



New Zealand Life Tables: 2005–07

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Preface

New Zealand Life Tables: 2005–07 contains the latest period life tables for the Māori, non-Māori, and total New Zealand populations. These complete period life tables are based on the mortality experience for the three-year period 2005–07, and provide standard measures for monitoring changes in mortality and survivorship patterns and the progress in prolonging life.

The report includes several other topics of interest. These include analysis of causes of death, summary information on the longevity and mortality experience of different subnational areas of New Zealand, and explanation of the methods of deriving these life tables. The report also consolidates earlier life table results.

Users should note three important aspects. First, the introduction of new birth and death registration forms in 1995 caused a significant discontinuity in historical ethnic birth and death statistics. However, the new forms have considerably improved the general quality of ethnic-specific data. Second, comparisons of Māori and non-Māori life tables over time and with each other should be interpreted with caution, because of changes in ethnic concept and data sources. Before 1995–97, Māori life expectancy is likely to be over-estimated and non-Māori life expectancy is likely to be under-estimated, because of under-registration of Māori deaths relative to the Māori population. Third, a brief section on cohort life tables has been included. Cohort life tables track the mortality experience of people born in each year from 1876. These complement the period life tables, which show the mortality experience in a specific time period.

This report was prepared by Simon Pang, under the guidance of Kim Dunstan, with assistance from Rino Adair, Alan Ambury, Paul Warren and John Bryant.



Geoff Bascand
Government Statistician

Standards and further information

Percentage changes

Percentage movements are, in a number of cases, calculated using data of greater precision than published. This could result in slight variations.

Rounding procedures

On occasion, figures are rounded to the nearest thousand or some other convenient unit. This may result in a total disagreeing slightly with the total of the individual items as shown in tables. Where figures are rounded the unit is in general expressed in words below the table headings, but where space does not allow this the unit may be shown as (000) for thousands, etc.

Source

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Email: info@stats.govt.nz
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Phone international: +64 4 931 4600
Fax: +64 4 931 4610
Post: PO Box 2922, Wellington, 6140, New Zealand
Website: www.stats.govt.nz

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Introduction

This report consists of five chapters. Chapter 1 contains background information on period life tables, including discussion of changes in the measurement of ethnic deaths and population. Chapter 2 presents the main results on longevity and mortality trends at the national level for the Māori, non-Māori and total New Zealand populations. Chapter 3 outlines the methodology used for constructing the latest complete period life tables. Chapter 4 presents a summary of longevity and mortality trends for the total population of subnational areas (regional councils and territorial authorities). Chapter 5 outlines the methodology used for constructing the latest abridged period life tables and standardised death rates of subnational areas.

Complete period life tables for 2005–07 for the Māori, non-Māori and total populations are contained in appendix 1. Supplementary five-year age group life table measures for 2005–07 are provided in appendix 2. Cohort life expectancy, for birth cohorts 1876–1933, are included in appendix 3.

Life tables are one of the basic demographic tools for analysing mortality. They are a tabular, numerical representation of mortality and survivorship of a population at each age. Most life tables are based on current mortality rates, and such tables are called period, current, or cross-sectional life tables. Every five years, Statistics New Zealand produces complete period life tables, using average mortality rates for three successive years centred on a census year. Complete life tables present functions for each single-year of age.

In every non-census year, Statistics NZ produces abridged period life tables, using mortality rates for three successive years centred on a non-census year. These abridged life tables present functions for five-year age groups rather than for single years of age, although ages 0 and 1–4 years are identified separately.

Period life tables show the mortality experience of a hypothetical group of newborn babies, assuming that they experience the observed mortality rates of the given period throughout their lives. The derived life expectancies give an indication of the average longevity of the population but do not necessarily reflect the longevity of an individual. Although these tables are usually based on death rates from a real population during a particular period of time, they are a hypothetical model of mortality, as they do not describe the real mortality which characterises a cohort as it ages.

Cohort (or generation) life tables are based on the mortality experience of a particular cohort (for example, all people born in the year 1900). These tables require data over many years, theoretically until the death of the last survivor. Cohort life tables are currently available for each year of birth from 1876 to 2006. However, life expectancy is only available to the 1933 birth cohort because subsequent cohorts still contain significant number of survivors, so the life tables are only partly complete.

1. Background

This chapter discusses important data issues which affect the historical comparability of life tables. These include changes in the measurement of ethnicity and the population since 1950–52 (the first period for which Māori and total New Zealand life tables were prepared). The measurement of ethnic mortality was particularly affected by the introduction of new death (and birth) registration forms in 1995. The preparation of life tables for subnational areas is also covered.

Ethnic life tables

Ethnic concept

The ethnic concept used for the 1995–97, 2000–02, and 2005–07 life tables is the ethnic group or groups that people identify with, or feel they belong to. Ethnicity is self-perceived and people can belong to more than one ethnic group. For example, people may identify with the Māori ethnicity even though they may not be descended from a Māori ancestor. Conversely, people may choose to not identify with the Māori ethnicity even though they are descended from a Māori ancestor. Ethnicity does not equate with birthplace.

In the Census of Population and Dwellings, ethnicity is identified by the person completing the census form. In the case of births and deaths, ethnicity is identified by the person completing the registration form. For births this is usually the parents, while for deaths this is most likely to be the funeral director (on the advice of a family member).

Different ethnic concepts were used for Māori and non-Māori life tables before 1995–97. These are discussed further in the following sections.

Changes to census forms

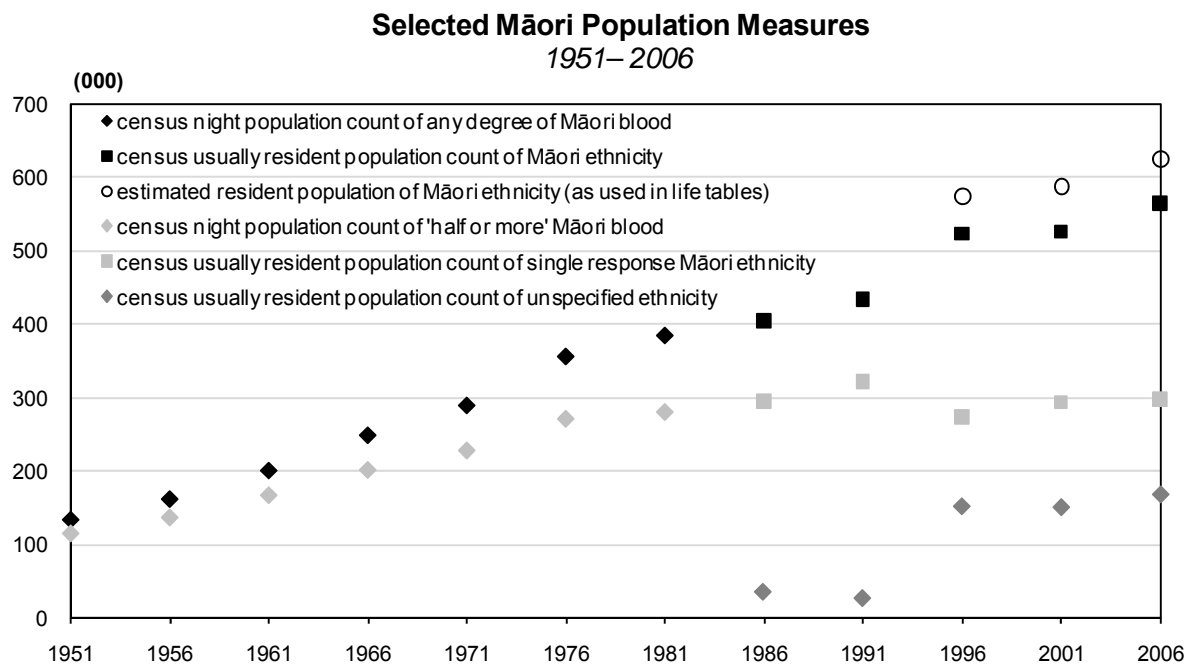
The ethnicity question used in the five-yearly Census of Population and Dwellings has had frequent changes in the wording of the instructions and tick-box categories. For an extensive list of historical census questionnaires, refer to Statistics NZ (2006). Before 1986, respondents were asked to identify their race or 'degree of blood' in terms of ethnic fractions. From 1986, respondents were asked to identify their ethnic affiliation via tick-box and/or write-in options, but without indicating the relative strength of affiliation. Moreover, the wording of recent census ethnic questions has varied:

- 1986: "What is your ethnic origin? Tick the box or boxes which apply to you."
- 1991: "Which ethnic group do you belong to? Tick the box or boxes which apply to you."
- 1996: "Tick as many circles as you need to show which ethnic group(s) you belong to."
- 2001 and 2006: "Which ethnic group do you belong to? Mark the space or spaces which apply to you."

Changes to population measures

The 1996 Census was the first to be followed by a post-enumeration survey which provided estimates of census coverage (net census undercount). This was a catalyst for Statistics NZ adopting the resident population concept for population estimates, projections, and demographic indexes. The 'estimated resident population' is the best available measure of the population that usually lives in an area. It is based on the census usually resident population count with adjustments for non-response to the census ethnicity question, net census undercount, and residents temporarily overseas on census night. The estimated resident population is not directly comparable with census counts because of these adjustments.

Figure 1.01



Note: Census counts at census date and population estimates at 30 June.

Changes to birth and death registration forms

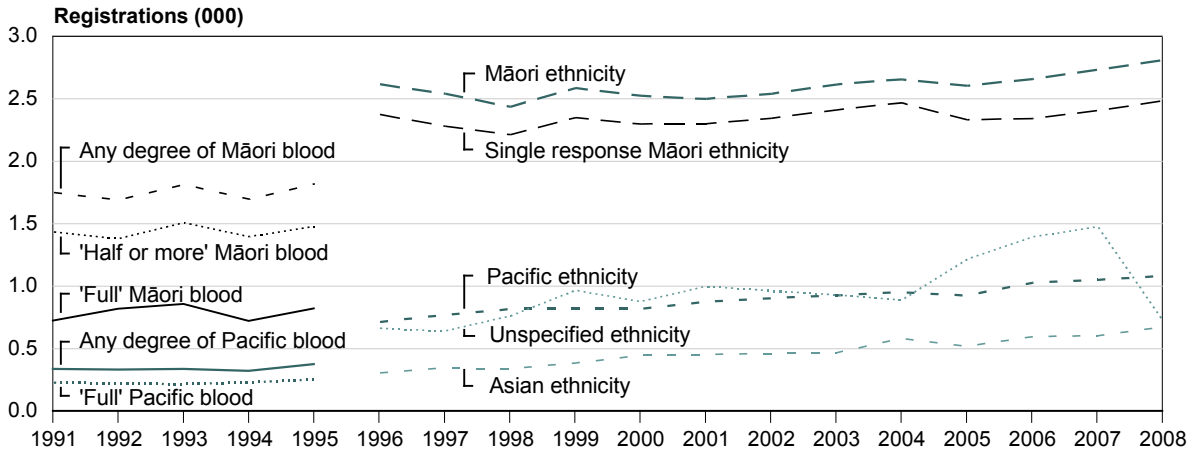
In September 1995, new birth and death registration forms were introduced carrying a revised question on ethnicity. Previously, the ethnic question on the death registration form asked for the degree of Māori or "Pacific Island" blood, if any, of the deceased person's parents. The new ethnic question is the same, in principle, as the questions used in the 1996 Census onwards. This has resulted in a number of changes:

- the ethnic concept is now self-identified ethnicity (previously Māori and Pacific respondents were classified by their 'degree of blood')
- ethnic vital statistics are now available for a wider range of ethnic groups (previously information was sought only for Māori and Pacific groups)
- ethnic data is now directly available for newborn babies and the deceased (in both cases this was previously derived from ethnicity of one or both parents)
- multiple response to the ethnicity question is now possible (previously the degree of Māori or Pacific blood, but not both, could be identified)
- non-response to the ethnicity question can now be quantified.

The introduction of the new registration forms has resulted in a significant increase in the number of deaths (figure 1.02) and births (figure 1.03) identified for each ethnicity.

Figure 1.02

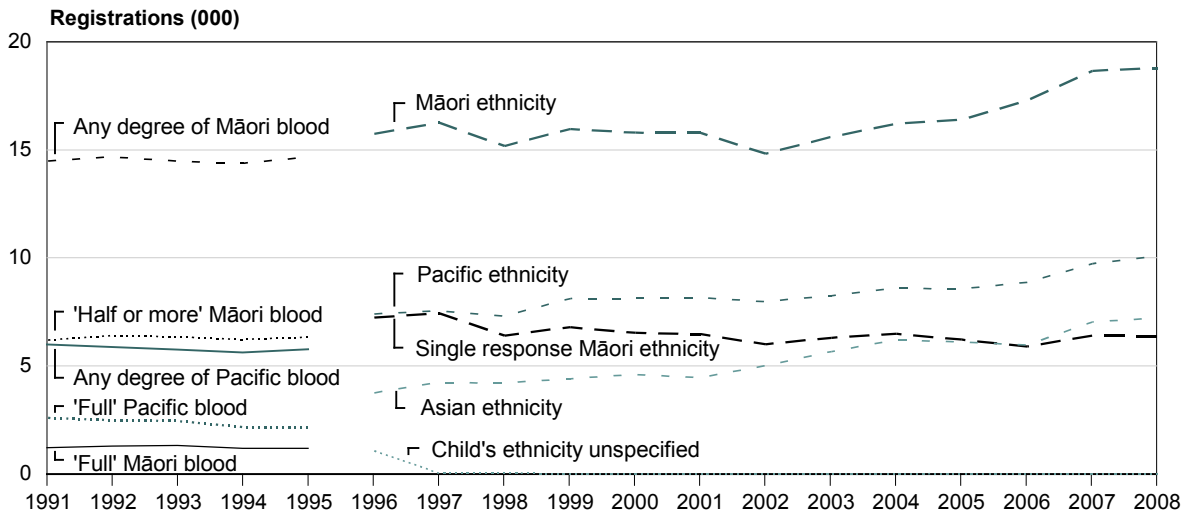
Deaths by Ethnicity 1991-2008



Note: December year data except for 1995 which is September year. Data before 1996 are deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas. Data from 1996 are deaths registered in New Zealand of people resident in New Zealand. From 1996, deaths with more than one ethnicity are included in each ethnic group. 'Single response Māori ethnicity' refers to deaths of people with Māori ethnicity only.

Figure 1.03

Live Births by Ethnicity of Child 1991-2008



Note: December year data, except for 1995 which is September year. Data before 1996 are births registered in New Zealand to mothers resident in New Zealand and mothers visiting from overseas. Data from 1996 are births registered in New Zealand. From 1996, births with more than one ethnicity are included in each ethnic group. 'Single response Māori ethnicity' refers to births with Māori ethnicity only. Data for 1998 are lower than expected because of a small change in the rate at which births were registered during 1998.

Availability and comparability of ethnic life tables

Statistics NZ has produced period life tables for the mutually exclusive Māori and non-Māori populations in addition to period life tables for the total New Zealand population. Following the introduction of new birth and death registration forms in September 1995, Statistics NZ has also evaluated the production of life tables for other ethnic groups such as Asian and Pacific. However, official life tables for other ethnic groups have not been produced because of the relatively small size of these ethnic populations, relatively few death registrations, and uncertainty associated with ethnic identification and measurement. For example, a person's ethnic identity can change over time and between different data collections, depending on the respondent and the context of collection. Hence, Statistics NZ is not yet confident that life tables provide a statistically robust measure of the mortality and survival experience of these ethnic populations for a given period (eg 2005–07) or over time (eg between 2000–02 and 2005–07), other than for Māori and non-Māori. All ethnic mortality measures, including those for Māori and non-Māori, should be interpreted with due caution.

Customised and non-official life tables for the Pacific and 'European or Other (including New Zealander)' ethnic groups are available on request from Statistics NZ. For more information, and quotes, email demography@stats.govt.nz.

There is evidence that Māori deaths were significantly under-reported, and hence non-Māori deaths were over-reported, before the new vitals registration forms were introduced in 1995. Following redesign of the forms, death registrations and population data are broadly comparable for ethnic groups. The 1995–97 Māori and non-Māori life tables published in July 1998 were the first to be constructed using data derived from the new registration forms. However, because numerator-denominator ethnic differences are significant before 1995–97, ethnic mortality measures from 1995–97 are not comparable with those from earlier years. For alternative estimates of life expectancy of different ethnic populations before 1995–97, see Ajwani (2003). Note, however, that these estimates may not be directly comparable with mortality measures produced by Statistics NZ because of differences in both the deaths numerator and population denominator.

Table 1.01

Summary of Ethnic Concepts, Deaths Measures, and Population Measures In New Zealand complete life tables 1950–52 to 2005–07

Period	Ethnic concept	Deaths measure	Population measure
2005–07	Māori life tables based on deaths of people with Māori ethnicity and the population of Māori ethnicity. Non-Māori life tables based on deaths and population not included in Māori life tables. Both Māori and non-Māori life tables make allowance for deaths and population with no ethnic response.	Deaths registered in New Zealand of people resident in New Zealand.	Estimated resident population at 30 June 2006 (based on census usually resident population count at 7 March 2006).

2000–02	Māori life tables based on deaths of people with Māori ethnicity and the population of Māori ethnicity. Non-Māori life tables based on deaths and population not included in Māori life tables. Both Māori and non-Māori life tables make allowance for deaths and population with no ethnic response.	Deaths registered in New Zealand of people resident in New Zealand.	Estimated resident population at 30 June 2001 (based on census usually resident population count at 6 March 2001).
1995–97 revised	Māori life tables based on deaths of people with Māori ethnicity and the population of Māori ethnicity. Non-Māori life tables based on deaths and population not included in Māori life tables. Both Māori and non-Māori life tables make allowance for deaths and population with no ethnic response. Adjustment made to Māori/non-Māori deaths, for undercount of Māori deaths using adjustment ratios presented in Ajwani (2003).	Deaths registered in New Zealand of people resident in New Zealand.	Estimated resident population at 30 June 1996 revised (based on census usually resident population count at 5 March 1996).
1995–97	Māori life tables based on deaths of people with Māori ethnicity and the population of Māori ethnicity. Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no ethnic response.	Deaths registered in New Zealand of people resident in New Zealand.	Estimated resident population at 30 June 1996 (based on census usually resident population count at 5 March 1996).
1990–92	Māori life tables based on deaths of people with any degree of Māori blood and the population of Māori ethnicity. Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths with no indication of degree of Māori blood, and population with no ethnic response.	Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.	Census usually resident population count at 5 March 1991.
1985–87	Māori life tables based on deaths of people with 'half or more Māori blood' and the population of 'single ethnic response' Māori. Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths with no indication of degree of Māori blood and including population with no ethnic response.	Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.	Estimated de facto population mean year ended 31 December 1985–87 (based on census night population count at 4 March 1986).

1980–82 revised	Māori life tables based on deaths of people with 'half or more Māori blood' and the population of 'half or more Māori blood'. Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no indication of degree of Māori blood. No adjustment made to Māori/non-Māori deaths for undercount of Māori deaths.	Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.	Estimated de facto population mean year ended 31 December 1980–82 (based on census night population count at 24 March 1981).
1980–82	Māori life tables based on deaths of people with any degree of Māori blood and the population of 'half or more Māori blood'. Deaths with any degree of Māori blood used as proxy adjustment for undercount of Māori 'half or more' deaths. Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no indication of degree of Māori blood.	Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.	Estimated de facto population mean year ended 31 December 1980–82 (based on census night population count at 24 March 1981).
1975–77	Māori life tables based on deaths of people with 'half or more Māori blood' and the population of 'half or more Māori blood'. Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no indication of degree of Māori blood.	Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.	Estimated de facto population mean year ended 31 December 1975–77 (based on census night population count at 23 March 1976).
1970–72	Māori life tables based on deaths of people with 'half or more Māori blood' and the population of 'half or more Māori blood'. Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no indication of degree of Māori blood.	Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.	Estimated de facto population mean year ended 31 December 1970–72 (based on census night population count at 23 March 1971).

1965–67	<p>Māori life tables based on deaths of people with 'half or more Māori blood' and the population of 'half or more Māori blood'.</p> <p>Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no indication of degree of Māori blood.</p>	<p>Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.</p>	<p>Estimated de facto population mean year ended 31 December 1965–67 (based on census night population count at 22 March 1966).</p>
1960–62	<p>Māori life tables based on deaths of people with 'half or more Māori blood provided that the remaining blood is European or Polynesian', and the population of 'half or more Māori blood provided that the remaining blood is European or Polynesian'.</p> <p>Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no indication of degree of Māori blood.</p>	<p>Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.</p>	<p>Estimated de facto population mean year ended 31 December 1960–62 (based on census night population count at 18 April 1961).</p>
1955–57	<p>Māori life tables based on deaths of people with 'half or more Māori blood provided that the remaining blood is European or Polynesian', and the population of 'half or more Māori blood provided that the remaining blood is European or Polynesian'.</p> <p>Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no indication of degree of Māori blood.</p>	<p>Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.</p>	<p>Estimated de facto population at 30 June 1956 (based on census night population count at 17 April 1956).</p>
1950–52	<p>Māori life tables based on deaths of people with 'half or more Māori blood provided that the remaining blood is European or Polynesian', and the population of 'half or more Māori blood provided that the remaining blood is European or Polynesian'.</p> <p>Non-Māori life tables based on deaths and population not included in Māori life tables, including deaths and population with no indication of degree of Māori blood.</p>	<p>Deaths registered in New Zealand of people resident in New Zealand and people visiting from overseas.</p>	<p>Estimated de facto population at 30 June 1951 (based on census night population count at 17 April 1951).</p>

Subnational life tables

For most subnational areas, death and population numbers are too small to construct reliable complete life tables. However, abridged period life tables, which involve death and population data by age groups (0, 1–4, 5–9, ... 80–84, 85+ years), have been constructed for many subnational areas. **Nevertheless, even the abridged life tables must be interpreted with caution.** Death and population numbers can fluctuate from year to year. In addition, the stated residence of the deceased may not reflect the geographic area(s) where that person spent most of their life.

For many subnational areas, death and population numbers are also too small to construct reliable abridged life tables. Standardised death rates provide an alternative summary measure of the mortality experience of each area. Like life tables, they allow for the different age-sex composition of each area. Standardised death rates have been calculated for all regional council and territorial authority areas of New Zealand for the periods 1995–97, 2000–02, and 2005–07.

A summary of subnational mortality and longevity trends from 1990–92 to 2005–07 is included in this report. The 1990–92 life tables use a different population measure than later periods (see table 1.02). More detailed results, including abridged life tables for various regions and territorial authority areas, are available on request (email: demography@stats.govt.nz, phone toll-free: 0508 525 525).

Table 1.02

Summary of Deaths Measures and Population Measures In subnational abridged life tables 1990–92 to 2005–07

Period	Deaths measure	Population measure
2005–07	Deaths registered in New Zealand of people resident in each area.	Estimated resident population of each area at 30 June 2006 (based on census usually resident population count of each area at 7 March 2006).
2000–02	Deaths registered in New Zealand of people resident in each area.	Estimated resident population of each area at 30 June 2001 (based on census usually resident population count of each area at 6 March 2001).
1995–97 revised	Deaths registered in New Zealand of people resident in each area.	Estimated resident population of each area at 30 June 1996 revised (based on census usually resident population count of each area at 5 March 1996).
1995–97	Deaths registered in New Zealand of people resident in each area.	Estimated resident population of each area at 30 June 1996 (based on census usually resident population count of each area at 5 March 1996).
1990–92	Deaths registered in New Zealand of people resident in each area.	Census usually resident population count of each area at 5 March 1991.

2. National trends in longevity and mortality

This chapter presents a summary of mortality and longevity trends for the total population, Māori population, and non-Māori population of New Zealand. Official complete period life tables for New Zealand were first produced for the period 1880–92, although these were for the non-Māori population only. For periods from 1950–52, complete period life tables have been prepared for the total New Zealand and Māori populations, in addition to life tables for the non-Māori population. Non-Māori life tables continue to be produced because they provide an important comparison with Māori life tables. However, it is important to note that changes to ethnic concepts, deaths measures, and population measures affect the historical comparability of these life tables, particularly those relating to the Māori population (see chapter 1, including table 1.01).

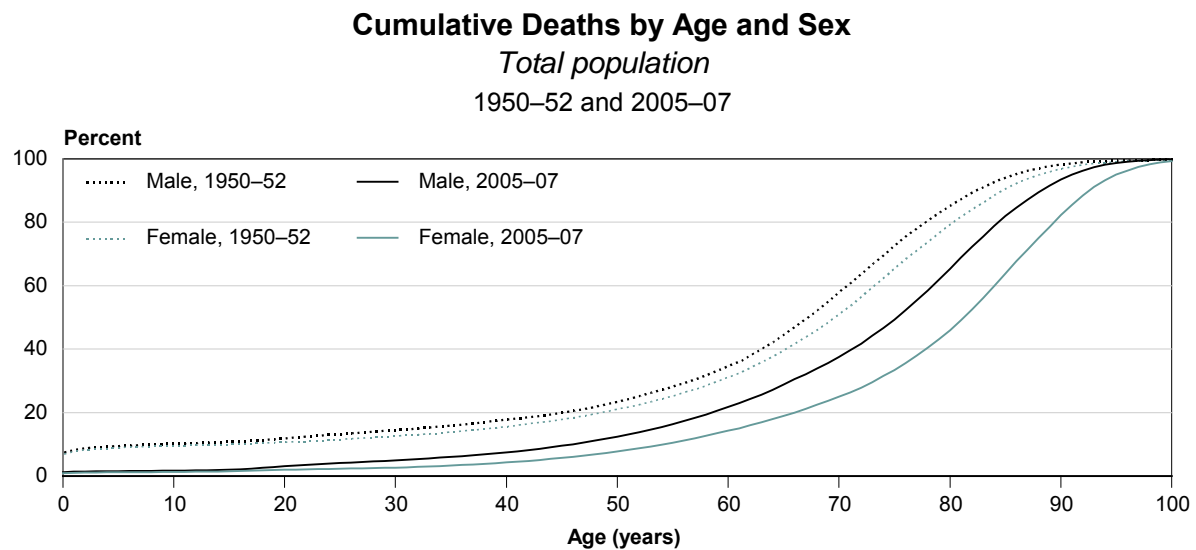
Age distribution of deaths

There were 83,801 deaths of New Zealand residents registered during the 2005–07 period, comprising 41,630 male deaths and 42,171 female deaths. Historically, more males are born than females, and females live longer, so male deaths have tended to outnumber female deaths. However, longer female life expectancy has resulted in more females surviving to older ages and closing of the gap between male and female life expectancies resulted in more female than male deaths in the 2005–07 period.

The median age of the New Zealand population is rising. As a result, the number of deaths at older ages is increasing. More than three-quarters of these deaths in 2005–07 were of people aged 65 years and over (figure 2.01). The proportion of male deaths occurring at 65 years and over increased from 57 percent in 1950–52, to 60 percent in 1975–77, and to 73 percent in 2005–07, while the percentage of female deaths occurring at 65 years and over increased from 62 to 72 percent, and then to 82 percent over the same period.

Children (those under 15 years) accounted for less than 2 percent of deaths in 2005–07, whereas they accounted for 11 percent of deaths in 1950–52 and 5 percent of deaths in 1975–77. Infants (under one year old) account for about two-thirds of the deaths of children. Those aged 15–29 years accounted for 2 percent of deaths in 2005–07, with 72 percent of these being male.

Figure 2.01

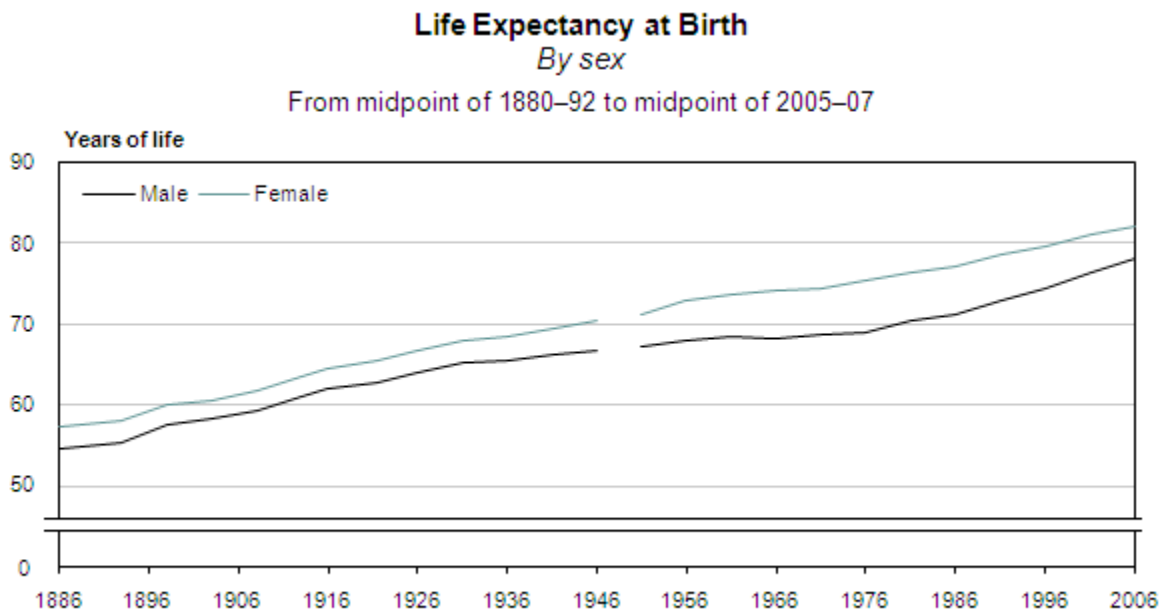


New Zealand life expectancy at birth

Based on period life tables, life expectancy at birth was 78.0 years for males and 82.2 years for females in 2005–07 (table 2.01 and figure 2.02). Male life expectancy increased by 1.7 years, from 76.3 years in 2000–02, while female life expectancy increased by 1.0 year, from 81.1 years. Life expectancies have increased by almost 11 years since 1950–52, up from 67.2 years for males and 71.3 years for females.

For most periods before 1975–77, increases in male life expectancy lagged behind increases in female life expectancy. Male life expectancy increased by 1.8 years between 1950–52 and 1975–77 compared with 4.2 years for females. However, within this 25-year period, male life expectancy at birth decreased slightly between 1960–62 and 1965–67 (as a result of an increase in mortality rates from heart disease, cancer, and motor vehicle accidents). Since 1975–77, male life expectancy has increased more than female life expectancy. Male life expectancy at birth increased by 9.0 years during the 30-year period 1975–77 to 2005–07, and by 6.7 years for females. The five-yearly increase in male life expectancy (1.9 years) between 1995–97 and 2000–02 was the highest recorded since 1950–52.

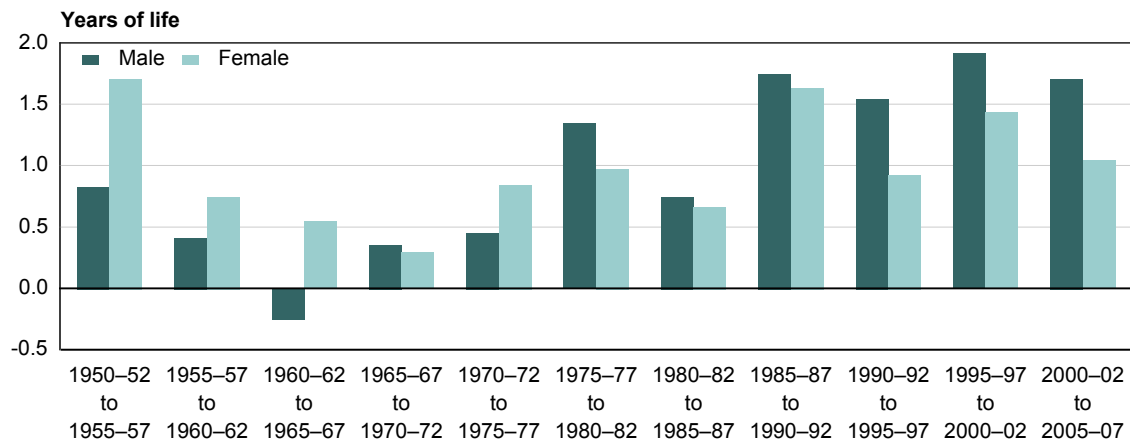
Figure 2.02



Note: Life tables before 1950–52 were prepared for the non-Māori population only.

Figure 2.03

Five-yearly Change in Life Expectancy at Birth
Total population by sex
 1950–52 to 2005–07



Cohort life tables

The period life tables show the mortality and survival experience of the population, based on people dying in the specific period (for example, 2005–07). The life expectancies from period life tables assume that people experience the observed mortality rates of the given period throughout their lives. In reality, death rates do not remain constant. Hence, if death rates continue to decrease, people born during 2005–07 will experience greater longevity than implied by the 2005–07 period life tables.

Statistics NZ recently developed cohort life tables covering the New Zealand population born in each year from 1876. The cohort mortality series tracks the birth cohorts (people born in each year) over their entire lifetime, by following the deaths of each cohort at each age.

The cohort life tables indicate that life expectancy at birth increased between the 1876 and 1933 birth cohorts, from 50.4 years to 70.3 years for males, and from 54.0 years to 75.4 years for females. Both the level and rate of change in life expectancy at birth are higher than implied by the period life tables, because of the progressive decline in mortality with successive birth cohorts.

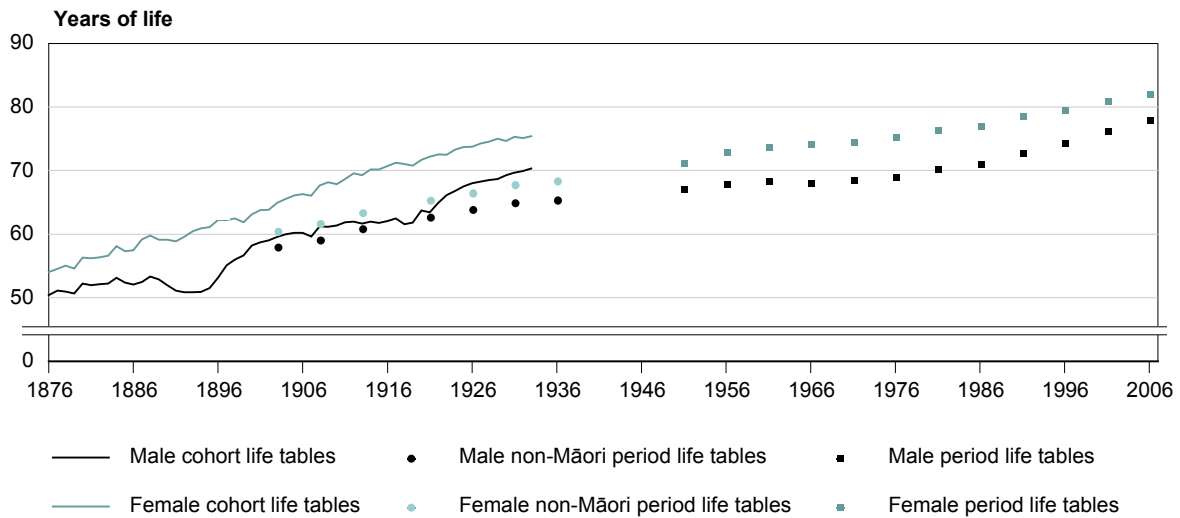
Life expectancy is the average length of life of a group of people from a given age. The death of the last survivor of a birth cohort is therefore needed before life expectancy (at any age) can be calculated. Some remaining survival and mortality experience has been projected at ages above 74 years to complete the life tables for birth cohorts up to 1933. For cohorts born after 1933, other life table measures, such as death rates at different ages and proportions dying by different ages, are still available. Tables derived from cohort life tables are included in appendix 3. More information on the cohort life tables is available from the Statistics NZ website: www.stats.govt.nz/datasets/population/cohort-life-tables.htm.

The cohort life tables indicate that males and females born in the early 1930s have lived for about 70 and 75 years on average, respectively. By comparison, it was not until the mid-1970s that period life tables indicated similar life expectancies at birth. The period life tables measure the life expectancy of the population at a moment in time, based on the most recently available mortality trends, while cohort life tables provide an insight into generational changes in mortality.

Figure 2.04

Life Expectancy at Birth from Cohort and Period Life Tables*By sex*

1876–2007



Note: Cohort life tables refer to year of birth; period life tables refer to year of death. Life expectancies for cohorts beyond 1933 are not available. Cohort life expectancies from 1907 onwards are partly based on projected mortality experiences at ages above 74 years.

Māori and non-Māori life expectancy at birth

The 2005–07 life tables indicate that a newborn Māori boy can expect to live 70.4 years and a newborn Māori girl 75.1 years (table 2.01). This is an increase of 1.4 years for males and 1.9 years for females over the 2000–02 figures of 69.0 years for males and 73.2 years for females.

Over the decade to 2007, Māori life expectancy has increased by 3.8 years for both males and females, up from 66.6 and 71.3 years, respectively, in 1995–1997.

For non-Māori in 2005–07, a newborn boy can expect to live 79.0 years and a newborn girl 83.0 years. This is an increase of 1.8 years for males and 1.0 year for females over the 2000–02 figures of 77.2 years for males and 81.9 years for females.

Māori and non-Māori life expectancy figures for 1995–97 onwards are not directly comparable with figures for 1990–92 and earlier. This is mainly because of the impact of the new ethnicity question on the birth and death registration forms, which was implemented in September 1995. See chapter 1 for more details on the new forms.

Table 2.01

Life Expectancy at Selected Ages
Total, Māori, and non-Māori populations
 1950–52 to 2005–07

Period	Male at exact age (years)					Female at exact age (years)				
	0	25	45	65	85	0	25	45	65	85
Total (years of life)										
1950–52	67.2	46.2	27.9	12.8	3.9	71.3	49.4	30.8	14.8	4.2
1955–57	68.0	46.6	28.1	12.9	4.1	73.0	50.6	31.7	15.3	4.6
1960–62	68.4	46.5	28.0	12.8	3.9	73.8	51.0	32.1	15.5	4.5
1965–67	68.2	46.0	27.5	12.6	4.1	74.3	51.2	32.3	15.8	4.7
1970–72	68.5	46.2	27.6	12.6	4.0	74.6	51.5	32.6	15.9	4.7
1975–77	69.0	46.6	28.1	12.8	3.9	75.5	52.2	33.2	16.6	5.0
1980–82	70.4	47.5	28.9	13.3	4.3	76.4	53.0	33.9	17.1	5.5
1985–87	71.1	48.2	29.6	13.7	4.5	77.1	53.5	34.4	17.4	5.6
1990–92	72.9	49.8	31.1	14.8	5.0	78.7	54.8	35.6	18.5	6.1
1995–97	74.4	51.0	32.2	15.6	4.9	79.7	55.7	36.5	19.1	6.2
2000–02	76.3	52.6	33.8	16.7	5.2	81.1	57.0	37.7	20.0	6.5
2005–07	78.0	54.2	35.3	18.0	5.6	82.2	58.0	38.6	20.6	6.6
Māori⁽¹⁾ (years of life)										
Life tables based on pre-1995 death registration form										
1950–52	54.0	38.3	22.5	10.5	3.4	55.9	39.2	23.3	12.2	4.0
1955–57	57.2	39.8	23.2	10.7	3.9	58.7	39.7	22.7	11.1	4.2
1960–62	59.0	39.8	23.1	10.7	3.5	61.4	40.6	23.5	11.8	4.5
1965–67	61.4	40.7	23.4	10.6	3.4	64.8	42.7	24.9	12.5	5.0
1970–72	61.0	39.6	22.6	10.7	3.5	65.0	42.8	25.1	12.1	4.3
1975–77	63.3	41.2	23.7	11.0	4.2	67.7	44.9	26.7	13.4	4.7
1980–82	65.1	42.7	24.8	11.3	3.9	69.5	46.5	28.1	13.9	5.0
1985–87	67.4	44.8	26.6	12.3	4.2	72.3	49.0	30.2	15.1	5.1
1990–92	68.0	45.2	27.0	12.7	4.6	73.0	49.2	30.4	15.4	5.6
Life tables based on death registration form introduced in September 1995										
1995–97	66.6	43.7	25.6	11.7	3.6	71.3	47.8	29.1	14.1	4.9
2000–02	69.0	45.6	27.3	12.7	4.2	73.2	49.3	30.4	15.1	5.2
2005–07	70.4	46.9	28.8	13.8	4.5	75.1	51.2	32.3	16.1	5.6
Non-Māori⁽¹⁾ (years of life)										
Life tables based on pre-1995 death registration form										
1950–52	68.3	46.6	28.1	12.9	3.9	72.4	49.8	31.1	14.8	4.2
1955–57	68.9	46.9	28.3	12.9	4.1	73.9	51.0	32.0	15.3	4.6
1960–62	69.2	46.9	28.2	12.8	3.9	74.5	51.5	32.4	15.5	4.5
1965–67	68.7	46.3	27.7	12.6	4.2	74.8	51.6	32.6	15.9	4.7
1970–72	69.1	46.5	27.9	12.6	4.0	75.2	51.9	32.8	16.0	4.7
1975–77	69.4	46.9	28.2	12.9	3.9	75.9	52.6	33.5	16.7	5.1
1980–82	70.8	47.8	29.1	13.4	4.4	76.9	53.3	34.2	17.2	5.5
1985–87	71.4	48.4	29.7	13.7	4.6	77.4	53.8	34.6	17.5	5.6
1990–92	73.4	50.1	31.4	14.9	5.0	79.2	55.2	36.0	18.6	6.1
Life tables based on death registration form introduced in September 1995										
1995–97	75.4	51.7	32.8	15.8	4.9	80.6	56.5	37.1	19.3	6.2
2000–02	77.2	53.3	34.4	16.9	5.2	81.9	57.7	38.3	20.2	6.5
2005–07	79.0	55.0	35.9	18.2	5.6	83.0	58.6	39.2	20.9	6.7

(1) Comparisons over time and between Māori and non-Māori should be interpreted with caution because of changes in ethnic concept and data sources, as summarised in table 1.01.

Māori and non-Māori differentials in life expectancy

As a result of differences in death rates, life expectancy at birth for non-Māori exceeded that of Māori by 8.6 years for males and by 7.9 years for females in 2005–07. For males, three-quarters of this difference is due to higher Māori death rates at ages 40–79 years. For females, three-quarters of this difference is due to higher Māori death rates at ages 50–84 years.

The Māori/non-Māori differential partly reflects different rates of diabetes and smoking, as well as socio-economic differences. Cause-of-death statistics for 2005 show age-standardised death rates from diabetes were four times higher for male Māori than male non-Māori and five times higher for female Māori compared with female non-Māori (personal communication, New Zealand Health Information Service, 2009). The 2006 Census reported that 42 percent of Māori aged 15 years and over were regular smokers, compared with 18 percent of non-Māori.

The gap between Māori and non-Māori life expectancy has narrowed. In 1995–97, it stood at 9.1 years (average of male and female). By 2000–02 it had dropped to about 8.5 years. In 2005–07, the gap was 8.2 years.

However, the observed gap between Māori males and non-Māori males life expectancy has fluctuated, dropping from 8.8 years in 1995–97 to 8.2 years in 2000–02, but increasing to 8.6 years in 2005–07. In contrast, the gap between Māori females and non-Māori females life expectancy has dropped from 9.3 years in 1995–97, to 8.8 years in 2000–02, to 7.9 years in 2005–07.

Table 2.02

Difference Between Māori and Non-Māori Life Expectancy At selected ages 1950–52 to 2005–07

Period	Male at exact age (years)					Female at exact age (years)				
	0	25	45	65	85	0	25	45	65	85
Non-Māori minus Māori⁽¹⁾ (years of life)										
Life tables based on pre-1995 death registration form										
1950–52	14.3	8.3	5.6	2.4	0.5	16.6	10.6	7.7	2.7	0.3
1955–57	11.7	7.1	5.1	2.2	0.2	15.2	11.3	9.3	4.3	0.4
1960–62	10.1	7.0	5.0	2.2	0.3	13.1	10.8	8.9	3.7	0.0
1965–67	7.2	5.6	4.3	2.0	0.7	10.1	8.9	7.7	3.4	-0.3
1970–72	8.1	6.9	5.3	1.9	0.5	10.2	9.1	7.7	3.9	0.4
1975–77	6.0	5.7	4.5	1.9	-0.3	8.1	7.7	6.8	3.3	0.4
1980–82	5.7	5.2	4.4	2.0	0.4	7.3	6.8	6.1	3.4	0.6
1985–87	3.9	3.6	3.1	1.4	0.3	5.1	4.8	4.4	2.4	0.5
1990–92	5.4	4.9	4.4	2.2	0.3	6.2	6.0	5.6	3.2	0.5
Life tables based on death registration form introduced in September 1995										
1995–97	8.8	8.1	7.2	4.0	1.3	9.3	8.7	8.0	5.3	1.2
2000–02	8.2	7.8	7.1	4.2	1.1	8.8	8.4	7.9	5.2	1.3
2005–07	8.6	8.1	7.1	4.4	1.1	7.9	7.5	6.9	4.8	1.1

(1) Comparisons over time and between Māori and non-Māori should be interpreted with caution because of changes in ethnic concept and data sources, as summarised in table 1.01.

Official life tables are unavailable for other ethnic populations, such as the broad Asian and Pacific populations, partly because of the relatively small size of these ethnic populations, and relatively few deaths. Nevertheless, other mortality measures, such as age-standardised death rates, indicate that Māori and Pacific death rates (9.9 deaths per 1,000 population and 8.8 per 1,000, respectively) are significantly higher than for the total population (5.8 per 1,000) for the 2005–07 period. The European or Other (5.4 per 1,000) and Asian (3.7 per 1,000) ethnic groups had much lower death rates than the Māori and Pacific ethnic groups.

It is important to note that standardised death rates can only be used to compare mortality trends for populations that have been standardised against the same population. Hence standardised death rates in this report (using the estimated resident population at 30 June 1996) are not comparable with rates published elsewhere that use a different standard population.

Table 2.03

Standardised Death Rates
By ethnic group
1996–97 to 2005–07

Ethnic group	Period		
	1996–97	2000–02	2005–07
Māori	11.9	11.2	9.9
Pacific	9.0	9.1	8.8
Total New Zealand population	7.5	6.5	5.8
Non-Māori	7.1	6.1	5.4
European or Other ⁽¹⁾	7.0	6.0	5.4
Asian	5.3	4.5	3.7

(1) Including New Zealander.

Note: Standardised death rates indicate the overall death rate (deaths per 1,000 population) if the observed age-and-sex-specific death rates were applied to a standard population. The rates have been standardised by the direct method of standardisation. The age and sex distribution of the estimated resident population of New Zealand at 30 June 1996 (age groups 0, 1–4, 5–9, 10–14, ... 80–84, 85+) is used as the standard.

Male-female difference in life expectancy

Before 1975–77, female life expectancy generally increased faster than male life expectancy. As a result, the difference between female and male life expectancy at birth increased from 4.1 years in 1950–52 to a peak of 6.4 years in 1975–77 (table 2.04). Since then, male life expectancy has been increasing faster and in 2005–07 the difference had narrowed to 4.1 years.

Table 2.04

Difference Between Male and Female Life Expectancy
At selected ages, total population
 1950–52 to 2005–07

Period	Exact age (years)				
	0	25	45	65	85
Female minus male (years of life)					
1950–52	4.1	3.2	2.9	2.0	0.4
1955–57	5.0	4.0	3.6	2.4	0.4
1960–62	5.3	4.5	4.1	2.7	0.7
1965–67	6.1	5.2	4.8	3.3	0.5
1970–72	6.0	5.3	4.9	3.4	0.7
1975–77	6.4	5.6	5.2	3.8	1.1
1980–82	6.1	5.5	5.0	3.8	1.3
1985–87	6.0	5.3	4.8	3.7	1.0
1990–92	5.9	5.1	4.5	3.7	1.1
1995–97	5.3	4.8	4.3	3.5	1.2
2000–02	4.8	4.4	3.8	3.3	1.3
2005–07	4.1	3.7	3.3	2.7	1.0

Closing of the gap between male and female life expectancy between 1995–97 and 2005–07 (from 5.3 to 4.1 years) is due to greater increases in non-Māori male life expectancy. Female life expectancy is higher than male life expectancy among both Māori and non-Māori. For the Māori population, male life expectancy increased more than female life expectancy between the periods 1995–97 and 2000–02. However, Māori male life expectancy increased by a smaller margin between 2000–02 and 2005–07. As a consequence, the Māori female longevity advantage was 4.7 years in both 1995–97 and 2005–07. Among non-Māori, females born in 2005–07 can expect to outlive males by 4.0 years, down from 4.8 years in 2000–02 and 5.2 years in 1995–97.

The closing gap between male and female life expectancy has also been observed overseas. In Australia, the gap has lessened from about seven years in the 1970s and early 1980s to just under five years in the mid-2000s (Australian Bureau of Statistics, 2008). Similarly, in the United Kingdom the difference between male and female life expectancy at birth has decreased from about six years to about four years over the last 25 years.

International comparison of life expectancy

In 2005–07, New Zealanders' life expectancy at birth was 82.2 years for females and 78.0 years for males. This was slightly below the OECD median of 82.3 years for females, and slightly above the OECD median of 77.1 years for males (OECD, 2008). Of 30 OECD countries, New Zealand was ranked 17th for females and 9th for males (based on estimated 2006 figures for countries without 2006 figures). In 1960–61, New Zealand's ranking was 9th for females and 7th for males. Through the 1960s, 1970s, and 1980s, longevity improved faster in many other OECD countries than in New Zealand. Since the 1980s, faster-than-average gains in life expectancy in New Zealand, particularly for males, have improved New Zealand's relative position.

Amongst the OECD countries, Japanese women had the highest life expectancy (85.8 years in 2006). For men, Iceland had the highest life expectancy (79.4 years in 2006). Differences in life expectancies between OECD countries vary by up to 12 years for women and about 10 years for men.

Table 2.05

Life Expectancy at Birth for OECD Countries

Country	Period	Years of life	
		Male	Female
Australia	2006	78.7	83.5
Austria	2006	77.1	82.7
Belgium	2006	76.6	82.3
Canada	2005	78.0	82.7
Czech Republic	2006	73.5	79.9
Denmark	2006	76.1	80.7
Finland	2006	75.9	83.1
France	2006	77.3	84.4
Germany	2006	77.2	82.4
Greece	2006	77.1	82.0
Hungary	2006	69.0	77.4
Iceland	2006	79.4	83.0
Ireland	2006	77.3	82.1
Italy	2004	77.9	83.8
Japan	2006	79.0	85.8
Korea	2006	75.7	82.4
Luxembourg	2006	76.8	81.9
Mexico	2006	73.2	78.1
Netherlands	2006	77.6	81.9
New Zealand	2005–07	78.0	82.2
Norway	2006	78.2	82.9
Poland	2006	70.9	79.6
Portugal	2006	75.5	82.3
Slovak Republic	2006	70.4	78.2
Spain	2006	77.7	84.4
Sweden	2006	78.7	82.9
Switzerland	2006	79.2	84.2
Turkey	2006	69.1	74.0
United Kingdom	2005	77.1	81.1
United States	2005	75.2	80.4

Source: OECD Health Data 2008, and New Zealand Period Life Tables 2005–07

Note: OECD Organisation for Economic Co-operation and Development.

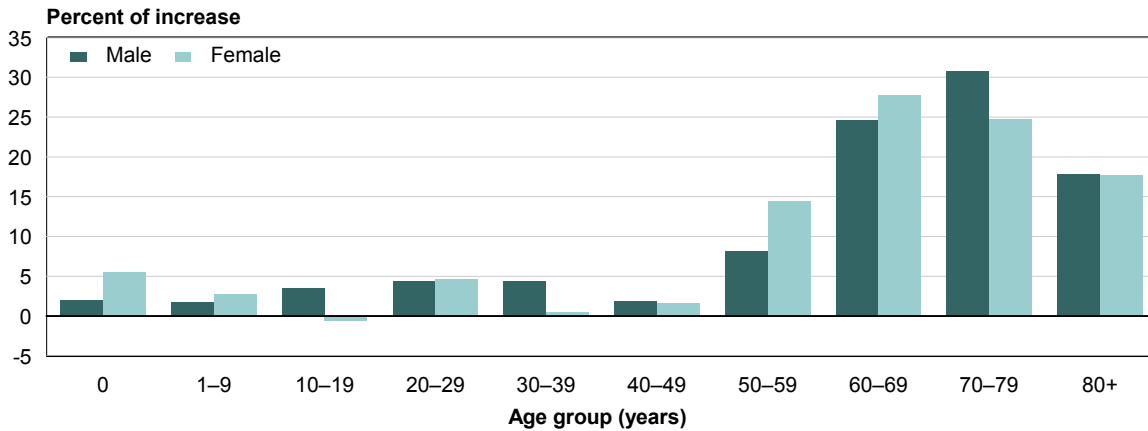
Age contribution to longevity differences

It is possible to determine the contribution that each age group has made to longevity differences, between periods or between populations (for example, Māori and non-Māori). This is because ages do not contribute equally to life expectancy at birth, with the youngest ages contributing relatively more. This comparison involves calculating and comparing 'hypothetical or temporary' life expectancies at each age. Hypothetical life expectancy is the average number of years that a group of people will live from age x to $x + i$ years (where i is the age interval). For further methodological details on this process see Arriaga (1984).

Two-thirds of the gains in life expectancy between 2000–02 and 2005–07 were due to the reduction in death rates among older ages (60–84 years). Reduced death rates among males and females aged in their 50s also made a significant contribution. Among females, those aged 15–19 years experienced a small increase in death rates, meaning these age groups made a small negative contribution to the longevity gain. For males, all age groups made a positive contribution to the longevity gain.

Figure 2.05

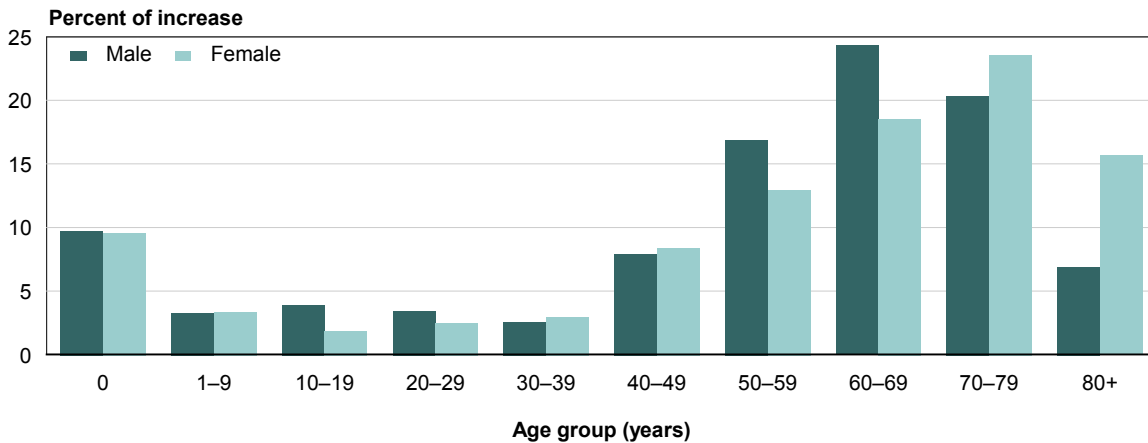
Age Contribution to Increase in Life Expectancy at Birth
Total population by sex
 2000–02 to 2005–07



Over a longer 30-year period, 1975–77 to 2005–07, New Zealand life expectancy at birth increased by 9.0 years for males and by 6.7 years for females. There were reductions in death rates in all age groups. The main contribution was from the reduction in death rates among late working and retirement ages (50–79 years). Reduced death rates among infants, men and women in their 40s, and women aged 80 years and over were also significant.

Figure 2.06

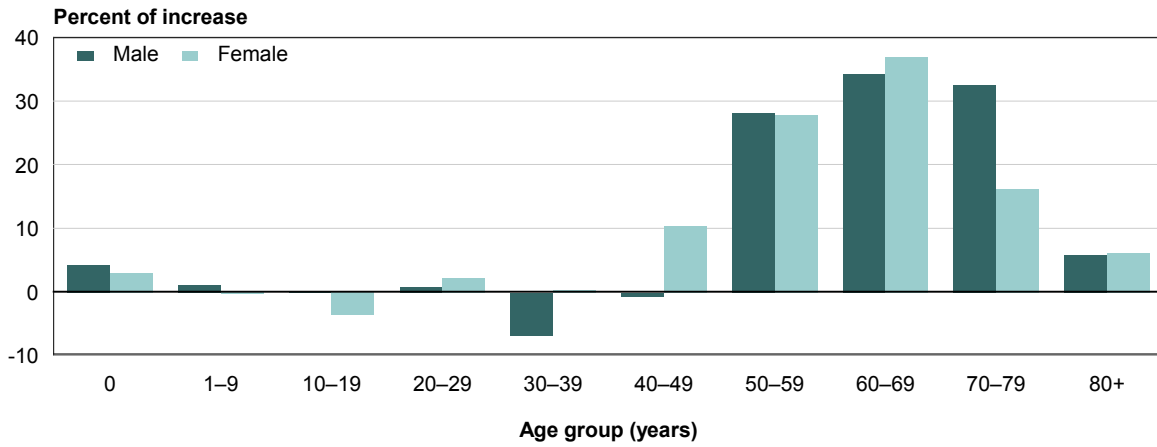
Age Contribution to Increase in Life Expectancy at Birth
Total population by sex
 1975–77 to 2005–07



Among Māori, most of the gains in life expectancy between 2000–02 and 2005–07 were from the reduction in death rates among late working and retirement ages (50–79 years). There were also reductions in death rates for infants, men and women aged 80 years and over, and women in their 40s. However, small increases in death rates were observed at some other ages.

Figure 2.07

Age Contribution to Increase in Life Expectancy at Birth
Māori population by sex
 2000–02 to 2005–07



Ethnic differentials

Māori experience higher death rates than non-Māori at all ages. Māori die at more than double the rate of non-Māori among males aged 2–6 and 28–72 years, and females aged 2–4, 12–17, and 25–75 years.

Figure 2.08

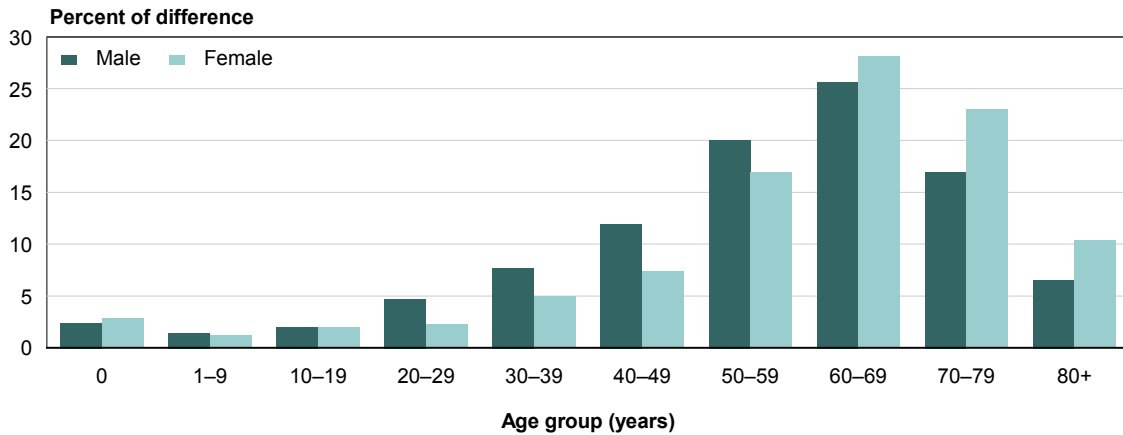
Ratio of Māori to Non-Māori Proportion Dying Within a Year (q_x)
By age and sex
 2005–07



About one-half of the difference between Māori and non-Māori life expectancy in 2005–07 was due to lower non-Māori death rates at ages 55–74 years. For males, three-quarters of the difference in longevity is due to higher Māori death rates at ages 40–79 years. For females, three-quarters of the difference in longevity is due to higher Māori death rates at ages 50–84 years.

Figure 2.09

Age Contribution to Difference between Māori and Non-Māori Life Expectancy at Birth
By sex
 2005–07



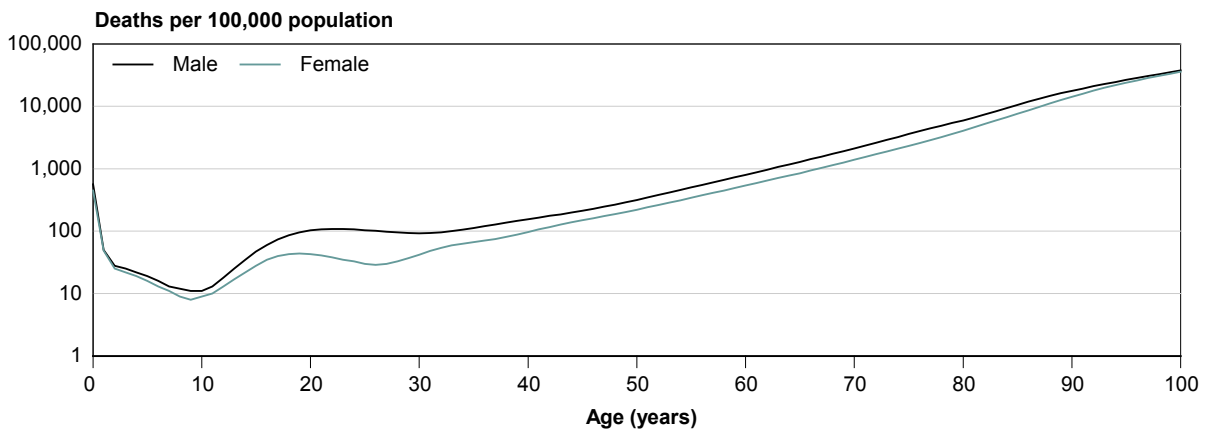
Death rates by age

Total population

The New Zealand life tables are comparable with those of other OECD countries. The total population life tables are characterised by relatively high death rates in the first year of life (about 5 deaths per 1,000 population). Death rates decrease to around 10 deaths per 100,000 at ages 7–11 years then increase to a hump at around 20 years, with markedly higher death rates for males than females (figure 2.10). Death rates then change little until the mid-30s for males and the late 20s for females, when they begin to increase gradually with age, reaching 1 death per 100 people for males aged in the early 60s and females aged in the late 60s. For males aged in the mid-80s and females aged in the late 80s, death rates have reached 1 death per 10 people.

Figure 2.10

Proportion Dying Within a Year (q_x)
Total population by age and sex
 2005–07



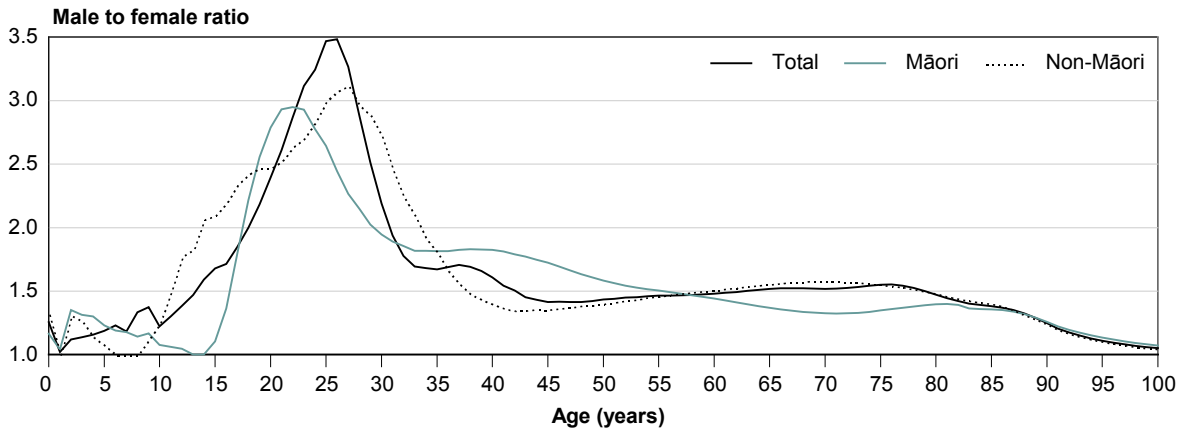
Note: Logarithmic scale

Females experience lower death rates than males at all ages. For the total population, males die at more than twice the rate of females at ages 18–30 years, and at more than three times

that of females at ages 23–27 years. Among Māori, males die at more than twice the rate of females at ages 18–29 years.

Figure 2.11

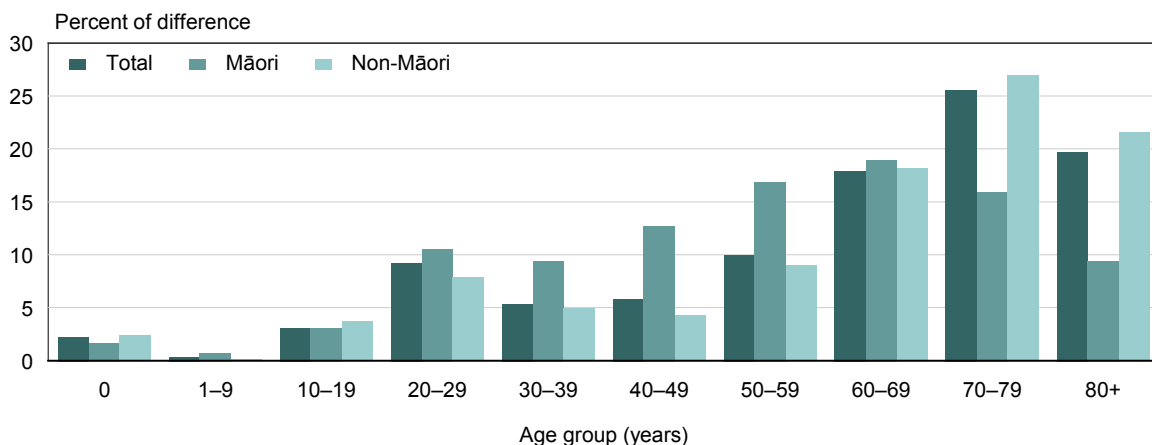
Ratio of Male to Female Proportion Dying Within a Year (q_x)
By age and ethnicity
 2005–07



In 2005–07, life expectancy at birth for females exceeded that of males by 4.1 years for the total New Zealand population, by 4.7 years for Māori, and by 4.0 years for non-Māori. For the total and non-Māori populations, two-thirds of the difference is due to higher male death rates at ages 55–89 years. For the Māori population, two-thirds of the difference is due to higher male death rates at ages 40–79 years.

Figure 2.12

Age Contribution to Difference between Male and Female Life Expectancy at Birth
By ethnicity
 2005–07

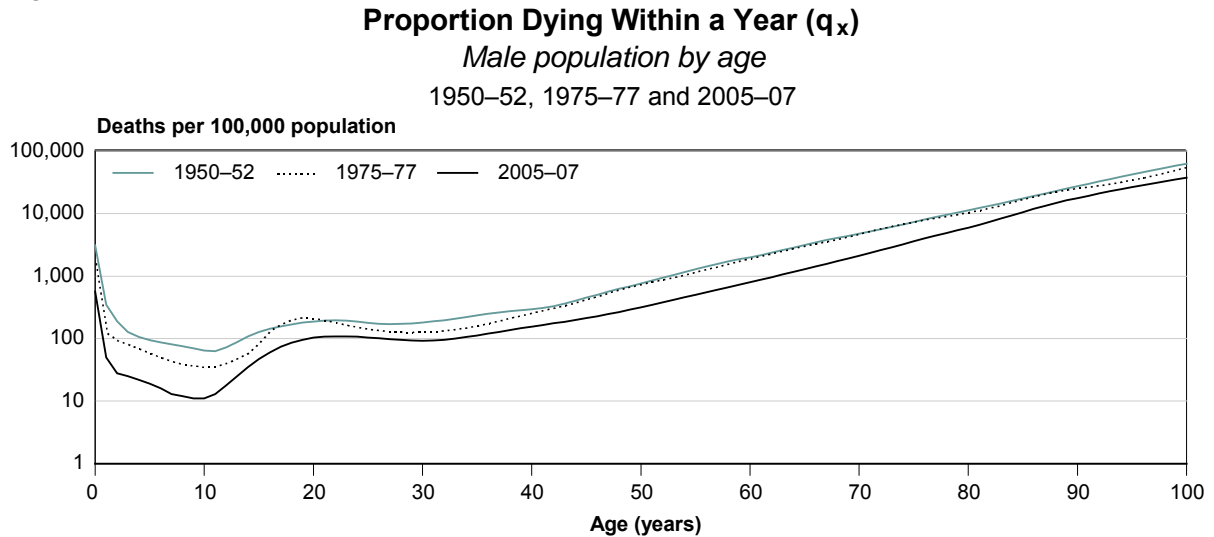


Change between 1950–52 and 2005–07

Between 1950–52 and 2005–07, male and female death rates decreased at all ages. However, the decreases were not uniform across age or time (figures 2.13–2.15). Between 1950–52 and 1975–77, male death rates actually increased slightly at ages 17–21 years, and at some ages between 48 and 88 years. The increase in male death rates at around 20

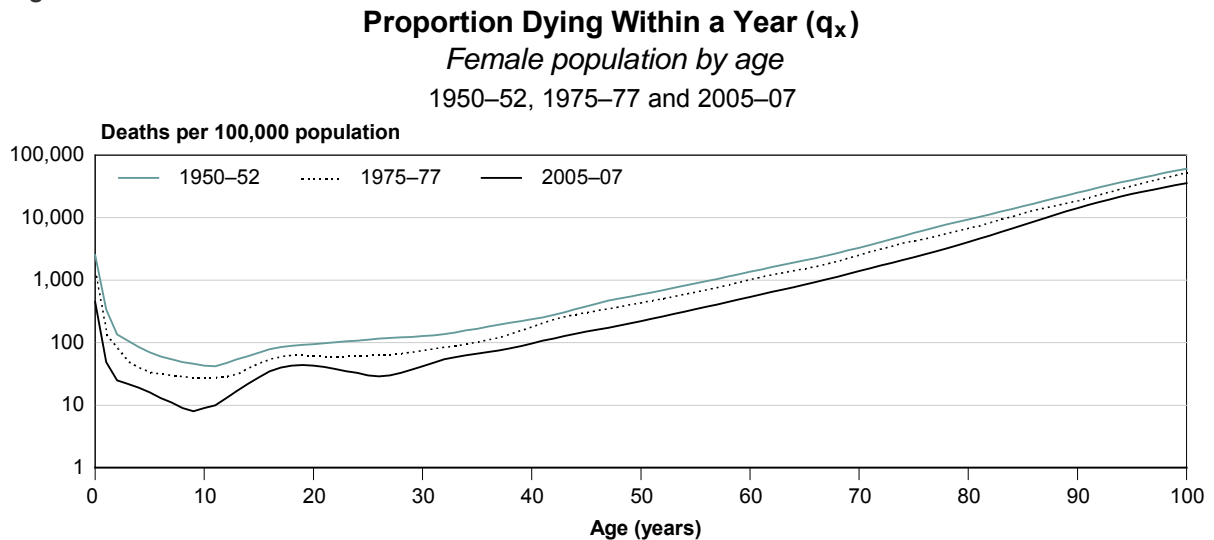
years accentuated the 'accident hump' at age 15–29 years, so-called because accidents (especially motor vehicle accidents) were the leading cause of death at those ages. An accident hump was also evident among female death rates at around 20 years in 1975–77, although this was smaller than for males. This hump is still apparent in 2005–07 but is less pronounced for males and more pronounced for females than it was 30 years earlier.

Figure 2.13



Note: Logarithmic scale

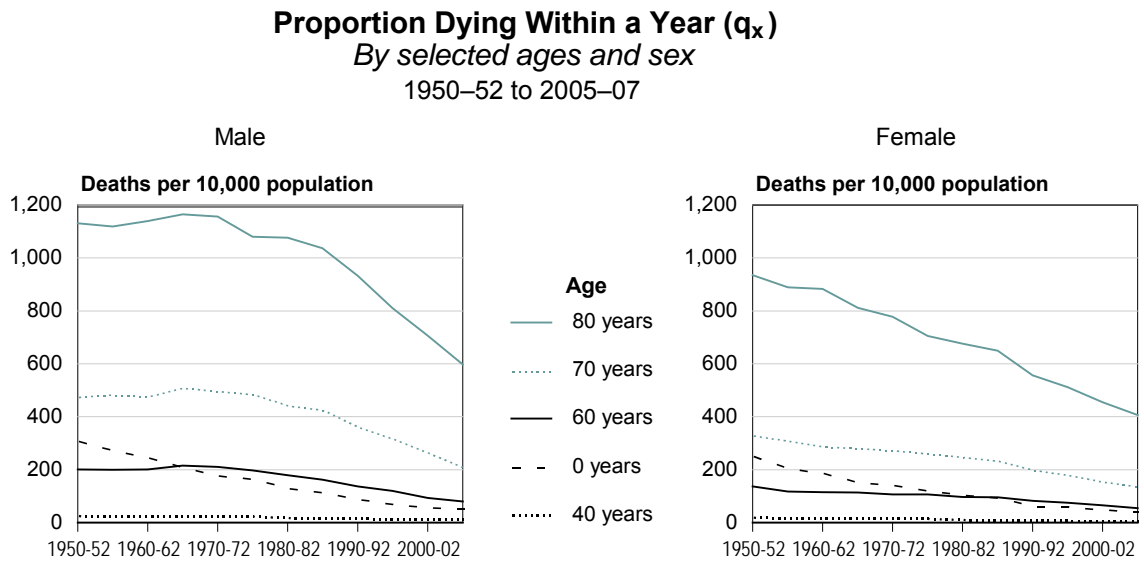
Figure 2.14



Note: Logarithmic scale

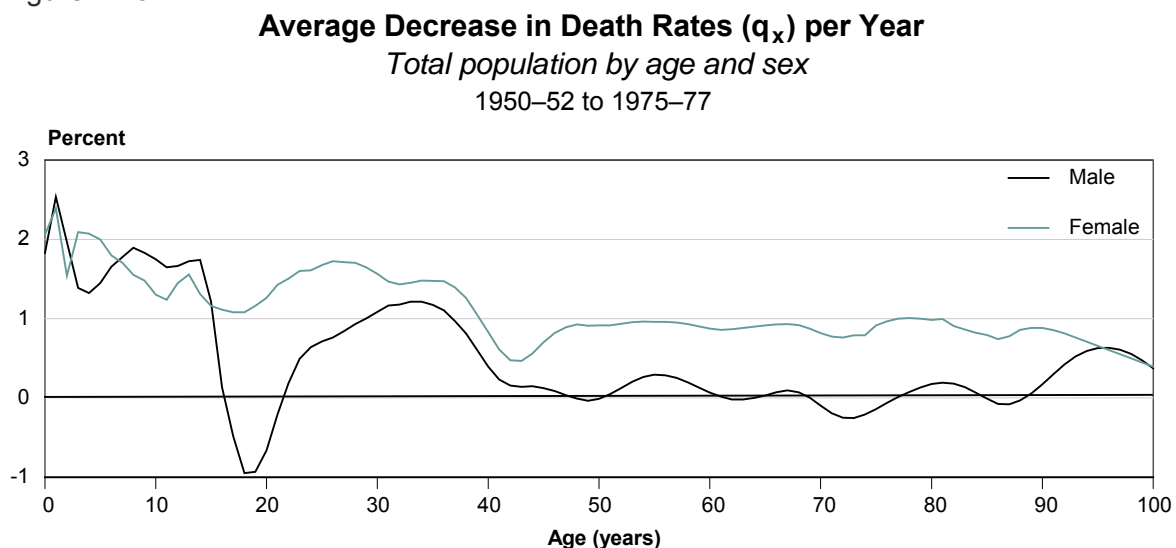
Figure 2.15 highlights changes in death rates over time at selected ages. For infants (under 1 year of age), death rates have dropped steadily for both males and females. For females aged 60, 70, and 80 years, death rates have dropped steadily. In contrast, for males at ages 60, 70, and 80 years, significant decreases in death rates were not achieved until the 1980s.

Figure 2.15



Between 1950–52 and 1975–77, death rates for children (under 15 years of age) decreased, on average, by just under 2.0 percent per year (figure 2.16). Female death rates declined more than male death rates at almost all ages above 15 years. For females aged between 15–39 years, death rates decreased by an average of between 1.0 and 1.7 percent per year, and close to 1.0 percent for those aged between 40–95 years. For males, the largest percentage decreases occurred under 15 years of age and for men aged between 29–36 years, while little change was recorded between 40 and 90 years of age. Male death rates at ages 17–21 years increased.

Figure 2.16

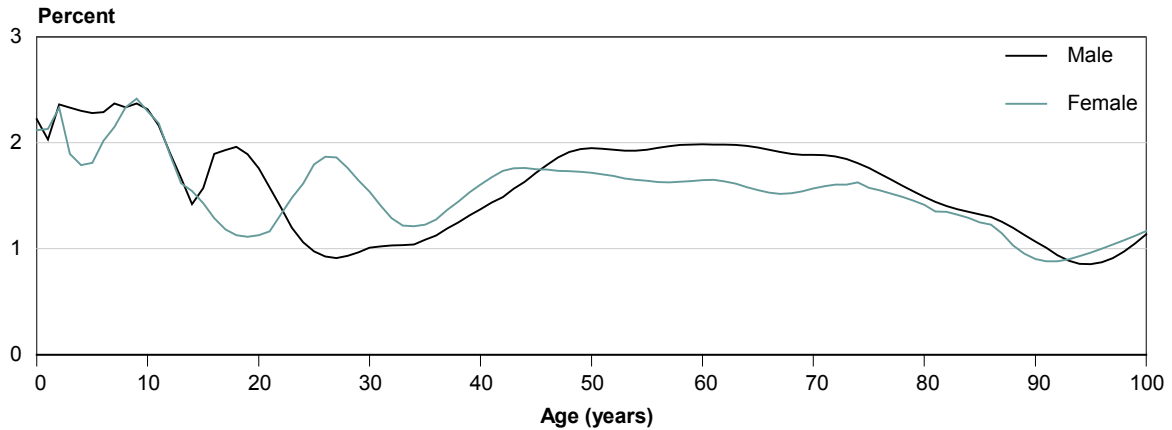


The pattern of change in age-specific death rates between 1975–77 and 2005–07 was broadly similar for males and females (figure 2.17). For both sexes, all ages experienced declines in death rates over this period. As for 1950–52 to 1975–77, the largest percentage decreases in death rates between 1975–77 and 2005–07 occurred in the youngest ages. Over this 30-year period, death rates declined by 1.8 to 2.4 percent per year under 13 years of age. The smallest percentage decreases for males were between 25–34 years, which

conversely had high percentage decreases in death rates for the earlier period between 1950–52 and 1975–77. However, having shown little change between 1950–52 and 1975–77, male death rates for middle and older ages (40–85 years) decreased significantly over the later period. Female death rates between 1975–77 and 2005–07 were more consistent across age than for males, averaging about 1.5 percent per year.

Figure 2.17

Average Decrease in Death Rates (q_x) per Year
Total population by age and sex
 1975–77 to 2005–07

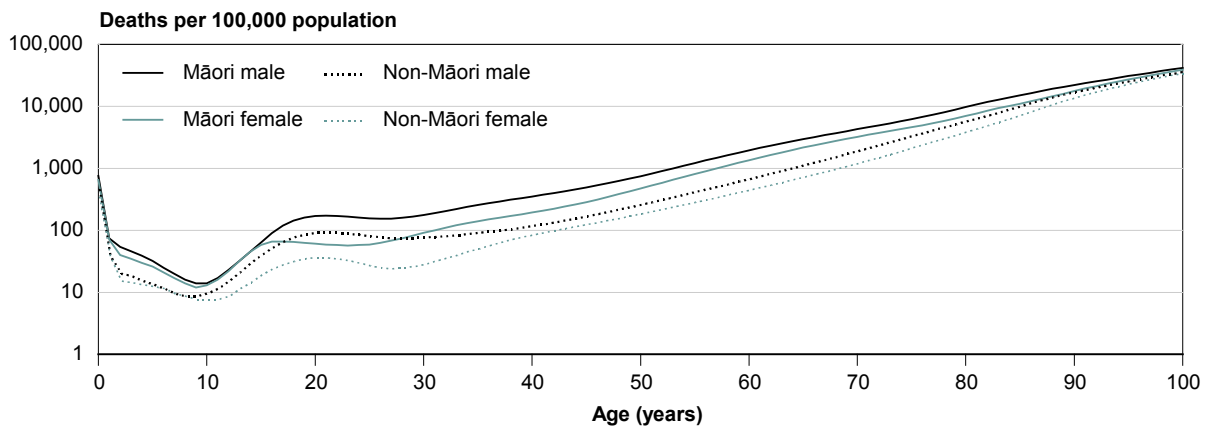


Māori and non-Māori

Māori experience higher death rates than non-Māori at all ages for both sexes (figure 2.18). Māori female death rates were higher than non-Māori males, except for the late teens and twenties (17–28 years). Māori death rates are up to three times higher than non-Māori, with the largest differences occurring around 40–60 years for males, and around 14, 30, and 60 years for females.

Figure 2.18

Proportion Dying Within a Year (q_x) by Age and Sex
Māori and non-Māori populations
 2005–07



Note: Logarithmic scale

Infant death rates

The proportion of infants dying in the first year of life has fallen markedly over the last 50 years. For males, the infant death rates decreased from 31.1 deaths per 1,000 population in 1950–52, to 16.9 in 1975–77, and further to 5.6 in 2005–07 (table 2.06). Females experienced a similar improvement, from 25.4 deaths per 1,000 population in 1950–52, to 12.3 in 1975–77, and further to 4.5 in 2005–07. The improvement in infant mortality is due to reductions in both the endogenous (related to the birth process) and exogenous (related to external circumstances) components of mortality in the first year of life.

Table 2.06

Infant Death Rate		
<i>Total population</i>		
1950–52 to 2005–07		
Period	Male	Female
Proportion dying within the first year of life (q_0) per 1,000 population		
1950–52	31.1	25.4
1955–57	27.5	20.9
1960–62	24.9	19.0
1965–67	21.1	15.5
1970–72	18.1	14.6
1975–77	16.9	12.3
1980–82	13.3	10.8
1985–87	11.7	9.6
1990–92	9.2	6.7
1995–97	7.2	6.3
2000–02	6.1	5.2
2005–07	5.6	4.5

The proportion of Māori infants dying in the first year of life is 1.6 times higher than the non-Māori rate for males and 1.8 times higher for females. Male Māori infant death rates have dropped from 10.7 per 1,000 population in 1995–97 to 7.5 in 2005–07. Female Māori infant death rates dropped from 9.6 per 1,000 population to 6.5 over the same period.

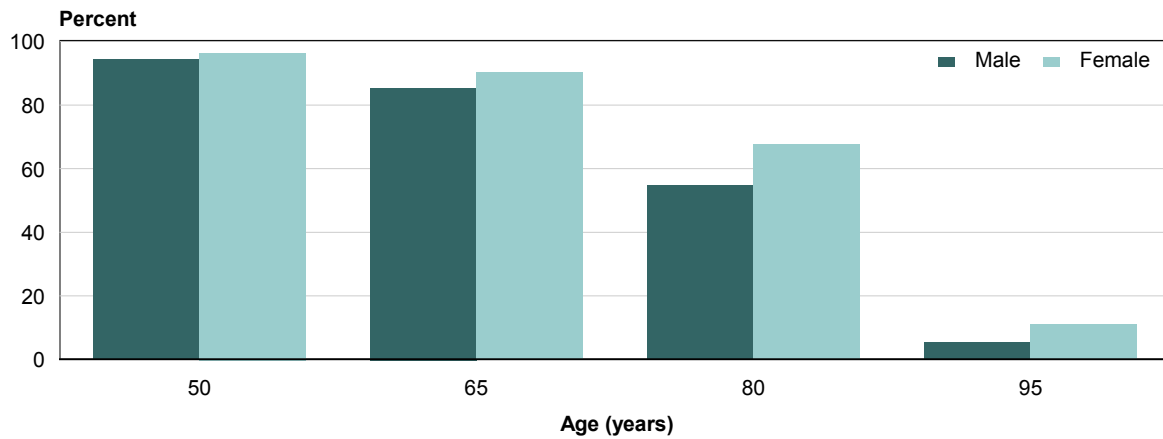
The infant death rates are based on the probability of dying in the first year of life (symbolised by q_0 in the life tables). These rates will differ slightly from infant mortality rates (infant deaths per 1,000 live births) published elsewhere. For details on the method used to calculate q_0 see chapter 3.

Chance of survival

Based on the 2005–07 life tables, 95 percent of newborn baby boys and 97 percent of girls can expect to reach 50 years of age (figure 2.19). About 86 percent of newborn boys and 90 percent of newborn girls can expect to live to 65 years of age. After that, the chance of survival decreases rapidly, with a faster decline for males than for females. About half (55 percent) of newborn boys are expected to reach 80 years of age, compared with 68 percent of newborn girls. Girls (11 percent) are twice as likely as boys (6 percent) to survive to 95 years. The chance of reaching 100 years is about 1 in 110 for newborn boys and 1 in 50 for newborn girls.

Figure 2.19

Proportion Surviving from Birth to Selected Ages
Total population by sex
 2005–07



According to the 2005–07 life tables, 90 percent of newborn Māori baby boys and 94 percent of girls can expect to reach 50 years of age. As age increases, the decrease in the chance of survival is more pronounced for Māori than for non-Māori. More than half (58 percent) of newborn non-Māori boys are expected to reach age 80 years, compared with 31 percent of newborn Māori boys. For females, 70 percent of newborn non-Māori girls are expected to reach age 80 years, compared with 44 percent of newborn Māori girls.

Table 2.07

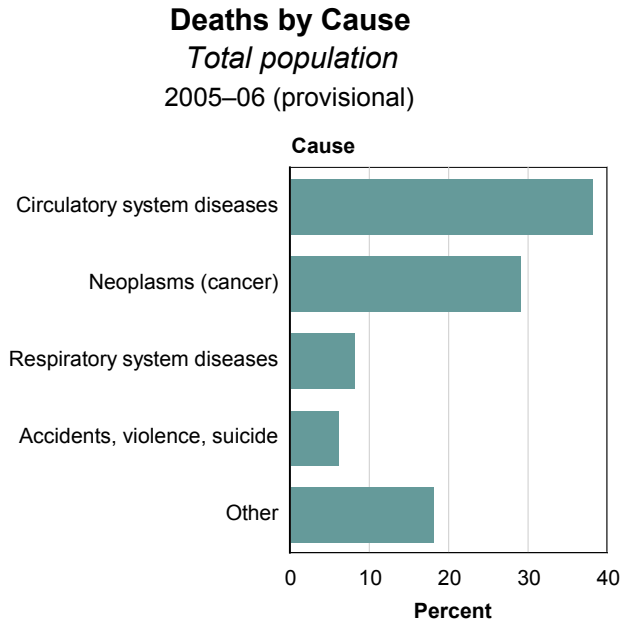
Chance of Survival from Birth to Selected Ages
Total, Māori and non-Māori populations
 2005–07

Exact age (years)	Total		Māori		Non-Māori	
	Male	Female	Male	Female	Male	Female
	Percent					
50	95	97	90	94	95	97
65	86	90	71	80	88	92
80	55	68	31	44	58	70
95	6	11	1	4	6	12

Causes of death

Diseases of the circulatory system (for example, heart disease, strokes) are the major cause of death in New Zealand. In the period 2005–06 (the latest two years for which cause of death data has been processed by the New Zealand Health Information Service), 38 percent of all deaths were due to this cause (figure 2.20). Neoplasms (mainly cancer) was the next biggest cause of death, accounting for 29 percent of deaths, followed by diseases of the respiratory system (8 percent), and external causes of death such as accidents and violence (6 percent). Diabetes, diseases of the nervous and digestive systems, mental disorders, and other causes made up the remaining 18 percent.

Figure 2.20



Source: New Zealand Health Information Service

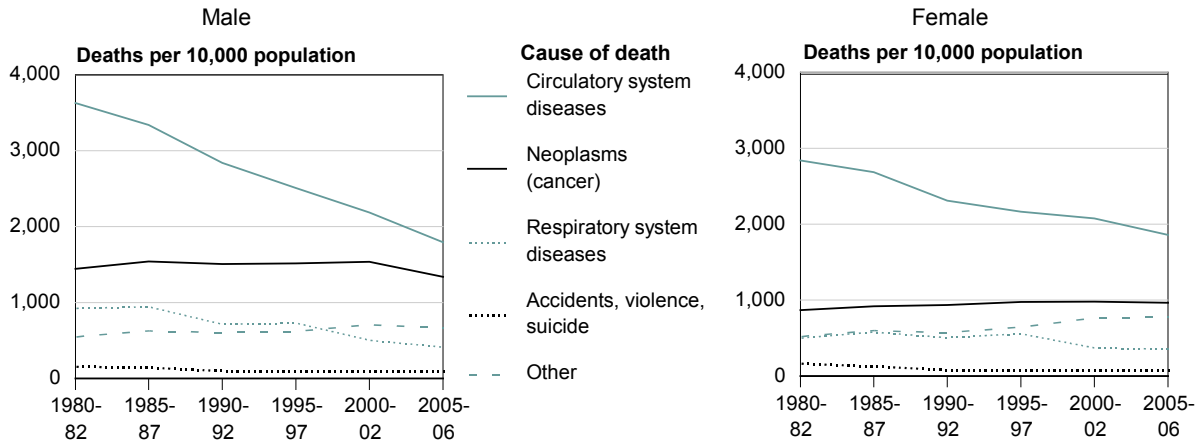
Eighty-eight percent of deaths from circulatory diseases in 2005–06 were of people aged 65 years and over. Over the last 25 years, mortality rates from circulatory diseases have dropped by 51 percent for males aged 65 years and over, and 35 percent for females aged 65 years and over. For those aged 45–64 years the decreases have been greater, at 72 and 74 percent for males and females, respectively (table 2.08).

Mortality rates from cancer for men aged 65 years and over increased slightly between 1980–82 and 2000–02, but dropped in 2005–06. Mortality rates from cancer for women aged 65 and over have increased over the last 25 years – up 11 percent compared with 1980–82. However, mortality rates from cancer in the 65 years and over age group are about one-third higher in men than in women. Cancer is the leading cause of death for people aged 45–64 years, accounting for 46 percent of deaths in 2005–06.

For people aged 15–24 years, external causes accounted for about 79 percent of male deaths and 60 percent of female deaths in 2005–06. Male deaths outnumbered female deaths from this cause by more than 3 to 1 among those aged 15–24 years. Mortality rates from external causes have dropped by 38 percent for males and 35 percent for females aged 15–24 years since 1980–82.

Figure 2.21

Mortality Rates of 65+ Age Group
By cause of death and sex
 1980–82 to 2005–06



Note: Rates for 2005–06 are provisional.

Detailed statistical and analytical information on the underlying causes of deaths registered in New Zealand are available from the New Zealand Health Information Service:

www.nzhis.govt.nz/moh.nsf/pagesns/528

www.nzhis.govt.nz/moh.nsf/pagesns/530

Table 2.08

Mortality Rates by Cause of Death, Age and Sex
Total population
 1980-82 to 2005-06

Age group (years)	Deaths per 100,000 people in age-sex group ⁽¹⁾											
	Male						Female					
	1980-82	1985-87	1990-92	1995-97	2000-02	2005-06 (P)	1980-82	1985-87	1990-92	1995-97	2000-02	2005-06 (P)
Diseases of the circulatory system (heart diseases, strokes, etc)												
0	9	3	8	2	5	7	8	13	10	5	10	5
1-14	1	2	1	1	1	1	1	1	1	1	0	0
15-24	4	4	6	4	4	3	7	3	2	3	2	2
25-44	39	32	30	28	25	23	19	16	14	12	11	11
45-64	569	511	372	284	203	160	240	202	149	106	87	62
65+	3,630	3,340	2,838	2,507	2,188	1,794	2,836	2,683	2,310	2,166	2,076	1,856
All ages	421	399	357	319	285	246	371	365	330	305	295	264
Cancer and other neoplasms												
0	9	3	3	4	4	10	4	4	5	4	2	5
1-14	7	7	6	5	5	2	4	5	4	4	4	3
15-24	11	8	8	9	7	8	8	6	5	6	5	5
25-44	33	30	29	22	22	21	41	40	39	34	30	28
45-64	328	324	307	256	227	198	286	292	282	260	217	195
65+	1,446	1,542	1,509	1,517	1,538	1,340	864	920	934	975	980	962
All ages	194	208	216	214	222	205	163	177	185	189	186	183
Diseases of the respiratory system (pneumonia, influenza, lung disease, etc)												
0	104	91	37	29	13	33	110	70	15	25	9	16
1-14	4	2	2	1	1	1	3	2	1	1	1	0
15-24	5	4	1	2	1	1	6	4	1	1	1	0
25-44	8	6	2	3	3	2	8	5	3	3	2	3
45-64	74	66	42	32	23	19	48	53	37	29	25	21
65+	935	955	728	742	518	427	510	591	519	567	383	368
All ages	98	101	81	83	61	54	72	84	75	80	57	55
External causes (accidents, violence, suicide, falls, etc)												
0	30	33	28	52	42	41	37	32	30	31	26	35
1-14	23	21	20	14	12	10	15	16	11	10	9	7
15-24	120	138	135	110	80	74	35	37	34	34	24	23
25-44	78	84	84	78	74	62	23	25	23	20	20	18
45-64	76	72	64	57	51	54	36	29	23	19	18	19
65+	170	157	114	109	108	111	175	138	90	86	88	89
All ages	79	83	77	67	59	56	43	39	31	29	27	27
Other (diabetes, nervous and digestive system disorders, and other diseases)												
0	1,204	1,084	875	644	600	491	940	873	614	594	495	374
1-14	11	11	11	8	8	6	11	9	8	8	7	5
15-24	13	12	10	12	12	8	9	8	11	9	9	9
25-44	18	20	24	23	21	21	14	13	13	14	12	12
45-64	102	92	86	83	74	79	73	68	64	58	55	53
65+	562	644	620	632	724	685	531	612	584	655	776	787
All ages	96	102	104	101	112	111	96	107	104	112	127	127
All causes												
0	1,356	1,213	950	732	663	582	1,099	992	674	659	542	434
1-14	45	44	40	29	26	20	34	33	25	24	21	16
15-24	153	166	160	136	103	94	65	58	54	54	40	38
25-44	176	171	169	154	145	129	104	98	91	83	76	71
45-64	1,149	1,064	870	711	577	511	684	643	555	471	403	350
65+	6,743	6,639	5,809	5,507	5,077	4,356	4,917	4,945	4,437	4,448	4,303	4,063
All ages	888	892	834	785	739	672	745	772	726	716	692	656

Source: Cause of death data from New Zealand Health Information Service

(1) Rates calculated on an average annual basis.

Note: The rates use the following population denominators:

- for 1980-82 and 1985-87, December year mean estimated de facto populations

- for 1990-92, census night population count at 5 March 1991

- for 1995-97, 2000-02 and 2005-06, the estimated resident population at 30 June 1996, 2001 and 2006, respectively.

Symbol: P provisional

3. National methodology

This part details the data and methods used to derive the 2005–07 complete life tables presented in this report.

Data

The data used to construct the 2005–07 complete life tables were:

- deaths registered in New Zealand of people resident in New Zealand in the December years 2005–07, by single-year of age, sex, and ethnicity
- live births registered in New Zealand to mothers resident in New Zealand in the December years 2004–07, by sex and ethnicity
- the estimated resident population of New Zealand at 30 June 2006, by single-year of age, sex, and ethnicity.

Deaths numerator

The life tables were compiled from deaths registered, rather than deaths occurring. Most death statistics refer to registrations rather than occurrences for a given time period, because of the time lag between when the death occurred and when it is registered. Hence, for a given time period, the number of death registrations can be confirmed before the number of death occurrences. For periods of a year or more, the difference between registrations and occurrences is generally small, so death statistics referring to registrations are suitable for most purposes.

An allowance for ethnic non-response among deaths was also made. There was no response to the ethnicity question for 4.9 percent of deaths in 2005–07.

Because deaths in the first year of life are skewed towards the early part of this age, infant death rates were calculated from more detailed data. This involved the division of the first year of life into more detailed ages.

Population denominator (exposed-to-risk population)

Usually the mean population for a period is used as the denominator to calculate death rates. However, mean population estimates are not available for all ethnic populations. To ensure consistency of method among all population subgroups, the estimated resident population at 30 June (the midpoint) was used. The impact of using 'midpoint' rather than 'mean' population estimates is generally insignificant.

The estimated resident population at 30 June 2006 is based on the census usually resident population count at 7 March 2006, 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 and 30 June of the census year
- reconciliation with demographic estimates at ages 0–4 years.

The 2006 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 4,027,947 included 565,329 who identified with the Māori ethnicity and 167,784 who gave no specific ethnic response. The 2005–07 life tables use as a population denominator the estimated resident population for each ethnic group of New Zealand, at 30 June 2006. New Zealand's estimated resident population of 4,185,000 included 624,000 who identified with the Māori ethnicity.

Because of changes to the census ethnicity question between 1996 and 2006, the 1996 and 2006 population estimates for ethnic groups are not necessarily comparable. Nevertheless, the derived mortality measures presented here are considered to give a statistically satisfactory description of Māori and non-Māori mortality experience during the 1995–97 to 2005–07 periods. Note that all population estimates used in the 1995–97 to 2005–07 life tables have been derived using the same methodology. In addition, the ethnicity question used in the 1996 Census is the same as that used in birth and death registration forms from September 1995. The use of population estimates based on the 1996 Census also allows the adjustment ratios presented in Ajwani (2003) to be incorporated.

For more information about the estimated resident population, refer to "Information about the population estimates" on the Statistics NZ website (www.stats.govt.nz).

Derived rates

The life tables are based on deaths averaged over three years. This is designed to reduce the impact of year-to-year statistical variations, particularly at younger ages where there is a small number of deaths and at very old ages where the population at risk is small. In some cases the New Zealand data does not enable death rates to be reliably estimated at all ages. For most ages above 90 years, death rates of the total New Zealand population have been modelled on the mortality trends of other countries such as Australia, Canada, Japan, the United Kingdom and the United States. For the Māori and non-Māori populations, death rates have also been modelled at some younger ages.

There are some small observed numerator-denominator ethnic differences since 1995 in comparison with 1996, 2001, and 2006 census data. For the 2000–02 and 2005–07 life tables, these estimated differences are not significant enough to reliably adjust death numbers by age, sex, and ethnicity. For the 1995–97 life tables, the smooth adjustment factors presented in Ajwani (2003) have been applied to Māori deaths by age, to allow for under-reporting of Māori deaths (relative to the Māori population). For the non-Māori life tables, corresponding adjustments have been applied to non-Māori deaths by age. These adjustment factors affect Māori life expectancy at birth by about 0.7 years, and non-Māori life expectancy at birth by about 0.1 years.

The construction of each complete life table involved two stages. First, central death rates (m_x) were calculated for each age (x), except the first year of life, and were then smoothed to eliminate any apparent irregularities. Second, the smoothed rates were used to calculate a set of age-specific probabilities of death (q_x), which were then used to derive other life table functions. The derivation of the mortality rate in the first year of life differed from all other ages and required special formulae, as detailed below in 'Age 0 years'.

Life table notation

x	Exact age (eg exact age 5 corresponds to 5 years and 0 days).
l_x	Number of people alive at exact age x from the original group of 100,000 (l_0).
L_x	Average number of people alive in the age interval x to $x + 1$.
d_x	Number of deaths in the age interval x to $x + 1$.
q_x	Probability that a person at exact age x dies within a year.
${}_5q_x$	Probability that a person at exact age x dies within 5 years.
p_x	Probability that a person at exact age x lives another year.
${}_5p_x$	Probability that a person at exact age x lives another 5 years.
${}_5m_x$	Central death rate for population in the age group x to $x + 5$.
${}_5S_x$	Proportion of population in the age group x to $x + 5$ surviving another 5 years.
e_x	Expected number of years of life remaining at exact age x .

Age 0 years

The probability of dying in the first year of life (q_0) required special treatment because infant deaths are skewed towards the early part of this age. The first year of life was divided into eight minor age intervals (n):

1. less than 1 day
2. from 1 day to less than 2 days
3. from 2 days to less than 7 days
4. from 1 week to less than 4 weeks
5. from 4 weeks to less than 3 months
6. from 3 months to less than 6 months
7. from 6 months to less than 9 months
8. from 9 months to less than 12 months.

For each of these age intervals the values of $q_0(n)$, $l_0(n)$, and $d_0(n)$ were calculated. The following examples show the formula for calculating $q_0(n)$ for two of these age intervals for 2005–07, where the denominator reflects the exposed-to-risk population:

$$\text{For } n = 3 \quad q_0(2\text{days} < 7\text{days}) = \frac{\text{Deaths}(2005 - 07, \text{age } 2\text{days} < 7\text{days})}{B_{2005} + B_{2006} + B_{2007} - k}$$

$$\text{For } n = 5 \quad q_0(4\text{weeks} < 3\text{months}) = \frac{\text{Deaths}(2005 - 07, \text{age } 4\text{weeks} < 3\text{months})}{\frac{2}{3}B_{2004}^4 + B_{2005} + B_{2006} + B_{2007} - \frac{2}{3}B_{2007}^4 - k}$$

where, for example:

$q_0(4weeks < 3months)$	probability of dying between 4 weeks and 3 months of life
B_{2007}	live births in 2007
B_{2007}^4	live births in the fourth (December) quarter of 2007
k	is an adjustment for deaths and migration made to the denominator to exclude people in the original birth cohort who died in an earlier age interval, and to allow for the effect of net migration, in order to give the correct 'exposed-to-risk' population

The values of $q_0(n)$ were then used to calculate $l_0(n)$ and $d_0(n)$:

Given $l_0(1) = 100,000$ the radix of a life table

then $l_0(n) = l_0(n-1) \cdot (1 - q_0(n-1))$ for $n = 2, 3, \dots, 8$

$$d_0(1) = 100,000 \cdot q_0(1)$$

$$d_0(n) = l_0(n) \cdot q_0(n) \quad \text{for } n = 2, 3, \dots, 8$$

$$d_0 = \sum_{n=1}^8 d_0(n)$$

and $q_0 = \frac{d_0}{l_0(1)}$

The value of L_0 was calculated as follows:

$$L_0(n) = \frac{1}{2}(l_0(n) + l_0(n+1)) \quad \text{for } n = 1, 2, \dots, 7$$

$$L_0(8) = \frac{1}{2}(l_0(8) + l_1) \quad \text{where } l_1 = l_0(1) \cdot (1 - q_0)$$

$$L_0 = \sum_{n=1}^8 (L_0(n) \cdot w(n))$$

where $w(n)$ is the weight given by the fraction of the year covered by the age interval (n). For example, for $n = 6$:

$$w(3months < 6months) = \frac{1}{4}$$

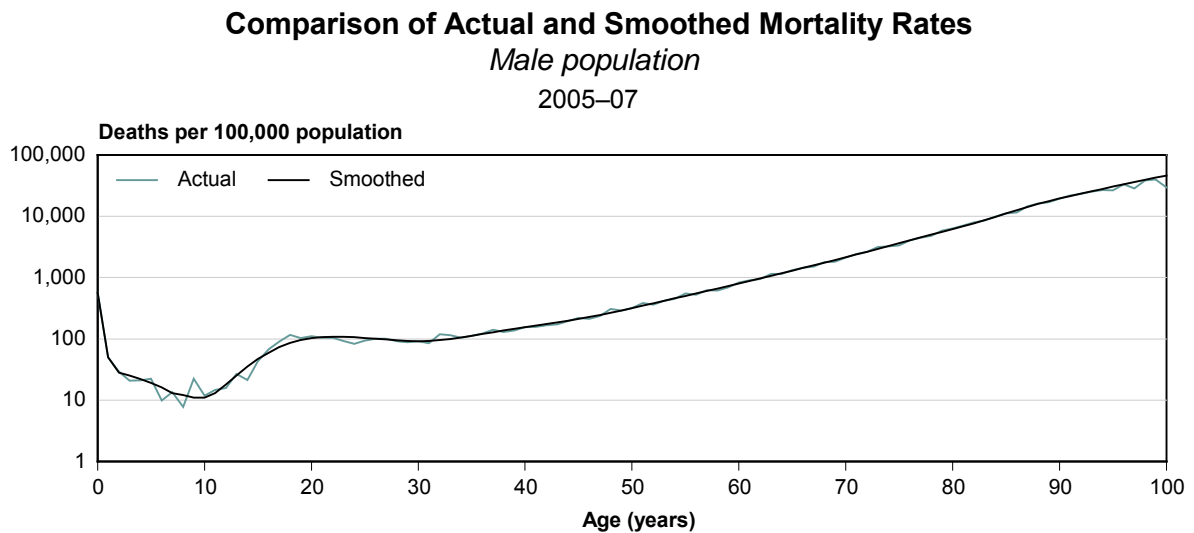
Age 1 year and over

The central death rates (m_x) were first calculated for each single year of age by dividing the average annual deaths of New Zealand residents for the period by the estimated resident population at the midpoint of the period. For 2005–07:

$$m_x = \frac{\frac{1}{3} \cdot \text{Deaths (2005 – 07, age } x)}{\text{Population (30 June 2006, age } x)}$$

Some refinement of data was made in the very old ages, above 90 years, to offset the effects of age misreporting and small death numbers. The central death rates derived from actual data also showed minor fluctuations across other ages. To minimise these fluctuations the rates were smoothed using a cubic spline method (figure 3.01). For more details on this method see Benjamin and Pollard (1980) and Department of Statistics (1986).

Figure 3.01



The smoothed central death rates were then used to calculate the corresponding values of q_x , for each age, using the equation:

$$q_x = \frac{m_x}{1 + \frac{1}{2}m_x}$$

Each series of q_x was tested to ensure that the deviations between the actual and expected deaths were minimal. The values of q_x were then used to derive the remaining life table functions:

$$l_0 = 100,000 \quad \text{the radix of a life table}$$

$$l_{x+1} = l_x(1 - q_x)$$

$$L_x = \frac{1}{2}(l_x + l_{x+1})$$

$$d_x = l_x q_x$$

$$p_x = 1 - q_x$$

$$e_x = \frac{\sum_{i=0}^h L_{x+i}}{l_x}$$

where h is the highest age of a given population group.

Supplementary functions for five-year age groups

In addition to the main life table functions, the following supplementary functions for five-year age groups have been calculated for 2005–07, and are contained in appendix 2:

$${}_5p_x = \frac{l_{x+5}}{l_x}$$

$${}_5q_x = 1 - {}_5p_x$$

$${}_5m_x = \frac{\sum_{i=0}^4 d_{x+i}}{\sum_{i=0}^4 L_{x+i}}$$

$${}_5s_x = \frac{\sum_{i=0}^4 L_{x+5+i}}{\sum_{i=0}^4 L_{x+i}}$$

Standardised death rates

Standardised death rates (SDRs) provide a summary measure of the mortality experience of an ethnic group, while allowing for the different age-sex composition of each ethnic group. Using the direct method of standardisation, SDRs indicate the overall death rate (deaths per 1,000 population) if the observed age-sex specific death rates were applied to a standard population. The SDRs presented in this report use the age and sex distribution of the estimated resident population of New Zealand at 30 June 1996 as the standard:

$$SDR = \frac{\sum_a m_a P_a}{P} \times 1,000$$

- where m_a is the age-sex specific death rate of the ethnic group
 P_a is the standard population at each age and sex
 P is the total standard population
 a are age groups 0, 1–4, 5–9, 10–14, ..., 80–84 and 85+ years

4. Subnational trends in longevity and mortality

This part presents a summary of mortality and longevity trends for the total population of subnational areas (regional council and territorial authority areas).

Abridged life tables for regional council areas (regions) were first produced in 1994 for the period 1990–92. In 1998, regional life tables for the 1995–97 period were published, although these have now been revised. This report contains summary results from the 1990–92 to 2005–07 abridged life tables for regions. The 1990–92 life tables use a different population measure than later periods (see table 1.02).

In addition, abridged life tables have been produced for selected territorial authority areas for 1995–97 to 2005–07, where death numbers are sufficient to produce reliable life tables. Because life tables cannot be reliably produced for many subnational areas, standardised death rates (SDRs) have also been derived for all regional council and territorial authority areas for the periods 1995–97 to 2005–07. As with life tables, SDRs allow for the different age-sex composition of each area. However, deriving SDRs is less sensitive than life tables to age groups with zero deaths.

To minimise annual fluctuations in mortality rates, the mortality measures are calculated for a three-year period. Nevertheless, all subnational mortality and longevity trends should be interpreted with caution. Death and population numbers can fluctuate from period to period. In addition, the stated residence of the deceased may not reflect the geographic area(s) where that person spent most of their life.

It should be noted that data from the abridged life tables may differ from data from the complete life tables.

Regional life expectancy at birth

Although New Zealanders' life expectancy at birth has increased by 9.0 years for males and by 6.7 years for females in the last 30 years, there are some significant regional differences in life expectancy (figures 4.01 and 4.02). According to the 2005–07 abridged life tables for regional council areas, life expectancy at birth ranged from 73.8 to 79.4 years for males, and 78.1 to 83.2 years for females (table 4.01). Possible reasons for regional variations in mortality and life expectancy are discussed in the 'Factors affecting mortality patterns' section below.

The regional life tables indicate that five regions have experienced both male and female life expectancies at birth that are consistently above the New Zealand average over the last decade: Auckland, Wellington, Tasman, Canterbury, and Otago (figures 4.03 to 4.06). Conversely, life expectancy in Gisborne region was significantly below the national average, with both male and female life expectancy being over four years lower than the New Zealand average in 2005–07. Other regions with life expectancies consistently below the national average over the last decade were Northland, Bay of Plenty, Hawke's Bay, Manawatu-Wanganui, West Coast, and Southland. Life expectancies in the remaining regions (Waikato, Taranaki, Nelson, and Marlborough) varied above or below the national average.

According to the abridged life tables, between 2000–02 and 2005–07 life expectancy at birth increased by 1.8 years for males and 1.0 year for females. All regions experienced life expectancy gains between these periods, except Gisborne where female life expectancy decreased by almost a year. However, the size of the gains varied significantly. Northland, Auckland, and Wellington regions were the only regions to experience gains greater than the national average for both males and females.

Figure 4.01

Male Life Expectancy at Birth
Regional council areas
2005–07

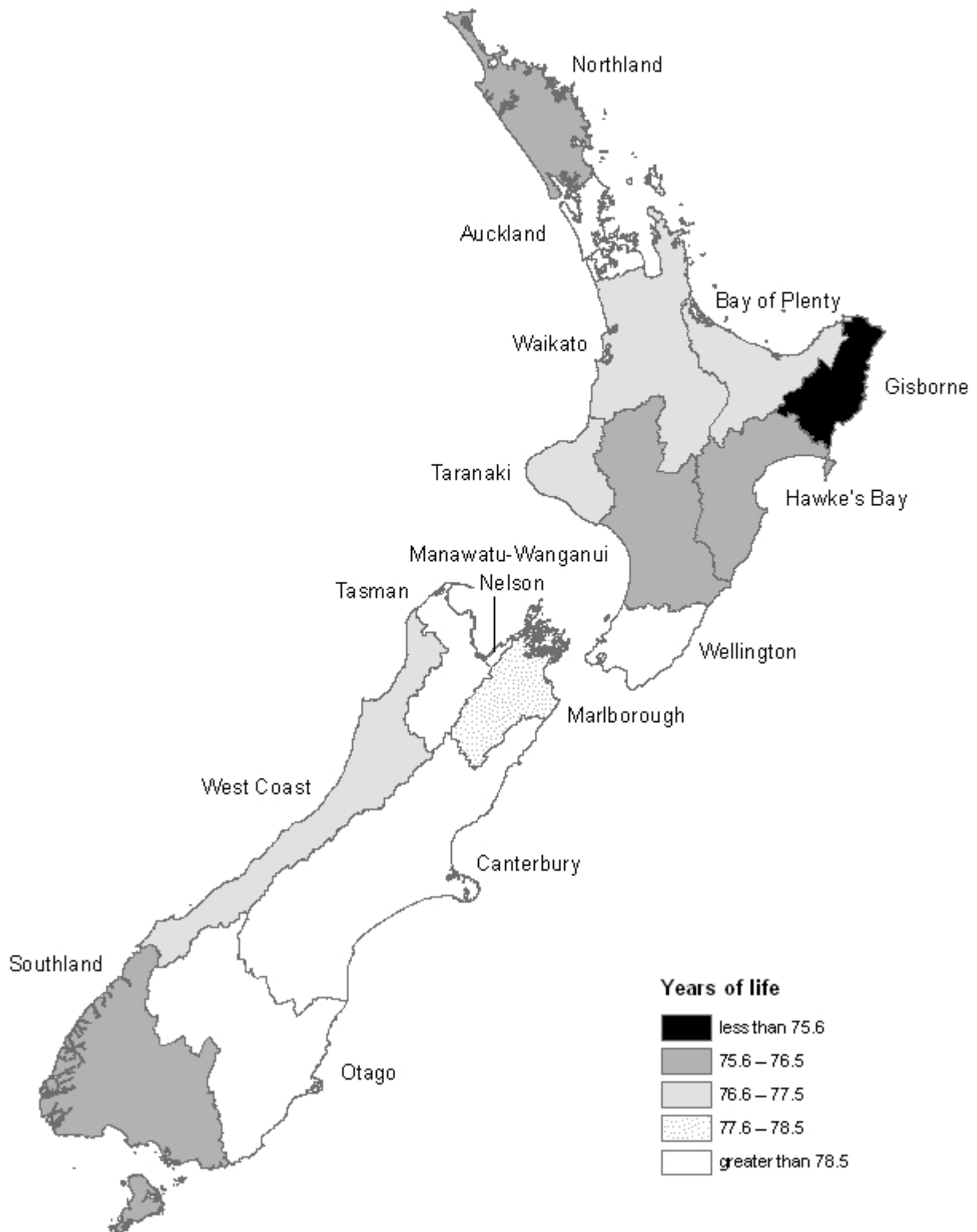


Figure 4.02

Female Life Expectancy at Birth
Regional council areas
2005–07



Table 4.01

Life Expectancy at Birth
Regional council areas and selected territorial authority areas
 1990-92 to 2005-07

Regional council / territorial authority area ⁽¹⁾	1990-92 ⁽²⁾			1995-97			2000-02			2005-07		
	Male	Female	F - M	Male	Female	F - M	Male	Female	F - M	Male	Female	F - M
Years of life												
Northland region	71.7	78.2	6.5	72.8	78.6	5.8	74.0	80.1	6.1	76.3	81.2	4.9
Far North district	..	..	..	71.8	77.4	5.6	73.3	80.2	6.9	75.5	80.0	4.5
Whangarei district	..	..	..	73.5	79.2	5.7	74.8	80.3	5.5	77.3	81.6	4.3
Auckland region	73.2	79.2	6.0	75.2	80.2	5.0	77.5	82.1	4.6	79.4	83.2	3.8
Rodney district	..	..	..	76.0	80.7	4.8	78.5	82.5	4.0	80.1	85.1	5.0
North Shore city	..	..	..	76.9	81.6	4.7	79.1	83.6	4.5	81.6	85.1	3.5
Waitakere city	..	..	..	74.6	80.1	5.5	77.7	81.7	4.0	79.6	82.6	3.0
Auckland city	..	..	..	74.8	80.1	5.3	77.7	82.4	4.8	79.6	83.0	3.5
Manukau city	..	..	..	75.0	79.6	4.6	76.2	81.5	5.2	78.0	82.4	4.3
Papakura district	..	..	..	73.3	79.3	6.0	76.2	79.8	3.6	75.2	80.8	5.6
Franklin district	..	..	..	74.4	79.3	4.9	77.0	80.7	3.6	78.0	84.1	6.1
Waikato region	72.5	78.5	6.0	74.3	80.0	5.7	75.9	81.0	5.1	77.2	81.8	4.7
Thames-Coromandel district	..	..	..	74.5	80.9	6.4	77.0	82.9	5.9	75.8	83.5	7.7
Waikato district	..	..	..	..	..	..	74.5	78.6	4.2	75.6	80.7	5.2
Matamata-Piako district	..	..	..	74.6	81.2	6.6	75.9	81.6	5.6	77.5	81.6	4.1
Hamilton city	..	..	..	74.7	80.2	5.5	76.7	81.9	5.2	77.5	82.0	4.4
Waipa district	..	..	..	74.1	78.9	4.8	76.1	80.4	4.3	78.6	83.7	5.1
Taupo district	..	..	..	72.9	80.0	7.1	75.2	80.2	5.0	77.8	81.0	3.2
Bay of Plenty region	72.5	78.0	5.5	73.0	79.2	6.2	75.4	80.5	5.2	77.1	81.9	4.8
Western Bay of Plenty district	..	..	..	73.4	80.8	7.4	75.7	81.9	6.2	78.6	82.8	4.2
Tauranga city	..	..	..	75.0	80.4	5.4	76.7	82.5	5.8	78.8	83.3	4.5
Rotorua district	..	..	..	71.7	78.1	6.5	74.0	78.5	4.5	75.6	80.1	4.6
Whakatane district	..	..	..	72.5	76.8	4.3	74.4	78.2	3.9	74.1	80.1	6.0
Gisborne region	71.3	76.5	5.2	70.7	76.4	5.7	72.6	78.9	6.3	73.8	78.1	4.2
Gisborne district	..	..	..	70.7	76.4	5.7	72.6	78.9	6.3	73.8	78.0	4.2
Hawke's Bay region	71.7	78.1	6.4	73.3	78.9	5.6	75.4	79.8	4.4	76.3	80.7	4.4
Hastings district	..	..	..	73.5	78.5	5.1	75.9	80.5	4.6	75.8	80.6	4.7
Napier city	..	..	..	73.4	79.7	6.3	75.5	80.1	4.6	77.4	80.3	2.9
Taranaki region	72.3	78.6	6.3	74.9	80.3	5.4	75.9	80.6	4.6	77.2	81.5	4.3
New Plymouth district	..	..	..	75.2	80.7	5.5	76.5	81.0	4.5	77.9	81.5	3.6
Manawatu-Wanganui region	72.2	77.7	5.5	73.8	79.0	5.3	75.2	79.9	4.7	76.5	81.4	4.9
Wanganui district	..	..	..	72.5	78.4	5.9	74.3	78.5	4.2	75.0	80.9	5.9
Palmerston North city	..	..	..	75.5	79.7	4.2	77.5	81.7	4.2	77.1	82.2	5.1
Horowhenua district	..	..	..	72.0	77.2	5.1	73.4	77.8	4.5	76.0	80.1	4.0
Wellington region	72.9	78.8	5.9	74.8	79.9	5.2	76.9	81.6	4.8	78.9	83.0	4.1
Kapiti Coast district	..	..	..	74.8	81.6	6.8	77.6	82.3	4.6	78.8	84.3	5.5
Porirua city	..	..	..	72.2	77.2	5.1	73.2	79.7	6.6	76.8	80.1	3.3
Upper Hutt city	..	..	..	74.4	78.4	4.0	76.9	80.2	3.3	78.5	83.1	4.6
Lower Hutt city	..	..	..	74.5	78.9	4.3	76.3	80.9	4.7	77.7	81.6	3.8
Wellington city	..	..	..	75.4	81.2	5.7	78.0	82.5	4.5	80.1	83.7	3.6
Masterton district	..	..	..	73.7	79.0	5.3	75.4	80.6	5.2	77.0	81.9	5.0

Note: For footnotes, see end of table.

Table 4.01 *continued*

Life Expectancy at Birth
Regional council areas and selected territorial authority areas
 1990–92 to 2005–07

Regional council / territorial authority area ⁽¹⁾	1990–92 ⁽²⁾			1995–97			2000–02			2005–07		
	Male	Female	F - M	Male	Female	F - M	Male	Female	F - M	Male	Female	F - M
Years of life												
Tasman region	75.2	80.7	5.5	74.8	80.6	5.8	77.2	82.0	4.8	78.9	82.5	3.5
Tasman district	..	..	..	74.8	80.6	5.8	77.2	82.0	4.8	78.9	82.5	3.5
Nelson region	73.3	80.7	7.4	75.8	79.4	3.6	76.1	81.4	5.4	78.9	82.3	3.4
Nelson city	..	..	..	75.8	79.4	3.6	76.1	81.4	5.4	78.9	82.3	3.4
Marlborough region	74.6	79.4	4.8	74.4	79.6	5.2	76.8	80.6	3.8	78.1	82.1	4.0
Marlborough district	..	..	..	74.4	79.6	5.2	76.8	80.6	3.8	78.1	82.1	4.0
West Coast region	70.4	77.1	6.7	72.3	78.4	6.0	74.2	81.4	7.1	76.9	81.6	4.7
Canterbury region	73.2	79.4	6.2	75.0	80.4	5.4	77.0	82.2	5.1	79.0	82.6	3.6
Waimakariri district	..	..	..	75.9	80.2	4.3	78.5	83.8	5.3	80.3	83.6	3.3
Christchurch city	..	..	..	74.8	80.3	5.4	77.1	82.1	5.0	79.0	82.4	3.5
Timaru district	..	..	..	74.4	80.2	5.8	75.9	80.6	4.8	77.4	82.4	5.0
Otago region	73.1	79.0	5.9	74.7	80.4	5.7	76.8	81.7	4.8	78.7	82.7	4.0
Dunedin city	..	..	..	74.3	79.9	5.7	76.6	81.3	4.7	78.1	81.9	3.8
Southland region	71.4	77.9	6.5	73.3	79.0	5.7	74.5	80.1	5.6	75.9	81.9	5.9
Invercargill city	..	..	..	73.5	78.4	5.0	73.2	79.2	6.0	75.2	80.8	5.7
North Island ⁽³⁾	74.4	79.7	5.3	76.4	81.2	4.8	78.1	82.4	4.3
South Island ⁽⁴⁾	74.7	80.2	5.5	76.6	81.7	5.1	78.6	82.5	3.9
New Zealand⁽⁵⁾⁽⁶⁾	72.8	78.7	5.9	74.4	79.8	5.4	76.5	81.4	4.9	78.2	82.4	4.2

(1) There are three territorial authority areas in this table which straddle regional boundaries: Franklin, Taupo and Rotorua districts. These territorial authority areas are listed under the region where most of their population lives.

(2) Life expectancies for 1990–92 are not directly comparable with life expectancies for 1995–97 to 2005–07 because of differences in methodology.

(3) Sum of North Island regions.

(4) Sum of South Island regions.

(5) Includes North Island and South Island regions plus areas not included in a region (eg Chatham Islands territory).

(6) Data from abridged life tables. These may differ from data from complete life tables.

Symbol: .. figure not available

Figure 4.03

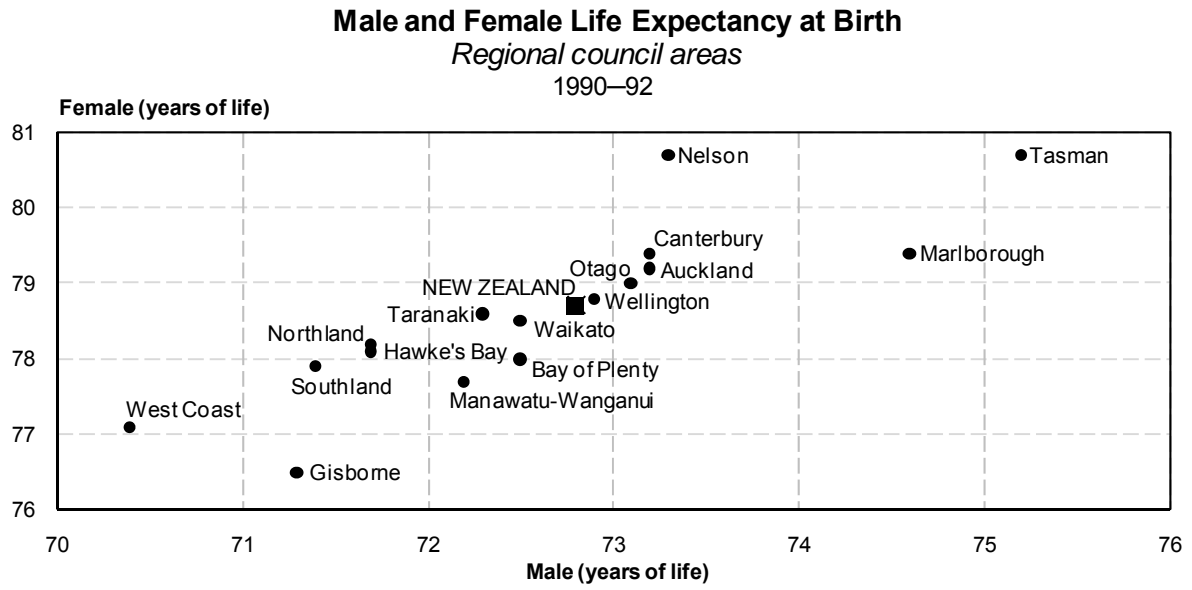


Figure 4.04

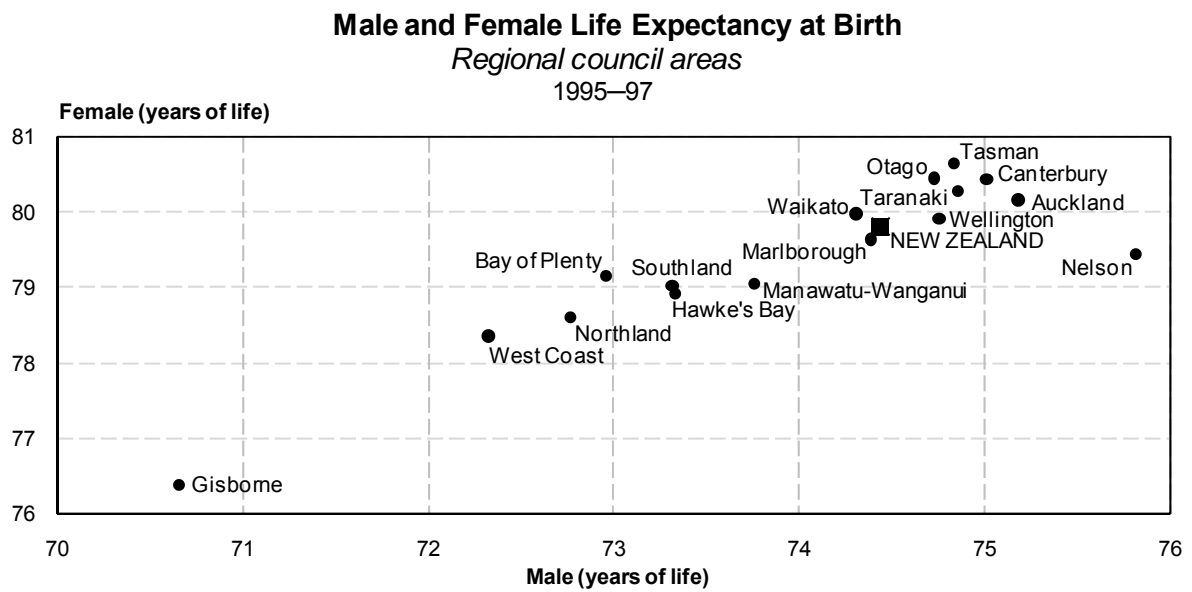


Figure 4.05

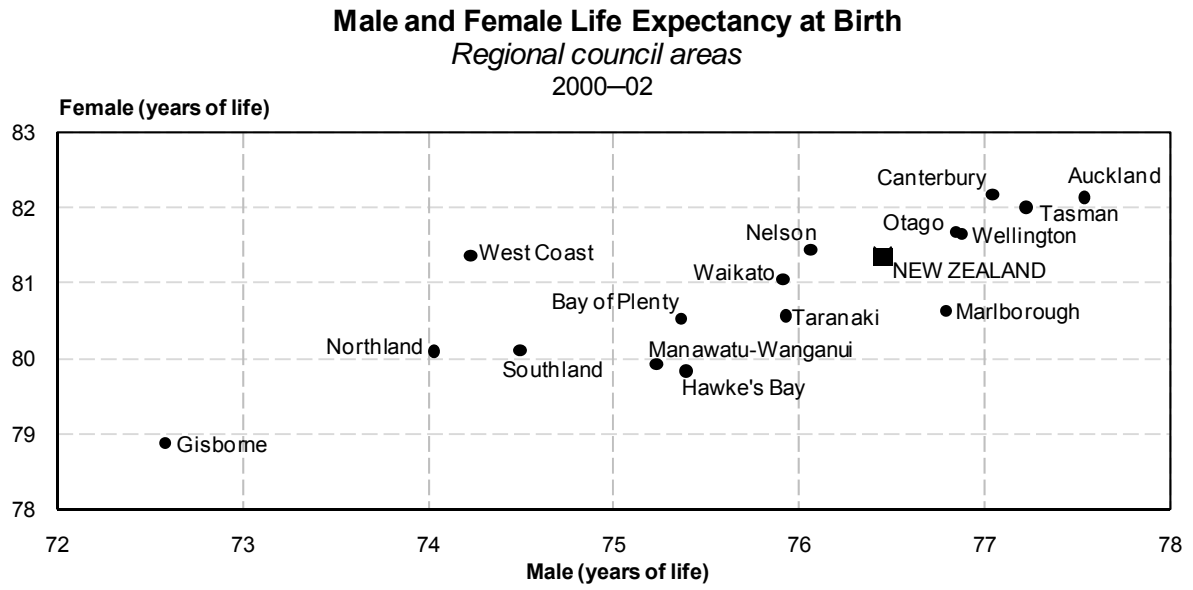
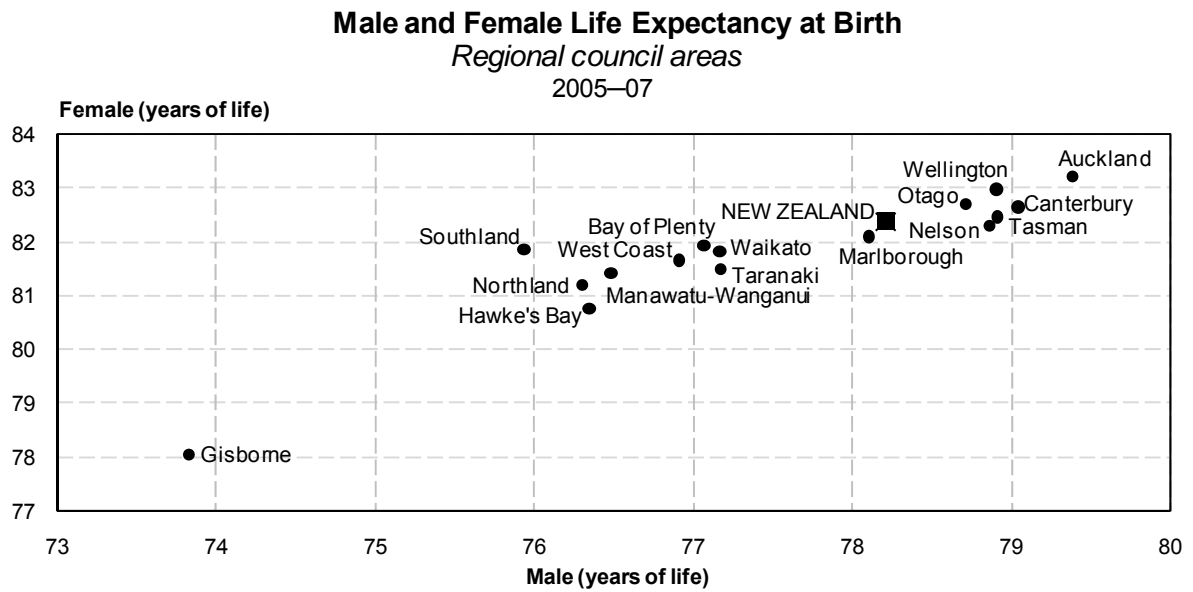


Figure 4.06



Regional life expectancy at age 65 years

The 2005–07 abridged life tables indicate that having reached the age of 65 years, New Zealanders can, on average, expect to live a further 18.2 years for males and 20.9 years for females (table 4.02). Only two regions had both male and female life expectancy at age 65 years above the national average: Auckland (18.9 and 21.4 years) and Wellington (18.4 and 21.2 years).

Between the periods 2000–02 and 2005–07, life expectancy at 65 years improved by 1.4 years for males and 0.6 years for females. All regions had gains in male life expectancy at age 65. Female life expectancy at age 65 also increased, although small falls were experienced in Gisborne and Tasman. However, the size of the gain varied significantly. Northland, Wellington, West Coast, Otago, and Southland were the only regions to have increases that were greater than the national average for both males and females.

Table 4.02

Life Expectancy at Age 65 Years
Regional council areas and selected territorial authority areas
 1990-92 to 2005-07

Regional council / territorial authority area ⁽¹⁾	1990-92 ⁽²⁾			1995-97			2000-02			2005-07		
	Male	Female	F - M	Male	Female	F - M	Male	Female	F - M	Male	Female	F - M
Years of life												
Northland region	14.8	18.6	3.8	15.3	18.8	3.5	15.7	19.8	4.1	17.6	20.5	2.9
Far North district	..	..	..	14.8	18.4	3.6	15.4	19.9	4.5	17.3	19.7	2.4
Whangarei district	..	..	..	15.6	18.9	3.3	16.1	20.0	3.9	18.1	20.9	2.8
Auckland region	15.2	19.0	3.8	16.1	19.4	3.3	17.4	20.8	3.4	18.9	21.4	2.5
Rodney district	..	..	..	15.9	19.6	3.6	17.7	21.3	3.6	19.8	22.6	2.8
North Shore city	..	..	..	16.6	20.2	3.5	18.2	21.4	3.3	19.7	22.3	2.7
Waitakere city	..	..	..	15.9	19.8	3.8	17.8	20.5	2.7	19.0	21.1	2.1
Auckland city	..	..	..	15.7	19.1	3.4	17.3	20.8	3.4	18.6	21.0	2.4
Manukau city	..	..	..	16.3	19.3	3.1	16.9	20.7	3.8	18.4	21.1	2.8
Papakura district	..	..	..	15.3	18.9	3.6	16.7	19.6	2.9	17.3	20.1	2.8
Franklin district	..	..	..	15.9	19.7	3.8	17.0	20.3	3.3	18.2	22.5	4.4
Waikato region	14.9	18.8	3.9	15.7	19.8	4.1	16.7	20.1	3.4	17.8	20.7	2.9
Thames-Coromandel district	..	..	..	15.8	20.1	4.3	16.8	20.6	3.8	17.4	21.4	4.1
Waikato district	..	..	..	..	..	..	15.5	18.3	2.7	16.9	19.7	2.8
Matamata-Piako district	..	..	..	16.1	20.2	4.1	16.9	20.9	4.0	18.5	21.1	2.5
Hamilton city	..	..	..	15.8	19.8	3.9	17.0	20.8	3.8	17.8	20.8	3.0
Waipa district	..	..	..	15.1	19.4	4.3	16.7	19.5	2.9	18.4	21.2	2.8
Taupo district	..	..	..	15.3	19.7	4.4	16.6	20.1	3.4	18.8	19.7	0.9
Bay of Plenty region	15.2	18.6	3.4	15.3	19.1	3.9	16.4	20.2	3.8	17.8	20.8	3.0
Western Bay of Plenty district	..	..	..	15.9	19.8	3.9	16.8	20.7	3.9	19.1	21.2	2.1
Tauranga city	..	..	..	15.9	20.1	4.2	17.3	21.2	4.0	18.4	21.5	3.1
Rotorua district	..	..	..	14.2	18.2	4.0	15.3	19.0	3.7	16.8	19.7	2.9
Whakatane district	..	..	..	15.2	17.9	2.7	15.4	19.0	3.5	16.6	20.3	3.7
Gisborne region	14.2	18.1	3.9	13.8	17.5	3.7	14.6	18.7	4.1	15.8	18.4	2.6
Gisborne district	..	..	..	13.8	17.5	3.7	14.6	18.7	4.1	15.8	18.4	2.6
Hawke's Bay region	14.2	18.6	4.4	15.3	19.1	3.8	16.6	19.3	2.7	17.3	19.7	2.3
Hastings district	..	..	..	15.5	18.7	3.2	16.6	19.7	3.0	17.2	20.1	2.8
Napier city	..	..	..	15.0	19.9	4.8	16.6	19.4	2.8	17.7	18.8	1.1
Taranaki region	14.7	18.6	3.9	16.1	19.9	3.8	16.9	19.8	3.0	17.5	20.3	2.7
New Plymouth district	..	..	..	15.9	19.9	4.0	17.3	20.0	2.7	18.2	20.3	2.1
Manawatu-Wanganui region	14.2	18.1	3.9	15.1	18.9	3.7	16.2	19.5	3.3	17.4	20.3	2.9
Wanganui district	..	..	..	14.9	18.5	3.6	16.1	19.2	3.1	16.3	20.1	3.8
Palmerston North city	..	..	..	16.0	19.2	3.2	17.3	20.3	3.0	17.5	20.7	3.1
Horowhenua district	..	..	..	14.1	17.9	3.7	14.7	18.2	3.5	16.9	20.4	3.5
Wellington region	14.8	18.4	3.6	15.6	19.0	3.4	16.8	20.1	3.3	18.4	21.2	2.8
Kapiti Coast district	..	..	..	15.1	20.3	5.2	17.5	20.9	3.5	19.1	22.5	3.3
Porirua city	..	..	..	14.5	17.1	2.6	15.1	18.9	3.8	17.5	19.2	1.8
Upper Hutt city	..	..	..	14.8	17.5	2.7	16.6	18.7	2.1	18.5	21.3	2.9
Lower Hutt city	..	..	..	15.7	18.3	2.6	16.5	19.9	3.5	17.9	20.2	2.4
Wellington city	..	..	..	15.7	19.6	3.9	17.2	20.1	2.9	18.6	21.4	2.8
Masterton district	..	..	..	15.1	18.4	3.2	15.9	20.0	4.1	17.6	20.7	3.1

Note: For footnotes, see end of table.

Table 4.02 *continued*

Life Expectancy at Age 65 Years
Regional council areas and selected territorial authority areas
 1990–92 to 2005–07

Regional council / territorial authority area ⁽¹⁾	1990–92 ⁽²⁾			1995–97			2000–02			2005–07		
	Male	Female	F - M	Male	Female	F - M	Male	Female	F - M	Male	Female	F - M
Years of life												
Tasman region	16.5	20.1	3.6	15.8	18.9	3.2	17.1	20.9	3.8	18.7	20.6	2.0
Tasman district	..	..	..	15.8	18.9	3.2	17.1	20.9	3.8	18.7	20.6	2.0
Nelson region	14.8	19.5	4.7	16.5	18.6	2.2	17.1	20.7	3.6	18.5	20.7	2.2
Nelson city	..	..	..	16.5	18.6	2.2	17.1	20.7	3.6	18.5	20.7	2.2
Marlborough region	15.1	18.9	3.8	15.2	18.9	3.8	16.8	19.5	2.6	18.0	20.3	2.3
Marlborough district	..	..	..	15.2	18.9	3.8	16.8	19.5	2.6	18.0	20.3	2.3
West Coast region	13.5	17.0	3.5	14.1	18.1	4.0	15.2	20.0	4.7	17.3	20.8	3.5
Canterbury region	14.7	18.4	3.7	15.6	19.3	3.7	17.1	20.6	3.5	18.4	20.8	2.4
Waimakariri district	..	..	..	16.3	19.3	3.0	18.2	22.1	3.9	19.4	21.9	2.5
Christchurch city	..	..	..	15.6	19.3	3.7	17.0	20.5	3.4	18.2	20.6	2.4
Timaru district	..	..	..	15.0	18.6	3.6	16.6	19.6	3.0	17.9	20.5	2.6
Otago region	14.4	18.1	3.7	15.5	19.6	4.1	16.7	20.0	3.3	18.1	21.0	2.8
Dunedin city	..	..	..	15.2	19.2	4.0	16.5	19.7	3.2	17.8	20.5	2.7
Southland region	13.7	17.6	3.9	14.4	18.7	4.3	15.5	19.0	3.4	17.0	20.5	3.6
Invercargill city	..	..	..	14.5	18.3	3.7	14.5	18.1	3.6	15.9	19.7	3.7
North Island ⁽³⁾	15.7	19.2	3.6	16.8	20.2	3.4	18.2	20.9	2.7
South Island ⁽⁴⁾	15.5	19.2	3.8	16.8	20.2	3.5	18.2	20.8	2.6
New Zealand ⁽⁵⁾⁽⁶⁾	14.8	18.6	3.8	15.6	19.2	3.6	16.8	20.2	3.4	18.2	20.9	2.7

(1) There are three territorial authority areas in this table which straddle regional boundaries: Franklin, Taupo and Rotorua districts. These territorial authority areas are listed under the region where most of their population lives.

(2) Life expectancies for 1990–92 are not directly comparable with life expectancies for 1995–97 to 2005–07 because of differences in methodology.

(3) Sum of North Island regions.

(4) Sum of South Island regions.

(5) Includes North Island and South Island regions plus areas not included in a region (eg Chatham Islands territory).

(6) Data from abridged life tables. These may differ from data from complete life tables.

Symbol: .. figure not available

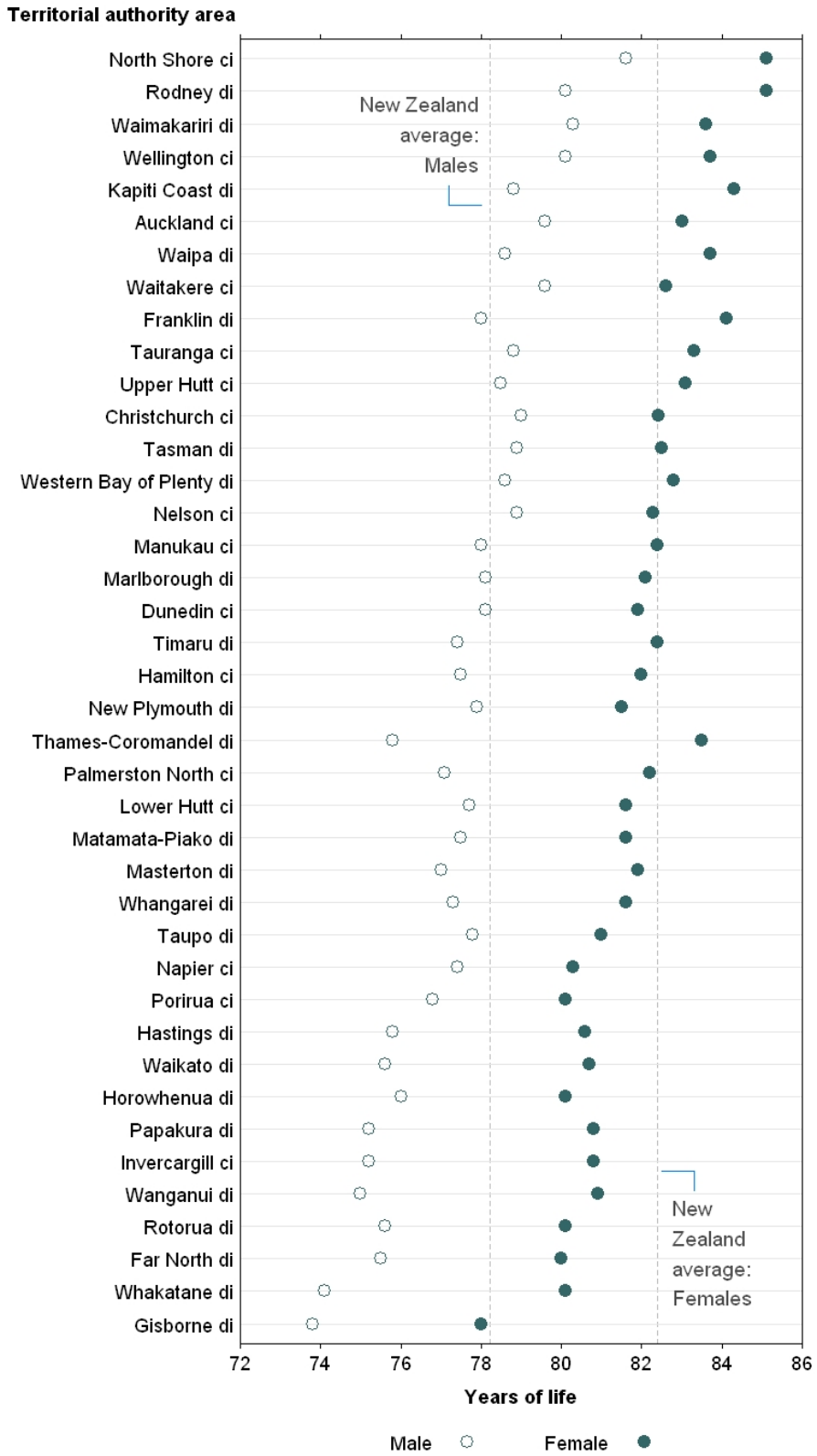
Territorial authority areas life expectancy at birth

There are 40 territorial authority areas where death and population numbers are considered sufficient to produce abridged life tables for 2000–02 and 2005–07, and 39 territorial authority areas for 1995–97. Nevertheless, because of fluctuations in death and population numbers, these abridged life tables should be interpreted with caution.

The 2005–07 life tables indicate that 13 of the 40 territorial authority areas had higher life expectancy at birth than the national average for both males and females. These 13 areas include seven cities (North Shore, Waitakere, Auckland, Tauranga, Upper Hutt, Wellington, and Christchurch) and six districts (Rodney, Waipa, Western Bay of Plenty, Kapiti Coast, Tasman, and Waimakariri). A similar pattern was observed for the 2000–02 period, although males in Western Bay of Plenty district, females in Upper Hutt city, and both males and females in Waipa district had slightly lower life expectancy than the national average. Possible reasons for the variations in mortality and life expectancy are discussed in 'Factors affecting mortality patterns' below.

Figure 4.07

Life Expectancy at Birth
Selected territorial authorities by sex
 2005–07



Note: ci = city; di = district

Standardised death rates

For many areas, death and population numbers are too small for constructing reliable abridged life tables, let alone complete life tables. Standardised death rates (SDRs) provide a summary measure of the mortality experience for each area, but also allow for the different age-sex composition of each area. However, they are meaningful only in comparison with similarly computed rates. Using the direct method of standardisation, SDRs indicate the overall death rate (deaths per 1,000 population) if the observed age-sex specific death rates were applied to a standard population.

SDRs have been calculated for all regional council and territorial authority areas for the periods 1995–97 to 2005–07 (table 4.03). The estimated resident population of New Zealand by age (0, 1–4, 5–9, 10–14, ..., 80–84 and 85+ years) and sex at 30 June 1996 is used as the standard.

Table 4.03

Standardised Death Rates
Regional council and territorial authority areas
 1995–97 to 2005–07

Regional council / territorial authority area ⁽¹⁾	1995–97	2000–02	2005–07	Regional council / territorial authority area ⁽¹⁾	1995–97	2000–02	2005–07
Deaths per 1,000 population				Deaths per 1,000 population			
Northland region	8.0	7.2	6.3	Wellington region	7.5	6.4	5.6
Far North district	8.6	7.4	6.7	Kapiti Coast district	6.7	5.8	5.1
Whangarei district	7.8	6.9	6.0	Porirua city	9.2	8.0	6.8
Kaipara district	7.5	7.6	6.2	Upper Hutt city	8.6	6.9	5.5
Auckland region	7.2	6.0	5.4	Lower Hutt city	7.8	6.8	6.1
Rodney district	6.8	5.6	4.7	Wellington city	7.1	6.1	5.3
North Shore city	6.5	5.5	4.6	Masterton district	8.1	7.0	6.1
Waitakere city	7.2	6.1	5.4	Carterton district	6.9	6.6	6.5
Auckland city	7.4	6.0	5.5	South Wairarapa district	7.6	6.6	4.9
Manukau city	7.2	6.5	5.8	Tasman region	7.3	5.9	5.6
Papakura district	7.9	7.0	6.7	Tasman district	7.3	5.9	5.6
Franklin district	7.4	6.4	5.3	Nelson region	7.2	6.4	5.8
Waikato region	7.3	6.6	6.0	Nelson city	7.2	6.4	5.8
Thames-Coromandel district	7.0	6.0	5.9	Marlborough region	7.5	6.6	5.8
Hauraki district	6.8	6.8	6.5	Marlborough district	7.5	6.6	5.8
Waikato district	7.4	7.7	6.7	West Coast region	8.6	7.1	6.2
Matamata-Piako district	7.1	6.3	5.8	Buller district	8.7	7.2	5.8
Hamilton city	7.3	6.3	6.0	Grey district	8.0	7.2	6.1
Waipa district	7.7	6.8	5.4	Westland district	9.6	6.8	6.8
Otorohanga district	6.3	6.0	5.2	Canterbury region	7.3	6.2	5.6
South Waikato district	7.7	7.2	7.4	Kaikoura district	6.8	6.6	5.6
Waitomo district	8.6	7.8	7.4	Hurunui district	7.5	5.2	5.6
Taupo district	7.7	6.9	5.9	Waimakariri district	6.9	5.4	5.0
Bay of Plenty region	7.7	6.7	6.0	Christchurch city	7.4	6.3	5.7
Western Bay of Plenty district	7.1	6.3	5.4	Selwyn district	5.2	4.7	4.5
Tauranga city	6.9	5.9	5.3	Ashburton district	7.0	6.7	5.6
Rotorua district	8.7	7.8	6.9	Timaru district	7.8	6.8	5.9
Whakatane district	8.4	7.7	7.1	Mackenzie district	7.1	5.7	4.6
Kawerau district	9.8	8.1	7.5	Waimate district	7.5	6.0	5.2
Opotiki district	9.9	8.1	7.8	Otago region	7.3	6.5	5.7
Gisborne region	9.4	8.2	7.9	Waitaki district	7.1	6.7	5.6
Gisborne district	9.4	8.2	7.9	Central Otago district	6.7	5.9	4.9
Hawke's Bay region	7.8	7.0	6.5	Queenstown-Lakes district	5.5	4.9	3.9
Wairoa district	10.0	10.1	7.2	Dunedin city	7.7	6.8	6.1
Hastings district	7.8	6.9	6.6	Clutha district	6.8	6.5	5.9
Napier city	7.7	6.9	6.5	Southland region	8.3	7.4	6.4
Central Hawke's Bay district	7.0	6.6	6.0	Southland district	7.5	6.1	5.1
Taranaki region	7.2	6.7	6.2	Gore district	8.8	7.2	6.0
New Plymouth district	7.0	6.4	6.0	Invercargill district	8.5	8.1	7.1
Stratford district	6.0	7.3	6.6				
South Taranaki district	7.9	7.1	6.4	North Island ⁽²⁾	7.5	6.5	5.8
Manawatu-Wanganui region	7.8	7.1	6.3	South Island ⁽³⁾	7.4	6.4	5.7
Ruapehu district	8.5	7.4	7.4				
Wanganui district	8.2	7.5	6.7	Chatham Islands territory ⁽⁴⁾	..	7.1	5.4
Rangitikei district	8.6	7.8	6.0				
Manawatu district	6.9	6.8	5.8	New Zealand	7.5	6.5	5.8
Palmerston North city	7.3	6.1	6.0				
Tararua district	7.2	7.3	6.4				
Horowhenua district	8.9	8.3	6.6				

(1) There are eight territorial authority areas in this table which straddle regional boundaries: Franklin, Waitomo, Taupo, Rotorua, Stratford, Rangitikei, Tararua and Waitaki districts. These territorial authority areas are listed under the region where most of their population lives.

(2) The sum of the North Island regions.

(3) The sum of the South Island regions.

(4) Chatham Islands territory is an area outside regions.

Note: The rates have been standardised by the direct method of standardisation. The age and sex distribution of the estimated resident population of New Zealand at 30 June 1996 is used as the standard.

Symbol: .. figure not available

Figure 4.08

Standardised Death Rates
North Island territorial authority areas
 2005–07



Figure 4.09



SDRs for New Zealand overall decreased from 7.5 deaths per 1,000 population in 1995–97 to 6.5 deaths per 1,000 population in 2000–02, and 5.8 deaths per 1,000 population in 2005–07. The decrease between 2000–02 and 2005–07 was reflected in all regions and

almost all territorial authority areas except South Waikato and Hurunui districts where rates increased, and Ruapehu and Westland districts where there was no change.

SDRs for regions in 2005–07 ranged from 5.4 to 7.9 deaths per 1,000 population, compared with a range of 5.9 to 8.2 deaths per 1,000 population in 2000–02, and a range of 7.2 to 9.4 deaths per 1,000 population in 1995–97. Auckland, Tasman, Nelson, and Canterbury regions had lower SDRs than the New Zealand average in 1995–97 to 2005–07. In contrast, Northland, Bay of Plenty, Gisborne, Hawke’s Bay, Manawatu-Wanganui, West Coast, and Southland regions had SDRs above the national average for all three periods. Wellington, Marlborough, and Otago experienced SDRs close to the national average for the three periods.

Among territorial authority areas, SDRs ranged from 3.9 to 7.9 deaths per 1,000 population in 2005–07, compared with 4.7 to 10.1 deaths per 1,000 population in 2000–02, and 5.2 to 10.0 deaths per 1,000 population in 1995–97. The SDRs, similar to the life expectancy results, suggest some geographic differences within regions. For example:

- Auckland region, with an SDR of 5.4 in 2005–07, includes territorial authority areas with SDRs ranging from 4.6 (North Shore city) to 6.7 (Papakura district).
- Waikato region, with an SDR of 6.0 in 2005–07, includes territorial authority areas with SDRs ranging from 5.2 (Otorohanga district) to 7.4 (South Waikato and Waitomo districts).
- Bay of Plenty region, with an SDR of 6.0 in 2005–07, includes territorial authority areas with SDRs ranging from 5.3 (Tauranga city) to 7.8 (Opotiki district).
- Manawatu-Wanganui region, with an SDR of 6.3 in 2005–07, includes territorial authority areas with SDRs ranging from 5.8 (Manawatu district) to 7.4 (Ruapehu district).
- Wellington region, with an SDR of 5.6 in 2005–07, includes territorial authority areas with SDRs ranging from 4.9 (South Wairarapa district) to 6.8 (Porirua city).
- Canterbury region, with an SDR of 5.6 in 2005–07, includes territorial authority areas with SDRs ranging from 4.5 (Selwyn district) to 5.9 (Timaru district).

Factors affecting mortality patterns

The reasons for subnational differences in longevity and mortality are difficult to identify precisely and are probably due to a combination of interrelated factors, including the proportion of the population who are Māori, the proportion of the population who smoke (or have smoked), the proximity to health and hospital services, the degree of urbanisation, and socio-economic factors.

Compared with non-Māori, life expectancy at birth for 2005–07 was an estimated 8.6 years lower for Māori males and 7.9 years lower for Māori females at the national level. Based on ethnic population estimates at 30 June 2006 (Statistics NZ, 2006), the highest Māori proportions at the regional level were in Gisborne (47 percent), Northland (31 percent), Bay of Plenty (28 percent), and Hawke’s Bay (24 percent). These are regions where male and female life expectancy at birth was consistently below the national average for 1990–92 to 2005–07 (figures 4.03 to 4.06). In contrast, the lowest Māori proportions were in Otago, Tasman, and Canterbury (all 7 percent), and Nelson (9 percent). These are regions which consistently appear to have life expectancies near or above the national average.

At the territorial authority area level, the pattern is similar. The highest Māori proportions in 2006 were in the districts of Chatham Islands (63 percent), Kawerau (60 percent), Wairoa (59 percent), Opotiki (57 percent), Gisborne (47 percent), Far North (43 percent),

Whakatane (42 percent), Waitomo (40 percent), Ruapehu (39 percent), and Rotorua (36 percent). With the exception of Chatham Islands, these areas are among those where life expectancies are below the national average and/or SDRs are above the national average.

Regionally, the proportion of the population who smoke also appears to have a strong inverse linear correlation with life expectancy (figures 4.10 and 4.11). At the 2006 Census, the proportion of the population aged 15 years and over who were smoking regularly was lowest in Tasman region (19 percent of males and 16 percent of females), Canterbury (20 percent and 17 percent), Wellington (20 percent and 18 percent), Auckland (20 percent and 16 percent) and Otago (20 percent of males and 18 percent of females). In contrast, the highest proportions were in Gisborne (28 percent of males and 30 percent of females), West Coast (25 percent and 24 percent), Northland (25 percent of both males and females), Hawke’s Bay (24 percent of both), and Southland (24 percent of males and 23 percent of females) regions.

Figure 4.10

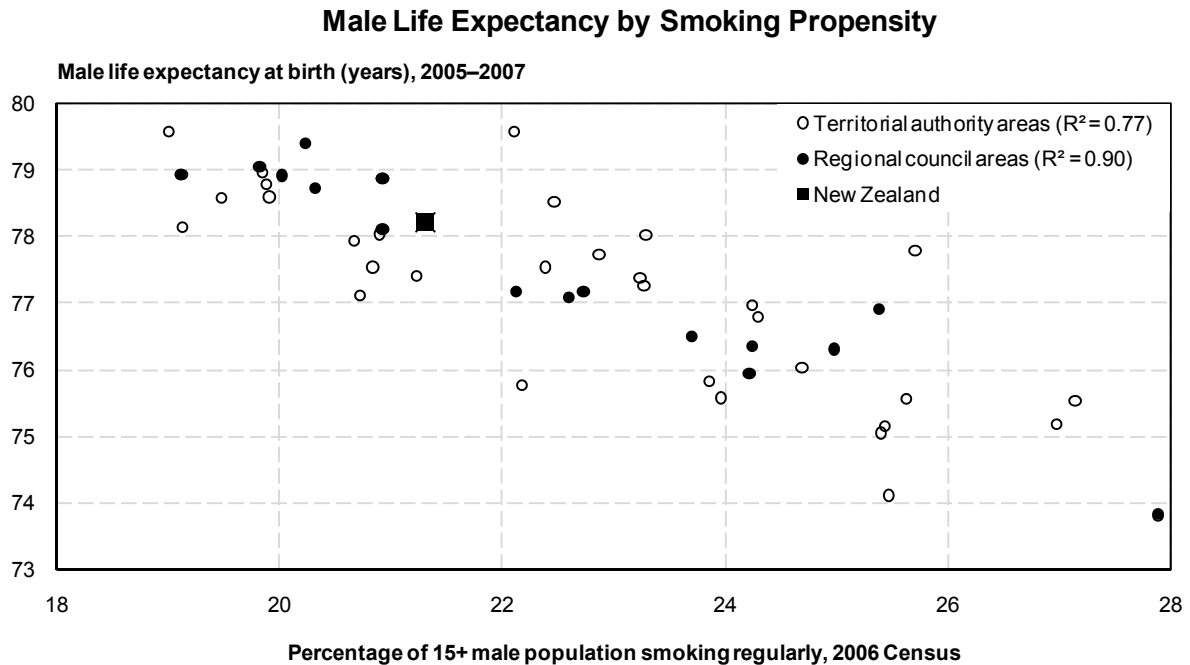
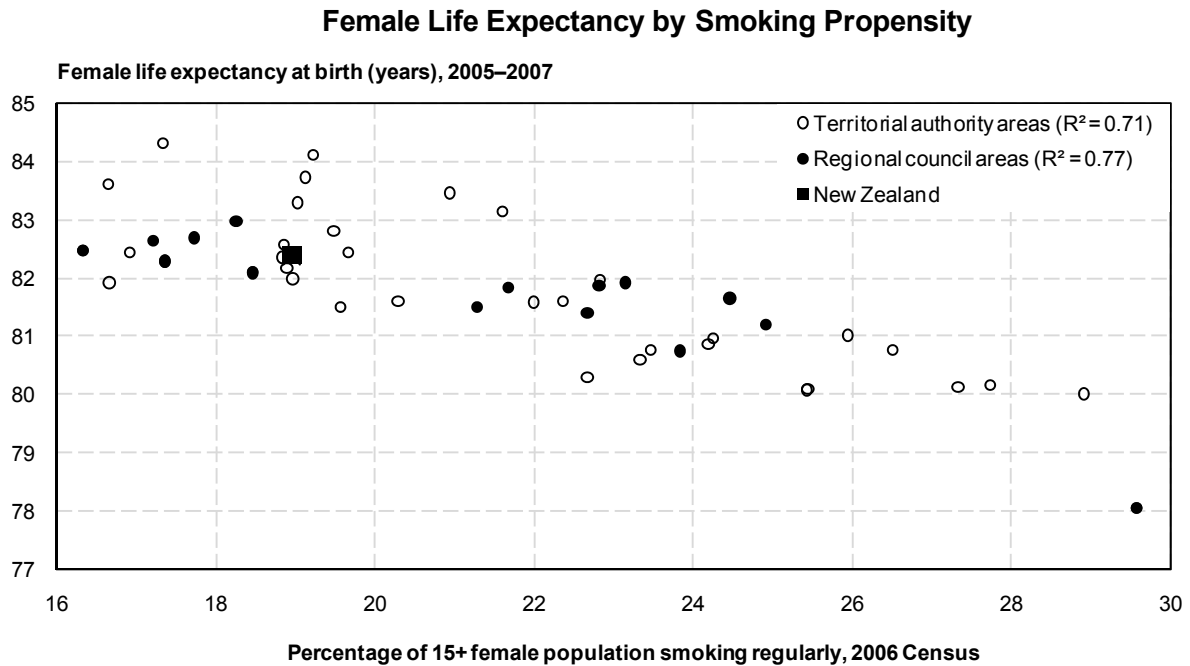


Figure 4.11



Among territorial authority areas, the lowest smoking proportions in 2006 were in North Shore city (16 percent of males and 12 percent of females), Wellington city (17 percent and 13 percent), Selwyn district (17 percent and 14 percent), Waimakariri district (18 percent and 17 percent), Rodney district (18 percent of males and 16 percent of females), Kapiti Coast district (18 percent and 17 percent), Auckland city (19 percent and 13 percent), and Tasman district (19 percent of males and 16 percent of females). In contrast, the highest proportions were in Chatham Islands territory (39 percent of males and 42 percent of females), and in the districts of Kawerau (34 percent of males and 39 percent of females), Wairoa (32 percent and 35 percent), Opotiki (30 percent and 34 percent), Waitomo (29 percent of males and 31 percent of females), Ruapehu (28 percent and 30 percent), South Waikato (28 percent and 30 percent), and Buller (28 percent of males and 27 percent of females).

5. Subnational methodology

This part details the data and methods used to derive the subnational abridged life tables and standardised death rates presented in chapter 4.

Data

The data used to construct the 1995–97 (revised), 2000–02, and 2005–07 subnational abridged life tables and standardised death rates were:

- deaths registered in New Zealand of people resident in each area in the December years 1995–97, 2000–02, and 2005–07, by age group (0, 1–4, 5–9, 10–15, ... , 80–84, 85 and over) and sex
- live births registered in New Zealand to mothers resident in each area in the December years 1995–97, 2000–02, and 2005–07, by sex
- the estimated resident population of each area at 30 June 1996, 30 June 2001 and 30 June 2006, by age group (1–4, 5–9, 10–15, ... , 80–84, 85 and over) and sex.

Deaths numerator

The life tables were compiled from deaths registered, rather than deaths occurring, in each respective three-year period. Most death statistics refer to registrations rather than occurrences for a given time period, because of the time lag between when the death occurred and when it is registered. Hence, for a given period, the number of death registrations can be confirmed before the number of death occurrences. For periods of a year or more, the difference between registrations and occurrences is generally small, so death statistics referring to registrations are suitable for most purposes.

An adjustment for address non-response among deaths was made. There was no response to the address question for 0.0 percent of deaths in 1995–97, 0.2 percent of deaths in 2000–02, and 0.5 percent of deaths in 2005–07.

Population denominator (exposed-to-risk population)

The estimated resident population of each area at 30 June (the midpoint) for each period was used as the denominator to calculate death rates. The estimated resident populations at 30 June 1996, 30 June 2001, and 30 June 2006 were based on the census usually resident population counts at 5 March 1996, 6 March 2001, and 7 March 2006, respectively, with adjustments for:

- net census undercount
- residents temporarily overseas on census night
- births, deaths, and net migration between census night and 30 June of the census year
- reconciliation with demographic estimates at ages 0–9 years.

For more information about the estimated resident population, refer to “Information about the population estimates” on the Statistics NZ website (www.stats.govt.nz).

Derived rates

The life tables were based on deaths averaged over three years. This is designed to reduce the impact of year-to-year statistical variations, particularly at younger ages where there may

be a small number of deaths and at very old ages where the population at risk may be small. In some cases, the subnational data does not enable death rates to be reliably estimated at all ages.

The construction of each abridged life table involved three stages. First, central death rates (m_x) were calculated for each age interval, except the first year of life. Second, the Brass logit system was used to smooth age-specific death rates for all areas. Third, the smoothed rates were used to calculate a set of age-specific probabilities of death (q_x), which were then used to derive other life table functions. The derivation of the mortality rate in the first year of life differed from all other ages and required special formulae, as detailed below in 'Age 0 years'.

Life table notation

x	Exact age (eg exact age 5 corresponds to 5 years and 0 days).
l_x	Number of people alive at exact age x from the original group of 100,000 (l_0).
L_x	Average number of people alive in the age interval x to $x + 1$.
d_x	Number of deaths in the age interval x to $x + 1$.
q_x	Probability that a person at exact age x dies within a year.
${}_5q_x$	Probability that a person at exact age x dies within 5 years.
p_x	Probability that a person at exact age x lives another year.
${}_5p_x$	Probability that a person at exact age x lives another 5 years.
${}_5m_x$	Central death rate for population in the age group x to $x + 5$.
${}_5S_x$	Proportion of population in the age group x to $x + 5$ surviving another 5 years.
e_x	Expected number of years of life remaining at exact age x .

Age 0 years

The probability of dying in the first year of life (q_0) required special treatment because infant deaths are skewed towards the early part of this age. The following example shows the formula for calculating q_0 for 2005–07, where the denominator approximates the exposed-to-risk population:

$$q_0 = \frac{\text{Deaths (2005 – 07, age 0)}}{\text{Live births (2005 – 07)}}$$

The value for q_0 is then used to derive the following life table functions:

$$l_0 = 100,000 \quad \text{the radix of a life table}$$

$$l_1 = l_0(1 - q_0)$$

$$L_0 = 0.15l_0 + 0.85l_1$$

where 0.85 and 0.15 approximate the proportion of infant deaths occurring in the first 6 months of life and second 6 months of life, respectively

$${}_5s_0 = \frac{{}_5L_5}{L_0 + {}_4L_1}$$

$$d_0 = l_0 \cdot q_0$$

$$m_0 = \frac{d_0}{L_0}$$

Age 1–4 years

The central death rates (m_x) for this age group were calculated by dividing the average annual deaths of residents of each area by the estimated resident population of each area at the midpoint of the period. For 2005–07:

$${}_4m_1 = \frac{\frac{1}{3} \cdot \text{Deaths (2005 – 07, ages 1 – 4)}}{\text{Population (30 June 2006, ages 1 – 4)}}$$

$${}_4q_1 = \frac{4 \cdot {}_4m_1}{1 + 2 \cdot {}_4m_1}$$

$${}_4d_1 = l_1 \cdot q_1$$

$${}_4L_1 = 2(l_1 + l_5)$$

Age 5–84 years

The central death rates (m_x) were calculated for each five-year age group by dividing the average annual deaths of residents of each area by the estimated resident population at the midpoint of the period. For 2005–07:

$${}_5m_x = \frac{\frac{1}{3} \cdot \text{Deaths (2005 – 07, ages } x \text{ to } x + 4)}}{\text{Population (30 June 2006, ages } x \text{ to } x + 4)}} \quad \text{for } x = 5, 10, 15, \dots, 80$$

$${}_5q_x = \frac{5 \cdot {}_5m_x}{1 + 2 \cdot \frac{1}{2} \cdot {}_5m_x} \quad \text{for } x = 5, 10, 15, \dots, 80$$

$${}_5p_x = 1 - {}_5q_x \quad \text{for } x = 5, 10, 15, \dots, 80$$

$$l_{x+5} = (1 - {}_5q_x)l_x \quad \text{for } x = 5, 10, 15, \dots, 80$$

$${}_5d_x = l_x - l_{x+5} \quad \text{for } x = 5, 10, 15, \dots, 80$$

$${}_5L_x = 2\frac{1}{2}(l_x + l_{x+5}) \quad \text{for } x = 5, 10, 15, \dots, 80$$

$${}_5s_x = \frac{{}_5L_{x+5}}{{}_5L_x} \quad \text{for } x = 5, 10, 15, \dots, 80$$

Age 85 years and over

Data for those aged 85 years and over were combined into one age group. Because it is an open-ended interval, some unique formulae were required:

$$q_{85} = 1$$

$$d_{85} = l_{85}$$

$$L_{85} = \frac{l_{85}}{m_{85}}$$

For all ages:

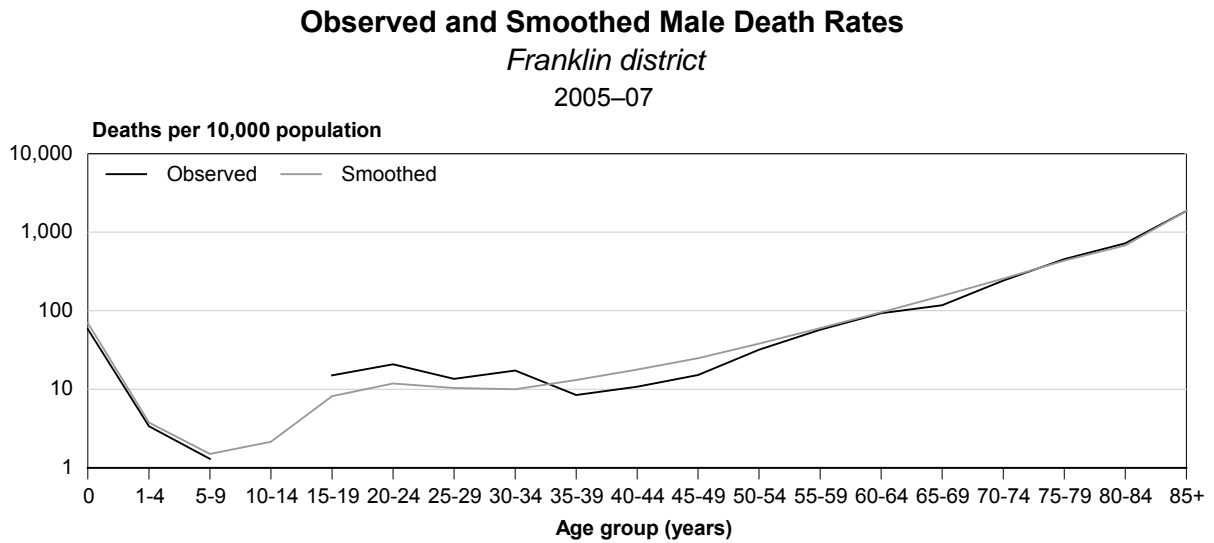
$$e_x = \frac{\sum_{i=0}^h L_{x+i}}{l_x} \quad \text{for } x = 0, 1, 5, 10, 15, \dots, 85$$

where $x + h = 85$.

Brass logit system

The Brass logit technique enables the calculation of smooth abridged life tables for areas that have unreliable and/or zero age-specific death rates, by adjusting the observed rates with reference to a standard life table. The technique does not alter the overall level of mortality, but the age-specific functions of the life table are smoothed. Essentially, the technique compares mortality between the area and a standard life table across ages, then a line of best fit is calculated to describe that relationship by age. The line of best fit is then used in conjunction with the standard life table to determine death rates for the small area life table. An example of observed and smoothed death rates is given in figure 5.01. For a more detailed description of the Brass logit system refer to Brass (1975).

Figure 5.01



Note: Logarithmic scale. There were no deaths registered for Franklin district for ages 10–14 years during 2005–07.

The subnational abridged life tables for 1995–97 to 2005–07 presented in this report use the Brass logit system and the complete life tables for New Zealand for 1995–97 to 2005–07, respectively, as the standard.

Abridged life tables compared with complete period life tables

There are small differences in life table measures derived from abridged and complete period life tables (table 5.01). Abridged life tables use grouped age data and an open-ended upper age group. By comparison, complete period life tables use single-year of age data. The abridged and complete life tables presented here also use different methods for smoothing death rates. The abridged life tables use the Brass logit system and the complete life tables for each respective period as the standard life tables.

Table 5.01

New Zealand Life Expectancy at Birth
Abridged and complete period life tables
1995–97 to 2005–07

Period	Abridged		Complete	
	Male	Female	Male	Female
Years of life				
1995–97	74.4	79.8	74.4	79.7
2000–02	76.5	81.4	76.3	81.1
2005–07	78.2	82.4	78.0	82.2

Standardised death rates

Standardised death rates (SDRs) provide a summary measure of the mortality experience of an area, while allowing for the different age-sex composition of each area. Using the direct method of standardisation, SDRs indicate the overall death rate (deaths per 1,000 population) if the observed age-sex specific death rates were applied to a standard population. The SDRs presented in this report use the age and sex distribution of the estimated resident population of New Zealand at 30 June 1996 as the standard:

$$SDR = \frac{\sum_a m_a P_a}{P} \times 1,000$$

where m_a is the age-sex specific death rate of the area
 P_a is the standard population at each age and sex
 P is the total standard population
 a are age groups 0, 1–4, 5–9, 10–14, ..., 80–84, and 85+ years

Glossary

Age-specific

A measure relating to an age group.

Asian ethnicity

People who identify with an Asian ethnicity (eg Chinese, Indian, Korean) with or without other ethnicities. Because ethnicity is self-perceived, people can identify with an Asian ethnicity even though they are not descended from an Asian ancestor. Conversely, people may choose to not identify with an Asian ethnicity even though they are descended from an Asian ancestor.

Census night population count

A count of all people present in a given area on a given census night. The census night population count of New Zealand includes visitors from overseas who are counted on census night, but excludes New Zealand residents who are temporarily overseas.

For a subnational area, the count includes visitors from overseas and elsewhere in New Zealand (people who do not usually live in that area), but excludes residents of that area who are temporarily elsewhere on census night (people who usually live in that area but are absent).

Census usually resident population count

A count of all people who usually live in a given area, and are present in New Zealand, on a given census night. The census usually resident population count of New Zealand excludes visitors from overseas and excludes New Zealand residents who are temporarily overseas.

For a subnational area, the count excludes visitors from overseas and elsewhere in New Zealand (people who do not usually live in that area), but includes residents of that area who are temporarily elsewhere in New Zealand on census night (people who usually live in that area but are absent).

Cohort

A group of people sharing a common demographic experience. For example, the 1900 birth cohort refers to the people who were born in the year 1900.

Death

The permanent disappearance of all evidence of life at any time after live birth has taken place (postnatal cessation of vital functions without capability of resuscitation). This definition therefore excludes foetal deaths.

Death (mortality) rate

The number of deaths relative to the exposed-to-risk population, often expressed as a rate per 1,000 population.

Estimated de facto population

An estimate of all people present in a given area at a given date. The estimated de facto population of New Zealand includes all people present in New Zealand and counted by the census (census night population count). This estimate includes visitors from overseas who are counted on census night, but excludes New Zealand residents who are temporarily overseas.

For a subnational area, the estimate includes visitors from overseas and elsewhere in New Zealand (people who do not usually live in that area), but excludes residents of that area

who are temporarily elsewhere on census night (people who usually live in that area but are absent).

The estimated de facto population at a given date after census includes births, deaths and net migration (arrivals less departures) of people during the period between census night and the given date.

De facto population estimates are no longer produced. National population estimates were produced annually (reference date at 31 December) from 1936 to 1950, and quarterly (reference dates at 31 March, 30 June, 30 September, and 31 December) from March 1951 to June 1997. Subnational population estimates were produced annually (reference date at 31 March) to 1995.

Estimated resident population

An estimate of all people who usually live in a given area at a given date. The estimated resident population of New Zealand 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), and an adjustment for residents missed or counted more than once by the census (net census undercount). Visitors from overseas are excluded.

For a subnational area, the estimate excludes visitors from overseas and elsewhere in New Zealand (people who do not usually live in that area), but includes residents of that area who are temporarily elsewhere on census night (people who usually live in that area but are absent).

The estimated resident population at a given date after census includes births, deaths and net migration (arrivals less departures) of residents during the period between census night and the given date.

National population estimates are produced quarterly (reference dates at 31 March, 30 June, 30 September, and 31 December) and subnational population estimates are produced annually (reference date at 30 June).

Ethnicity

Ethnicity is the ethnic group or groups that people identify with or feel they belong to. Ethnicity is a measure of cultural affiliation, as opposed to race, ancestry, nationality, or citizenship. Ethnicity is self-perceived and people can belong to more than one ethnic group.

An ethnic group is made up of people who have some or all of the following characteristics:

- a common proper name
- one or more elements of common culture which need not be specified, but may include religion, customs or language
- unique community of interests, feelings and actions
- a shared sense of common origins or ancestry
- a common geographic origin.

This definition is based on the work of A Smith (1986), "The Ethnic Origins of Nations".

People can identify with an ethnicity even though they are not descended from ancestors with that ethnicity. Conversely, people may choose to not identify with an ethnicity even though they are descended from ancestors with that ethnicity. Ethnicity is not the same as birthplace.

In the Census of Population and Dwellings, ethnicity is identified by the person completing the census form. In the case of births and deaths, ethnicity is identified by the person completing the registration form. For births this is usually the parent(s), while for deaths this is most likely to be the funeral director (on the advice of a family member).

For more information about ethnicity, refer to the [Review of the Measurement of Ethnicity](#) on the Statistics NZ website (www.stats.govt.nz) which includes information about the Statistical Standard for Ethnicity 2005.

European or Other ethnicity

People who identify with a European ethnicity (eg New Zealand European, English, Dutch) or Other ethnicity (eg New Zealander), with or without other ethnicities. Because ethnicity is self-perceived, people can identify with a European ethnicity even though they are not descended from a European ancestor. Conversely, people may choose to not identify with a European ethnicity even though they are descended from a European ancestor.

Standardised death rates have been derived for the 'European or Other (including New Zealander)' ethnic group. Standardised death rates are not available for the European ethnic group, or for the Other (including New Zealander) ethnic group. This reflects that sufficient demographic data is available to enable standardised death rates to be derived for the combined ethnic grouping, but not for the separate ethnic groups. This approach is consistent with [Guidelines for Using Ethnicity Data: 2006 Census](#), available on the Statistics NZ website (www.stats.govt.nz).

Exposed-to-risk population

People able to experience a particular event (eg death) often because of specific characteristics (eg age, sex, geographic location).

Foetal death

Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of gestation, by either spontaneous abortion (miscarriage), induced abortion, or stillbirth. Death is indicated by the fact that after such separation the foetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

Infant death

The death of a child (who was born alive) before the age of one year.

Life expectancy

The average length of life remaining at a given age. In a period [life table](#), it is the average length of life from a given age, assuming people experience the [age-specific mortality](#) rates of a given period from the given age onwards. In a cohort life table, it is the average length of life from a given age, of people born in a given period, based on the mortality rates actually experienced by them from that given age onwards.

Life expectancy at birth

The average length of life of a birth cohort. In a period [life table](#), it is the average length of life of newborn babies, assuming they experience the [age-specific mortality](#) rates of a given period throughout their life. In a cohort life table, it is the average length of life of people born in a given period, based on the mortality rates actually experienced by them throughout their life.

Life table

A tabular numerical representation of mortality and survivorship of a cohort of births at each age. It comprises an array of measures, including probabilities of death, probabilities of survival, and life expectancies at various ages.

Complete life tables present life table functions for each single year of age, while abridged life tables present life table functions for age groups.

Current, period, or cross-sectional life tables are based on current mortality rates. These tables assume that as a cohort passes through life it experiences a given pattern of age-specific mortality rates, which do not change from year to year. Although it is usually based on death rates from a real population during a particular period of time, these tables are a hypothetical model of mortality as they do not describe the real mortality that characterises a cohort as it ages.

Cohort, longitudinal, or generation life tables are based on the actual mortality experience of a particular cohort (eg all people born in the year 1900). These tables require data over many years, from infancy to the oldest age lived by the cohort (ie until the death of the last survivor).

Live birth

The birth of a child who breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered liveborn. All liveborn infants should be registered and counted as such, irrespective of gestation or whether alive or dead at the time of registration. If they die at any time following birth they should also be registered and counted as deaths.

Longevity

Length of life.

Māori ethnicity

People who identify with the Māori ethnicity with or without other ethnicities. Because ethnicity is self-perceived, people can identify with Māori ethnicity even though they are not descended from a Māori ancestor. Conversely, people may choose to not identify with Māori ethnicity even though they are descended from a Māori ancestor.

Mean population

The average number of people in an area during a given period, usually a year. This measure may be estimated in terms of a simple or weighted arithmetic mean of monthly or quarterly population during the reference period. If the mean population is unavailable, the population at the midpoint of the period is generally suitable for most purposes.

Mortality

The death of individuals in a community.

Net census undercount

The difference between undercount and overcount. It is usually expressed as a percentage of what should have been the complete count rather than as a percentage of what was counted. The 1996, 2001, and 2006 post-enumeration surveys estimated net census undercount to be 1.6 ± 0.2 , 2.2 ± 0.3 , and 2.0 ± 0.4 percent, respectively (sample errors at the 95 percent level).

Non-Māori ethnicity

People identifying with an ethnicity excluding those who identified with Māori ethnicity.

Pacific ethnicity

People who identify with a Pacific ethnicity (eg Samoan, Tongan, Fijian) with or without other ethnicities. Because ethnicity is self-perceived, people can identify with a Pacific ethnicity even though they are not descended from a Pacific ancestor. Conversely, people may choose to not identify with a Pacific ethnicity even though they are descended from a Pacific ancestor.

Post-enumeration survey

A sample survey to check the accuracy of coverage and/or response of another census or survey. A post-enumeration survey was conducted after each of the 1996, 2001, and 2006 Censuses of Population and Dwellings to check the coverage of each census.

Radix

The original size of the birth cohort of a life table, usually set at 100,000 for convenience.

Resident population concept

A statistical basis for a population in terms of those who usually live in a given area at a given time. The census usually resident population count is a census measure of the resident population concept, and the estimated resident population is a demographic measure of the resident population concept. In terms of vital statistics, the resident population concept refers to events that relate to residents of New Zealand only.

Resident temporarily overseas

A person who usually lives in New Zealand but who is overseas for a period of less than 12 months. In census statistics, a resident temporarily overseas is a person who is identified on the census dwelling form as usually living in that dwelling but who is overseas for a period of less than 12 months. In international travel and migration statistics, a resident temporarily overseas is someone who is mainly living in New Zealand for 12 months or more, who is overseas for a period of less than 12 months.

Standardised death rates

The overall death rate that would have prevailed in a standard population if it had experienced the age-specific (usually age-and-sex-specific) death rates of the population or area being studied. The standardised death rates presented in this report use the direct method of standardisation, and indicate the number of deaths per 1,000 population for each ethnic group/area and each period, if each ethnic group/area had a standard population (the estimated resident population of New Zealand at 30 June 1996).

Subnational

Geographical units of a country (eg area units, territorial authority areas, regional council areas, urban areas) whose boundaries are defined for administrative, legal, or statistical purposes.

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Appendix 1: New Zealand period life tables, 2005–07

Table A1.1

Total Male Population Period Life Table, 2005-07

Exact age (years)	Out of 100,000 males born			Probability that a male who reaches this age		Expected number of years of life remaining at age x	Exact age (years)	Out of 100,000 males born			Probability that a male who reaches this age		Expected number of years of life remaining at age x
	Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year			Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year	
x	l_x	L_x	d_x	p_x	q_x	e_x	x	l_x	L_x	d_x	p_x	q_x	e_x
0	100,000	99,536	563	0.99437	0.00563	78.04	55	92,838	92,606	465	0.99499	0.00501	26.25
1	99,437	99,412	50	0.99950	0.00050	77.48	56	92,373	92,120	507	0.99451	0.00549	25.38
2	99,387	99,373	28	0.99972	0.00028	76.52	57	91,866	91,590	553	0.99398	0.00602	24.52
3	99,359	99,347	25	0.99975	0.00025	75.54	58	91,313	91,012	603	0.99340	0.00660	23.67
4	99,334	99,323	22	0.99978	0.00022	74.56	59	90,710	90,381	658	0.99275	0.00725	22.82
5	99,312	99,303	19	0.99981	0.00019	73.57	60	90,052	89,693	718	0.99203	0.00797	21.98
6	99,293	99,285	16	0.99984	0.00016	72.59	61	89,334	88,943	783	0.99123	0.00877	21.16
7	99,277	99,271	13	0.99987	0.00013	71.60	62	88,551	88,124	855	0.99035	0.00965	20.34
8	99,264	99,258	12	0.99988	0.00012	70.61	63	87,696	87,230	932	0.98937	0.01063	19.53
9	99,252	99,247	11	0.99989	0.00011	69.62	64	86,764	86,256	1,017	0.98828	0.01172	18.74
10	99,241	99,236	11	0.99989	0.00011	68.62	65	85,747	85,194	1,107	0.98709	0.01291	17.95
11	99,230	99,224	13	0.99987	0.00013	67.63	66	84,640	84,038	1,205	0.98576	0.01424	17.18
12	99,217	99,208	18	0.99982	0.00018	66.64	67	83,435	82,781	1,309	0.98431	0.01569	16.42
13	99,199	99,187	25	0.99975	0.00025	65.65	68	82,126	81,415	1,422	0.98268	0.01732	15.67
14	99,174	99,157	35	0.99965	0.00035	64.67	69	80,704	79,932	1,545	0.98086	0.01914	14.94
15	99,139	99,116	47	0.99953	0.00047	63.69	70	79,159	78,321	1,677	0.97881	0.02119	14.22
16	99,092	99,063	59	0.99940	0.00060	62.72	71	77,482	76,571	1,822	0.97649	0.02351	13.52
17	99,033	98,997	73	0.99926	0.00074	61.76	72	75,660	74,672	1,976	0.97388	0.02612	12.83
18	98,960	98,918	85	0.99914	0.00086	60.80	73	73,684	72,614	2,141	0.97095	0.02905	12.17
19	98,875	98,828	95	0.99904	0.00096	59.85	74	71,543	70,387	2,312	0.96768	0.03232	11.51
20	98,780	98,729	102	0.99897	0.00103	58.91	75	69,231	67,988	2,487	0.96407	0.03593	10.88
21	98,678	98,625	106	0.99893	0.00107	57.97	76	66,744	65,413	2,663	0.96010	0.03990	10.27
22	98,572	98,519	107	0.99891	0.00109	57.03	77	64,081	62,664	2,834	0.95577	0.04423	9.68
23	98,465	98,412	107	0.99891	0.00109	56.10	78	61,247	59,749	2,997	0.95107	0.04893	9.10
24	98,358	98,306	105	0.99893	0.00107	55.16	79	58,250	56,676	3,148	0.94596	0.05404	8.54
25	98,253	98,202	102	0.99896	0.00104	54.21	80	55,102	53,456	3,293	0.94023	0.05977	8.00
26	98,151	98,102	99	0.99899	0.00101	53.27	81	51,809	50,091	3,437	0.93366	0.06634	7.48
27	98,052	98,004	96	0.99902	0.00098	52.32	82	48,372	46,583	3,579	0.92601	0.07399	6.97
28	97,956	97,910	93	0.99905	0.00095	51.37	83	44,793	42,936	3,714	0.91708	0.08292	6.49
29	97,863	97,818	91	0.99907	0.00093	50.42	84	41,079	39,162	3,834	0.90666	0.09334	6.03
30	97,772	97,727	90	0.99908	0.00092	49.47	85	37,245	35,284	3,923	0.89467	0.10533	5.60
31	97,682	97,637	91	0.99907	0.00093	48.51	86	33,322	31,346	3,953	0.88137	0.11863	5.20
32	97,591	97,544	94	0.99904	0.00096	47.56	87	29,369	27,418	3,902	0.86714	0.13286	4.84
33	97,497	97,449	97	0.99900	0.00100	46.60	88	25,467	23,587	3,761	0.85231	0.14769	4.50
34	97,400	97,349	103	0.99894	0.00106	45.65	89	21,706	19,939	3,534	0.83720	0.16280	4.19
35	97,297	97,243	109	0.99888	0.00112	44.70	90	18,172	16,556	3,232	0.82213	0.17787	3.91
36	97,188	97,130	117	0.99880	0.00120	43.75	91	14,940	13,501	2,878	0.80733	0.19267	3.65
37	97,071	97,009	124	0.99872	0.00128	42.80	92	12,062	10,799	2,527	0.79054	0.20946	3.40
38	96,947	96,881	133	0.99863	0.00137	41.85	93	9,535	8,453	2,165	0.77290	0.22710	3.17
39	96,814	96,744	141	0.99854	0.00146	40.91	94	7,370	6,466	1,809	0.75459	0.24541	2.96
40	96,673	96,598	151	0.99844	0.00156	39.97	95	5,561	4,825	1,473	0.73517	0.26483	2.76
41	96,522	96,443	159	0.99835	0.00165	39.03	96	4,088	3,505	1,166	0.71473	0.28527	2.57
42	96,363	96,278	170	0.99824	0.00176	38.09	97	2,922	2,474	896	0.69333	0.30667	2.40
43	96,193	96,104	179	0.99814	0.00186	37.16	98	2,026	1,693	666	0.67110	0.32890	2.24
44	96,014	95,919	191	0.99801	0.00199	36.23	99	1,360	1,121	479	0.64815	0.35185	2.09
45	95,823	95,722	203	0.99788	0.00212	35.30	100	881	716	331	0.62463	0.37537	1.95
46	95,620	95,511	218	0.99772	0.00228	34.37							
47	95,402	95,285	235	0.99754	0.00246	33.45							
48	95,167	95,041	253	0.99734	0.00266	32.53							
49	94,914	94,777	275	0.99710	0.00290	31.62							
50	94,639	94,489	300	0.99683	0.00317	30.71							
51	94,339	94,176	327	0.99653	0.00347	29.81							
52	94,012	93,834	357	0.99620	0.00380	28.91							
53	93,655	93,460	391	0.99583	0.00417	28.02							
54	93,264	93,051	426	0.99543	0.00457	27.13							

Table A1.2

Total Female Population Period Life Table, 2005-07

Exact age (years)	Out of 100,000 females born			Probability that a female who reaches this age		Expected number of years of life remaining at age x	Exact age (years)	Out of 100,000 females born			Probability that a female who reaches this age		Expected number of years of life remaining at age x
	Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year			Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year	
x	l_x	L_x	d_x	p_x	q_x	e_x	x	l_x	L_x	d_x	p_x	q_x	e_x
0	100,000	99,623	448	0.99552	0.00448	82.16	55	95,429	95,266	326	0.99658	0.00342	29.32
1	99,552	99,528	49	0.99951	0.00049	81.53	56	95,103	94,925	357	0.99625	0.00375	28.42
2	99,503	99,491	25	0.99975	0.00025	80.57	57	94,746	94,552	388	0.99590	0.00410	27.53
3	99,478	99,467	22	0.99978	0.00022	79.59	58	94,358	94,146	424	0.99551	0.00449	26.64
4	99,456	99,447	19	0.99981	0.00019	78.60	59	93,934	93,703	462	0.99508	0.00492	25.76
5	99,437	99,429	16	0.99984	0.00016	77.62	60	93,472	93,220	504	0.99461	0.00539	24.88
6	99,421	99,415	13	0.99987	0.00013	76.63	61	92,968	92,694	549	0.99410	0.00590	24.02
7	99,408	99,403	11	0.99989	0.00011	75.64	62	92,419	92,120	598	0.99353	0.00647	23.15
8	99,397	99,393	9	0.99991	0.00009	74.65	63	91,821	91,496	650	0.99292	0.00708	22.30
9	99,388	99,384	8	0.99992	0.00008	73.66	64	91,171	90,818	707	0.99224	0.00776	21.46
10	99,380	99,376	9	0.99991	0.00009	72.66	65	90,464	90,079	770	0.99149	0.00851	20.62
11	99,371	99,366	10	0.99990	0.00010	71.67	66	89,694	89,275	839	0.99065	0.00935	19.79
12	99,361	99,355	13	0.99987	0.00013	70.68	67	88,855	88,397	916	0.98969	0.01031	18.98
13	99,348	99,340	17	0.99983	0.00017	69.69	68	87,939	87,439	1,001	0.98862	0.01138	18.17
14	99,331	99,320	22	0.99978	0.00022	68.70	69	86,938	86,391	1,095	0.98740	0.01260	17.37
15	99,309	99,295	28	0.99972	0.00028	67.71	70	85,843	85,244	1,198	0.98604	0.01396	16.59
16	99,281	99,264	35	0.99965	0.00035	66.73	71	84,645	83,991	1,309	0.98453	0.01547	15.82
17	99,246	99,226	40	0.99960	0.00040	65.75	72	83,336	82,622	1,428	0.98287	0.01713	15.06
18	99,206	99,185	43	0.99957	0.00043	64.78	73	81,908	81,132	1,552	0.98105	0.01895	14.31
19	99,163	99,141	44	0.99956	0.00044	63.81	74	80,356	79,515	1,683	0.97906	0.02094	13.58
20	99,119	99,098	43	0.99957	0.00043	62.84	75	78,673	77,762	1,823	0.97683	0.02317	12.86
21	99,076	99,056	41	0.99959	0.00041	61.86	76	76,850	75,862	1,976	0.97429	0.02571	12.15
22	99,035	99,016	38	0.99962	0.00038	60.89	77	74,874	73,802	2,145	0.97135	0.02865	11.46
23	98,997	98,980	35	0.99965	0.00035	59.91	78	72,729	71,563	2,332	0.96794	0.03206	10.78
24	98,962	98,946	33	0.99967	0.00033	58.93	79	70,397	69,129	2,536	0.96398	0.03602	10.12
25	98,929	98,914	30	0.99970	0.00030	57.95	80	67,861	66,483	2,757	0.95938	0.04062	9.48
26	98,899	98,885	29	0.99971	0.00029	56.97	81	65,104	63,609	2,991	0.95406	0.04594	8.86
27	98,870	98,855	30	0.99970	0.00030	55.99	82	62,113	60,496	3,235	0.94792	0.05208	8.26
28	98,840	98,824	33	0.99967	0.00033	55.00	83	58,878	57,138	3,480	0.94089	0.05911	7.69
29	98,807	98,789	37	0.99963	0.00037	54.02	84	55,398	53,539	3,718	0.93288	0.06712	7.14
30	98,770	98,750	41	0.99958	0.00042	53.04	85	51,680	49,710	3,941	0.92375	0.07625	6.62
31	98,729	98,706	47	0.99952	0.00048	52.06	86	47,739	45,671	4,136	0.91337	0.08663	6.12
32	98,682	98,656	53	0.99946	0.00054	51.09	87	43,603	41,458	4,290	0.90161	0.09839	5.66
33	98,629	98,600	58	0.99941	0.00059	50.12	88	39,313	37,119	4,389	0.88837	0.11163	5.22
34	98,571	98,540	62	0.99937	0.00063	49.15	89	34,924	32,717	4,415	0.87358	0.12642	4.81
35	98,509	98,476	66	0.99933	0.00067	48.18	90	30,509	28,334	4,351	0.85740	0.14260	4.44
36	98,443	98,408	70	0.99929	0.00071	47.21	91	26,158	24,066	4,185	0.84001	0.15999	4.09
37	98,373	98,336	74	0.99925	0.00075	46.24	92	21,973	20,013	3,920	0.82159	0.17841	3.78
38	98,299	98,259	80	0.99919	0.00081	45.28	93	18,053	16,269	3,569	0.80233	0.19767	3.49
39	98,219	98,176	86	0.99912	0.00088	44.31	94	14,484	12,908	3,152	0.78238	0.21762	3.22
40	98,133	98,086	95	0.99903	0.00097	43.35	95	11,332	9,980	2,704	0.76134	0.23866	2.98
41	98,038	97,986	105	0.99893	0.00107	42.39	96	8,628	7,503	2,250	0.73926	0.26074	2.76
42	97,933	97,876	115	0.99883	0.00117	41.44	97	6,378	5,473	1,810	0.71624	0.28376	2.55
43	97,818	97,756	125	0.99872	0.00128	40.48	98	4,568	3,866	1,405	0.69238	0.30762	2.37
44	97,693	97,625	136	0.99861	0.00139	39.54	99	3,163	2,638	1,051	0.66780	0.33220	2.20
45	97,557	97,484	146	0.99850	0.00150	38.59	100	2,112	1,735	755	0.64265	0.35735	2.05
46	97,411	97,333	157	0.99839	0.00161	37.65							
47	97,254	97,170	169	0.99826	0.00174	36.71							
48	97,085	96,994	183	0.99812	0.00188	35.77							
49	96,902	96,803	198	0.99796	0.00204	34.84							
50	96,704	96,597	214	0.99779	0.00221	33.91							
51	96,490	96,374	233	0.99759	0.00241	32.98							
52	96,257	96,131	252	0.99738	0.00262	32.06							
53	96,005	95,867	276	0.99713	0.00287	31.14							
54	95,729	95,579	300	0.99687	0.00313	30.23							

Table A1.3

Māori Male Population Period Life Table, 2005-07

Exact age (years)	Out of 100,000 males born			Probability that a male who reaches this age		Expected number of years of life remaining at age x	Exact age (years)	Out of 100,000 males born			Probability that a male who reaches this age		Expected number of years of life remaining at age x
	Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year			Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year	
x	l_x	L_x	d_x	p_x	q_x	e_x	x	l_x	L_x	d_x	p_x	q_x	e_x
0	100,000	99,401	754	0.99246	0.00754	70.36	55	85,686	85,164	1,044	0.98782	0.01218	20.62
1	99,246	99,210	73	0.99926	0.00074	69.90	56	84,642	84,073	1,138	0.98656	0.01344	19.87
2	99,173	99,146	54	0.99946	0.00054	68.95	57	83,504	82,886	1,237	0.98519	0.01481	19.13
3	99,119	99,096	46	0.99954	0.00046	67.98	58	82,267	81,598	1,339	0.98372	0.01628	18.41
4	99,073	99,054	39	0.99961	0.00039	67.02	59	80,928	80,206	1,445	0.98214	0.01786	17.71
5	99,034	99,018	32	0.99968	0.00032	66.04	60	79,483	78,707	1,553	0.98046	0.01954	17.02
6	99,002	98,990	25	0.99975	0.00025	65.06	61	77,930	77,100	1,661	0.97868	0.02132	16.35
7	98,977	98,967	20	0.99980	0.00020	64.08	62	76,269	75,384	1,770	0.97679	0.02321	15.69
8	98,957	98,949	16	0.99984	0.00016	63.09	63	74,499	73,561	1,877	0.97481	0.02519	15.05
9	98,941	98,934	14	0.99986	0.00014	62.10	64	72,622	71,631	1,982	0.97271	0.02729	14.43
10	98,927	98,920	14	0.99986	0.00014	61.11	65	70,640	69,598	2,085	0.97049	0.02951	13.82
11	98,913	98,905	17	0.99983	0.00017	60.12	66	68,555	67,463	2,185	0.96813	0.03187	13.23
12	98,896	98,885	23	0.99977	0.00023	59.13	67	66,370	65,230	2,281	0.96563	0.03437	12.65
13	98,873	98,857	32	0.99968	0.00032	58.14	68	64,089	62,903	2,373	0.96297	0.03703	12.08
14	98,841	98,819	44	0.99955	0.00045	57.16	69	61,716	60,486	2,460	0.96014	0.03986	11.52
15	98,797	98,766	63	0.99936	0.00064	56.19	70	59,256	57,986	2,540	0.95713	0.04287	10.98
16	98,734	98,690	89	0.99910	0.00090	55.22	71	56,716	55,410	2,612	0.95394	0.04606	10.45
17	98,645	98,587	117	0.99881	0.00119	54.27	72	54,104	52,766	2,677	0.95053	0.04947	9.93
18	98,528	98,457	142	0.99856	0.00144	53.34	73	51,427	50,059	2,736	0.94680	0.05320	9.42
19	98,386	98,307	158	0.99839	0.00161	52.41	74	48,691	47,295	2,793	0.94264	0.05736	8.92
20	98,228	98,145	167	0.99830	0.00170	51.50	75	45,898	44,474	2,849	0.93792	0.06208	8.44
21	98,061	97,976	170	0.99827	0.00173	50.58	76	43,049	41,597	2,904	0.93254	0.06746	7.96
22	97,891	97,808	167	0.99829	0.00171	49.67	77	40,145	38,668	2,955	0.92639	0.07361	7.50
23	97,724	97,643	163	0.99833	0.00167	48.75	78	37,190	35,691	2,999	0.91936	0.08064	7.06
24	97,561	97,483	157	0.99839	0.00161	47.83	79	34,191	32,676	3,030	0.91137	0.08863	6.63
25	97,404	97,328	152	0.99844	0.00156	46.91	80	31,161	29,639	3,044	0.90230	0.09770	6.23
26	97,252	97,177	150	0.99846	0.00154	45.98	81	28,117	26,602	3,030	0.89224	0.10776	5.85
27	97,102	97,027	150	0.99846	0.00154	45.05	82	25,087	23,605	2,965	0.88183	0.11817	5.49
28	96,952	96,875	154	0.99841	0.00159	44.12	83	22,122	20,705	2,835	0.87185	0.12815	5.16
29	96,798	96,718	161	0.99834	0.00166	43.19	84	19,287	17,953	2,669	0.86162	0.13838	4.85
30	96,637	96,552	171	0.99823	0.00177	42.26	85	16,618	15,370	2,496	0.84981	0.15019	4.55
31	96,466	96,375	182	0.99811	0.00189	41.34	86	14,122	12,969	2,306	0.83670	0.16330	4.26
32	96,284	96,186	196	0.99796	0.00204	40.41	87	11,816	10,768	2,096	0.82265	0.17735	4.00
33	96,088	95,983	211	0.99780	0.00220	39.50	88	9,720	8,787	1,866	0.80800	0.19200	3.75
34	95,877	95,763	228	0.99762	0.00238	38.58	89	7,854	7,042	1,625	0.79309	0.20691	3.52
35	95,649	95,527	245	0.99744	0.00256	37.67	90	6,229	5,538	1,382	0.77820	0.22180	3.31
36	95,404	95,274	261	0.99726	0.00274	36.77	91	4,847	4,274	1,146	0.76359	0.23641	3.11
37	95,143	95,004	278	0.99708	0.00292	35.87	92	3,701	3,233	936	0.74699	0.25301	2.92
38	94,865	94,718	295	0.99689	0.00311	34.97	93	2,765	2,391	748	0.72954	0.27046	2.74
39	94,570	94,414	313	0.99669	0.00331	34.08	94	2,017	1,726	582	0.71141	0.28859	2.57
40	94,257	94,091	332	0.99648	0.00352	33.19	95	1,435	1,214	442	0.69218	0.30782	2.41
41	93,925	93,749	352	0.99625	0.00375	32.31	96	993	830	326	0.67192	0.32808	2.26
42	93,573	93,387	373	0.99601	0.00399	31.42	97	667	551	233	0.65072	0.34928	2.11
43	93,200	93,001	398	0.99573	0.00427	30.55	98	434	354	161	0.62867	0.37133	1.98
44	92,802	92,590	425	0.99542	0.00458	29.68	99	273	219	108	0.60591	0.39409	1.86
45	92,377	92,150	455	0.99507	0.00493	28.81	100	165	131	69	0.58258	0.41742	1.74
46	91,922	91,678	489	0.99468	0.00532	27.95							
47	91,433	91,170	527	0.99424	0.00576	27.10							
48	90,906	90,622	569	0.99374	0.00626	26.25							
49	90,337	90,028	618	0.99316	0.00684	25.41							
50	89,719	89,383	672	0.99251	0.00749	24.59							
51	89,047	88,681	732	0.99178	0.00822	23.77							
52	88,315	87,916	799	0.99095	0.00905	22.96							
53	87,516	87,079	874	0.99001	0.00999	22.17							
54	86,642	86,164	956	0.98897	0.01103	21.38							

Table A1.4

Māori Female Population Period Life Table, 2005–07

Exact age (years)	Out of 100,000 females born			Probability that a female who reaches this age		Expected number of years of life remaining at age x	Exact age (years)	Out of 100,000 females born			Probability that a female who reaches this age		Expected number of years of life remaining at age x
	Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year			Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year	
x	l_x	L_x	d_x	p_x	q_x	e_x	x	l_x	L_x	d_x	p_x	q_x	e_x
0	100,000	99,486	648	0.99353	0.00648	75.06	55	91,190	90,821	739	0.99190	0.00810	23.56
1	99,352	99,317	71	0.99929	0.00071	74.55	56	90,451	90,044	815	0.99099	0.00901	22.75
2	99,281	99,261	40	0.99960	0.00040	73.60	57	89,636	89,188	896	0.99000	0.01000	21.95
3	99,241	99,224	35	0.99965	0.00035	72.63	58	88,740	88,248	984	0.98891	0.01109	21.17
4	99,206	99,191	30	0.99970	0.00030	71.66	59	87,756	87,218	1,077	0.98773	0.01227	20.40
5	99,176	99,163	26	0.99974	0.00026	70.68	60	86,679	86,092	1,175	0.98645	0.01355	19.65
6	99,150	99,140	21	0.99979	0.00021	69.70	61	85,504	84,866	1,277	0.98507	0.01493	18.91
7	99,129	99,121	17	0.99983	0.00017	68.71	62	84,227	83,535	1,384	0.98357	0.01643	18.19
8	99,112	99,105	14	0.99986	0.00014	67.72	63	82,843	82,096	1,494	0.98197	0.01803	17.48
9	99,098	99,092	12	0.99988	0.00012	66.73	64	81,349	80,546	1,606	0.98026	0.01974	16.80
10	99,086	99,080	13	0.99987	0.00013	65.74	65	79,743	78,883	1,720	0.97843	0.02157	16.12
11	99,073	99,065	16	0.99984	0.00016	64.75	66	78,023	77,106	1,834	0.97650	0.02350	15.47
12	99,057	99,046	22	0.99978	0.00022	63.76	67	76,189	75,216	1,947	0.97445	0.02555	14.83
13	99,035	99,019	32	0.99968	0.00032	62.77	68	74,242	73,214	2,057	0.97230	0.02770	14.20
14	99,003	98,981	45	0.99955	0.00045	61.79	69	72,185	71,104	2,162	0.97005	0.02995	13.60
15	98,958	98,930	57	0.99942	0.00058	60.82	70	70,023	68,892	2,262	0.96769	0.03231	13.00
16	98,901	98,869	65	0.99934	0.00066	59.86	71	67,761	66,583	2,356	0.96523	0.03477	12.42
17	98,836	98,804	65	0.99934	0.00066	58.90	72	65,405	64,184	2,442	0.96267	0.03733	11.85
18	98,771	98,739	64	0.99935	0.00065	57.93	73	62,963	61,704	2,519	0.95999	0.04001	11.29
19	98,707	98,676	62	0.99937	0.00063	56.97	74	60,444	59,148	2,592	0.95711	0.04289	10.74
20	98,645	98,615	60	0.99939	0.00061	56.01	75	57,852	56,520	2,665	0.95393	0.04607	10.19
21	98,585	98,556	58	0.99941	0.00059	55.04	76	55,187	53,817	2,741	0.95034	0.04966	9.66
22	98,527	98,499	57	0.99942	0.00058	54.07	77	52,446	51,037	2,819	0.94625	0.05375	9.14
23	98,470	98,442	56	0.99943	0.00057	53.10	78	49,627	48,177	2,900	0.94156	0.05844	8.63
24	98,414	98,386	57	0.99942	0.00058	52.13	79	46,727	45,236	2,982	0.93618	0.06382	8.14
25	98,357	98,328	58	0.99941	0.00059	51.16	80	43,745	42,215	3,061	0.93003	0.06997	7.66
26	98,299	98,268	62	0.99937	0.00063	50.19	81	40,684	39,118	3,132	0.92301	0.07699	7.20
27	98,237	98,204	67	0.99932	0.00068	49.23	82	37,552	35,957	3,190	0.91505	0.08495	6.75
28	98,170	98,134	73	0.99926	0.00074	48.26	83	34,362	32,748	3,228	0.90607	0.09393	6.34
29	98,097	98,057	80	0.99918	0.00082	47.29	84	31,134	29,550	3,169	0.89823	0.10177	5.94
30	98,017	97,973	89	0.99909	0.00091	46.33	85	27,965	26,417	3,097	0.88927	0.11073	5.56
31	97,928	97,879	98	0.99900	0.00100	45.37	86	24,868	23,365	3,007	0.87907	0.12093	5.19
32	97,830	97,776	108	0.99890	0.00110	44.42	87	21,861	20,413	2,897	0.86748	0.13252	4.83
33	97,722	97,663	118	0.99879	0.00121	43.47	88	18,964	17,584	2,761	0.85441	0.14559	4.49
34	97,604	97,540	128	0.99869	0.00131	42.52	89	16,203	14,905	2,596	0.83979	0.16021	4.17
35	97,476	97,408	137	0.99859	0.00141	41.57	90	13,607	12,408	2,398	0.82379	0.17621	3.87
36	97,339	97,266	147	0.99849	0.00151	40.63	91	11,209	10,125	2,168	0.80657	0.19343	3.60
37	97,192	97,114	156	0.99840	0.00160	39.69	92	9,041	8,084	1,914	0.78832	0.21168	3.34
38	97,036	96,954	165	0.99830	0.00170	38.76	93	7,127	6,305	1,645	0.76923	0.23077	3.10
39	96,871	96,784	175	0.99819	0.00181	37.82	94	5,482	4,795	1,374	0.74945	0.25055	2.88
40	96,696	96,603	187	0.99807	0.00193	36.89	95	4,108	3,551	1,115	0.72858	0.27142	2.68
41	96,509	96,409	200	0.99793	0.00207	35.96	96	2,993	2,554	878	0.70668	0.29332	2.49
42	96,309	96,202	215	0.99777	0.00223	35.03	97	2,115	1,781	669	0.68383	0.31617	2.32
43	96,094	95,978	232	0.99759	0.00241	34.11	98	1,446	1,201	491	0.66014	0.33986	2.16
44	95,862	95,737	251	0.99738	0.00262	33.19	99	955	781	348	0.63573	0.36427	2.01
45	95,611	95,475	273	0.99714	0.00286	32.28	100	607	489	236	0.61076	0.38924	1.87
46	95,338	95,189	299	0.99686	0.00314	31.37							
47	95,039	94,875	329	0.99654	0.00346	30.47							
48	94,710	94,529	363	0.99617	0.00383	29.57							
49	94,347	94,147	401	0.99575	0.00425	28.68							
50	93,946	93,724	444	0.99527	0.00473	27.80							
51	93,502	93,256	492	0.99474	0.00526	26.93							
52	93,010	92,737	546	0.99413	0.00587	26.07							
53	92,464	92,162	605	0.99346	0.00654	25.22							
54	91,859	91,525	669	0.99272	0.00728	24.39							

Table A1.5

Non-Māori Male Population Period Life Table, 2005-07

Exact age (years)	Out of 100,000 males born			Probability that a male who reaches this age		Expected number of years of life remaining at age x	Exact age (years)	Out of 100,000 males born			Probability that a male who reaches this age		Expected number of years of life remaining at age x
	Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year			Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year	
<i>x</i>	<i>l_x</i>	<i>L_x</i>	<i>d_x</i>	<i>p_x</i>	<i>q_x</i>	<i>e_x</i>	<i>x</i>	<i>l_x</i>	<i>L_x</i>	<i>d_x</i>	<i>p_x</i>	<i>q_x</i>	<i>e_x</i>
0	100,000	99,591	486	0.99515	0.00486	78.96	55	93,945	93,743	404	0.99570	0.00430	26.71
1	99,514	99,494	40	0.99960	0.00040	78.34	56	93,541	93,320	442	0.99527	0.00473	25.82
2	99,474	99,464	21	0.99979	0.00021	77.37	57	93,099	92,857	484	0.99480	0.00520	24.94
3	99,453	99,444	19	0.99981	0.00019	76.39	58	92,615	92,350	530	0.99428	0.00572	24.07
4	99,434	99,426	16	0.99984	0.00016	75.40	59	92,085	91,795	581	0.99369	0.00631	23.20
5	99,418	99,411	14	0.99986	0.00014	74.41	60	91,504	91,186	637	0.99304	0.00696	22.35
6	99,404	99,398	12	0.99988	0.00012	73.42	61	90,867	90,517	700	0.99230	0.00770	21.50
7	99,392	99,387	10	0.99990	0.00010	72.43	62	90,167	89,783	769	0.99147	0.00853	20.66
8	99,382	99,378	9	0.99991	0.00009	71.44	63	89,398	88,976	845	0.99055	0.00945	19.84
9	99,373	99,369	9	0.99991	0.00009	70.45	64	88,553	88,089	929	0.98951	0.01049	19.02
10	99,364	99,359	10	0.99990	0.00010	69.45	65	87,624	87,114	1,020	0.98836	0.01164	18.22
11	99,354	99,348	12	0.99988	0.00012	68.46	66	86,604	86,045	1,119	0.98708	0.01292	17.43
12	99,342	99,334	16	0.99984	0.00016	67.47	67	85,485	84,872	1,226	0.98566	0.01434	16.65
13	99,326	99,315	22	0.99978	0.00022	66.48	68	84,259	83,588	1,342	0.98407	0.01593	15.88
14	99,304	99,289	31	0.99969	0.00031	65.49	69	82,917	82,183	1,469	0.98228	0.01772	15.13
15	99,273	99,252	42	0.99958	0.00042	64.51	70	81,448	80,644	1,608	0.98026	0.01974	14.40
16	99,231	99,204	55	0.99945	0.00055	63.54	71	79,840	78,961	1,758	0.97798	0.02202	13.68
17	99,176	99,143	67	0.99932	0.00068	62.58	72	78,082	77,122	1,920	0.97541	0.02459	12.97
18	99,109	99,070	79	0.99920	0.00080	61.62	73	76,162	75,116	2,093	0.97252	0.02748	12.29
19	99,030	98,986	88	0.99911	0.00089	60.67	74	74,069	72,931	2,276	0.96927	0.03073	11.62
20	98,942	98,896	93	0.99906	0.00094	59.72	75	71,793	70,560	2,466	0.96565	0.03435	10.97
21	98,849	98,802	95	0.99904	0.00096	58.78	76	69,327	67,997	2,661	0.96162	0.03838	10.35
22	98,754	98,707	94	0.99905	0.00095	57.83	77	66,666	65,238	2,856	0.95716	0.04284	9.74
23	98,660	98,615	91	0.99908	0.00092	56.89	78	63,810	62,286	3,049	0.95222	0.04778	9.15
24	98,569	98,526	87	0.99912	0.00088	55.94	79	60,761	59,143	3,236	0.94674	0.05326	8.59
25	98,482	98,441	83	0.99916	0.00084	54.99	80	57,525	55,819	3,412	0.94068	0.05932	8.04
26	98,399	98,360	79	0.99920	0.00080	54.03	81	54,113	52,326	3,574	0.93396	0.06604	7.52
27	98,320	98,282	77	0.99922	0.00078	53.08	82	50,539	48,678	3,723	0.92633	0.07367	7.01
28	98,243	98,205	76	0.99923	0.00077	52.12	83	46,816	44,886	3,860	0.91754	0.08246	6.53
29	98,167	98,129	77	0.99922	0.00078	51.16	84	42,956	40,966	3,981	0.90733	0.09267	6.07
30	98,090	98,052	77	0.99921	0.00079	50.20	85	38,975	36,940	4,071	0.89556	0.10444	5.64
31	98,013	97,974	79	0.99919	0.00081	49.24	86	34,904	32,853	4,102	0.88248	0.11752	5.24
32	97,934	97,894	81	0.99917	0.00083	48.28	87	30,802	28,776	4,053	0.86842	0.13158	4.87
33	97,853	97,811	84	0.99914	0.00086	47.32	88	26,749	24,792	3,914	0.85369	0.14631	4.53
34	97,769	97,725	88	0.99910	0.00090	46.36	89	22,835	20,992	3,686	0.83858	0.16142	4.23
35	97,681	97,635	92	0.99906	0.00094	45.40	90	19,149	17,461	3,376	0.82368	0.17632	3.94
36	97,589	97,541	96	0.99902	0.00098	44.44	91	15,773	14,267	3,012	0.80904	0.19096	3.68
37	97,493	97,443	100	0.99897	0.00103	43.48	92	12,761	11,437	2,649	0.79242	0.20758	3.43
38	97,393	97,341	105	0.99892	0.00108	42.53	93	10,112	8,974	2,276	0.77494	0.22506	3.20
39	97,288	97,232	112	0.99885	0.00115	41.57	94	7,836	6,883	1,906	0.75679	0.24321	2.98
40	97,176	97,117	119	0.99878	0.00122	40.62	95	5,930	5,152	1,556	0.73754	0.26246	2.78
41	97,057	96,994	126	0.99870	0.00130	39.67	96	4,374	3,756	1,237	0.71726	0.28274	2.59
42	96,931	96,864	135	0.99861	0.00139	38.72	97	3,137	2,660	954	0.69603	0.30397	2.42
43	96,796	96,724	145	0.99850	0.00150	37.77	98	2,183	1,827	712	0.67396	0.32604	2.26
44	96,651	96,573	157	0.99838	0.00162	36.83	99	1,471	1,215	513	0.65118	0.34882	2.11
45	96,494	96,410	169	0.99825	0.00175	35.89	100	958	780	357	0.62782	0.37218	1.97
46	96,325	96,234	183	0.99810	0.00190	34.95							
47	96,142	96,043	198	0.99794	0.00206	34.02							
48	95,944	95,836	216	0.99775	0.00225	33.08							
49	95,728	95,611	235	0.99755	0.00245	32.16							
50	95,493	95,365	256	0.99732	0.00268	31.24							
51	95,237	95,097	280	0.99706	0.00294	30.32							
52	94,957	94,804	307	0.99677	0.00323	29.41							
53	94,650	94,482	336	0.99645	0.00355	28.50							
54	94,314	94,130	369	0.99609	0.00391	27.60							

Table A1.6

Non-Māori Female Population Period Life Table, 2005-07

Exact age (years)	Out of 100,000 females born			Probability that a female who reaches this age		Expected number of years of life remaining at age x	Exact age (years)	Out of 100,000 females born			Probability that a female who reaches this age		Expected number of years of life remaining at age x
	Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year			Number alive at exact age	Average number alive in the age interval	Number dying in the age interval	Lives another year	Dies within a year	
x	l_x	L_x	d_x	p_x	q_x	e_x	x	l_x	L_x	d_x	p_x	q_x	e_x
0	100,000	99,679	367	0.99633	0.00367	82.96	55	96,132	95,991	283	0.99706	0.00294	29.80
1	99,633	99,613	40	0.99960	0.00040	82.27	56	95,849	95,695	308	0.99679	0.00321	28.88
2	99,593	99,585	16	0.99984	0.00016	81.30	57	95,541	95,374	334	0.99650	0.00350	27.97
3	99,577	99,570	15	0.99985	0.00015	80.31	58	95,207	95,025	365	0.99617	0.00383	27.07
4	99,562	99,555	14	0.99986	0.00014	79.33	59	94,842	94,643	398	0.99580	0.00420	26.17
5	99,548	99,542	13	0.99987	0.00013	78.34	60	94,444	94,227	435	0.99539	0.00461	25.28
6	99,535	99,529	12	0.99988	0.00012	77.35	61	94,009	93,771	476	0.99494	0.00506	24.40
7	99,523	99,518	10	0.99990	0.00010	76.36	62	93,533	93,273	521	0.99443	0.00557	23.52
8	99,513	99,509	9	0.99991	0.00009	75.37	63	93,012	92,727	571	0.99386	0.00614	22.65
9	99,504	99,500	8	0.99992	0.00008	74.37	64	92,441	92,128	626	0.99323	0.00677	21.78
10	99,496	99,492	8	0.99992	0.00008	73.38	65	91,815	91,472	687	0.99252	0.00748	20.93
11	99,488	99,484	8	0.99992	0.00008	72.38	66	91,128	90,752	752	0.99175	0.00825	20.08
12	99,480	99,476	9	0.99991	0.00009	71.39	67	90,376	89,964	824	0.99088	0.00912	19.25
13	99,471	99,465	12	0.99988	0.00012	70.40	68	89,552	89,100	904	0.98991	0.01009	18.42
14	99,459	99,452	15	0.99985	0.00015	69.40	69	88,648	88,152	993	0.98880	0.01120	17.60
15	99,444	99,434	20	0.99980	0.00020	68.41	70	87,655	87,109	1,092	0.98754	0.01246	16.79
16	99,424	99,412	25	0.99975	0.00025	67.43	71	86,563	85,961	1,204	0.98609	0.01391	16.00
17	99,399	99,385	29	0.99971	0.00029	66.45	72	85,359	84,694	1,330	0.98442	0.01558	15.22
18	99,370	99,354	33	0.99967	0.00033	65.46	73	84,029	83,295	1,468	0.98253	0.01747	14.45
19	99,337	99,319	36	0.99964	0.00036	64.49	74	82,561	81,751	1,621	0.98037	0.01963	13.70
20	99,301	99,282	38	0.99962	0.00038	63.51	75	80,940	80,047	1,787	0.97792	0.02208	12.96
21	99,263	99,244	38	0.99962	0.00038	62.53	76	79,153	78,171	1,965	0.97517	0.02483	12.25
22	99,225	99,207	36	0.99964	0.00036	61.56	77	77,188	76,111	2,155	0.97208	0.02792	11.54
23	99,189	99,172	34	0.99966	0.00034	60.58	78	75,033	73,854	2,358	0.96857	0.03143	10.86
24	99,155	99,140	31	0.99969	0.00031	59.60	79	72,675	71,388	2,574	0.96458	0.03542	10.20
25	99,124	99,110	28	0.99972	0.00028	58.62	80	70,101	68,700	2,802	0.96003	0.03997	9.55
26	99,096	99,083	26	0.99974	0.00026	57.63	81	67,299	65,780	3,038	0.95486	0.04514	8.93
27	99,070	99,058	25	0.99975	0.00025	56.65	82	64,261	62,622	3,278	0.94899	0.05101	8.33
28	99,045	99,032	26	0.99974	0.00026	55.66	83	60,983	59,224	3,518	0.94231	0.05769	7.75
29	99,019	99,006	27	0.99973	0.00027	54.68	84	57,465	55,587	3,757	0.93462	0.06538	7.19
30	98,992	98,978	29	0.99971	0.00029	53.69	85	53,708	51,711	3,994	0.92564	0.07436	6.66
31	98,963	98,947	33	0.99967	0.00033	52.71	86	49,714	47,605	4,219	0.91513	0.08487	6.16
32	98,930	98,912	37	0.99963	0.00037	51.73	87	45,495	43,286	4,418	0.90289	0.09711	5.68
33	98,893	98,873	41	0.99959	0.00041	50.75	88	41,077	38,791	4,572	0.88870	0.11130	5.24
34	98,852	98,829	46	0.99953	0.00047	49.77	89	36,505	34,207	4,597	0.87407	0.12593	4.83
35	98,806	98,781	51	0.99948	0.00052	48.79	90	31,908	29,644	4,529	0.85805	0.14195	4.46
36	98,755	98,726	58	0.99941	0.00059	47.81	91	27,379	25,200	4,358	0.84082	0.15918	4.11
37	98,697	98,665	65	0.99934	0.00066	46.84	92	23,021	20,979	4,085	0.82256	0.17744	3.80
38	98,632	98,596	72	0.99927	0.00073	45.87	93	18,936	17,075	3,722	0.80345	0.19655	3.51
39	98,560	98,521	79	0.99920	0.00080	44.91	94	15,214	13,569	3,291	0.78367	0.21633	3.24
40	98,481	98,438	86	0.99913	0.00087	43.94	95	11,923	10,509	2,828	0.76279	0.23721	3.00
41	98,395	98,349	93	0.99905	0.00095	42.98	96	9,095	7,917	2,357	0.74087	0.25913	2.78
42	98,302	98,252	101	0.99897	0.00103	42.02	97	6,738	5,788	1,900	0.71801	0.28199	2.57
43	98,201	98,147	109	0.99889	0.00111	41.06	98	4,838	4,099	1,479	0.69430	0.30570	2.38
44	98,092	98,034	117	0.99881	0.00119	40.11	99	3,359	2,805	1,109	0.66989	0.33011	2.21
45	97,975	97,912	126	0.99871	0.00129	39.15	100	2,250	1,851	799	0.64490	0.35510	2.06
46	97,849	97,781	136	0.99861	0.00139	38.20							
47	97,713	97,640	147	0.99850	0.00150	37.26							
48	97,566	97,487	158	0.99838	0.00162	36.31							
49	97,408	97,323	171	0.99824	0.00176	35.37							
50	97,237	97,144	186	0.99809	0.00191	34.43							
51	97,051	96,950	202	0.99792	0.00208	33.50							
52	96,849	96,740	219	0.99774	0.00226	32.57							
53	96,630	96,511	239	0.99753	0.00247	31.64							
54	96,391	96,262	259	0.99731	0.00269	30.72							

**Appendix 2: Five-year age group mortality and survivorship rates,
2005–07**

Table A2.1

Mortality and Survivorship Rates
By five-year age group and sex
 Total, Māori and Non-Māori populations, 2005–07 period life table

Exact age (years)	Total population				Māori population				Non-Māori population			
	Probability that a person who reaches this age:		Central annual death rate for age group x to x+5	Proportion of age group x to x+5 who will survive another five years	Probability that a person who reaches this age:		Central annual death rate for age group x to x+5	Proportion of age group x to x+5 who will survive another five years	Probability that a person who reaches this age:		Central annual death rate for age group x to x+5	Proportion of age group x to x+5 who will survive another five years
	Lives another five years	Dies within five years			Lives another five years	Dies within five years			Lives another five years	Dies within five years		
x	${}_5p_x$	${}_5q_x$	${}_5m_x$	${}_5S_x$	${}_5p_x$	${}_5q_x$	${}_5m_x$	${}_5S_x$	${}_5p_x$	${}_5q_x$	${}_5m_x$	${}_5S_x$
Male												
0	0.99312	0.00688	0.00138	0.99874	0.99034	0.00966	0.00195	0.99789	0.99418	0.00582	0.00117	0.99904
5	0.99929	0.00071	0.00014	0.99929	0.99892	0.00108	0.00022	0.99905	0.99946	0.00054	0.00011	0.99940
10	0.99897	0.00103	0.00021	0.99780	0.99869	0.00131	0.00026	0.99681	0.99908	0.00092	0.00018	0.99800
15	0.99638	0.00362	0.00073	0.99529	0.99424	0.00576	0.00115	0.99239	0.99667	0.00333	0.00067	0.99574
20	0.99466	0.00534	0.00107	0.99481	0.99161	0.00839	0.00168	0.99197	0.99535	0.00465	0.00093	0.99569
25	0.99510	0.00490	0.00098	0.99525	0.99213	0.00787	0.00158	0.99121	0.99602	0.00398	0.00080	0.99601
30	0.99514	0.00486	0.00097	0.99446	0.98978	0.01022	0.00205	0.98768	0.99583	0.00417	0.00084	0.99538
35	0.99359	0.00641	0.00129	0.99244	0.98545	0.01455	0.00293	0.98291	0.99483	0.00517	0.00104	0.99400
40	0.99121	0.00879	0.00177	0.98960	0.98005	0.01995	0.00403	0.97607	0.99298	0.00702	0.00141	0.99146
45	0.98764	0.01236	0.00249	0.98462	0.97123	0.02877	0.00583	0.96396	0.98963	0.01037	0.00208	0.98697
50	0.98097	0.01903	0.00384	0.97590	0.95505	0.04495	0.00918	0.94241	0.98379	0.01621	0.00327	0.97929
55	0.96999	0.03001	0.00609	0.96185	0.92761	0.07239	0.01499	0.90930	0.97402	0.02598	0.00526	0.96657
60	0.95219	0.04781	0.00978	0.93893	0.88874	0.11126	0.02349	0.86529	0.95760	0.04240	0.00865	0.94483
65	0.92317	0.07683	0.01594	0.90131	0.83884	0.16116	0.03495	0.80913	0.92952	0.07048	0.01457	0.90791
70	0.87458	0.12542	0.02665	0.83875	0.77457	0.22543	0.05069	0.73280	0.88146	0.11854	0.02509	0.84523
75	0.79592	0.20408	0.04521	0.74315	0.67892	0.32108	0.07632	0.61367	0.80126	0.19874	0.04387	0.74618
80	0.67593	0.32407	0.07689	0.59241	0.53329	0.46671	0.12272	0.46358	0.67753	0.32247	0.07644	0.59484
85	0.48790	0.51210	0.13864	0.40541	0.37483	0.62517	0.18911	0.31240	0.49131	0.50869	0.13734	0.40887
90	0.30602	0.69398	0.22611	0.24415	0.23037	0.76963	0.27934	0.18454	0.30968	0.69032	0.22397	0.24752
Female												
0	0.99437	0.00563	0.00113	0.99893	0.99176	0.00824	0.00166	0.99827	0.99548	0.00452	0.00091	0.99919
5	0.99943	0.00057	0.00011	0.99946	0.99909	0.00091	0.00018	0.99913	0.99948	0.00052	0.00010	0.99954
10	0.99929	0.00071	0.00014	0.99870	0.99871	0.00129	0.00026	0.99763	0.99948	0.00052	0.00010	0.99906
15	0.99809	0.00191	0.00038	0.99795	0.99684	0.00316	0.00063	0.99692	0.99856	0.00144	0.00029	0.99827
20	0.99808	0.00192	0.00038	0.99833	0.99708	0.00292	0.00058	0.99694	0.99822	0.00178	0.00036	0.99847
25	0.99839	0.00161	0.00032	0.99795	0.99654	0.00346	0.00069	0.99560	0.99867	0.00133	0.00027	0.99848
30	0.99736	0.00264	0.00053	0.99677	0.99448	0.00552	0.00111	0.99324	0.99812	0.00188	0.00038	0.99747
35	0.99618	0.00382	0.00076	0.99526	0.99200	0.00800	0.00161	0.99053	0.99671	0.00329	0.00066	0.99580
40	0.99413	0.00587	0.00118	0.99276	0.98878	0.01122	0.00226	0.98604	0.99486	0.00514	0.00103	0.99374
45	0.99126	0.00874	0.00176	0.98922	0.98259	0.01741	0.00351	0.97721	0.99247	0.00753	0.00151	0.99071
50	0.98682	0.01318	0.00265	0.98344	0.97066	0.02934	0.00595	0.96140	0.98864	0.01136	0.00228	0.98578
55	0.97949	0.02051	0.00414	0.97409	0.95053	0.04947	0.01013	0.93629	0.98244	0.01756	0.00354	0.97776
60	0.96782	0.03218	0.00653	0.95923	0.91998	0.08002	0.01663	0.90024	0.97216	0.02784	0.00564	0.96420
65	0.94892	0.05108	0.01046	0.93415	0.87811	0.12189	0.02588	0.85351	0.95469	0.04531	0.00926	0.94075
70	0.91648	0.08352	0.01738	0.89240	0.82619	0.17381	0.03797	0.79494	0.92339	0.07661	0.01588	0.89773
75	0.86257	0.13743	0.02937	0.81839	0.75615	0.24385	0.05537	0.70486	0.86609	0.13391	0.02856	0.82175
80	0.76156	0.23844	0.05371	0.68602	0.63927	0.36073	0.08787	0.57177	0.76615	0.23385	0.05256	0.69122
85	0.59034	0.40966	0.10244	0.49154	0.48657	0.51343	0.13983	0.40627	0.59410	0.40590	0.10111	0.49381
90	0.37143	0.62857	0.18877	0.28998	0.30190	0.69810	0.22770	0.23651	0.37367	0.62633	0.18771	0.29227

Appendix 3: Cohort life tables by birth cohort

Table A3.1

Cohort Life Expectancy
At selected ages, by sex
 Birth cohorts 1876–1933

Year of birth	Male life expectancy at exact age (years)					Female life expectancy at exact age (years)				
	0	1	15	45	65	0	1	15	45	65
Years of life										
1876	50.4	57.8	50.8	27.7	12.9	54.0	60.9	53.6	30.3	15.1
1877	51.1	57.9	50.8	27.7	13.0	54.5	60.8	53.7	30.3	15.0
1878	51.0	58.0	50.6	27.5	13.0	55.1	61.4	54.0	30.4	15.1
1879	50.7	58.3	50.7	27.6	13.0	54.6	61.5	54.0	30.5	15.3
1880	52.2	59.0	51.0	27.7	13.1	56.3	62.5	54.4	30.7	15.4
1881	52.0	58.8	50.8	27.7	13.1	56.2	62.4	54.5	30.8	15.5
1882	52.1	58.8	50.5	27.6	13.1	56.3	62.7	54.6	30.8	15.6
1883	52.2	59.0	50.5	27.7	13.0	56.6	63.2	54.8	30.8	15.6
1884	53.1	59.1	50.4	27.7	13.0	58.1	63.8	55.2	31.1	15.6
1885	52.4	59.0	50.2	27.7	12.9	57.3	63.8	55.3	31.3	15.7
1886	52.1	58.8	49.8	27.7	12.9	57.5	64.1	55.4	31.4	15.9
1887	52.5	58.5	49.3	27.5	12.8	59.2	64.8	55.8	31.6	16.1
1888	53.4	58.7	49.2	27.6	12.9	59.8	64.9	55.8	31.5	16.1
1889	52.9	58.3	49.0	27.7	12.9	59.1	64.7	55.8	31.6	16.1
1890	52.0	57.8	48.4	27.7	12.9	59.1	65.0	56.1	31.7	16.2
1891	51.1	57.4	47.9	27.6	12.7	58.9	64.9	55.9	31.8	16.3
1892	50.9	57.1	47.5	27.8	12.8	59.6	65.4	56.2	32.0	16.4
1893	50.9	56.8	46.6	27.6	12.8	60.5	66.2	56.4	32.0	16.4
1894	50.9	56.5	46.2	27.5	12.7	60.9	66.6	56.6	32.0	16.4
1895	51.6	57.2	46.8	27.6	12.7	61.1	66.9	56.9	32.1	16.5
1896	53.2	58.4	48.0	27.6	12.7	62.2	67.3	57.2	32.3	16.6
1897	55.1	60.4	50.2	27.7	12.7	62.2	67.4	57.4	32.5	16.6
1898	56.0	62.1	52.0	27.8	12.8	62.5	68.1	57.9	33.0	16.9
1899	56.7	63.1	52.9	27.6	12.7	61.8	67.8	57.6	32.5	16.5
1900	58.2	63.7	53.4	27.9	12.8	63.1	68.1	58.0	32.7	16.6
1901	58.8	64.3	53.9	28.1	12.9	63.8	68.8	58.5	33.0	16.9
1902	59.0	65.0	54.3	28.3	13.1	63.8	69.4	58.8	33.3	17.1
1903	59.6	65.1	54.2	28.2	13.0	65.0	69.9	59.1	33.4	17.2
1904	60.0	65.0	54.0	28.2	13.1	65.5	69.8	59.2	33.4	17.2
1905	60.2	64.9	54.2	28.2	13.1	66.1	70.1	59.6	33.6	17.4
1906	60.2	65.1	54.5	28.4	13.3	66.3	70.7	60.1	33.9	17.6
1907	<i>59.7</i>	<i>65.2</i>	<i>54.4</i>	<i>28.4</i>	<i>13.5</i>	<i>66.0</i>	<i>70.8</i>	<i>60.0</i>	<i>33.8</i>	<i>17.6</i>
1908	<i>61.2</i>	<i>65.5</i>	<i>54.5</i>	<i>28.5</i>	<i>13.5</i>	<i>67.7</i>	<i>71.4</i>	<i>60.6</i>	<i>34.2</i>	<i>17.9</i>
1909	<i>61.2</i>	<i>65.4</i>	<i>54.2</i>	<i>28.4</i>	<i>13.6</i>	<i>68.1</i>	<i>71.6</i>	<i>60.7</i>	<i>34.3</i>	<i>18.0</i>
1910	<i>61.3</i>	<i>65.5</i>	<i>54.3</i>	<i>28.6</i>	<i>13.7</i>	<i>67.9</i>	<i>71.5</i>	<i>60.6</i>	<i>34.2</i>	<i>17.9</i>
1911	<i>61.9</i>	<i>65.4</i>	<i>54.4</i>	<i>28.8</i>	<i>13.9</i>	<i>68.7</i>	<i>71.7</i>	<i>60.7</i>	<i>34.2</i>	<i>18.0</i>
1912	<i>62.0</i>	<i>65.3</i>	<i>54.3</i>	<i>28.9</i>	<i>14.0</i>	<i>69.5</i>	<i>72.3</i>	<i>61.4</i>	<i>34.7</i>	<i>18.3</i>
1913	<i>61.7</i>	<i>65.3</i>	<i>54.2</i>	<i>29.1</i>	<i>14.3</i>	<i>69.3</i>	<i>72.5</i>	<i>61.6</i>	<i>34.9</i>	<i>18.5</i>
1914	<i>61.9</i>	<i>65.2</i>	<i>54.2</i>	<i>29.2</i>	<i>14.5</i>	<i>70.2</i>	<i>72.9</i>	<i>61.9</i>	<i>35.0</i>	<i>18.5</i>
1915	<i>61.7</i>	<i>65.0</i>	<i>54.0</i>	<i>29.4</i>	<i>14.6</i>	<i>70.2</i>	<i>72.9</i>	<i>62.0</i>	<i>35.1</i>	<i>18.8</i>
1916	<i>62.1</i>	<i>65.3</i>	<i>54.1</i>	<i>29.9</i>	<i>14.9</i>	<i>70.7</i>	<i>73.5</i>	<i>62.5</i>	<i>35.3</i>	<i>18.9</i>
1917	<i>62.5</i>	<i>65.4</i>	<i>54.1</i>	<i>30.2</i>	<i>15.5</i>	<i>71.2</i>	<i>73.9</i>	<i>62.6</i>	<i>35.4</i>	<i>19.0</i>
1918	<i>61.6</i>	<i>64.6</i>	<i>53.2</i>	<i>30.0</i>	<i>15.2</i>	<i>71.0</i>	<i>73.8</i>	<i>62.5</i>	<i>35.4</i>	<i>18.9</i>
1919	<i>61.8</i>	<i>64.8</i>	<i>53.5</i>	<i>30.2</i>	<i>15.6</i>	<i>70.8</i>	<i>73.5</i>	<i>62.4</i>	<i>35.3</i>	<i>19.0</i>
1920	<i>63.7</i>	<i>66.9</i>	<i>55.1</i>	<i>30.6</i>	<i>15.5</i>	<i>71.7</i>	<i>74.6</i>	<i>62.9</i>	<i>35.4</i>	<i>19.0</i>
1921	<i>63.4</i>	<i>66.5</i>	<i>54.8</i>	<i>30.5</i>	<i>15.6</i>	<i>72.2</i>	<i>74.8</i>	<i>63.2</i>	<i>35.8</i>	<i>19.3</i>
1922	<i>65.0</i>	<i>67.9</i>	<i>56.2</i>	<i>31.2</i>	<i>16.2</i>	<i>72.5</i>	<i>74.9</i>	<i>63.4</i>	<i>35.8</i>	<i>19.3</i>
1923	<i>66.1</i>	<i>69.1</i>	<i>57.5</i>	<i>31.4</i>	<i>16.5</i>	<i>72.5</i>	<i>75.0</i>	<i>63.5</i>	<i>35.9</i>	<i>19.5</i>
1924	<i>66.8</i>	<i>69.6</i>	<i>58.0</i>	<i>31.2</i>	<i>16.4</i>	<i>73.3</i>	<i>75.7</i>	<i>64.1</i>	<i>36.3</i>	<i>19.9</i>
1925	<i>67.5</i>	<i>70.2</i>	<i>58.5</i>	<i>31.5</i>	<i>16.4</i>	<i>73.7</i>	<i>76.1</i>	<i>64.5</i>	<i>36.6</i>	<i>20.1</i>
1926	<i>68.0</i>	<i>70.8</i>	<i>59.0</i>	<i>31.8</i>	<i>16.6</i>	<i>73.8</i>	<i>76.1</i>	<i>64.5</i>	<i>36.7</i>	<i>20.1</i>
1927	<i>68.3</i>	<i>71.0</i>	<i>59.2</i>	<i>32.0</i>	<i>16.9</i>	<i>74.3</i>	<i>76.5</i>	<i>64.8</i>	<i>36.8</i>	<i>20.2</i>
1928	<i>68.5</i>	<i>71.3</i>	<i>59.5</i>	<i>32.3</i>	<i>16.9</i>	<i>74.6</i>	<i>76.6</i>	<i>64.7</i>	<i>36.7</i>	<i>20.1</i>
1929	<i>68.7</i>	<i>71.4</i>	<i>59.7</i>	<i>32.5</i>	<i>17.0</i>	<i>75.0</i>	<i>77.1</i>	<i>65.1</i>	<i>37.1</i>	<i>20.4</i>
1930	<i>69.3</i>	<i>71.9</i>	<i>60.3</i>	<i>32.9</i>	<i>17.5</i>	<i>74.7</i>	<i>76.8</i>	<i>64.8</i>	<i>36.7</i>	<i>20.2</i>
1931	<i>69.7</i>	<i>72.3</i>	<i>60.7</i>	<i>33.3</i>	<i>17.7</i>	<i>75.3</i>	<i>77.2</i>	<i>65.3</i>	<i>37.2</i>	<i>20.4</i>
1932	<i>69.9</i>	<i>72.4</i>	<i>60.7</i>	<i>33.5</i>	<i>18.0</i>	<i>75.1</i>	<i>77.2</i>	<i>65.5</i>	<i>37.3</i>	<i>20.5</i>
1933	<i>70.3</i>	<i>73.0</i>	<i>61.2</i>	<i>34.0</i>	<i>18.2</i>	<i>75.4</i>	<i>77.4</i>	<i>65.6</i>	<i>37.3</i>	<i>20.7</i>

Source: New Zealand cohort life tables

Note: The italicised life expectancies for 1907–1933 birth cohorts are partly based on projected mortality experiences at ages above 74 years.

Table A3.2

Age by which 25, 50 and 75 Percent of Birth Cohort Have Died
By sex
 Birth cohorts 1876–1939

Year of birth	Male quartiles			Female quartiles		
	25 percent (Q1)	50 percent (Q2)	75 percent (Q3)	25 percent (Q1)	50 percent (Q2)	75 percent (Q3)
Age (years)						
1876	17.3	63.0	76.9	22.6	67.1	80.8
1877	20.3	63.4	77.1	24.6	67.5	80.7
1878	20.5	63.1	76.9	26.1	68.0	80.8
1879	19.4	62.7	76.9	24.4	67.8	80.9
1880	25.6	64.1	77.4	30.5	69.2	81.5
1881	24.9	63.9	77.3	29.7	69.1	81.6
1882	27.0	63.8	77.3	30.2	69.2	81.7
1883	28.3	64.0	77.2	31.3	69.4	81.7
1884	31.6	64.6	77.4	35.2	70.7	82.2
1885	29.8	64.2	77.3	32.9	70.5	82.3
1886	29.1	64.0	77.2	32.7	70.6	82.4
1887	29.3	64.0	76.9	38.0	71.6	82.9
1888	29.1	64.5	77.2	40.5	71.8	83.1
1889	28.0	64.3	77.1	37.8	71.7	82.9
1890	26.6	63.7	76.8	37.5	72.0	83.0
1891	25.2	63.1	76.5	36.5	71.7	83.0
1892	24.3	62.8	76.6	38.7	72.2	83.3
1893	23.7	62.5	76.4	42.6	72.7	83.5
1894	23.0	62.5	76.1	44.8	72.9	83.6
1895	22.3	63.4	76.4	45.4	73.1	83.8
1896	22.1	64.9	77.0	48.3	73.7	84.2
1897	28.3	66.5	77.7	48.3	73.7	84.4
1898	36.7	67.3	78.1	48.4	74.3	84.8
1899	41.9	67.7	78.0	47.6	73.7	84.2
1900	46.7	68.6	78.6	51.5	74.3	84.6
1901	48.5	69.0	78.8	52.9	74.8	85.0
1902	49.5	69.1	79.1	52.8	75.1	85.3
1903	50.7	69.3	79.1	55.5	75.5	85.7
1904	51.4	69.2	79.2	57.0	75.8	85.5
1905	52.3	69.3	79.3	58.1	76.3	86.0
1906	52.1	69.4	79.5	58.5	76.8	86.3
1907	50.8	69.2	79.6	58.1	76.5	86.3
1908	53.7	69.9	79.8	60.6	77.5	86.9
1909	53.4	69.5	80.0	61.0	77.6	87.1
1910	53.4	70.0	80.0	60.8	77.2	86.9
1911	53.9	70.1	80.5	61.8	77.6	87.3
1912	53.7	70.4	80.6	63.1	78.5	87.7
1913	53.0	70.2	80.9	62.5	78.6	88.1
1914	52.9	70.2	81.1	63.7	79.0	88.3
1915	52.1	70.2	81.3	63.4	79.1	88.5
1916	52.1	70.7	81.7	64.4	79.6	88.6
1917	52.1	71.1	82.4	64.8	79.9	88.8
1918	50.1	70.3	82.0	64.8	79.7	88.7
1919	50.2	70.7	82.5	64.0	79.7	88.7
1920	54.9	72.1	83.0	65.4	80.3	88.7
1921	54.0	71.8	82.9	65.9	80.6	89.3
1922	56.2	73.1	84.2	66.4	80.9	89.3
1923	58.0	73.9	84.8	66.1	81.1	89.5
1924	58.8	74.1	84.7	67.0	81.8	90.0
1925	59.8	74.7	84.9	67.5	82.2	90.2
1926	60.5	75.2	85.3	67.5	82.2	90.3
1927	60.7	75.7	85.5	68.2	82.4	90.5
1928	61.0	76.1	85.7	68.6	82.4	90.4
1929	61.4	76.3	85.9	69.0	83.0	90.7
1930	61.7	77.1	86.5	68.3	82.6	90.4
1931	62.2	77.5	86.9	69.5	83.1	90.7
1932	62.3	77.8	87.2	69.6	83.1	90.8
1933	63.0	78.3	87.6	69.5	83.3	91.0
1934	63.2	..	..	70.1	..	..
1935	63.2	..	..	70.1	..	..
1936	63.1	..	..	..	..	..
1937	64.5	..	..	..	..	..
1938	64.5	..	..	..	..	..
1939	66.1	..	..	..	..	..

Source: New Zealand cohort life tables

Note: The italicised quartiles are partly based on projected mortality experiences at ages above 74 years.

Symbol: .. not available