Foreword

This statistical report is designed to assist implementation of the *Health of Older People Strategy, Health Sector Action to 2010 to Support Positive Ageing*. It provides information about New Zealand’s older population to help the Ministry of Health, District Health Boards and service providers to plan for and deliver services for current and future generations of older people.

The Ministry intends that the information in this report will form the basis of a repository of statistical information about older people’s health on the Ministry of Health website. This statistical information will be gradually expanded and updated at intervals, as the data become available. A major focus of future data collection will be better information to assess progress in, and develop outcome measures for, implementing the Health of Older People Strategy. This will include monitoring development of community-based care, early intervention to support ageing in place, and an integrated continuum of care.

Currently 12 percent of people in New Zealand are aged 65 and over, but by 2051 older people will comprise 25 percent of the population. This statistical report and subsequent updates will provide a basis for assessing the impact this growth may have on future demand for health and disability support services, and for planning to manage that demand.

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Director-General of Health
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Chapter 1: Introduction

Purpose of the report

This statistical report is designed to assist implementation of the Health of Older People Strategy, Health Sector Action to 2010 to Support Positive Ageing (Associate Minister of Health and Minister for Disability Issues 2002). It provides information about New Zealand’s older population to help the Ministry of Health, District Health Boards (DHBs) and service providers to plan for and deliver services to current and future cohorts of older people. The information also provides a baseline from which to monitor changes, over time, in the population group and in the services they use.

Structure of the report

The report sets out what is known about the current and future older population, including the size and composition of the older population (Chapter 2), their socio-demographic characteristics (Chapter 3), health status (Chapter 4), current expenditure on health and disability support services for older people (Chapter 5), utilisation and cost of health services funded through Vote Health (Chapter 6), Disability Support Service utilisation and cost (Chapter 7) and ACC service utilisation and cost (Chapter 8).

Chapter 9 discusses gaps in information, the Ministry of Health programme of work to improve the quality and coverage of data collection, and issues that need to be taken into account in projecting future demand for and the cost of health care.
Data sources and limitations

This report uses data from a variety of sources. Data from published sources are acknowledged in the text, but much of the data has not previously been published. Data in Chapter 2 on the changing size and composition of the New Zealand population is from Statistics New Zealand Censuses of Population and Dwellings for years up to 1996. Projections for ethnic groups are based on the 1996 Census; projections for the total population are based on the Statistics New Zealand 1999 update. Appendix 1a provides details on the assumptions underlying the projections used.

The total population projections for 2001 differ slightly from the actual figures recorded at the 2001 Census. The difference for the Māori population is greater, however, because a different question on ethnicity was asked in 1996, resulting in an increase in the number of Māori recorded between the 1991 and 1996 Censuses, but little change between the 1996 and 2001 Censuses (see Appendix 1b). Statistics New Zealand will be producing new population projections based on the 2001 Census in 2003.

Data from the Statistics New Zealand 2001 Household Disability Survey and 2001 Survey of Residential Facilities have been used for the section on prevalence of disability in Chapter 4. Calculations for mortality and hospitalisation rates in Chapter 4 and for hospital inpatient services in Chapter 6 used the national minimum data set held by New Zealand Health Information Service (NZHIS). Information on primary care, laboratory and pharmaceutical utilisation and costs was compiled by the Ministry of Health from survey as well as routine data collections. Data for mental health services is from the mental health information national collection (MHINC) held by NZHIS and disability support service utilisation and cost have been obtained from the Ministry’s Client Claims Processing System or from service providers.

The data on per capita expenditure for health services in Chapters 5 and 6 are derived from data sets developed to calculate population-based funding. They therefore provide an indication of actual expenditure. The data in Chapter 8 on ACC claims and costs are derived from the ACC data warehouse.
The data presented are the latest available at the time of writing. Where possible, data are presented in either 5-year or 10-year age groups for the total population, male and female, Māori and Pacific peoples. While most data can be provided for male and female, there are gaps in health data for Māori and Pacific people and very little data for other ethnic minority communities.

Data on service utilisation and costs relate only to publicly funded services (excluding privately funded health care and unsubsidised residential care). Trends in service utilisation and cost are provided where this is available (notably for inpatient and residential care), but for most services there is insufficient reliable historical information. Some data are also provided at individual DHB level.

Base tables for most figures containing data held by the Ministry of Health will be available from the Ministry’s website (http://www.moh.govt.nz). It is planned to update the report regularly, adding new data as it becomes available.

A major focus of future data collection will be development of outcome measures and the extent to which service utilisation patterns and trends demonstrate a focus on community-based care; early intervention to support ageing in place; and development of an integrated continuum of care approach consistent with implementing the Health of Older People Strategy. Further work will also be carried out to assess the impact of ageing on New Zealand’s health and disability support services.

**Overview**

The New Zealand population is ageing, with the proportion of people in the population aged 65 and over increasing from 12 percent in 2001 to 26 percent by 2051. By about 2021 there will be more people over the age of 65 than under the age of 15. The biggest increase in older people will be amongst people aged 85 and over, due to increased longevity and the post World War II baby boom generation reaching this age group from about 2035.
The older population will also become more diverse, with increasing proportions of Māori, Pacific and Asian peoples reaching 65 and over, both as a result of increasing life expectancy and larger birth cohorts reaching older age. Population ageing will affect DHBs differently, with some of the smaller boards already having up to 15 percent of their population aged 65 and over. DHBs in areas where there has been significant growth in retirement settlements are already experiencing higher demand for services in those areas.

Life expectancy is increasing and, since the mid-1980s, has been increasing more for males than for females. However, women can still expect to live longer than men, with life expectancy at birth currently 80.4 years for females and 75.2 years for males. Life expectancy for Māori and Pacific peoples is still lower than for the general population, due to higher mortality rates at younger ages, particularly for cardiovascular conditions and cancer. Life expectancy for Māori and Pacific peoples is, however, increasing.

Older people are significant users of both health and disability support services. Vote Health expenditure for the financial year 2001/02 will be about $6,850 million. Around 39 percent of that expenditure will be for the 12 percent of the population aged 65 and over.

Older people currently use hospital services, pharmaceuticals and laboratory tests more than people aged under 65. This is reflected in higher per capita public expenditure on these services for older people than for younger age groups. The pattern is different for general practice services, however. These are used predominantly by the very young and very old, but because of the higher government subsidy for children under six, public per capita expenditure is much higher for young children than for any other age group.

Older people are also lower users of ACC funded services. In 2000/01 ACC spent $1,110 million for the treatment, rehabilitation and support of people who had an accident. Only 3.9 percent of this was for people aged 65 and over. The largest number of claims for ACC funding was from men aged 15 to 64.
Public hospital admissions for older people have been increasing over the last 10 years. For most of the time this has been at an average yearly rate of 3.1 percent, but for the last four years this has increased to 4.3 percent per year. Over this period the rate of increase has been at least 1 percent higher than for people under the age of 65.

Part of the increase in public hospital admissions has been because increases in day treatments and reductions in length of stay in hospital have enabled more people to be treated. Conversely, since the early 1990s there has also been an increase in the complexity and cost of hospital treatment, with the introduction of more sophisticated surgical techniques and increases in both cardiac and orthopaedic surgery.

The likelihood of having a disability and of needing assistance increases with age. The majority of people aged 65–74 live at home without requiring any assistance (74%), however, the proportion of people needing assistance increases with age, as does the need for residential care. Around half of people aged 85 and over live at home with assistance and 27 percent live in residential care. While the percentage of people aged 65 and over in residential care at any point in time is relatively low (around 5%), it has been estimated from overseas data that 25 to 30 percent of people who reach the age of 65 can expect to spend some time in long-term care before they die.

Internationally there is evidence of improved health status and declining rates of disability, but equally there is evidence that there will be a dramatic rise in the number of older people with disabilities in the medium term, as the baby boom generation reaches older ages. The indications are that demand for, and cost of, both health and disability support services will continue to increase as the population ages. However, policy responses can influence future demand. There are currently a number of initiatives under way that are designed to improve the health of New Zealanders. Much of this work is signalled in the New Zealand Health Strategy (Minister of Health 2000), the Primary Health Care Strategy (Minister of Health 2001) and the Health of Older People Strategy, Health Sector Action to 2010 to Support Positive Ageing (Associate Minister of Health and Minister for Disability Issues 2002).
Chapter 2:
Population Ageing in New Zealand

Growth of the population aged 65 and over

Currently 457,000 (12%) of people in New Zealand are aged 65 or over, 209,000 (5.4%) are aged 75 or over and 50,000 (1.3%) are aged 85 or older. Comparatively high birth rates and significant periods of net migration (an excess of immigrants over emigrants) have resulted in a more youthful population in New Zealand than in countries of comparable economic development but lower levels of immigration. However, like the rest of the world, New Zealand’s population is ageing.

The period between World War II and the mid-1960s was one of high fertility. This is reflected in the high proportion of children under the age of 15 in the 1961 population in Figure 2.1. Declining fertility from about 1965 and movement of the ‘baby boom’ generation into adulthood has resulted in decreasing proportions of children, from 33 percent in 1961 to an estimated 23 percent of the population in 2001.¹

¹ Total population projections in this report use the Statistics New Zealand 1999 projections. In order to keep the integrity of the projection series, data for 2001 is that from the 1999 projections rather than actual 2001 figures.
Figure 2.1: Percentage age distribution of New Zealand population: 1951 to 2051

There are risks in projecting population numbers too far into the future, because the assumptions on which the projections are based are best estimates and the risk of error increases the further the projections go into the future. Actual population numbers will depend on fertility, and migration decisions that have not yet been made and on mortality patterns that may change in unexpected ways. Bearing in mind the limitations in the methodology, the proportion of the population aged under 15 years is expected to continue to decline in the future, with children making up only 16 percent of the population in 2051.

In contrast, the proportion of older people is projected to increase, particularly from about 2010 onwards, as the baby boom generation begins to reach 65. By around 2021 there will be more people over the age of 65 than under the age of 15. By 2051 25 percent of the population will be aged 65 and over. The proportion of people in the 15–64 age group has been increasing slightly over the last 40 years (from 58% in 1961 to 66% in 2001) and will continue to increase to 67 percent in 2011. However, as the baby boom generation begins to reach age 65, the proportion of people in the 15–64 age group will fall to around 59 percent by 2040 and then level off.

Figure 2.2 illustrates the significant growth in the older population over the next 50 years by comparing the current population age structure with that projected for 2051.

Figure 2.2: Population age structure for New Zealand in 2001 and projected for 2051, by five-year age groups

In the medium term (around 2010 to 2035) the biggest growth will be in the age group 65–74, as the baby boom generation enters retirement, but the most rapid growth over the period to 2051 will be in the age group 85 and over (Figure 2.3). The number of people in this age group is projected to increase by 485 percent between 2001 and 2051. In comparison, the total population aged 65 and over is estimated to increase by 158 percent, and the New Zealand population by only 20 percent.

**Figure 2.3:** New Zealand population 65+, 75+ and 85+ as a percentage of the total population: 1961 to 2051

The greater increase in the very old is due both to increasing longevity and the baby boom generations of the 1950s and 1960s reaching 85 and over from around 2035. By 2051, there will be 1.18 million people aged 65 and over (comprising 26% of the total population), 708,000 (15%) aged 75 and over, and 292,000 (5.3%) aged 85 and over.
At the 2001 Census there were 400 people aged 100 and over. In 2051, there are projected to be over 12,000 people aged 100 and over (assuming an increase in life expectancy at birth of about six years between 1996, the base year for the projections, and 2051).

This ageing of the population will significantly change demand for health and disability support services in New Zealand; however, demographic change will be only one factor affecting that demand. Chapter 9 summarises what is currently known about the complex interplay of changes in population age structure, health status, technological advances and social expectations in driving demand for, and the cost of, health and disability support services.

**Increasing ethnic diversity amongst older New Zealanders**

Population ageing is occurring in most, if not all, ethnic communities in New Zealand and future cohorts of older people will be increasingly more heterogeneous than in the past or present. Significant increases are projected for older Māori, Pacific and Asian peoples. The following ethnicity data is based on self-reported information that has been prioritised according to protocols to avoid double counting of people who identify with more than one ethnicity. Appendix 1b sets out the prioritisation process used.

**Growth in Māori population aged 65 and over**

At the 2001 Census, of the 526,000 people who recorded their ethnicity as Māori, 17,600 (3.3%) were aged 65 or over. Māori make up a much smaller proportion of the older population in New Zealand (3.9%) than they do for the total population (14%). This is partly due to consistently higher fertility rates amongst Māori resulting in a more youthful age structure than the total population, but also to higher mortality rates in earlier age groups for Māori.

The Māori population is projected to grow to almost 1 million by 2051. By then Māori aged 65 or more will make up approximately 10 percent of older people, and 13 percent of the total Māori population (Figure 2.4). This represents over a 500 percent increase in the number of Māori who are aged 65 and over. The largest proportions of older Māori will still be in the 65–74 age group, but increasing numbers will be living to older ages.
Figure 2.4: Māori population 65+, 75+ and 85+ as a percentage of the total Māori population: 1996 to 2051


**Growth in Pacific populations aged 65 and over**

Pacific peoples are also under-represented in the older age groups. The 2001 Census recorded 6.2 percent of the population as Pacific peoples, but only 1.6 percent of those aged 65 and over was of Pacific ethnicity. Low numbers of older Pacific peoples are partly due to higher mortality at younger ages and partly a reflection of recent migration patterns of Pacific peoples to New Zealand, with a predominance of younger immigrants and return migration for some older Pacific peoples.

A high rate of growth is also projected for Pacific peoples, with those aged 65 and over expected to reach 11 percent of the total Pacific population by 2051 compared with 3.5 percent in 2001 (Figure 2.5). This represents an increase of around 860 percent, from 7800 in 2001 to 65,800 in 2051. Pacific peoples will also increase as a proportion of people aged 65 and over (from 1.6% in 2001, to 2.3% by 2016 and 4.4% by 2051). Again, the majority of older Pacific peoples will be aged 65–74, but increasing numbers will be living to 85 and older.
**Growth in Asian populations aged 65 and over**

Population projections for Asian peoples only extend to 2016, because of the volatility in Asian migration levels and uncertainty about future immigration policy at the time the projections were made. Asian communities account for a small, but rapidly growing proportion, of the older population in New Zealand. In 2001, 2.2 percent of people aged 65 and over affiliated with an Asian ethnic group. By 2016 older Asian people are projected to increase to 4 percent of the population aged 65 and over.

Older Asian peoples will also make up an increasing proportion of the Asian community. At the 2001 Census approximately 248,000 people affiliated with an Asian ethnic group. Of those, 3.3 percent were aged 65 and over. By 2016, 7.3 percent of the Asian community will be aged 65 and over, 2.2 percent will be 75 and over and 0.5 percent will be 85 and over (Figure 2.6).
Figure 2.6: Asian populations 65+, 75+ and 85+ as a percentage of total Asian populations: 1996 to 2016


Population age structures in District Health Boards

The number of older people living in each District Health Board (DHB) region varies considerably (Figure 2.7). This is largely a reflection of the relative population size in the Board regions, with Canterbury DHB having the highest number of people aged 65 and over (58,200), closely followed by Waitemata (48,700), Auckland (39,500), Waikato (37,500), and Counties-Manukau (34,500).
Older populations in DHBs are projected to grow at different rates. These projections are based on current population structures and assumptions about each region’s future fertility, mortality and net migration (see Appendix 1a). By 2021, Canterbury will be replaced by Waitemata as the DHB with the largest population of people aged 65 and over, and Counties-Manukau will replace Waikato with the third largest population (Figure 2.8).
Figure 2.8: Projected DHB populations aged 65–74, 75–84 and 85+: 2021

Other DHBs with smaller populations have higher proportions of older people (Figure 2.9). South Canterbury DHB has the highest proportion of older people (16%) followed by Bay of Plenty and Wairarapa (15%).
Figure 2.9: DHB populations aged 65–74, 75–84 and 85+, as a percentage of the total population: 2001

Source: Statistics New Zealand, Population Projections (base 1999)

By 2021, 25 percent of the population in South Canterbury and Wairarapa will be 65 and over, and Taranaki (23%) will have displaced Bay of Plenty (22%) (Figure 2.10).
**Figure 2.10:** Projected DHB populations aged 65–74, 75–84 and 85+, as a percentage of the total population: 2021

Source: Statistics New Zealand, Population Projections (base 1999)

**DHB older Māori populations**

Those DHBs with high proportions of Māori in their populations also have the highest proportions of older Māori (Tairawhiti, Lakes and Northland). Tairawhiti has the highest proportion of people aged 65 and over who are Māori (21%). In Lakes and Northland around 12 percent of older people are Māori. By 2021, the proportion of people aged 65 and over who are Māori will have increased to 24 percent in Tairawhiti, and 15 percent in Lakes. The proportion of people aged 65 and over in Northland will remain around 12 percent.

**DHB older Pacific populations**

Those DHBs with the highest proportion of Pacific peoples in their population also have the highest proportion of older Pacific peoples. Counties-Manukau has the highest proportion of people aged 65 and over who are Pacific peoples (6.4%). In Auckland DHB Pacific peoples make up 5.2 percent of people aged 65 and over, in Capital and Coast 2.9 percent and in Hutt Valley 2 percent.
By 2021, the proportion of people aged 65 and over who are Pacific peoples will have increased to 8.5 percent in Counties-Manukau, 6.5 percent in Auckland, 5 percent in Hutt Valley, and 4.9 percent in Capital and Coast.

**Variability in population age structure at territorial authority level**

While population age structures vary across DHBs, there is also variation within DHBs, at territorial authority level. Table 2.1 lists the 10 territorial authorities with the highest proportion of people aged 65 and over at the 2001 Census. Kapiti Coast District had the highest proportion of older people. Horowhenua and Kapiti Districts attract retirees from Wellington, while Tauranga and Thames-Coromandel are both well-established east-coast retirement centres.

Five of the 10 territorial authorities with the highest concentrations of older people are located in the south of the South Island. Timaru, Ashburton, Waimate, Waitaki and Central Otago are all farming areas. The urban centres within them are service centres that also attract older people retiring from farming.

<table>
<thead>
<tr>
<th>Territorial authority</th>
<th>Percent of population 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapiti Coast District</td>
<td>22.5</td>
</tr>
<tr>
<td>Thames-Coromandel District</td>
<td>19.5</td>
</tr>
<tr>
<td>Waitaki District</td>
<td>19.2</td>
</tr>
<tr>
<td>Horowhenua District</td>
<td>18.8</td>
</tr>
<tr>
<td>Waimate District</td>
<td>17.7</td>
</tr>
<tr>
<td>Timaru District</td>
<td>17.7</td>
</tr>
<tr>
<td>Central Otago District</td>
<td>17.4</td>
</tr>
<tr>
<td>Tauranga District</td>
<td>17.3</td>
</tr>
<tr>
<td>Ashburton District</td>
<td>16.7</td>
</tr>
<tr>
<td>Wanganui District</td>
<td>16.1</td>
</tr>
</tbody>
</table>

*Source: Statistics New Zealand, Census of Population and Dwellings 2001*
## International comparisons

Compared to the developed, industrialised countries of Europe and Japan, New Zealand has a youthful population age structure. In Figure 2.11 New Zealand is in 24th position in terms of the proportion of older people in the population. Other developed economies that have experienced significant international immigration (Canada, the United States and Australia) have similar proportions of older people.

### Figure 2.11: Percent of the population aged 65 and over: 1999

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of the population aged 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>5.3</td>
</tr>
<tr>
<td>Turkey</td>
<td>5.3</td>
</tr>
<tr>
<td>Korea</td>
<td>6.8</td>
</tr>
<tr>
<td>Ireland</td>
<td>11.3</td>
</tr>
<tr>
<td>Slovakia</td>
<td>11.3</td>
</tr>
<tr>
<td>Iceland</td>
<td>11.6</td>
</tr>
<tr>
<td>New Zealand</td>
<td>11.7</td>
</tr>
<tr>
<td>Poland</td>
<td>12.0</td>
</tr>
<tr>
<td>Australia</td>
<td>12.2</td>
</tr>
<tr>
<td>United States</td>
<td>12.3</td>
</tr>
<tr>
<td>Canada</td>
<td>12.4</td>
</tr>
<tr>
<td>Netherlands</td>
<td>13.6</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>13.8</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>14.3</td>
</tr>
<tr>
<td>Hungary</td>
<td>14.6</td>
</tr>
<tr>
<td>Finland</td>
<td>14.8</td>
</tr>
<tr>
<td>Denmark</td>
<td>14.9</td>
</tr>
<tr>
<td>Portugal</td>
<td>15.1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>15.2</td>
</tr>
<tr>
<td>Norway</td>
<td>15.4</td>
</tr>
<tr>
<td>Austria</td>
<td>15.5</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>15.7</td>
</tr>
<tr>
<td>France</td>
<td>15.9</td>
</tr>
<tr>
<td>Spain</td>
<td>16.6</td>
</tr>
<tr>
<td>Japan</td>
<td>16.7</td>
</tr>
<tr>
<td>Belgium</td>
<td>16.8</td>
</tr>
<tr>
<td>Germany</td>
<td>16.8</td>
</tr>
<tr>
<td>Greece</td>
<td>17.0</td>
</tr>
<tr>
<td>Italy</td>
<td>17.6</td>
</tr>
<tr>
<td>Sweden</td>
<td>17.8</td>
</tr>
</tbody>
</table>

Source: OECD (2001)
The projected rate of population ageing in New Zealand is not exceptional either. This phenomenon is well recognised in developed countries, but is now occurring in developing countries as well. The rapidly increasing numbers of very old people (85 and over) now and in the future is unprecedented and has wide-ranging implications for not just health and social services, but for the whole of the economy. “As the numbers of (very old) people grow, there is a heightened need to understand the characteristics of older populations, their strengths, and their requirements. The effects will be felt not just within individual nations but also throughout the global economy” (Kinsella and Velkoff 2001).
Chapter 3: Socio-Demographic Characteristics of Older People

Older people differ from younger population groups in a number of respects. There are marked differences in the ratio of men to women, marital status, living arrangements, geographical distribution and geographical mobility. There are also marked differences between people aged 65–74 and people aged 85 and over. This chapter provides an overview of key demographic characteristics. More detailed information on people over the age of 85 will be provided in a forthcoming publication by the New Zealand Institute for Research on Ageing.2

Data used in this chapter is from the 2001 Census of Population and Dwellings. Information on ethnic groups includes all people who recorded an affiliation with that group. This means that people recording more than one ethnic affiliation are recorded more than once. In other chapters, prioritised ethnicity, as described in Appendix 1b, has been used.

Gender imbalance in older ages

While in younger age groups men outnumber women, with advancing age women increasingly outnumber men. Table 3.1 demonstrates this widening gender gap. This trend was most marked in 1981 when women comprised 73 percent of people aged 85 and over compared to only 55 percent in the 65–74 age group. The very high proportion of women aged 85 and over around 1981 reflects the high loss of New Zealand men in the First World War.

---

2 Working title of 'Life at 85 plus – Statistical information about very old people in New Zealand' by Davey J and Gee S.
Since 1981 there has been a narrowing of the gender gap in all age groups over 65. Based on recent trends in life expectancy at older ages, the gender gap is projected to continue to reduce, but women will still outnumber men in the oldest age groups (by 2051 women will still make up 61 percent of the population aged 85 and over). These projections, however, will be affected by any changes in lifestyle affecting health in older men and women (either negatively or positively), and/or advances in the treatment of conditions that currently disproportionately affect men.

Table 3.1: Percentage of females per age group: 1961–2051

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>65–74</td>
<td>55.4</td>
<td>54.5</td>
<td>54.2</td>
<td>51.7</td>
<td>51.7</td>
<td>51.0</td>
</tr>
<tr>
<td>75–84</td>
<td>56.6</td>
<td>61.3</td>
<td>60.9</td>
<td>59.0</td>
<td>54.8</td>
<td>55.7</td>
</tr>
<tr>
<td>85+</td>
<td>59.1</td>
<td>73.1</td>
<td>71.0</td>
<td>69.5</td>
<td>62.6</td>
<td>61.1</td>
</tr>
<tr>
<td>Total 65+</td>
<td>56.0</td>
<td>57.7</td>
<td>57.7</td>
<td>56.2</td>
<td>54.2</td>
<td>55.2</td>
</tr>
</tbody>
</table>


Living arrangements

Living arrangements are affected by a host of factors, including marital status, financial well-being, health status and family size and structure, as well as cultural traditions, such as kinship patterns, the value placed on living independently, the availability of social services and social support, and the physical features of housing stock and local communities.

Because women have a longer life expectancy than men and traditionally have married men 2–3 years older than themselves, older women are much more likely to live alone than older men. At the 2001 Census, 43 percent of women aged 65 and over lived alone compared to 20 percent of men, conversely 71 percent of men lived with a partner either with or without other family members (Figure 3.1).
The proportion of older people living alone has been increasing since the 1960s, with fewer older people living with their children or relatives. This could be due to a number of factors, including greater prosperity amongst older people, decreasing family closeness, greater geographical mobility resulting in more dispersed family networks, or more services supporting older people to live in the community.

**Figure 3.1:** Household living arrangements of people aged 65 and over: 2001 Census

Source: Statistics New Zealand, Census of Population and Dwellings 2001 (MB 2001)

The proportion of older people who live on their own is likely to grow in the future, as increasing proportions of working-age people currently live alone and have few children (Statistics New Zealand 1998). As these younger cohorts reach age 65 their changing marital status and living arrangements will affect the nature and type of support services that both families and governments may need to provide, especially for the growing numbers of older people who lack direct familial support (Pezzin and Schone 1999).
Employment, voluntary work and care giving

Levels of employment amongst older people are low and decrease rapidly with increasing age. For some, ceasing work is a gradual process, which may begin with a move to a less intensive job or cutting down the number of hours worked. For others, retirement may be followed by return to the workforce, or by voluntary work (Statistics New Zealand 1998).

At the 2001 Census, 12 percent of people aged 65 and over were in the labour force, either in full or part-time work or seeking work (Table 3.2). This is an increase from 6 percent of older people in 1991 and 9 percent in 1996. The majority of older people in paid employment in 2001 were men (18%, compared to 7% of women aged 65 or over). Older Māori are more likely to be in paid employment (20% of men 65 and over and 12% of women).

Table 3.2: Proportion of older people in the labour force, by age, gender and ethnicity:

<table>
<thead>
<tr>
<th>Age</th>
<th>Total</th>
<th>Māori</th>
<th>Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>-----</td>
<td>-------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>65–74</td>
<td>23.9%</td>
<td>11.3%</td>
<td>17.3%</td>
</tr>
<tr>
<td>75–84</td>
<td>8.6%</td>
<td>3.0%</td>
<td>5.3%</td>
</tr>
<tr>
<td>85+</td>
<td>4.9%</td>
<td>1.8%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Total</td>
<td>17.5%</td>
<td>7.0%</td>
<td>11.6%</td>
</tr>
</tbody>
</table>

Note: Ethnicity data based on all ethnic affiliations recorded
Source: Statistics New Zealand, Census of Population and Dwellings 2001(MB 2001)

Labour force participation is highest for people aged 65–74, dropping steeply to 5.3 percent of people aged 75–84 and 2.7 percent of people aged 85 and over. These age-specific proportions have increased since 1991, when 9 percent of those aged 65–74, 2 percent of people aged 75–84 and 1 percent of people aged 85 and over were in employment (Statistics New Zealand 2001). There is potential for labour force participation to increase further in the future, particularly for the 65–69 age group, given the improving health status and longevity of older people, and the decreasing size of the ‘working age’ population of 15–64 from about 2010.
Participation in unpaid work and voluntary work is also more common amongst people aged 65–74 than for older age groups (Table 3.3). People reporting more than one type of unpaid work at the 2001 Census are counted more than once in Table 3.3. More women aged 65–74 than men in that age group reported providing some unpaid or voluntary work in the four weeks preceding the Census. Women also tended to report higher levels of childcare (either in their own home or elsewhere) than men, although this decreased with increasing age. Conversely, more men aged 85 and over than women reported looking after someone, either in their own home or elsewhere, who was ill or disabled (7% compared to 2.8%), possibly reflecting the higher rates of disability amongst women in that age group (see section on prevalence of disability in Chapter 4). Much of the unpaid work that older men and women contributed was help or voluntary work for an organisation, group or marae.

Table 3.3: Proportion of older people providing unpaid work, by age and gender: 2001

<table>
<thead>
<tr>
<th>Task</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65–74</td>
<td>75–84</td>
</tr>
<tr>
<td>Looking after a child</td>
<td>13.0</td>
<td>4.9</td>
</tr>
<tr>
<td>Looking after someone</td>
<td>10.9</td>
<td>9.8</td>
</tr>
<tr>
<td>who is ill or disabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other help or voluntary work outside the</td>
<td>16.8</td>
<td>11.4</td>
</tr>
<tr>
<td>home</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand, Census of Population and Dwellings 2001 (MB 2001)

Māori men and women generally reported higher levels of unpaid work than the total population, particularly for child-care. Māori aged 85 and over also reported higher levels of involvement in work for an organisation, group or marae than the total population (Table 3.4).
Table 3.4: Proportion of older Māori providing unpaid work, by age and gender: 2001

<table>
<thead>
<tr>
<th>Task</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65–74 %</td>
<td>75–84 %</td>
</tr>
<tr>
<td>Looking after a child</td>
<td>18.2</td>
<td>9.5</td>
</tr>
<tr>
<td>Looking after someone who is ill or disabled</td>
<td>13.4</td>
<td>10.1</td>
</tr>
<tr>
<td>Other help or voluntary work outside the home</td>
<td>18.3</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Note: Data based on all ethnic affiliations recorded
Source: Statistics New Zealand, Census of Population and Dwellings 2001 (MB 2001)

Older Pacific peoples also contributed high levels of unpaid work, particularly caring for children and someone who is ill or disabled (Table 3.5).

Table 3.5: Proportion of older Pacific peoples providing unpaid work, by age and gender: 2001

<table>
<thead>
<tr>
<th>Task</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65–74 %</td>
<td>75–84 %</td>
</tr>
<tr>
<td>Looking after a child</td>
<td>31.3</td>
<td>20.5</td>
</tr>
<tr>
<td>Looking after someone who is ill or disabled</td>
<td>15.1</td>
<td>12.3</td>
</tr>
<tr>
<td>Other help or voluntary work outside the home</td>
<td>13.7</td>
<td>8.2</td>
</tr>
</tbody>
</table>

Note: Data based on all ethnic affiliations recorded
Source: Statistics New Zealand, Census of Population and Dwellings 2001 (MB 2001)
Income and assets

Levels of income are closely related to paid employment. Consequently, older people have lower average incomes than the working age population. At the 2001 Census the median annual income for a person aged 65 and over was $13,120 or around $252 per week before tax, compared with a median income for all New Zealand adults of $18,550 (Table 3.6). Older men earned slightly more on average than older women, with median incomes of $13,610 and $12,800 respectively. Median incomes for Māori and Pacific peoples were lower for both the total adult population and for people aged 65 and over, being lowest for Pacific peoples.

Table 3.6: Median annual income for older people and all adults by gender for the total population, Māori and Pacific: 2001

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Total</th>
<th>Māori</th>
<th>Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Males</td>
<td>65 and over</td>
<td>13,610</td>
<td>11,780</td>
<td>9,760</td>
</tr>
<tr>
<td></td>
<td>15 and over</td>
<td>24,910</td>
<td>18,580</td>
<td>17,750</td>
</tr>
<tr>
<td>Females</td>
<td>65 and over</td>
<td>12,800</td>
<td>11,580</td>
<td>9,990</td>
</tr>
<tr>
<td></td>
<td>15 and over</td>
<td>14,530</td>
<td>13,220</td>
<td>12,970</td>
</tr>
<tr>
<td>Total</td>
<td>65 and over</td>
<td>13,120</td>
<td>11,670</td>
<td>9,880</td>
</tr>
<tr>
<td></td>
<td>15 and over</td>
<td>18,550</td>
<td>14,830</td>
<td>14,790</td>
</tr>
</tbody>
</table>

Note: Ethnicity data based on all ethnic affiliations recorded
Source: Statistics New Zealand 2001 Census of Population and Dwellings (MB 2001)

While income levels may be low, many older people own their own home. A recent survey on the living standards of older people found that 68 percent of single respondents owned their own home and a further 16 percent lived in accommodation owned by a family trust or relative (Table 3.7). A much higher proportion of people living with a partner owned their own home (86 percent) and a further 8 percent lived in accommodation owned by a family trust or relative. Accommodation costs for these groups were significantly lower than for older people renting accommodation – particularly those renting from a private landlord or from Housing New Zealand (Fergusson et al 2001b).
Table 3.7: Distribution of home ownership (%) and mean accommodation costs per week ($ pw)

<table>
<thead>
<tr>
<th>Owner of accommodation</th>
<th>Single (n=1618)</th>
<th>Partnered (n=1442)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>Mean $pw</td>
</tr>
<tr>
<td>Older person and/or partner</td>
<td>67.9</td>
<td>24.2</td>
</tr>
<tr>
<td>Family Trust</td>
<td>6.6</td>
<td>6.8</td>
</tr>
<tr>
<td>Family members</td>
<td>9.3</td>
<td>21.6</td>
</tr>
<tr>
<td>Private landlord</td>
<td>3.1</td>
<td>115.7</td>
</tr>
<tr>
<td>Local authority</td>
<td>4.6</td>
<td>65.5</td>
</tr>
<tr>
<td>Housing New Zealand</td>
<td>4.8</td>
<td>134.2</td>
</tr>
<tr>
<td>Other</td>
<td>3.7</td>
<td>78.2</td>
</tr>
</tbody>
</table>

Note: All values in the table were estimated from the observed sample weighted to take account of probability of selection, non-response and sample stratification.

Source: Fergusson et al 2001b

Equity in a home provides older people with the flexibility to consider cost-effective accommodation options as they grow older, and the need for care and access to services become more important considerations (Khawaja 2000). It also offsets to some extent the limitations imposed by a low income.

Few older people had many other assets (Table 3.8). In the survey on living standards of older New Zealanders, 56 percent of single respondents had savings and assets of less than $10,000 and 72 percent had savings of less than $25,000. Partners generally had higher levels of saving and investments, but 36 percent still had joint assets of less than $10,000 and 51 percent had assets of less than $25,000 (Fergusson et al 2001b).
Table 3.8: Estimated total value of savings and investments (excluding own home)

<table>
<thead>
<tr>
<th>Value ($000)</th>
<th>Single (n=1407) %</th>
<th>Partnered (n=1224) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>30.6</td>
<td>20.9</td>
</tr>
<tr>
<td>1–10</td>
<td>25.3</td>
<td>15.4</td>
</tr>
<tr>
<td>10–25</td>
<td>15.9</td>
<td>14.7</td>
</tr>
<tr>
<td>25–50</td>
<td>9.0</td>
<td>12.3</td>
</tr>
<tr>
<td>50–100</td>
<td>7.3</td>
<td>9.7</td>
</tr>
<tr>
<td>100–200</td>
<td>5.6</td>
<td>10.1</td>
</tr>
<tr>
<td>200–300</td>
<td>2.7</td>
<td>5.5</td>
</tr>
<tr>
<td>300–400</td>
<td>1.6</td>
<td>4.3</td>
</tr>
<tr>
<td>400+</td>
<td>2.1</td>
<td>7.0</td>
</tr>
<tr>
<td>Median value of investments</td>
<td>$7,500</td>
<td>$37,500</td>
</tr>
</tbody>
</table>

Note: All values in the table were estimated from the observed sample weighted to take account of probability of selection, non-response and sample stratification.

Source: Fergusson et al 2001b

The research on living standards for older New Zealanders found that despite having generally lower levels of income, most older people were doing quite well and had relatively few material restrictions and difficulties. A minority (around 5% of the sample) had quite marked material hardship and a further 5 to 10 percent had some difficulties (Fergusson et al 2001a). Older people, both Māori and non-Māori, tended to report fewer material restrictions and difficulties than younger people.

The research showed that the people most at risk of poor living standards were characterised by a mix of low income, no savings, high accommodation costs, a history of economic stress, being younger (aged from 65–69 years), being of Māori or Pacific ethnicity, and having held a low-status occupation. These findings suggest that what determines a person’s living standards in old age is not one single factor (such as net annual income), but an accumulation of factors that reflect the person’s current circumstances and previous life history (Fergusson et al 2001a).

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3 Living standards were measured by developing a scale of material well-being based on responses to questions relating to ownership restrictions, social participation restrictions, economising, severe financial problems and self-assessed standard of living.
These findings are consistent with those of the National Health Committee report on the socioeconomic determinants of health, which found overwhelming evidence that socioeconomic inequalities affect health (National Health Committee 1998). Key findings in that report were that low socioeconomic groups experience poorer health outcomes, and socioeconomic inequalities have a cumulative health impact over time. This is coupled in older age with the effect of lifetime deprivation (for example, in childhood nutrition) and disease.

**Urbanisation**

Older people, like the rest of the population, are highly urbanised. At the 2001 Census, 69 percent of people aged 65 and over lived in main urban areas (populations of 30,000 or more). This is very close to the total population (71%). However, significantly more older people live in secondary (10,000–29,999 population) and minor urban areas (1000–9999 population) than the general population (20% compared to 15%).

Older women are more likely to live in urban areas than older men, with 80 percent of women aged 65 and over living in urban areas (population 10,000 and over) compared to 75 percent of men aged 65 and over (Table 3.9).

<table>
<thead>
<tr>
<th>Age group</th>
<th>Rural</th>
<th>Urban</th>
<th>Percent in urban areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female (n)</td>
<td>Male (n)</td>
<td>Female (n)</td>
</tr>
<tr>
<td>65–74</td>
<td>29,493</td>
<td>32,400</td>
<td>98,052</td>
</tr>
<tr>
<td>75–84</td>
<td>17,133</td>
<td>14,463</td>
<td>74,943</td>
</tr>
<tr>
<td>85+</td>
<td>5,508</td>
<td>2,868</td>
<td>28,614</td>
</tr>
<tr>
<td>Total 65+</td>
<td>52,134</td>
<td>49,731</td>
<td>201,609</td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand 2001 Census of Population and Dwellings (MB 2001)

---

4 Rural includes urban areas with populations under 10,000.
There are particular health and disability support service issues for older people living in rural and secondary urban areas. Older people in rural areas are more likely to be living with a spouse and providing mutual support, but this can become a fragile arrangement if the health of one or both partners deteriorates. Older people in rural areas can have difficulty accessing health and support services, particularly if they live in remote areas, cannot drive and have limited access to public transport. Even in secondary urban centres there can be problems accessing secondary health care.
Chapter 4:  
Health Status of Older People

Health status can be measured in a number of ways. Each of the measures discussed in this chapter illustrates a different facet of health status. The most common summary measure is life expectancy at birth. For older people, life expectancy at age 65 is often used. Life expectancy measures calculate the average number of years a person can expect to live from the stated age, assuming specific mortality levels remain constant. As such they do not take account of the quality of life during those years. An indicator of the quality of life associated with increasing longevity is independent life expectancy. This measures the average number of years that will be free of disability requiring assistance. Other indicators of health status are mortality and morbidity rates, rates of disability and severity of disability.

Life expectancy

Like most other countries, life expectancy in New Zealand is increasing. Between 1960 and 1998 female life expectancy at birth rose by 6.5 years (from 73.9 to 80.4). Male life expectancy also increased by 6.5 years, from 68.7 to 75.2 over the same period. Since the mid-1980s, life expectancy has been increasing more rapidly for males than for females. For example, between 1986 and 1998, life expectancy at birth increased by 4.1 years for males and 3.3 years for females.

New Zealand data suggests that future gains in life expectancy are possible (Ministry of Health 1999), but it is not known whether the gender gap in life expectancy will continue to decrease. It has been suggested that lower life expectancy for males is the result of greater exposure to risk factors such as tobacco and alcohol use and occupational hazards (Statistics Canada 1997). If this is the case, then the gender gap may decrease if there is a reduction in alcohol and tobacco consumption amongst men and/or they reduce risk-taking behaviour, or conversely, if risk-taking behaviour amongst women increases.
Table 4.1 shows that at age 65, women can still expect to live, on average, three and a half years longer than men (19.5 years compared to 16.1 years). They can expect a longer period of independence (11.9 years compared to 9.9 years), but they also have, on average, more years with a disability requiring assistance (7.6 years compared to 6.2 years for men).

Table 4.1: Life expectancy and independent life expectancy in older age

<table>
<thead>
<tr>
<th>Life expectancy</th>
<th>All NZ</th>
<th>Male</th>
<th>Female</th>
<th>Māori Male</th>
<th>Māori Female</th>
<th>Pacific Male</th>
<th>Pacific Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life expectancy at birth</td>
<td>77.8</td>
<td>75.2</td>
<td>80.4</td>
<td>68.0</td>
<td>72.3</td>
<td>69.8</td>
<td>75.6</td>
</tr>
<tr>
<td>Life expectancy at age 65</td>
<td>17.8</td>
<td>16.1</td>
<td>19.5</td>
<td>12.6</td>
<td>15.0</td>
<td>13.4</td>
<td>16.6</td>
</tr>
<tr>
<td>Independent* life expectancy at age 65</td>
<td>10.9</td>
<td>9.9</td>
<td>11.9</td>
<td>7.4</td>
<td>7.5</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

* Implies free of disability requiring assistance

Source: Statistics New Zealand, New Zealand Life Tables, and Ministry of Health 2001

**Life expectancy for Māori**

Life expectancy is still significantly lower for Māori than the New Zealand average, despite major improvements for Māori over the last 40 years. From the 1950s to the mid-1980s life expectancy at birth for Māori males increased by 13 years and for Māori females by 16 years. In the 1950s and early 1960s almost all of the improvement in Māori life expectancy at birth was due to reductions in infant and child mortality. In the 1970s and early 1980s, the greatest improvements in survival were at older ages. Despite these improvements Māori life expectancy at birth is still lower than for the total population.

Differences in life expectancy are less marked at older ages than at birth, because of higher death rates amongst Māori at earlier ages. Nevertheless, life expectancy for 65-year-old Māori men is 3.5 years less than the average 65-year-old male and for 65-year-old Māori women it is 4.5 years less than for the average 65-year-old woman. Shorter life expectancy for Māori is reflected in fewer years of independent life expectancy at age 65 years (7.4 years for Māori men compared to 9.9 for all men, and 7.5 for Māori women compared to 11.9 for all women).
Life expectancy for Pacific peoples

Life expectancy at birth for Pacific peoples is slightly higher than for Māori, being 70 years for males and 76 years for females, but this is still lower than the New Zealand average. This pattern is repeated at age 65. Information on independent life expectancy is not available for Pacific peoples.

Mortality rates and causes

Mortality rates in older ages have been decreasing in New Zealand, with the biggest reduction being in the 65–74 age group. Between 1980 and 1998 mortality rates for people aged 65–74 decreased from 35 per 1000 to 22 per 1000 (Figure 4.1). This represents a 37 percent reduction over the 18-year period. Mortality rates for those aged 75–84, and 85 and over both decreased by 35 percent over the same time period.

Figure 4.1: Mortality rates by age group for people aged 65 and over: 1980–98

Source: Ministry of Health 2002
It has long been recognised that mortality rates increase exponentially at older ages. Recent research, however, has documented that, at very old ages, the rate of increase in mortality rates tends to slow down. For example, in a study of 28 countries, with what the author considered to be, reasonably reliable data for the period 1950–90, Kannisto (1994) noted not only that mortality rates declined from about the age of 80 and over, but that the rate of decline appears to be getting greater over time. Other work has confirmed this tendency (Wilmoth et al 2000).

Findings such as these have generated two potential explanations. The “heterogeneity” hypothesis, based on the idea of “survival of the fittest” suggests that the deceleration in old-age mortality is a result of frailer older people dying before they reach the age of 80 and over, thus creating a very old population with exceptionally healthy attributes resulting from genetic endowment and/or lifestyle. A second, “individual risk” hypothesis suggests that the rate of ageing may slow down at very old ages, and/or that certain genes that are detrimental to survival may be suppressed (Horiuchi and Wilmoth 1998).

**Causes of mortality**

The most common cause of death for both men and women over 65 years old is ischaemic heart disease, with the rate increasing markedly with increasing age, particularly for males (Figures 4.2 and 4.3). Deaths from other circulatory disorders, stroke, respiratory diseases and cancer also increase with age, although their relative importance varies for men and women. For example, mortality rates for ischaemic heart disease, lung cancer, other cancers and respiratory disease are consistently higher for men than for women, while mortality rates for stroke are higher for women aged 85 and over than for men in that age group. These differences are largely related to differential rates of smoking throughout life (Ministry of Health 1999).
Figure 4.2: Mortality rates by age group and major cause of death for males aged 65 and over: 1996–98 combined

Figure 4.3: Mortality rates by age group and major cause of death for females aged 65 and over: 1996–98 combined

Source: Ministry of Health 2002
Mortality rates for Māori and Pacific peoples

There have been several changes in the classification and coding of ethnicity on birth and death registrations over the last 30 years that have affected the calculation of mortality rates for ethnic groups. A major change occurred in 1995 when the classification changed from a ‘biological’ classification to one based on a concept of self-identification. This resulted in an apparent increase in age-standardised mortality rates for Māori of approximately 25 percent between 1994 and 1996. Similar changes apply to the rates for Pacific ethnic groups. The following data is therefore likely to inflate mortality rates for these two groups. This section uses ethnicity data that has been prioritised using the methodology set out in Appendix 1b.

Mortality rates for older Māori

The shorter life expectancy for Māori compared with the total population is due to higher mortality rates, particularly for circulatory diseases and cancers (including lung cancer), at earlier ages. In the 65–74 age group the Māori mortality rate is 104 percent higher than that of European/other New Zealanders. The most common causes of death in this age group are ischaemic heart disease, other cancers and ‘other’ causes. In the 75–84 and 85-and-over age groups ischaemic heart disease is clearly the leading cause of death, with other circulatory disorders, other cancers, respiratory diseases and ‘other’ causes increasing with age (Figure 4.4). The most common conditions in the ‘other’ category are diseases of the digestive system and conditions covered by the broad category of ‘endocrine, nutritional and metabolic diseases’, which includes diabetes, and immunity disorders.

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5 For a more detailed discussion see Ministry of Health (1999).
**Figure 4.4:**  Mortality rates by age group and major cause of death for Māori aged 65 and over: 1996–98 combined

![Graph showing mortality rates by cause and age group for Māori people.](image)

Source: Ministry of Health 2001

**Mortality rates for older Pacific peoples**

The mortality rate for Pacific peoples aged 65 and over is also much higher than for European and other groups of the same age (77% higher). As for Māori, the three main causes of death in Pacific peoples aged 65–74 are ischaemic heart disease, other cancers, and ‘other’ causes. ‘Other’ causes is the principal cause of death in the 75–84 age group, followed by other cancers, ischaemic heart disease and other circulatory disorders. In the 85-and-over age group ‘other’ causes, principally endocrine disorders (including diabetes), is the leading cause of death followed closely by respiratory diseases (Figure 4.5).
Figure 4.5: Mortality rates by age group and major cause of death for Pacific peoples aged 65 and over: 1996–98 combined

Source: Ministry of Health 2001

**Standardised mortality ratios for District Health Boards**

In order to compare mortality rates across DHBs, Figure 4.6 uses mortality rates for 1996–98 that have been standardised to take account of DHBs' different age, ethnic and socioeconomic profiles. The standardised mortality ratio is the ratio of observed to expected mortality rates; with expected mortality rates calculated using the age, ethnic and socioeconomic deprivation structure of each DHB region. The length of the vertical lines in Figure 4.6 represent the degree of error in estimating the ratio within a 99 percent confidence level. This means that there is a 99 percent chance that the true mortality rate lies somewhere along the line. The 99 percent confidence intervals are shorter for DHBs with larger populations.

Figure 4.6 shows which DHBs had mortality rates either significantly higher, no different from, or significantly less than the national average rate of mortality. This is determined by whether or not the 99 percent confidence interval for the standardised rate for each DHB crosses the line indicating the national rate.
Avoidable mortality

Avoidable mortality refers to deaths that, in theory, could have been avoided by either disease prevention or health intervention. Three types of avoidable mortality are:

1. **primary avoidable mortality**, which could be prevented through population health strategies
2. **secondary avoidable mortality**, which could be prevented through early detection and intervention, typically in a primary care setting, and through appropriate disease management
3. **tertiary avoidable mortality**, which could be minimised by medical or surgical treatment.

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6 See Ministry of Health (1999) Appendix 3 for a list of causes of mortality and morbidity that could be considered to be avoidable for people aged under 75 years.
All other deaths are considered to be unavoidable. Secondary and tertiary avoidable mortality can be regarded as outcome measurements for the effectiveness of the health system, and principally of personal and family health services.

Only deaths occurring under the age of 75 are considered in this analysis. This is because data on cause of death beyond the age of 75 becomes increasingly clouded by co-morbidities. This makes the distinction between avoidable and unavoidable causes of death less clear.

Between 1980 and 1998 avoidable mortality rates dropped by 45 percent for those aged 65–74, compared with a 16 percent reduction in unavoidable mortality over the same period (Figure 4.7). This is very similar to the trend for all people aged under 75 (45% reduction in avoidable mortality and 19% reduction in unavoidable mortality). The narrowing of the gap between avoidable and unavoidable mortality shows the value added by the health system through primary and secondary care, as well as population health strategies.

**Figure 4.7:** Standardised mortality rates for avoidable and unavoidable mortality for people aged 65–74: 1980 to 98

Note: SMR – Standardised Mortality Rate, standardised for age.
Source: Ministry of Health 2002
Figure 4.8 shows the standardised avoidable mortality rates for older people for each DHB region. There was less variation across DHBs in standardised avoidable mortality than for total mortality (Figure 4.6).

**Figure 4.8:** Standardised avoidable mortality ratios for people aged 65–74, by DHB region: 1996–98 combined (99% confidence intervals)

Note: Standardised mortality ratio, standardised for age, ethnicity and socioeconomic profile.
Source: Ministry of Health 2002

**Avoidable morbidity**

Morbidity is defined as any departure (subjective or objective) from a state of physiological or psychological wellbeing. A measure of avoidable morbidity is hospitalisation rates categorised as either avoidable or unavoidable. Two types of avoidable hospitalisation are:

1. **preventable hospitalisations**, which could be prevented through population health strategies

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7 Excludes hospitalisations preventable by strategies for injury prevention as these are less avoidable than conditions classified as preventable or ambulatory sensitive.
2 ambulatory sensitive hospitalisations, which result from diseases and conditions sensitive to prophylactic or therapeutic interventions delivered through primary health care, and are therefore avoidable.\(^8\)

By definition the rate of ambulatory sensitive hospitalisations can be considered as an outcome measure for primary health care. As for avoidable mortality, analysis is confined to age groups under 75, because of the increasing likelihood of co-morbidities confounding analysis in the 75-and-over age group.

Hospitalisation data is recorded on discharge. Figure 4.9 shows that preventable hospitalisations for people aged 65–74 decreased slightly (0.5% average decrease per annum) from 1988/89 to 2000/01. This trend has reversed of late, however, with a 2.1 percent average annual increase since 1996/97. Since 1988/89 ambulatory sensitive hospitalisations have increased at a higher rate than unavoidable hospitalisations for those aged 65–74 (4.8% average annual increase compared with 2.8% for unavoidable admissions).

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\(^8\) Ministry of Health (2001) Appendix 2 provides a list of conditions that could be considered to be avoidable hospitalisations for people under 75 years of age, and the proportions of each condition that are either preventable or ambulatory sensitive.
The relative increase in ambulatory sensitive hospitalisations indicates that, although public health strategies have reduced the incidence of disease since 1988/89, a greater proportion of older people are being hospitalised for conditions that could theoretically be treated through primary care, possibly in combination with support services.

An increase in ambulatory sensitive hospitalisations has also been observed in the general population under 75 (Ministry of Health 2001). The most likely reasons for the increase are thought to be: changes in incentives to refer or admit patients; a rise in the prevalence of chronic conditions (Ministry of Health 1999); higher cost barriers to primary health care; and continuing difficulty for primary health care in reaching certain sectors of the population (Ministry of Health 1998).
In Figure 4.10 hospitalisation data has been standardised across DHBs to develop standardised preventable hospitalisation ratios, using the same procedure as for standardised mortality ratios, and combining data from 1998/99–2000/01. The standardised preventable hospitalisation ratio provides a measure of the effectiveness of population health strategies.

**Figure 4.10**: Standardised discharge ratios for preventable hospitalisation for people aged 65–74, by DHB region: 1998/99–2000/01 combined (99% confidence intervals)

The ratio of standardised ambulatory sensitive hospitalisation rates for older people for the years 1998/99–2000/01 are shown in Figure 4.11.
Disability rates and causes

There is a growing body of information on the extent to which disability impacts on the lives of older people in New Zealand. Key sources of information are the post-Census disability surveys in 1996–1997 and 2001. This report uses data from the 2001 Household Disability Survey and Disability Survey of Residential Facilities. Prevalence rates reported in this section refer to the number of people per 1000 in the specified age group who reported a disability or a particular level or type of disability.

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Note: Standardised discharge ratio, standardised for age, ethnicity and socioeconomic profile
Source: Ministry of Health 2002

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9 Statistics New Zealand surveys of households and residential care facilities.
**Prevalence and level of disability**

The likelihood of having a disability\(^{10}\) increases with advancing age (Figure 4.12). While 14 percent of women aged 15–44 and 12 percent of men in that age group reported a disability, in the 75-and-over age group the proportion increased to 69 percent for women and 64 percent for men.

**Figure 4.12:** Prevalence of disability, by age and gender: 2001

![Graph showing prevalence of disability by age and gender]

Note: Rates are per 1000 people in the age group.
Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities

The severity of disability also increases significantly\(^{11}\) with age (Figure 4.13). Around 36 percent of all people aged 75 and over had a moderate disability (requiring some assistance or special equipment, but less than daily) and 18 percent had a severe disability (requiring daily assistance). Conversely, people aged 65–74 were more likely to report no activity limitation or a mild disability.

---

\(^{10}\) Survey respondents were defined as having a disability if they gave a positive response to questions about activity limitation. The person may or may not require assistance for the disability.

\(^{11}\) A significance level of 95 percent has been used for comparisons of disability survey data.
Prevalence and level of disability for Māori

The rate of disability for Māori increases significantly with age (Figure 4.14). Because of the small number of older Māori in the disability survey samples, it is not possible to differentiate between older age groups. While older Māori adults (aged 65 and over) appear to have higher rates of disability than the same age groups in the total population, the difference is not statistically significant. However, Māori women aged 45–64 did report significantly higher rates of disability than the total population (39% compared to 23%).

---

12 Mild disability – not requiring assistance; moderate disability – requiring assistance or special equipment, but not daily, severe disability – requiring at least daily assistance.
Figure 4.14: Prevalence of disability for Māori, by age and gender: 2001

Note: Rates are per 1000 people in the age group.
Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities

Māori aged 45–64 also reported significantly higher rates of both moderate and severe disability than the total population (13% with a moderate disability compared to 11% in the total population and 5.6% with a severe disability compared with 2.6% in the total population). The rate of severe disability for Māori aged 65 and over was also significantly higher than in the total population (17% compared to 12% in the total population aged 65 and over) (Figure 4.15).
**Figure 4.15:** Level of disability\(^{13}\) for Māori, by age: 2001

Note: Rates are per 1000 people in the age group.
Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities

**Prevalence and level of disability for Pacific peoples**

The prevalence of disability amongst Pacific peoples was similar to the total population with no significant differences for people of the same age group or between men and women of the same age (Figure 4.16).

---

\(^{13}\) Mild disability – not requiring assistance; moderate disability – requiring assistance or special equipment, but not daily, severe disability – requiring at least daily assistance.
Figure 4.16: Prevalence of disability\textsuperscript{14} for Pacific peoples, by age and gender: 2001

Note: Rates are per 1000 people in the age group.
Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities

There was a higher rate of moderate disability in the total population aged 65 and over than for Pacific peoples (27% compared to 14% for Pacific peoples). However, severe disability was significantly higher amongst Pacific peoples aged 65 and over at 28 percent compared to 12 percent in the total population (Figure 4.17).

\textsuperscript{14} Mild disability – not requiring assistance; moderate disability – requiring assistance or special equipment, but not daily, severe disability – requiring at least daily assistance.
**Figure 4.17:** Level of disability for Pacific peoples, by age: 2001

Note: Rates are per 1000 people in the age group.
Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities

**Level of disability and place of residence**

Virtually all people in residential care required some assistance and most had a severe disability requiring daily assistance (72% of people aged 65–74 and 84% of people aged 75 and over). This is much higher than for people living in the community (Table 4.2). Conversely, people living in the community were more likely to have either no disability or a mild disability. People aged 75 and over living in the community also reported significantly higher levels of moderate disability (3.9%) compared to people of the same age in residential care (14%). The differences between people aged 65–74, however were not statistically significant.
Table 4.2: Level of disability, by age and residential status: 2001

<table>
<thead>
<tr>
<th>Age group</th>
<th>Household (rates per 1000 household population)</th>
<th>Residential care (rates per 1000 residential care population)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mild</td>
<td>Moderate</td>
</tr>
<tr>
<td>65–74</td>
<td>172</td>
<td>188</td>
</tr>
<tr>
<td>75+</td>
<td>138</td>
<td>391</td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities

The majority of people in residential care reported more than one activity limitation. This was significantly higher than for people in the same age group in the community (Table 4.3).

Table 4.3: Prevalence of multiple disability, by age and residential status: 2001

<table>
<thead>
<tr>
<th>Age group</th>
<th>Household (rates per 1000 household population)</th>
<th>Residential care (rates per 1000 residential care population)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single disability</td>
<td>Multiple disability</td>
</tr>
<tr>
<td>65–74</td>
<td>154</td>
<td>267</td>
</tr>
<tr>
<td>75+</td>
<td>154</td>
<td>481</td>
</tr>
</tbody>
</table>

Note: multiple disability refers to a positive response to more than one question on activity limitation.
Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities

Cause and type of disability

The extent of multiple disability amongst people in residential care is reflected in the high proportion of people in Table 4.4 reporting difficulty with both mobility and activities requiring agility (such as dressing and washing). Older people living in the community were much less likely to report difficulty with these activities. Difficulty seeing and speaking were also much more common amongst people in residential care, as were psychological, psychiatric and cognitive disabilities (remembering, learning and intellectual disability).
Table 4.4: Type of disability for people aged 65 and over, by residential status: 2001

<table>
<thead>
<tr>
<th>Type of disability</th>
<th>Household (rates per 1000 household population)</th>
<th>Residential care (rates per 1000 residential care population)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>382</td>
<td>914</td>
<td>413</td>
</tr>
<tr>
<td>Agility</td>
<td>295</td>
<td>887</td>
<td>329</td>
</tr>
<tr>
<td>Partially sighted/blind</td>
<td>77</td>
<td>452</td>
<td>99</td>
</tr>
<tr>
<td>Hearing impaired/deaf</td>
<td>221</td>
<td>404</td>
<td>231</td>
</tr>
<tr>
<td>Speaking</td>
<td>28</td>
<td>272</td>
<td>42</td>
</tr>
<tr>
<td>Remembering</td>
<td>68</td>
<td>533</td>
<td>95</td>
</tr>
<tr>
<td>Learning disability</td>
<td>29</td>
<td>480</td>
<td>55</td>
</tr>
<tr>
<td>Psychiatric/psychological</td>
<td>25</td>
<td>327</td>
<td>42</td>
</tr>
<tr>
<td>Intellectual</td>
<td>9</td>
<td>106</td>
<td>15</td>
</tr>
<tr>
<td>Disability type not elsewhere classified</td>
<td>80</td>
<td>154</td>
<td>84</td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities

Over half of people in residential care had difficulty remembering. This is an indication of the high prevalence of dementia amongst this population group. Developing dementia is an increasing reason for an older person needing assistance or residential care. Dementia predominantly affects people aged over 65 and becomes more common with advancing age. There is wide variation in prevalence rates reported by different international studies. Some of this variation reflects different levels of impairment, some being so mild that they do not markedly interfere with normal daily functioning, but are detected by the cognitive tests used in some surveys. There is generally less disagreement about severe forms of dementia. A New Zealand study, reported in 1983, estimated that 7.7 percent of people aged 65 and over have dementia with the prevalence of dementia roughly doubling every five years or so between the ages of 60 and 90 years (from 1% of people aged 60–64, 4% of people aged 65–74, up to 40% of people aged 90 and over) (Campbell et al 1983). This exponential increase possibly does not continue over the age of 95 years (Sainsbury et al 1997). At present around 70 percent of people with dementia are cared for in their own homes, usually by one carer, often also elderly (Richards 2001).
Estimates from the United States using 1995 data suggest that approximately 7 percent of all deaths are attributable to Alzheimer’s disease (although not necessarily reported as such on death certificates), placing it close to stroke as the fourth leading cause of death (Ewbank 1999).
Chapter 5:
Overview of Health and Disability Support Service Expenditure

Public expenditure on health is funded through Vote Health and Vote ACC. Health expenditure includes personal and mental health, disability support services, and public health programmes. This chapter focuses on Vote Health expenditure, including the two major areas of funding (personal health and disability support services). Estimates for Vote Health in this chapter are derived from data sets developed to calculate population-based health and disability support service funding. Information on Vote ACC expenditure is provided in Chapter 8.

Total Vote Health expenditure

Older people are high users of health and disability support services, with annual per capita expenditure\(^ {15} \) from Vote Health increasing exponentially in the older age groups (Figure 5.1). For example, the estimated per capita expenditure for people under the age of 15 in 2001/02 is $949, and $1329 for someone aged 15–64, compared with $3643 for people aged 65–74 years, $6863 for people aged 75–84 and $13,568 for people aged 85 and over. For the financial year 2001/02 Vote Health expenditure will be around $6850 million (GST exclusive). Around 39 percent of that expenditure is for the 12 percent of the population aged 65 and over.

\(^{15}\) Throughout this chapter, per capita expenditure refers to total publicly funded expenditure on the service by demographic group, divided by the total population of that demographic group.
**Figure 5.1:** Estimated annual per capita Vote Health expenditure on health and disability support services by age group and gender: 2001/02 (GST exclusive)

![Graph showing estimated annual per capita Vote Health expenditure on health and disability support services by age group and gender: 2001/02 (GST exclusive)](image)

Source: Ministry of Health 2002

**Personal health**

The majority of Vote Health expenditure is on personal health, around $4500 million (GST exclusive) or 66 percent of Vote Health in 2001/02. This includes public expenditure on general practice, community health, pharmaceuticals, laboratory tests and hospital-based services, such as accident and emergency, inpatient and outpatient services. Annual per capita expenditure on personal health (Figure 5.2) shows a similar trend to total Vote Health expenditure in Figure 5.1. The main difference is that per capita expenditure continues to be higher for men at age 85 and over than for women. At age 85 and over the per capita expenditure for males in 2001/02 is estimated to be $6668 compared to $5180 for females in this age group. Per capita expenditure at younger age groups is much lower ($776 for males aged 0–14, $679 for females aged 0–14, $666 for males aged 15–64 and $1118 for women aged 15–64).
Figure 5.2: Estimated annual per capita Vote Health expenditure on personal health services by age group and gender: 2001/02 (GST exclusive)

Disability support services

Disability support services (DSS) for older people include needs assessment and service co-ordination, assessment, treatment and rehabilitation services (AT&R), and a range of services providing ongoing support. Further details are provided in Chapter 7.

Vote Health expenditure on DSS for 2001/02 will be around $1300 million (GST exclusive). Estimated annual per capita expenditure on DSS shows a very different pattern from personal health, with minimal expenditure for all age groups up to age 65 (Figure 5.3). It is estimated that 69 percent of DSS funding goes to people aged 65 and over. Around 63 percent of this funding is for residential care. In contrast to personal health expenditure, females incur higher per capita DSS costs than males, particularly in the age group 85 and over. In this age group per capita expenditure for women is $8460 per year compared to $5476 for men.
**Figure 5.3:** Estimated annual per capita Vote Health expenditure on disability support services by age group and gender: 2001/02 (GST exclusive)

Source: Ministry of Health 2002

**Relative expenditure on health and disability support services**

Figure 5.4 illustrates the relative use of personal health and disability support services by men and women with increasing age. While women tend to use disability support services more than men, combined personal health and DSS expenditure is roughly similar for all age groups up to 85 and over – where DSS expenditure is considerably higher for women than for men resulting in higher overall costs for women in this age group.
Figure 5.4: Relative per capita expenditure in personal health and DSS, by age and gender: 2001/02 (GST exclusive)

![Graph showing relative per capita expenditure in personal health and DSS by age and gender: 2001/02 (GST exclusive)](image)

Source: Ministry of Health 2002

**International comparisons of public expenditure**

Per capita public expenditure on health services for people aged 65 and over in developed countries is uniformly higher than for younger people, as Table 5.1 illustrates. However, direct international comparisons are limited by the differences in methodology and data sources used. Much of the between-country differences shown in Table 5.1 may be attributed to variations in programme coverage. For example, in Germany, relatively little long-term care is included in publicly funded health expenditure. As a result Germany has a relatively low ratio of per capita expenditure for older people (three times higher for people aged 75 and over than for people under 65). In countries with more inclusive long-term care coverage, such as Finland, Australia and New Zealand, the ratio is 5.5 to 6 times higher (Kinsella and Velkoff 2001).
Table 5.1: Ratio of per capita health expenditure for older people relative to per capita expenditure for people aged 0–64: 1993

<table>
<thead>
<tr>
<th>Country</th>
<th>Age group</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65–74</td>
<td>65+</td>
<td>75+</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>1.4</td>
<td>1.7</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>2.3</td>
<td>2.7</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>2.3</td>
<td>2.8</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2.5</td>
<td>3.9</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
<td>2.3</td>
<td>3.9</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>2.8</td>
<td>4.0</td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td>2.6</td>
<td>4.0</td>
<td>5.7</td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>2.8</td>
<td>4.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>3.1</td>
<td>4.2</td>
<td>5.2</td>
<td></td>
</tr>
</tbody>
</table>

Note: Data are relative to the level of per capita spending for people aged 0–64, which is set at 1.0. Source: Kinsella and Velkoff (2001)

There is growing evidence that acute health care costs do not rise so much with age as with proximity to death (Wanless 2001). Recent research in Canada, for example, indicated that about one-third of health expenditure is incurred by people in their last year of life, regardless of age (Pollock 2001). Preliminary analysis in the United Kingdom has also suggested that more than a quarter of acute health care costs are incurred in the last year of life (Wanless 2001). This means that a large part of observed health care expenditure for older people may be explained by the high ‘cost of dying’ and the higher probability of people aged 75 and over being in the last year or two of their lives, in comparison with people in younger age groups.

There is some indication that health care costs actually taper off at very old ages, suggesting that life may be prolonged up to a point, but that treatment is not desired indefinitely (Kinsella and Velkoff 2001). Amongst older people not in residential care, per capita health expenditure often peaks at ages 75–79 and declines thereafter. Costs per service (such as hospital stays and medicine prescriptions) for older people are less than for the population as a whole, although usage rates for older people are much higher and hence the per capita costs are higher (OECD 1997).
Long-term care costs show a different pattern, with the cost of care increasing with age (McGrail et al 2000). This suggests that, as the population ages, there will be greater increases in long-term care costs than acute care costs, a trend that is already indicated in Figure 5.4.

Governments and international organisations are now recognising the need for cost-of-illness studies on age-related diseases. This is in part to anticipate the likely demands from increasingly prevalent and expensive chronic conditions (of which Alzheimer’s disease may be the most costly) and in part to understand the potential benefits of higher levels of education and access to information about healthier lifestyle behaviour to future generations (Kinsella and Velkoff 2001).
Chapter 6:  
Expenditure on and Utilisation of Health Services

Information on utilisation and cost of health services by age is incomplete. For example there is little information on personal expenditure on health services or on use made of many community-based services. This chapter sets out what information is known about the use of, and public expenditure on, general practitioner services, pharmaceuticals, laboratory tests, hospital-based medical and surgical interventions (including day and outpatient services), and mental health services.

Community-based health care

General practice

General practice (GP) services are used predominantly by the very young and older people (Figure 6.1). In older age groups, use of GP services increases with age. In 2000/01 men and women aged 85 and over each visited a GP service around nine times a year compared with six and seven visits for men and women aged 65–74 years.
The distribution of publicly subsidised GP costs shows a similar pattern of greater expenditure on the very young and older age groups but there is much greater concentration of expenditure on the very young (Figure 6.2). Figure 6.2 excludes out-of-pocket costs and reflects the higher subsidy level for children under 6 years old (this increased from $32.50 to $35 per visit on 1 July 2002).

Older people with incomes below $20,047 per annum for a single person or $29,933 for a couple, are eligible for a Community Services Card (CSC) and receive a subsidy of $15 per GP visit. Currently 71.4 percent of people aged 65 or over are CSC holders. Another 4.9 percent have high user health cards (HUHCs) because they have an ongoing condition that necessitates visiting a GP more than 12 times in 12 months. This entitles them to a $15 subsidy on subsequent GP visits. All other older people pay the full cost of visiting a GP service.

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16 Throughout this chapter, per capita expenditure refers to total publicly funded expenditure on the service by demographic group, divided by the total population of that demographic group.
Because of the higher subsidy rates and number of GP visits for children under 6 years, public per capita expenditure on GP services is much higher for this age group than for any other ($276 for each child 0–4 years old in 2000/01). This equates to a total expenditure of $77.5 million for GP visits for this age group. Higher co-payments for older people resulted in a much lower per capita cost to the state of $86 for people aged 65 and over, totalling $39.3 million for the group as a whole.

**Figure 6.2:** Estimated public expenditure on GP services per capita, by age and gender: 2000/01

![Per capita expenditure chart](chart.png)

Source: Ministry of Health 2001

**Pharmaceutical services**

On a per capita basis, pharmaceutical services are used predominantly by older people with the number of scripts per capita increasing rapidly with age from age 45–64 onwards (Figure 6.3). As with GP service visits, females 65 and over obtain slightly more scripts on average than a male of the same age.
People eligible for a CSC or HUHC pay $3 part charge per item for pharmaceuticals that are listed on the PHARMAC schedule. All others pay a part charge of up to $15 per item for fully subsidised pharmaceuticals. However, for drugs that are not fully subsidised by PHARMAC, people pay the difference between the full cost of the drug and the PHARMAC subsidy.

Public expenditure on pharmaceuticals follows the same pattern as utilisation (Figure 6.4). For example, in 2000/01 the per capita cost for females aged 45–64 was $200 compared to $423 for females aged 65–74, and $642 for females aged 85 and over. The comparable cost for men aged 85 and over was $629.
Figure 6.4: Estimated public expenditure on pharmaceuticals per capita, by age and gender: 2000/01

Laboratory services

Laboratory service use and per capita expenditure also increase with increasing age (Figures 6.5 and 6.6), although the utilisation rates and per capita expenditure are much lower than for pharmaceuticals. For example, women aged 85 and over used, on average, 10 laboratory tests, with a per capita public expenditure of $85.
Figure 6.5: Estimated laboratory utilisation per capita, by age group and gender: 2000/01

Source: Ministry of Health, 2001

Figure 6.6: Estimated public expenditure on laboratory tests per capita, by age group and gender: 2000/01

Source: Ministry of Health, 2001
Secondary care

This section provides information on publicly funded hospital-based services. It does not include privately funded hospital care.

Medical and surgical hospitalisation

In 2000/01 there were approximately 534,000 publicly funded medical and surgical hospital admissions (including all inpatient and day patient admissions, but excluding outpatient attendance and maternity cases). This represents a rate of 137 admissions for every 1000 people. Of these admissions, over 170,000 (32%) were for the 12 percent of people aged 65 and over. Hospitalisation rates (which are recorded on discharge) for older people increase with age (Figure 6.7), with much higher rates for people aged 85 and over (534 per 1000) than for people aged 65–74 (260 per 1000). Hospitalisation rates are also higher for men in older age groups than for women.

Figure 6.7: Medical and surgical hospital discharge rates per 1000, by age group and gender: 2000/01

Source: Ministry of Health 2002
Excluding those aged 0–4, per capita expenditure for hospital admissions remains fairly constant up to age 50. However after age 50, per capita expenditure, like hospitalisation rates, increases linearly with age (Figure 6.8). This is partly due to increasing numbers of admissions with increasing age, but also to increasing complexity of conditions resulting in higher treatment costs and longer stays in hospital than for younger age groups.

The average per capita cost of medical/surgical treatment for someone under 65 was $248. This compares with an average cost per capita of $1388 for those aged 65 and over. Within the older age groups, per capita expenditure increases from $940 for people aged 65–74 to $1562 at age 75–79 and $2066 per capita at age 85 and over. Overall, 40 percent of the total expenditure on medical/surgical treatment in 2000/01 was for patients aged 65 and over.

**Figure 6.8:** Estimated medical and surgical inpatient hospital per capita expenditure, by age group and gender: 2000/01

Source: Ministry of Health 2002
Hospitalisation rates for older people have been increasing at a much faster rate than for people under 65. There has been a considerable increase in the number of discharges from hospital for older people over the last four years (Figure 6.9). From 1988/89 to 1996/97, the number of hospital discharges for people aged 65 and over grew by an average of 3.1 percent per annum (compared to 1.6% for people under 65). Since 1996/97, the average rate of growth has been 4.3 percent per annum, or almost 8,000 discharges per year (compared to an average 3.2% for people under 65). The highest increase has occurred for those aged 85 and over. Over the same period the per capita cost of medical and surgical discharges for people aged 65 and over has increased by 4.2 percent (based on 2000/01 case weights).

Figure 6.9: Medical and surgical hospital discharge rates, by age group for people aged 65 and over: 1988/89 to 2000/01

Over the 12-year period since 1988/89 the ratio of discharges to patients aged 65 and over has increased by 1 percent per annum. This could reflect higher rates of readmission to hospital for older patients, but further analysis is required to determine the cause of this increase.
There also appears to have been a marked increase in the complexity of surgical procedures over the last 12 years. Figure 6.10 shows case-mix adjusted discharges for the period. These have been calculated using the national contracted prices paid to Hospital and Health Services for hospital treatment in 2000/2001.\textsuperscript{17}

Since the early 1990s, surgical treatment provided in hospital has become more complex due to new sophisticated surgical techniques, more higher-cost treatments and an increase in both cardiac and orthopaedic surgery, at the expense of lower-cost and less-complex surgery. The true rate of increase in complexity will be somewhat lower than that shown in Figure 6.10, however, as there have been several changes in coding practices over the period.\textsuperscript{18}

Rates of increase in case-mix adjusted surgical procedures have been higher for older people than for people under the age of 65, although the difference has decreased significantly in recent years. Rates increased for people aged 65 and over by an average of 5.4 percent per annum between 1988/89 and 1996/97 (compared to 2.2% for people under 65) and by 3.8 percent between 1996/97 and 2000/01 (only 0.4% higher than for people aged under 65).

\textsuperscript{17} The price weights used represent the relative weight of the average national price for each AN-DRG during 2000/01 compared with the national average price for all AN-DRGs in 2000/01.

\textsuperscript{18} Some of this greater complexity is the result of ‘classification creep’ (particularly from 1994/95 to 1997/98), that is, hospital coders record secondary diagnosis codes more frequently. This tendency implies that cases are being classified to more expensive diagnosis-related groups than previously, but only because coding practice has changed.
Hospital discharge rates for all people aged 65 and over have increased at an average rate of 4.2 percent per annum since 1996/97. However, discharge rates for older Māori have increased much more rapidly (at 6.1%) with hospitalisation rates in 2000/01 being 34 percent higher than those for European/other (Figure 6.11).

Increases in hospitalisation rates have also been higher for older Pacific peoples (9.6%), with the rate for 2000/01 being 57 percent higher than those for European/other.
Not only are older people admitted to hospital more than people under 65, they also use medical and surgical services at different rates (Table 6.1). The discharge rates in Table 6.1 have been weighted to take account of different rates of co-morbidities and complications across age groups and then expressed as a proportion of all discharges in each age group. People under 65 tended to be hospitalised for diseases or disorders of the musculoskeletal system (15% of all discharges for that age group) followed by diseases or disorders of the circulatory, digestive, and respiratory systems.

For people aged 65–74, and 75–84, diseases and disorders of the circulatory system are the most common cause of hospitalisation (28% and 25% of discharges respectively), being much higher than for people under 65 years old (14%). Musculoskeletal conditions are the next most likely causes of hospitalisation in these age groups. For those aged 85 and over, diseases or disorders of the musculoskeletal system are the most likely cause of hospital admission, with circulatory system diseases and disorders the second most common.
Table 6.1: Proportion of case-weighted discharges for all age groups for each major diagnostic category: 2000/01

<table>
<thead>
<tr>
<th>Major diagnostic category</th>
<th>Age group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0–64</td>
</tr>
<tr>
<td>Pre MDC$^{19}$</td>
<td>5.5</td>
</tr>
<tr>
<td>Nervous system</td>
<td>8.0</td>
</tr>
<tr>
<td>Eye</td>
<td>1.3</td>
</tr>
<tr>
<td>ENMT$^{20}$</td>
<td>6.2</td>
</tr>
<tr>
<td>Respiratory system</td>
<td>8.5</td>
</tr>
<tr>
<td>Circulatory system</td>
<td>14.2</td>
</tr>
<tr>
<td>Digestive system</td>
<td>10.6</td>
</tr>
<tr>
<td>Liver, pancreas</td>
<td>2.9</td>
</tr>
<tr>
<td>Musculoskeletal system</td>
<td>14.9</td>
</tr>
<tr>
<td>Skin, breast</td>
<td>5.6</td>
</tr>
<tr>
<td>Endocrine, nutrition</td>
<td>2.0</td>
</tr>
<tr>
<td>Kidney, urinary</td>
<td>3.7</td>
</tr>
<tr>
<td>Male reproductive</td>
<td>0.9</td>
</tr>
<tr>
<td>Female reproductive</td>
<td>4.4</td>
</tr>
<tr>
<td>Blood, immunity</td>
<td>1.2</td>
</tr>
<tr>
<td>Cancer</td>
<td>1.8</td>
</tr>
<tr>
<td>Infection, parasites</td>
<td>2.7</td>
</tr>
<tr>
<td>Substance use</td>
<td>0.1</td>
</tr>
<tr>
<td>Injury, poisoning</td>
<td>4.2</td>
</tr>
<tr>
<td>Burns</td>
<td>0.5</td>
</tr>
<tr>
<td>Other contacts</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Population</td>
<td>88.2%</td>
</tr>
</tbody>
</table>

Source: Ministry of Health 2002

$^{19}$ Pre-major diagnostic category – includes transplants of major organs or bone marrow, or a tracheotomy.

$^{20}$ Diseases or disorders of the ear, nose, mouth or throat.
There is considerable variation in medical and surgical hospitalisation rates for older people between DHB regions. Figure 6.12 shows the case-weighted discharge rates for each DHB after standardising the data for differences in the case complexity, age, ethnic and socioeconomic structure of the DHBs’ populations. The differences in the discharge rates in Figure 6.12 may reflect differences in the level of provision and access to hospital-level services, including referral and admission practices. Further analysis is required, however, to determine the cause(s) of these differences.

**Figure 6.12:** Standardised case-weighted discharge ratios for people aged 65 and over, by DHB region: 1998/99–2000/01 combined (99% confidence intervals)

Source: Ministry of Health 2001
Older people are spending less time in hospital for medical and surgical treatment than in the past, although there is evidence of a flattening out in this reduction over the last few years (Figure 6.13). Between 1988/89 and 1995/96 the average length of stay (ALOS)\(^1\) for those aged 65–74 decreased by 5.3 percent per annum compared to 3.6 percent per annum for people under the age of 65. Since 1995/96 it has decreased by 3.7 percent per annum for people aged 65 and over and 2.9 percent per annum for those aged under 65. For those aged 75–84, and 85 and over, the reduction in ALOS between 1988/89 and 1995/96 was even greater than for people in the 65–74 age group (6.9% per annum for people aged 75–84 and 9.9% per annum for people aged 85 and over).

**Figure 6.13:** Medical and surgical hospital average length of stay for older people: 1988/89 to 2000/01

Source: Ministry of Health 2001

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\(^{21}\) ALOS is calculated only for cases that spend at least one night in hospital.
Possible reasons for the reduction in ALOS are advances in medical technology, for example, new surgical techniques and more effective drugs, and planning for early discharge. These shorter stays have led to savings in both costs and resources for hospitals, enabling more people to be treated in hospital (refer Figures 6.9 and 6.10). However, it is not known to what extent shorter lengths of stay in hospital have impacted on demand for disability support services, such as home support and residential care, or on readmission rates.

**Day treatment services**

One of the key changes in hospital treatment during the 1990s, particularly for surgery, has been an increase in the level of day case treatment (for example cataract surgery). Technological advances have enabled a number of procedures to be performed safely in day wards, avoiding an overnight stay.

Decreases in the ALOS in hospital have been occurring at the same time as significant increases in the proportion of medical and surgical procedures undertaken as day cases.\(^{22}\) The continued increase in day treatment (Figure 6.14) may be the main reason why the reduction in ALOS has tailed off in recent years – as more of the less complex procedures are undertaken as day cases.

---

\(^{22}\) Day cases were not required to be reported to the NMDS prior to 1992/93.
Since 1992/93 the percentage of older patients treated as day cases has increased markedly. Between 1992/93 and 1999/00 there was a 6.4 percent increase per annum for those aged 65–74, a 9.9 percent increase for those aged 75–84 and a 9 percent increase for people aged 85 and over. Lately, however, the rate of increase has tapered off for all age groups, with a slight decline in levels of day case treatment for people aged 85 and over. Between 1992/93 and 1999/00 there was a 3.1 percent annual increase in day cases for people aged 0–64, with no change in the 2000/01 year.

**Accident and emergency and outpatient services**

Older people tend to use Accident and Emergency (A&E) services at lower rates than people under the age of 45, but are higher users than adults aged 45–64 years (Figure 6.15). It is estimated that in 1999/00 around 6 percent of A&E events were for people aged 65–74, a rate of 169 events per 1000 people. This decreased to 136 events per 1000 people aged 75 and over. The comparative rates for people under 45 and 45–64 were 225 and 112 per 1000 respectively.
In contrast, older people use medical and surgical outpatient services at a much higher rate than those aged under 65 (Figure 6.15). People aged 65 and over accounted for approximately 25 percent of medical/surgical outpatient treatments, and 25 percent of outpatient costs. Highest use of medical outpatient services was by people aged 65–74, with an estimated rate of 691 events per 1000. For surgical outpatient services, however, the highest usage was by those aged 75 and over, with a rate of 602 events per 1000.

**Figure 6.15:** Accident and emergency department and medical and surgical outpatient utilisation per capita, by age group: 1999/00

![Bar chart showing accident and emergency department and medical and surgical outpatient utilisation per capita by age group: 1999/00](image)

Source: Ministry of Health 2002

The average per capita expenditure for an A&E visit was estimated to be slightly lower for older people – $23 for 65–74 year-olds and $19 for those aged 75 and over, compared to an average estimated cost per capita of $26 for all cases (Figure 6.16).
Per capita expenditure for medical outpatient visits is significantly higher than surgical outpatient or A&E visits in the 45–64 and 65–74 age groups and less so in the age group 75 and over. The average per capita cost for outpatient services for people aged 65–74 was $120 for medical and $60 for surgical outpatient services. Per capita expenditure for both medical and surgical outpatients decreases for the 75-and-over age group ($88 for outpatient medical treatment and $75 for surgical outpatient services).

**Figure 6.16:** Estimated accident and emergency department, medical and surgical outpatient hospital per capita expenditure, by age group: 1999/00

![Graph showing per capita expenditure for different age groups and services](image)

Source: Ministry of Health 2002

**Specialist mental health services**

The data in this section has been extracted from the Mental Health Information National Collection (MHINC). This data collection is still under development, being most complete for DHB-delivered services, but providing information for only a limited number of non-government agencies (NGOs) delivering mental health services. The figures in this section provide information on mental health services provided by DHBs.
Information on psychogeriatric services is incomplete as these services are funded through mental health funding in the northern and midland regions, where some psychogeriatric teams have yet to join the MHINC data collection process. In the central and southern regions psychogeriatric AT&R services (which differ from the services provided by psychogeriatric teams in the other two regions) are funded through Disability Support Services and are reported on in Chapter 7. These data gaps mean that utilisation of specialist mental health services by older people is underestimated in this chapter.

Mental health services are organised into child and adolescent services (covering ages 0–19), adult services (covering all ages from 18 years) and mental health services for older people (people aged 65 and over). People over the age of 65 may attend either adult mental health or psychogeriatric services depending upon whether they were a mental health service client before turning 65 and whether they have co-morbidities that may be better treated by a psychogeriatric team.

From the data currently available, specialist mental health services are accessed most frequently by people aged 25–44 (Figure 6.17). People over the age of 60 are less likely to use mental health services than any other age group apart from the 0–4 age group. However, as indicated above, Figure 6.17 underestimates provision of psychogeriatric services, as data are incomplete.
Figure 6.17: Mental health service utilisation rates, by age group: 2001 calendar year

Source: Ministry of Health 2002

Data for Figure 6.18 is also incomplete for psychogeriatric services. Community mental health, and drug and alcohol teams see all adults, while psychogeriatric teams focus on people aged 65 and over. People aged 65–74 were most likely to be seen by a community mental health team (61% of clients in this age group), suggesting that many of them had pre-existing mental health conditions. Only 32 percent of people aged 65–74 accessing mental health services received those services from a psychogeriatric team (Figure 6.18).
People aged 75 and over were more likely to receive services from a psychogeriatric team (56%) than any other mental health service. Only 40 percent in this age group were seen by a community health team. The usage of Alcohol and Drug services declined with age, with very few people 75 and over accessing these services.

It is not possible to identify the cost of specialist mental health services accessed by older people because it is not yet possible to disaggregate cost for adult community health teams by age.
Chapter 7:  
Expenditure on and Utilisation of Disability Support Services

Disability support services (DSS) for older people consist of:

- information and advisory services
- needs assessment and service co-ordination (to determine access to DSS-funded services)
- assessment, treatment and rehabilitation services (AT&R), which include assessment of the potential for improving functional ability (physical and mental)
- home support services (personal care and household management such as cleaning, laundry and meal preparation)
- carer support and respite care (support for full-time unpaid caregivers to provide relief from the caregiving role)
- environmental support (equipment, home and vehicle modifications)
- residential care (rest home, dementia unit or continuing care hospital).

For the 1998/99 financial year it was estimated that 69 percent of DSS expenditure was for people aged 65 and over. Table 7.1 sets out the estimated distribution of that expenditure across service types for older people. Sixty-three percent of DSS expenditure for older people was for residential care, with a further 20 percent for AT&R. There was comparatively little expenditure to support people at home, either directly or through supporting family members or others caring for them. Expenditure on home support has been increasing over recent years. Separating DSS funding by age group will begin in 2002 with some historical analysis on 2001/02 data occurring during July 2002.
Table 7.1: Estimated expenditure on disability support services for people aged 65 and over: 1998/1999

<table>
<thead>
<tr>
<th>Type of service</th>
<th>Percent expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential care</td>
<td>62.7</td>
</tr>
<tr>
<td>Assessment treatment and rehabilitation</td>
<td>19.7</td>
</tr>
<tr>
<td>Home support</td>
<td>9.6</td>
</tr>
<tr>
<td>Caregiver support</td>
<td>2.3</td>
</tr>
<tr>
<td>Disability needs assessment</td>
<td>1.3</td>
</tr>
<tr>
<td>Respite care</td>
<td>0.7</td>
</tr>
<tr>
<td>Environmental support</td>
<td>0.7</td>
</tr>
<tr>
<td>Service co-ordination</td>
<td>0.2</td>
</tr>
<tr>
<td>Home alterations</td>
<td>0.2</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>0.2</td>
</tr>
<tr>
<td>Other</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Source: Ministry of Health 2000

This chapter provides information on AT&R services, carer support, environmental support and residential care.

Assessment treatment and rehabilitation services

AT&R services are co-ordinated multidisciplinary services that are customised to meet the complexity of need of people with disabilities in order to restore their functional ability, and enable them to live as independently as possible. AT&R services are predominantly provided in hospital inpatient settings, but can also be provided as day hospital or outpatient services or in a community base or the person’s own home. The ratio of inpatient to outpatient AT&R services is approximately 3 to 1. A small proportion of AT&R services focuses on psychogeriatric conditions, the most common of which is dementia. The rest provide a generic or general older person’s service. Hospital-based AT&R is used almost exclusively by people aged 65 and over, with usage increasing markedly with age. Figure 7.1 shows discharge rates and per capita expenditure of AT&R services for people under the age of 65, people over the age of 65 accessing generic or geriatric AT&R services and for people accessing DSS-funded psychogeriatric AT&R in the central and southern regions. Psychogeriatric services in the northern and midland regions are funded through mental health funding and are included in Chapter 6.
Of the 19,436 hospitalisations for AT&R in 2000/01, 89 percent were for people aged 65 and over. This included psychogeriatric AT&R (which accounted for 4.5% of admissions). AT&R hospitalisation rates were the highest for people aged 85 and over (113 per 1000). This was more than twice the rate for those aged 75–84 and almost 700 percent the rate of those aged 65–74. There was very little difference in utilisation rates by gender.

Total expenditure for AT&R services in hospitals in 2000/01 was approximately $164.3 million. The average per capita expenditure on AT&R hospitalisations for a person aged 65–74 was $125. This compares with an average per capita cost of $409 for those aged 75–84, and $933 for those aged 85 and over. Around 67.4 percent of AT&R costs were for people aged 75 and over.23

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23 All estimates are based on relative bed day utilisation.
Figure 7.2 provides information on AT&R discharges for people aged 65 and over. Information on discharge rates for psychogeriatric AT&R units in the central and southern regions\(^{24}\) is only available from 1996/97.\(^{25}\) There has been little change in AT&R hospitalisation rates for older people over the period. The rate of discharge from psychogeriatric AT&R services has increased slightly since 1996/97, from 3.5 per 1000, to 3.6 per 1000 in 2000/01. This increase was accompanied by marked inter year variability, with a sharp increase between 1998/99 and 1999/00 (to 5 per 1000), followed by a decrease in the following year.

**Figure 7.2:** AT&R discharge rates per 1000 for people aged 65 and over:
1993/94 to 2000/01

![Graph showing discharge rates per 1000](image)

Source: Ministry of Health 2002

\(^{24}\) These admission rates have been calculated using the number of admissions per 1000 people aged 65 and over in the central and southern regions.

\(^{25}\) Estimates prior to 1996/97 for psychogeriatric AT&R are unreliable.
Long-term support

A consequence of increasing disability with advancing age is that older people are more likely to need additional support services to remain living at home, or may need to move into residential care (Figure 7.3). In the 2001 household and residential facility disability surveys 74 percent of people aged 65–74 were living at home without assistance. However, only 54 percent of 75–84 year-olds and 15 percent of people aged 85 and over were living at home without assistance. The majority of people aged 85 and over were living at home with assistance (57%). People aged 85 and over were also more likely to be living in residential care than the other two age groups (27% compared to 5.9% of people aged 75–84 and 1.8% of people aged 65–74).

Figure 7.3: Residential distribution of people aged 65 and over, by level of disability and age group: 2001

Note: Home with assistance includes people needing assistance or specialist equipment either daily or less frequently.

Source: Statistics New Zealand 2001 Household Disability Survey and 2001 Disability Survey of Residential Facilities
**Carer support**

Carer support consists of a range of non-residential services to give full-time, unpaid caregivers relief from the caring role. In many cases carer support is given in the home of the person requiring it, but it may also be provided in the home of the relief carer, or in the case of day care, in a facility. Access to carer support is through needs assessment. A number of days are allocated to clients, who may then use any or all of them as required. Only around 2 percent of DSS funding for older people is for carer support.

Use of carer support increases with age, being greatest for those caring for people aged 85 and over. However, provision of carer support for this age group decreased markedly between 1998/99 and 1999/00 (Figure 7.4). Over the whole period there was a 12 percent per annum decrease in carer support for people aged 85 and over. Carer support increased for all other age groups, with the largest increase being for people aged 65–74 years (13%).

**Figure 7.4:** Carer support clients per 1000, by age group: 1997/98 to 2000/01

Source: Ministry of Health 2002
Carer support increased by 18 percent per annum in the southern region, and 5.2 percent per annum in the central region, but dropped by 2.5 percent per annum in the northern region and 7.3 percent per annum in the midland region.

**Figure 7.5:** Carer support clients, by age group and region for people aged 65 and over: 1997/98 to 2000/01

![Graph showing carer support clients by age group and region for people aged 65 and over from 1997/98 to 2000/01.](image)

Source: Ministry of Health 2002

**Environmental support**

Environmental support includes modifications to housing or vehicles, grants to assist with purchasing a vehicle, driving assessment, assessment for personal care, wheelchair and seating appliances, equipment to assist with standing or walking, hearing and vision appliances, communication devices, household management and personal care pain relief. Less than 1 percent of DSS funding for older people is for environmental support.
Of the $30 million expended on environmental support in 1999/00 around half was for people aged 65 and over. Per capita expenditure for older people was highest in the northern region ($42) and lowest in the central region ($27). Per capita expenditure for people under 65 was considerably lower (Figure 7.6).

Figure 7.6: Environmental support per capita expenditure, by region and age group: 1999/00

Source: Ministry of Health 2002

Residential care

As at 1 July 2001, there were 1186 dementia care, 9559 long-stay hospital, and 23,412 rest home beds available in New Zealand.
Use of residential care

During 2000/01, there were an estimated 29,100 people, on average, in residential care. This includes 19,669 either fully or partially publicly funded residents, and an estimated 9523 people paying the full cost of their residential care. No further information is available on people paying the full cost of residential care. This section focuses on publicly subsidised residents in rest homes, dementia units or continuing hospital care.

Very few people aged 65–74 were receiving subsidised residential care (around 1% of men and women in this age group). The majority of subsidised residents were women (66%), with the number of women increasing markedly with advancing age (Figure 7.7). There were almost three times as many women aged 85 and over in residential care than men. This is due to the higher life expectancy for women, higher rates of disability and the greater likelihood of older women being widowed. Thirty-one percent of women aged 85 and over were in residential care compared to 24 percent of men.

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26 Eligibility for state funding for residential care is dependent upon a needs assessment and means test. However, no one assessed as needing residential care has to pay more than $636 per week for that care. The state pays any difference between $636 and the full cost of care.
The percentage of older people in residential care at any given point in time is relatively low, on average around 5 percent in developed countries. However, an estimated 25–30 percent of people who survive to age 65 can expect to spend some time in long-term care institutions before they die (Kinsella and Velkoff 2001).

Residential care use is measured in bed days (the number of beds occupied during the year). In 2000/01 the state subsidised approximately 7.02 million bed days in rest home/continuing hospital care. The majority of beds are in rest homes, but since 1996/97 rest home use has remained fairly constant at around 3.8 million bed days per year while hospital bed days have increased steadily from 2.15 million per year in 1996/97 to 2.62 million in 2000/01 (Figure 7.8). Dementia unit bed days have also increased over the period, from 365,300 to 559,300. This pattern of utilisation may reflect later entry to residential care, with higher levels of disability or frailty. In 1999/00, the average age on entry to residential care was 82.5 years. Twenty percent of people admitted to residential care survived less than three months, and 40 percent survived less than 12 months. The average length of stay for people receiving a public subsidy was two years.
**Figure 7.8:** Residential care for older people, bed day utilisation by facility type: 1996/97 to 2000/01

![Graph showing bed day utilisation by facility type from 1996/97 to 2000/01](image)

Source: Ministry of Health 2001

**Cost of residential care**

In 2000/01, public expenditure on rest home/continuing hospital care subsidies was $426 million. This included partial subsidies for people who would otherwise need to pay more than $636 per week. $223.1 million was for continuing hospital care, $176.9 million for rest home care and $26.0 million for dementia unit beds (Figure 7.9). Over the four-year period expenditure on continuing hospital care increased by 5.7 percent per annum, while expenditure on rest homes grew by 2.2 percent and dementia unit beds increased by 9.5 percent. Most of the increase was between 1996/97 and 1999/00, with an overall average increase in residential care expenditure of 5.5 percent per year up to 1999/00 and a 1 percent increase after that date.
Per capita expenditure on residential care has also increased over the five years for which data are available (Figure 7.10). On a per capita basis, funding for those aged 65–74 and 75–84 increased at a higher rate than for those aged 85 and over from 1996/97 to 1999/00, although there have been reductions in per capita expenditure for both the 65–74 ($241 to $222) and 75–84 ($1037 to $982) year age groups from 1999/00 to 2000/01. Overall, per capita expenditure on residential care for the population aged 65 and over has increased by 0.3 percent from 1999/00 to 2000/01. Most of this increase has been due to growth in utilisation.

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27 Per capita expenditure refers to total public expenditure on residential care for each age group, divided by the total population in that age group. Per capita expenditure reflects the number of people in an age group receiving the service as well as the per person cost.
Figure 7.10: Growth in per capita expenditure on residential care, by age group 1996/97 to 2000/01

Source: Ministry of Health 2001

International comparisons

It is not possible to derive accurate cross-country comparisons of rates of residential care because of inconsistent data. Despite these limitations, Figure 7.11 provides an indication of the variable institutionalisation rates for older people, using data from the early to mid-1900s. At the time the data was collected New Zealand had the eighth highest rate of residential care for older people, at 6.7 percent of people aged 65 and over.
Soldo (1987) noted that in most developed countries, fewer than 2 percent of people aged 65–69 were in institutions. Those who do enter residential care in this age group usually do so because they are either single or widowed and childless, i.e., people who are unlikely to have young family members to rely upon for support. The rate of institutionalisation rises fairly slowly until age 80, but many countries experience a sharp increase in institutionalisation rates among octogenarians. More than half of all Norwegians aged 85 and over live in residential care at a given point in time, as do around one-third of this age group in Australia and New Zealand (Kinsella and Velkoff 2001).

A number of studies (e.g., Manton, Stallard and Liu 1993; Weiner and Illston 1995; and Leung 2000) have documented the direct relationship between advances in medical technology that are prolonging life and population ageing, age-gender specific rates of chronic disease and disability, and the need for long-term care.
It has been argued that the absolute numbers of people in residential care are increasing in countries with older population structures even with increasing efforts to enhance community-based services and avoid or greatly reduce levels of institutionalisation (Kinsella and Velkoff 2001). Despite these general trends, social conditions and policy can significantly affect the level of use of residential care. An OECD study (Jacobzone et al 1998) noted the usefulness of an ‘active’ strategy towards ageing in relation to the need for long-term care services.

“[An] active ageing strategy focuses on reducing the prevalence of disability with more emphasis on prevention. It also considers that ageing, far from being a pure demographic phenomenon, is a dynamic process which social policy care systems may certainly influence … Decisions taken now will also largely determine the future” (Jacobzone et al p.26).
Chapter 8: 
Expenditure on and Utilisation of ACC Services

ACC has responsibility for injury prevention, treatment and rehabilitation and for the provision of weekly compensation for people injured in New Zealand. Claims are funded through a number of sources including levies on employers, employees and motor vehicles. Government directly funds ACC for non-earners. This fund includes the majority of older people, children and beneficiaries.

Funding is demand driven, based mainly on fee for service arrangements for treatment and rehabilitation provided to claimants. Earnings-related compensation is paid for those claimants who are working at the time of the injury.

Information is provided in this chapter on the number of claims and the per capita costs of those claims. The individual cost of claims varies considerably as some are for single episodes of care or treatment, while others cover ongoing care and support for people with high levels of disability resulting from an accident.

In 2000/01 ACC spent $1110 million for the treatment, rehabilitation and support of people who had an accident. Of this, $43 million (3.9%) was for people aged 65 and over.

ACC claims and expenditure

Males aged 15–64 made the most claims for ACC-funded health and disability support services. Men aged 25–44 made 97 claims for every 1000 males in that age group (Figure 8.1). At older age groups claim rates decreased for men, but increased for women, with women making more claims than men from age 75 onwards. In the 85-and-over age group, the claim rate for women was 68 per 1000, compared to 37 per 1000 for men. This reflects the higher proportion of women at older ages.
Figure 8.1: Total ACC claims per 1000, by age group and gender: 2000/01

The pattern of ACC claims is reflected in per capita expenditure (Figure 8.2) with the highest per capita expenditure being for males in the 25–44 age group ($697). Per capita costs for older men were $137 for those aged 65–74, $83 for 75–84-year-olds and $63 for those aged 85 and over. Only in the 85-and-over age group was per capita expenditure higher for women ($81) than for men.

Source: ACC 2002
Figure 8.2: Annual per capita cost of ACC claims, by age group and gender: 2000/01

Source: ACC 2002

ACC claims for Māori

Māori men and women made fewer ACC claims than the national average for all age groups. For example, Māori men aged 85 and over only made 19 claims per 1000 compared to 37 for all men in that age group, and Māori women aged 85 and over made only 16 claims per 1000 compared to 68 for all women aged 85 and over.
Figure 8.3: Māori, ACC claims per 1,000, by age group and gender: 2000/01

The lower claim rates are reflected in lower per capita costs (Figure 8.4). For example, per capita expenditure for Māori males aged 25–44 was $596 compared to $697 for all males. However, at older age groups per capita expenditure is higher for Māori men aged 65–74 ($183) than for all men in that age group ($137). Expenditure for Māori men aged 85 and over is also higher ($67) than for women in that age group ($16).
**Figure 8.4:** Annual per capita cost of ACC claims for Māori, by age group and gender: 2000/01

Source: ACC 2002

**ACC claims for Pacific peoples**

ACC claim rates for Pacific peoples are generally much lower than for the total population and lower than for Māori (Figure 8.5). For example, in the highest claim group (ages 25–44) there were 64 claims per 1000 Pacific men compared to 83 for Māori men in that age group and 97 for all men in that age group. At older age groups, Pacific women aged 85 and over made far more claims (47 per 1000) than Pacific men (14 per 1000).
Figure 8.5: Pacific peoples, ACC claims per 1000, by age group and gender, 2000/01

Again, the pattern for claims is generally reflected in per capita expenditure for Pacific peoples (Figure 8.6). However, per capita expenditure for Pacific men aged 75–84 is higher ($32) than for women in that age group ($7), despite lower claim rates (Figure 8.5).

Source: ACC 2002
Figure 8.6: Annual per capita cost of ACC claims for Pacific peoples, by age group and gender, 2000/01

Source: ACC 2002
Chapter 9: Developing Knowledge on Older People’s Health and Demand for Health Services

Improving data quality and coverage

Previous chapters have commented on the limitations of the data used in this report. These include data on primary care, which is based mainly on New Zealand Health Surveys; incomplete data linking pharmaceutical and laboratory utilisation and costs to individuals; lack of information on other community health services; the current data gaps in the developing Mental Health Information National Collection; and the limited information on DSS service utilisation by age group.

The Ministry of Health has a programme of work under way to improve the coverage and quality of data on health service utilisation. The New Zealand Health Information Service (NZHIS) has developed a good database on hospital inpatient episodes in the National Minimum Data Set (NMDS). This uses the National Health Index (NHI), a unique person identifier that enables different episodes of care for an individual to be linked. However, information on other health service interventions, such as outpatient and primary care visits and pharmaceutical and laboratory utilisation, is sketchy. This is partly due to limited infrastructure to support use of the NHI by community-based health care providers, which has led, in some cases, to low compliance. Other issues that impact on use of the NHI include limited awareness of its appropriate use by providers and restrictions on its use due to the Health Information Privacy Code 1994 (Privacy Commissioner 2000).28

28 Issued by the Privacy Commissioner under the Privacy Act 1993.
Three current Ministry of Health projects are of particular relevance to data needs for policy development, planning and funding decisions for health and disability support services for older people. These are:

- improving infrastructural support for primary health care providers by making access to the NHI database much easier and by promoting its use. Initial work will focus on GPs and on initiatives aimed at creating and improving information sharing networks amongst health practitioners
- improving the coverage and quality of DSS data, in particular to work towards more consistent service specifications and recording of units of service, particularly from Needs Assessment/Service Co-ordination agencies; and provision for separate reporting of services for people under the age of 65 and those aged 65 and over
- improving the accuracy of NHI data by reducing duplication of NHI numbers for individuals.

The duplication of NHI numbers does not affect the quality of information on episodes of care (used in this report) but may result in not all episodes of care being linked to an individual. Elimination of duplication would increase the usefulness of the NHI for core services that depend on a population register (such as screening and disease management), by allowing more sophisticated analysis of multiple service utilisation for certain conditions or groups of patients.

In addition to the above projects:

- work will continue on extending the coverage of the Mental Health Information National Collection for both DHBs and non-government agencies
- the New Zealand Health Survey sample frame has been extended to include people in residential care. This will include a larger number of older people in the survey
- The New Zealand Health Monitor, the Ministry’s 10-year strategy for its national population survey programme, includes surveys specifically designed around information needs in relation to older people. These will be undertaken on a regular basis.
Projecting future demand for health and disability support services

This report has used population projections to demonstrate the growing number and proportion of older people in New Zealand over the next 50 years. From this and information on current health and disability service use by age, it is clear that demand for, and consequently the cost of providing health and disability support services, will increase as New Zealand’s population continues to age.

An analysis of the impact of population ageing on health expenditure in New Zealand (Johnston and Teasdale 1999) concluded that publicly funded health spending would rise from 6.5 percent of Gross Domestic Product (GDP) in 2001 to 8.4 percent in 2051, if the policies of adjusting the level of public expenditure on health for population growth and population ageing continued.

The report also noted that, while the pressures of population ageing on health spending are unavoidable, future changes in the relative per capita health costs of older people do not make a large difference to projected costs. What does make a difference, is the rate of growth in health spending that is above and beyond population growth and ageing adjustments. This includes price changes; technological developments; trends in referring, prescribing and treatment; changes in demand and public expectations of health services; and new initiatives that raise the level of services provided in the public system. Large increases in health spending as a percentage of GDP could be avoided by controlling this ‘non-demographic’ spending growth (Johnston and Teasdale 1999).

A recent review of health services in the United Kingdom also concluded that demographic trends will steadily increase costs, but do not pose a major threat to the affordability of the National Health Service and noted that the main pressures on health care in the future will come from patient expectations, technology, and the rising cost of providing care (Wanless 2002).
There is now a growing body of international literature that recognises that there is no simplistic relationship between population ageing and future demand for, or cost of, health and disability support services. Attempts to project future demand for publicly funded health and disability support services need to take account of trends in a range of variables that have been shown to affect that demand. These include: increasing life expectancy; changes in health status and prevalence of disability; technological advances; rising expectations of health and support services; and expectations of what should be publicly funded.

An example of this approach is a recent report by the United Kingdom Treasury that used three scenarios to project future demand for health services. These scenarios were based on changing health needs; technological development and medical advances; and the use of workforce and productivity (Wanless 2002).

**Increasing life expectancy and changing health status**

This report has shown that older people in New Zealand use health and disability support services more than people in younger age groups and per capita expenditure increases with increasing age. However, there is also growing evidence that successive cohorts of older people are not only living longer than their predecessors, they are also healthier.

More than two decades ago Fries (1980) postulated that the compression of mortality towards older ages (through increasing life expectancy) could be followed by a compression of morbidity – that non-communicable diseases and markers of ageing (such as raised blood pressure and cholesterol and lowered vital capacity) could be postponed through changes in lifestyle, thus delaying disability or major infirmity to the very end of life.
There is considerable debate about whether increasing life expectancy will be largely healthy, with ill health and disability compressed into the last years of life. It is likely that disability rates among people aged 65 and over will decrease in the medium term, when the post World War II baby boom generation reaches retirement, because there will be relatively fewer very old people. An OECD study which projected growth rates in disability in several countries found that in all countries studied “the combined effects of health gains and the strong increase in the population just over 65 leads to a decline in disability up to 2020” (Jacobzone et al 1998). While there are some differences between countries, it appears that there may be a decline in projected severe disability, relative to moderate disability.

This conclusion is supported by various studies that have shown no improvement or an increase in mild to moderate disability and decreases in the rate of severe disability (reported in OECD 1998; Kinsella and Velkoff 2001; and Wanless 2001).

An OECD study has also noted that the prevalence of severe disability is falling for the younger age groups (under 80 years) more than for older age groups and is falling for men more than for women (Jacobzone 1999). Some diseases are more prevalent in very old age and are strongly linked with disability. Alzheimer’s disease is one of these. Garber et al (2002) noted that rates of Alzheimer’s disease are 1.4 percent for 65–69 year olds rising to 23.6 percent for people aged 85 and over, and rates may go as high as 40.4 percent for people aged 90 and over (Campbell et al 1983.) There is a strong association between Alzheimer’s disease and functional status impairment and therefore a requirement for either residential or home-based care.

Recent evidence suggests that decreasing disability amongst older people under the age of 80 may not be sustained, however. Wanless noted that, while there are signs of increasing health through reduction in the prevalence of smoking, the overall prevalence of long-standing illness has not declined and trends in other health-related behaviours such as drinking alcohol and not exercising are worsening (Wanless 2001). Recent US research suggests that obesity is more detrimental to health than smoking, heavy drinking or poverty (Sturm and Wells 2001; Sturm 2002).

29 Countries such as Australia showed modest or no improvements in severe disability compared with France and the US with significant improvement up to 2020 (Jacobzone).
Technological advances

Technology and medical advances are widely recognised as major drivers of health expenditure, through the delivery of more and better services to patients (Wanless 2001). The impact of technology on the cost of health services, however, is complex. Changes in technology will affect the demand for health services – by increasing demand for the particular technological advance. It may also reduce demand for ongoing disability support by preventing, reducing or removing functional limitations. Examples of this are the development of vaccines and antibiotics that have prevented the development of debilitating diseases; operations that have alleviated disabling conditions – such as joint replacement and cataract surgery; and pharmacological advances in the treatment of such conditions as hypertension and arthritis (Cutler 2001).

Some technological advances have more impact than others. For example, an OECD report on Ageing and Technology noted that “it has been shown that decreasing morbidity from arthritis would lead to a much greater reduction in functional limitation than ... any other condition” (OECD 1998).

Some technological advances can actually increase disability. A Netherlands study found that eliminating some chronic diseases would increase disability because of increased longevity and development or progression of other chronic diseases (OECD 1998).

Informal support

This report has noted the growing trend for older people to live alone. Increasing labour force participation by women is also putting pressure on family and informal support networks for older people. A New Zealand study noted the key roles of spouses and daughters in the provision of informal care (Dwyer at al 2000) and therefore reducing demand for disability support services.
With increasing life expectancy for men more couples will be living into old age (Jacobzone et al. 1998). However, evidence for a continued narrowing of the gender gap in older age is ambiguous. Data from industrialised countries still show no clear pattern on change in the gender gap (Kinsella and Velkoff 2001). It may be narrowing in some countries, such as the US, but in other countries with high overall life expectancies, gains in female longevity continue to outpace those of males. There are also conflicting views about future family formation patterns. One report has postulated higher levels of social support because of a high rate of marriage and childbearing in the 1946–50 cohort (Wanless 2001). However, another report places more emphasis on the impact of divorce rates on the numbers of women who may be living alone in older age (Kinsella and Velkoff 2001).

**Rising expectations**

Wanless has suggested that meeting public expectations is the key challenge facing many health care systems (Wanless 2001). A recent comparison of hospital care in five countries identified significant groups of people voicing concern about the quality of their country’s health care (Coulter and Cleary 2001).

Wanless identified several broad social trends contributing to rising expectations of the health system in the United Kingdom that are applicable in New Zealand:

- global evidence of a greater desire for choice as well as increased tailoring of services, especially in more individualised western societies
- higher disposable income and expansion in higher education fuelling rising expectations
- the continually growing emphasis on high skill, knowledge focused, flexible career paths impacting on social services; both in terms of adapting to accommodate these changing lifestyles and meeting the needs these pressures generate, such as increased expectation of increased information and involvement around decision-making
• changing patterns of work that affect both the availability of informal caregivers and expectations of more accessible, convenient service available 24 hours a day, seven days a week
• a reduction in deferential attitudes, with people increasingly likely to use their ‘voice’ to complain, if they receive poor service (Wanless 2001).

Medical trends are also raising expectations:
• medical advances are increasing the range of treatments that are available. Increasing success rates have increased people’s expectation of being in good health as they get older
• the number of conditions being officially classified as illnesses is growing. Recent additions include: Post Traumatic Stress Disorder (PTSD); Myalgic Encephalomyelitis (ME) and workplace-related conditions such as Repetitive Strain Injury (RSI) (Wanless 2001).

In the future many more older people are likely to expect to be fully mobile, have good eyesight, and be independent well into their old age. They are therefore likely to be more demanding of the health services because their expectations about health and treatment, their improved education and economic circumstances suggest they will be less deferential towards medical professionals than the current generation of older people. These trends combined, suggest that future older people will receive higher levels of care for a given health need (Wanless 2001). There is already some evidence for this. A Canadian study showed that between 1971 and 1983, healthy seniors accounted for a 58 percent increase in specialist care, and a 32 percent increase in non-specialist care, while older individuals in poor health accounted for 10 and 9 percent (Black et al 1995).

Action to remove discrimination against people on the basis of age could also have an impact on health care costs. Analysis of treatment rates by age in the United Kingdom for certain cardiac and orthopaedic procedures suggests that expenditure on these procedures would need to rise by 11 percent to give the oldest people the same treatment rates as the ‘young old’. This assumes that as prevalence rises with age, so should treatment rates, although rises in co-morbidity and other contra-indications may limit appropriate treatment rates in late old age (Wanless 2001).
Potential impact on health care expenditure

Despite evidence for improved health status and falling rates of disability, it appears this will not be sufficient to offset the pressures on health and disability services from the increase in numbers of disabled older people. A study generating baseline rates of disability from survey data from 1982 and 1985 found that all scenarios for changes in mortality and morbidity showed relatively dramatic rises in the numbers of disabled older people (Kunkel and Applebaum 1992). Assuming longer life and less disability, this study projected a rise in the numbers of severely disabled people in the USA from just under 3 million in 2000 to 8.5 million in 2040.

The relationship between increasing life expectancy and health status is very significant for any assessment of the costs of health care associated with ageing. If the reduction in mortality is greater than the reduction in morbidity (ie, if the increased years are lived in poor health or disability) then the health care and support costs associated with disability will increase hugely. On the other hand, if there is an improvement in health status of older people so that the longer years lived are lived in good health, then the costs of ageing will not be as significant as feared (Jacobzone 1999).

Evidence for the argument that acute health care costs increase more as a factor of proximity to death rather than increasing age and that acute care costs taper off at very old ages (around 90) was outlined in Chapter 5. Research in Scotland has shown that the cost of acute hospital care for people in their last year of life in 1999 was, on average, around $4500 a year more than people of the same age who did not die (survivors). But the cost of survivors increased very steeply with very old age. The average cost of acute care for an 88-year-old survivor was twice that of a 75-year-old survivor, but still less than someone aged 88 who died (Wanless 2001). This is because the cost of acute health care during the last year of life tends to decrease with increasing age, but the acute health care costs of survivors continue to increase with age – resulting in a reduction in the additional costs of dying as a person gets older.
A British Columbian study of the costs of continuing care (in facilities and at home) as well as acute care (McGrail et al 2000) also found that proximity to death was a more important factor than increasing age in determining acute health care costs. The pattern of continuing care costs, however, increased with age for both survivors and those close to death. This suggests that the ageing population will result in a relative shift from acute care costs towards continuing care, leading to greater increases in long-term care costs (Wanless 2001).

**Conclusion**

This chapter has provided an overview of the emerging international literature on the impact of population ageing on health and disability support services. It is clear that trends seen in New Zealand reflect international trends, and that our response to population ageing will largely determine the future.

In conclusion it is useful to note that there is also an international consensus on the health system policy response to population ageing. WHO has summarised this as:

- prevent and reduce the burden of excess disabilities, chronic disease and premature mortality
- reduce risk factors associated with major diseases and increase factors that protect health throughout the life course
- develop a continuum of affordable, accessible, high-quality and age-friendly health and social services that address the need and rights of women and men as they age (WHO 2002).

New Zealand initiatives to improve the health of New Zealanders include work signalled in the *New Zealand Health Strategy* (Minister of Health 2000), the *Primary Health Care Strategy* (Minister of Health 2001) and the *Health of Older People Strategy* (Associate Minister of Health and Minister for Disability Issues 2002).
Appendix 1: Population Projection Methodology and Definition of Ethnicity

A Population projections

Projections for the total population used in Chapter 2 are based on series 4 of the New Zealand Population Projections derived by Statistics New Zealand. These projections have as their base the estimated resident population at 30 June 1999, and were released in 2000. Projections for ethnic groups are based on series 5 of the respective population projections series. These projections have as their base the estimated resident population at 30 June 1996, and were released in 1998.

The projections are not predictions or forecasts. They represent the statistical outcomes of various combinations of selected assumptions concerning future changes in various dynamics of population change. These assumptions were charted by drawing on contemporary demographic trends and patterns, as well as international experiences. Given the uncertainties about future trends in fertility, mortality and net migration and their determinants, Statistics New Zealand usually derives a range of alternative demographic scenarios. The scenario generating the projections used in this report is thought to convey the broad features of likely future dynamics and patterns. It was based on assumptions that during the projection period:

- fertility levels will continue to decrease for New Zealand women until 2010 and will then level off at 1.90 children on average
- life expectancy at birth will increase by about six years between 1999 and 2051
- there will be a net migration gain of 5000 people each year (the average annual level for the last 100 years).
**Ethnic population projections**

Different fertility, mortality and migration assumptions were used in projecting future Māori, Pacific and Asian populations. These projections used an ethnic classification based on self-identification. This includes people who identify with that ethnic group either solely or in combination with other ethnic groups. Because of this a person can be counted in more than one ethnic group. A special allowance was also made for inter-ethnic mobility – when people change their ethnic classification from one group to another over time. Different levels of inter-ethnic mobility were used for each ethnic group.

**Māori population projections**

The projections in this report assumed that for the period up to 2051:

- fertility levels will continue to decrease for Māori women until 2015 and will then level off at 2.10 children on average
- Māori men will have 0.65 children on average with non-Māori women from 2013
- life expectancy at birth will increase by about eight years between 1996 and 2051
- there will be a net migration loss of 500 Māori each year
- there will be an annual net inter-ethnic mobility loss of about 0.4 percent.

**Pacific population projections**

The projections in this report assumed that for the period up to 2051:

- fertility levels for Pacific women will continue to decrease until 2015 and then level off at 2.20 children on average
- Pacific men will have 0.70 children on average with non-Pacific women from 2014
- life expectancy at birth will increase by about seven years between 1996 and 2051
- there will be a net migration gain of 1,000 Pacific people each year
- there will be an annual net inter-ethnic mobility loss of about 0.3 percent.
Asian population projections

Population projections for the Asian ethnic group only cover the period to 2016 because of the volatility of Asian migration levels in recent years and the uncertainty of future immigration policy.

The projections in this report assumed that for the period up to 2016:

- fertility levels for Asian women will continue to decrease until 2013 and then level off at 1.85 children on average
- Asian men will have 0.30 children on average with non-Asian women
- life expectancy at birth will increase by about three years between 1996 and 2016
- there will be a net migration gain of 4000 Asian people each year from 2000
- there will be an annual net inter-ethnic mobility loss of about 0.2 percent.

DHB population projections

Population projections for the 21 DHBs have been derived by aggregating the Statistics New Zealand area units projections. These projections have as their base the estimated resident population at 30 June 1996 and go out to the year 2021. The projections were released in 2000. Three alternative projection series (low, medium and high) were produced for each area, incorporating different fertility, mortality and net migration assumptions and reflecting each area’s unique socio-demographic characteristics. The medium series has been used in this report.

Māori population projections for DHBs are also 30 June 1996-based and go out to 2021. Three alternative projection series (low, medium and high) were produced using the cohort-component method and incorporating different fertility, mortality, net migration and inter-ethnic mobility assumptions. The medium series has been used in this report.
B Definition of ethnicity

There was a key change in the wording of the question on ethnicity between the 1996 and 2001 Censuses. The question asked in 2001 was almost the same as that asked in 1991. The question in 1996, however, reversed the order of listing Māori and European and also gave more options for people who considered themselves to be ‘other European’ to tick answer boxes for specific ethnicities. These were not used in 1991 or 2001. In all three Censuses, people were given the option of ticking as many boxes in the ethnicity question that they wanted to. The main consequence for data used in this report is that more people answered several ethnicity categories in 1996 than in 1991 or 2001. One result of this was the count for Māori ethnicity increased between 1991 and 1996, but there was little change between 1996 and 2001. This will affect the 2001-base population projections for Māori. Statistics New Zealand will be reviewing population estimates and new population projections will be released in 2003.

Census statistics define ethnicity as the ethnic group(s) that people identify with or feel they belong to. It is self-perceived and people can belong to more than one ethnic group. Unless otherwise stated, ethnic data used in this report is based on the prioritised recording of ethnicity specified by the Ministry of Health. The Census of Population and Dwellings asks people to specify which ethnic group(s) they belong to and allows them to specify as many as they wish. The priority system allocates people to one group only, on the following basis: ‘New Zealand Māori’ includes those who specified NZ Māori either alone or in combination with other groups; ‘Pacific peoples’ includes all people who specified one or more Pacific ethnic groups except those who also specified NZ Māori; ‘Asian’ includes all those who specified an Asian ethnic group except those who also specified NZ Māori and/or a Pacific ethnic group; ‘Other’ includes all those who specified another ethnic group except those who also specified NZ Māori and/or a Pacific group and/or an Asian group and/or a European group; ‘European’ includes those who specified only European ethnicities.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-standardised rates</td>
<td>Rates that have been statistically adjusted to enable valid comparison despite differences in the age structures of the populations being compared. In this report Segi’s World Population (a model population) is used as the reference population for age standardisation by the direct method.</td>
</tr>
<tr>
<td>Ambulatory sensitive hospitalisation</td>
<td>A subcategory of avoidable hospitalisations, comprising hospitalisations of people aged 0–74 (in this report 65–74 years) from causes considered to be responsive to prophylactic or therapeutic interventions deliverable in ambulatory (non-inpatient) care settings.</td>
</tr>
<tr>
<td>AN-DRG</td>
<td>A grouping of cases on the basis of similar cost within broader groupings relating to the same or similar body organs or system of the body. In version 3.1, used for this publication, there are 667 AN-DRGs.</td>
</tr>
<tr>
<td>Average length of stay (ALOS)</td>
<td>Average number of nights that a patient spends in hospital. ALOS is truncated, so that all cases with a length of stay (LOS) greater than the 97th percentile for the AN-DRG have their LOS reduced to the 97th percentile for that AN-DRG.</td>
</tr>
<tr>
<td>Avoidable hospitalisation</td>
<td>Hospitalisation of people aged 0–74 (in this report 65–74 years) due to causes considered to be responsive to preventive interventions or ambulatory health care. Used as an indicator of avoidable morbidity.</td>
</tr>
<tr>
<td>Avoidable morbidity</td>
<td>A departure from a state of physiological or psychological wellbeing that is avoidable through preventative interventions. An indicator is avoidable hospitalisation.</td>
</tr>
<tr>
<td>Avoidable mortality</td>
<td>Deaths of people aged 0–74 (in this report 65–74) years) from causes considered to be responsive to preventive or therapeutic interventions.</td>
</tr>
<tr>
<td>Baby boom</td>
<td>The period between the end of World War II and the mid-1960s when a large number of people were born into the New Zealand population. The baby boom generation is usually taken to be those born in the years 1946–65.</td>
</tr>
<tr>
<td>Case-weighted discharge</td>
<td>The relative weight of the average national price for each AN-DRG during 2000/01 compared with the national average price for all AN-DRGs in 2000/01.</td>
</tr>
<tr>
<td>Term</td>
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<tr>
<td>Chronic disease</td>
<td>A disease lasting or expected to last for six months or longer. The disease may be continuous or episodic (characterised by alternating remissions and relapses). Unlike acute diseases, chronic diseases are generally multifactorial in causation.</td>
</tr>
<tr>
<td>Community Services Card</td>
<td>An entitlement card provided by government which people on low incomes or receiving income support or national superannuation may use to obtain discounts on doctors’ fees and prescriptions.</td>
</tr>
<tr>
<td>Co-morbidity</td>
<td>Coexistence of more than one disease in the same individual at a given time.</td>
</tr>
<tr>
<td>Confidence interval</td>
<td>The range of values within which we have a specified level of confidence (for example 95 percent) that the true value of the variable of interest actually lies.</td>
</tr>
<tr>
<td>Disability</td>
<td>Functional or role limitation resulting from a health condition and lasting or expected to last for six months or more. A disability may or may not be associated with the need for assistance.</td>
</tr>
<tr>
<td>Disability-free life expectancy</td>
<td>A health expectancy indicator measuring the expectation of life (at any age) free of any functional or role limitation, whether needing assistance or not.</td>
</tr>
<tr>
<td>Disability requiring assistance (DRA)</td>
<td>An activity limitation for which a person needs special equipment, or assistance either daily or less frequently.</td>
</tr>
<tr>
<td>High User Health Card (HUHC)</td>
<td>An entitlement card provided by government which people using GP services on 12 occasions or more in one year may use to obtain discounts on doctors’ fees and prescriptions.</td>
</tr>
<tr>
<td>Independent life expectancy</td>
<td>A health expectancy indicator measuring the expectation of life (at a given age) free of disability needing assistance. That is, the average number of years an individual of a given age is expected to live independently, if current mortality and disability rates continue to apply.</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>A summary statistic derived from a life table, estimating the average number of years an individual of a given age is expected to live if current mortality rates continue to apply.</td>
</tr>
<tr>
<td>Major diagnostic category (MDC)</td>
<td>A coding system constructed to correspond to a major organ system and comprising several AN-DRGs.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
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</tr>
<tr>
<td>Morbidity</td>
<td>Any departure (subjective or objective) from a state of physiological or psychological wellbeing.</td>
</tr>
<tr>
<td>Mortality</td>
<td>Death.</td>
</tr>
<tr>
<td>Per capita expenditure</td>
<td>Total public expenditure on the service by demographic group, divided by the total population of that demographic group.</td>
</tr>
<tr>
<td>Population ageing</td>
<td>A shift in the age distribution of a population towards older ages. The result is an increasing proportion of older people in the population and a rising median age.</td>
</tr>
<tr>
<td>Prevalence of disability</td>
<td>The number of instances of disability present in the population at a given time, divided by the population at risk.</td>
</tr>
<tr>
<td>Preventable hospitalisations</td>
<td>A subcategory of avoidable hospitalisations, comprising hospitalisations of persons aged 0–74 (in this report 65–74 years) from causes considered to be potentially preventable through modification of risk factors or determinants.</td>
</tr>
<tr>
<td>Primary avoidable mortality</td>
<td>A subcategory of avoidable mortality, comprising deaths of persons aged 0–74 (in this report 65–74 years) from causes considered to be potentially preventable through modification of risk factors or determinants.</td>
</tr>
<tr>
<td>Secondary avoidable mortality</td>
<td>A subcategory of avoidable mortality, comprising deaths among people aged 0–74 years (in this report 65–74 years) from causes considered to be responsive to early detection and intervention, typically in primary health care settings.</td>
</tr>
<tr>
<td>Standardised case-weighted discharge ratio</td>
<td>Ratio of observed to expected case-weighted discharge rates, with expected case-weighted discharge rates calculated using the age, ethnic and socioeconomic deprivation structure of each DHB region.</td>
</tr>
<tr>
<td>Standardised discharge rates</td>
<td>Discharge rates calculated using the age structure of the population.</td>
</tr>
<tr>
<td>Standardised mortality rate</td>
<td>Rates of death calculated using the age structure of the population</td>
</tr>
<tr>
<td>Standardised mortality ratio</td>
<td>Ratio of observed to expected mortality rates, with expected mortality rates calculated using the age, ethnic and socioeconomic deprivation structure of each DHB region.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
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<td>--------------------------------------------------------</td>
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</tr>
<tr>
<td>Standardised preventable and ambulatory sensitive hospitalisation ratio</td>
<td>Ratio of observed to expected preventable and ambulatory sensitive hospitalisation rates, with expected hospitalisation rates calculated using the age, ethnic and socioeconomic deprivation structure of each DHB region.</td>
</tr>
<tr>
<td>Tertiary avoidable mortality</td>
<td>A subcategory of avoidable mortality comprising deaths among people aged 0–74 (in this report 65–74 years) from causes considered to be responsive to medical or surgical treatment even when fully developed.</td>
</tr>
</tbody>
</table>
References


Soldo BJ. 1987. Family support and long-term care. Paper prepared for the Conference on Aging and Long-Term Care, University of Michigan, Ann Arbor, May.


