Health Profile

West Coast District Health Board

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CONTENTS

Content of Tables

Content of Figures

Contents of Maps

INTRODUCTION

The New Zealand Public Health and Disability Act 2000 requires District Health Boards (DHBs) to improve, promote and protect the health of the people and communities in their region. The Act states that one of the functions of the DHBs is:

> *To regularly investigate, assess, and monitor the health status of its resident population, any factors that the DHB believes may adversely affect the health status of the population, and the need of that population for services* (Clause 23 (1) (g)).

This process is done through a health needs assessment.

Background

In October 2001, the Public Health Consultancy, Wellington School of Medicine and Health Sciences produced *An Assessment of the Health Needs in the West Coast District Health Board (DHB) Region* along with 11 other small/rural DHBs.

In order to review the previous health needs assessment, the South Island DHBs have decided to take a regional approach to the review of their health needs assessments. Technical reports developed centrally are available for Southland, Otago, South Canterbury, West Coast and Nelson-Marlborough DHBs. Canterbury DHB, although closely linked into this project, have developed their own health needs assessment report.

Purpose

This document is a technical report, updating the 2001 Health Needs Assessment. It describes the health and independence status of the West Coast DHB population at a given time. In addition, this report provides, where possible, information on changes in the health status of the West Coast population and illustrates the progress that the West Coast DHB is making in different areas.

Particular emphasis is placed on the national priority areas identified by the New Zealand Health Strategy (NZHS), the Positive Ageing Strategy and the New Zealand Disability Strategy (NZDS). This report will provide the West Coast DHB with the local data needed to determine the priority, which these areas should be given.

This technical report also provides the West Coast DHB with evidence for other areas that are of potential local importance.

Context of the Health Needs Assessment

Both 'health' and 'need' are complex concepts. There is no right or wrong definition. Rather there are a number of ways of thinking about health need, which are complementary. Views on this vary between individuals, groups and cultures, as need is a value-laden concept.

Bradshaw's typology (1972) offers one classification of the different usages of need:

- *normative need* is what experts define as need (eg, completed childhood vaccinations, breastfeeding rates, the 13 priority health gain areas in the *NZHS)*
- *expressed need* is what can be inferred about need from observing how people use services (so measurement of services and their utilisation is taken to be an indicator of expressed need or demand)
- *comparative need* infers that the needs arising in one location can be deemed to be similar to those in another location if people have the same sociodemographic characteristics (measured by inter-regional comparisons)
- *felt need* is what residents in a location say is a need, problem or concern for them (measured by qualitative and social research approaches).

Each type of need has validity. This project takes a broad approach, considering all four of Bradshaw's concepts of need. Health needs may be measured in many ways. Together with the pragmatic focus on indicators of illness, it is important to bear in mind holistic concepts of wellbeing, and also to look beyond illness status to the determinants of health. By understanding the distribution of social and

economic factors within populations it is possible to predict resulting levels of health and illness. Socioeconomic status is recognised as a major source of health needs, incorporating variables such as income, education, employment and deprivation. Ethnicity is another important factor in itself.

The Ministry of Health (Ministry of Health 2000c) defines 'health need' within the broad environment of individual health and considers questions of deprivation and inequality related to the socioeconomic determinants of health. Since a large measure of the health of populations is determined by factors outside health services, for DHBs to influence these they need to first understand the broader determinants of health in their region and, secondly, to work intersectorally with other agencies to address these determinants. For example, addressing the health needs resulting from poor housing or overcrowding would mean both treating resulting illness (such as meningococcal disease and respiratory infections) *and* working with Housing New Zealand Corporation to improve housing conditions.

The Ministry of Health (Ministry of Health 2000c) further defines 'health care needs assessment' as the *assessment of the population's capacity to benefit from health care services, prioritised according to effectiveness, including cost-effectiveness, and funded within available resources.*

Prioritisation and The Health Needs Assessment Process

DHBs are facing difficult decisions in allocating scarce resources to meet the health needs of their resident populations. It is therefore essential to have a transparent process of determining what the health needs are for the DHB population and of dividing up funding according to priorities.

The health needs assessment is a core component of the process of prioritisation, and should be considered within a conceptual framework for the DHB purchasing process (Ministry of Health 2000c). The process of prioritisation is a separate part of the DHB planning cycle, which draws on the needs assessment, and also involves:

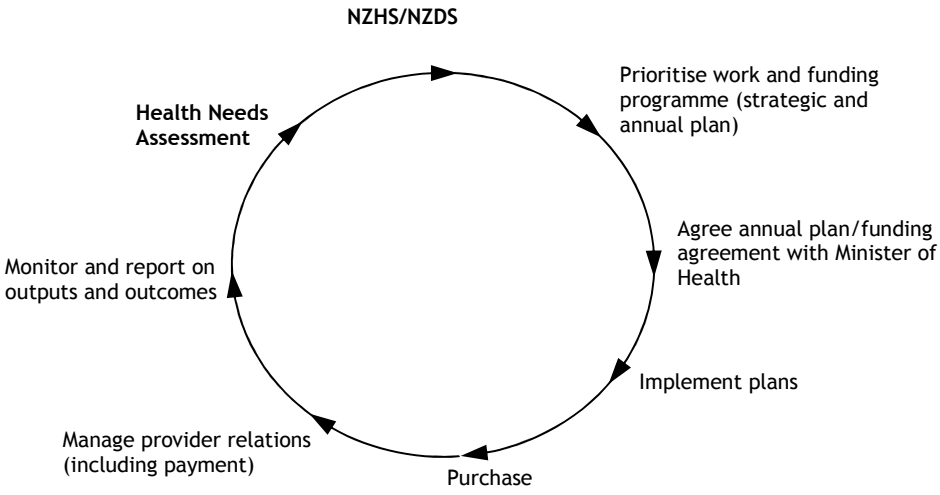
- Principles for decision making
- Decision making process
- Provider selection protocols
- Provider performance management policy

Decision making principles reflect prioritisation areas. These are:

- Maori development in health - Maori health issues are considered when applying all of the decision making principles.
- Effectivness – The extent to which health and disability services produce the desired health outcomes.
- Cost – Consideration of total economic costs of services, including flow on effects on both health and social sectors.
- Equity – Ability to reduce remediable disparities in health status for groups with lower levels of health.
- Acceptability – Meets expectations and values of West Coast District Health Board residents .
- Quality – Appropriate considertations whether services will be safe, timely and efficient.

The following diagram represents the Ministry of Health's understanding of the planning cycle of a DHB and the role of the health needs assessment within it (Ministry of Health 2000a).

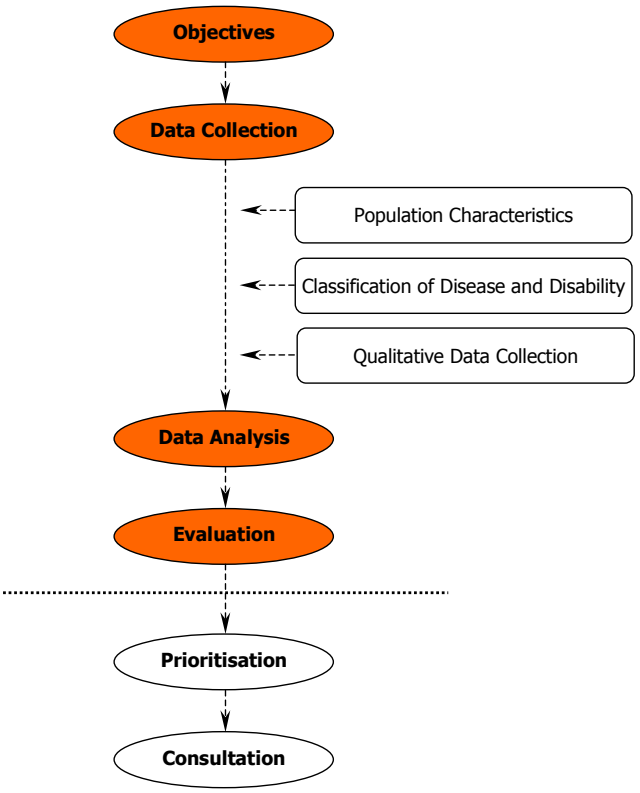
Figure 1. The DHB Planning Cycle



The diagram below illustrates the process for developing this technical report.

Prioritisation is an essential part of health needs assessments and is the last stage of the process of health needs assessment (Ministry of Health 2000a). Prioritisation compares different needs, considers service priorities at the margin, evaluates costs of meeting those needs, and finally ranks need in preference order. Because this report was developed through a regional approach, prioritisation is beyond the scope of this report. DHBs will carry out prioritisation separately as part of their ongoing planning process.

Figure 2. The Health Needs Assessment Process for the Regional Project



Methodology and Limitations

This technical report represents the first formal review of the health needs assessment as part of a three yearly review process.

The information presented in this report comes from a range of sources and illustrates a broad picture of need.

Both qualitative and quantitative data collection methods were used to obtain information for inclusion in this report. Both methods are complementary and are therefore presented together within the body of the report.

Qualitative data included in this report has not necessarily been validated or investigated, but is reported as given. It is hoped that providing qualitative data may generate useful discussion. Similarly, quantitative data may be subject to varying interpretations and additional sources or parameters may be suggested for further study.

A key assumption behind this health needs assessment is the importance of the Treaty of Waitangi, and the rights of Mäori to enjoy at least equal health status compared with the total New Zealand population. DHB consultation and engagement with Mäori is an imperative to tangata whenua groups exercising mana whenua and kaitiakitanga in their rohe. One of the functions of this document is to identify health need for Mäori, including presenting disparities (where these are accurately measurable) and identifying other elements of health important to Mäori. Measures of disparity have been included throughout as a means of highlighting areas of need. However, there are some difficulties in data analysis for Mäori. These are discussed below.

All statistics have limitations, and caution is required in the interpretation of all data. In particular, absolute numbers of some health events are very small in some DHB's. This affects the reliability and validity of the collected data. Additionally, it might be difficult to identify the statistical validity of some data and the differences to the national average. One example is 'Mortality from alcohol-related conditions'. Large variations in calculated rates can occur with regional differences in coding practices or even with one or two extra events in a region in any one year. Local knowledge assists in understanding the data. This report identifies issues affecting the reliability and validity of data where known.

Although there have been attempts to ensure local feedback and comment, the fact that this technical report has been developed and written centrally means that the relevance of certain data can be interpreted in a number of ways. Some variations may indicate the need for more research in an area.

In some instances, it has been difficult to obtain the required data or the range of data desired, in particular in the area of mental health and primary care. In primary care, for example, the incidence of diabetes in the general population is not known, and hospitalisation rates for diabetes do not necessarily reflect local incidence rates nor are they necessarily a good measure of such.

Whenever possible, the findings in this report are based on the most recent data available. However, demographic projections risk becoming more inaccurate the further away one moves from the date of projection.

The Ministry of Health, Public Health Directorate has provided support and guidance to the Regional Project in undertaking this health needs assessment.

A Note on Ethnicity Coding

There are a number of difficulties with ethnicity data. Over time, the census used changing definitions of ethnicity, and coding practices varied (also between regions). This affects the collation and interpretation of statistics for Mäori. Specific and relative rates and percentages for Mäori can be difficult to interpret. Nevertheless, because Mäori health and reduction in disparities is a central part of this document, ethnicity data is presented where possible.

An Ethnicity Data Collection Policy was established in 2004 that lead to the development of an Ethnicity Data Collection Procedure. This would comply with West Coast DHB's accountability obligations in the Crown Funding Agreement as well as faith as in ethnicity coding for West Coast DHB.

A Note on Territorial Authorities

Within the DHB, there are geographical variations in need, which will not be identified unless the statistics are broken down by Territorial Authorities (TAs). At times, this is not possible due to small

numbers, or due to unavailability of data. Where possible, this report will consider data broken down by Territorial Authorities.

SECTION 1: STATISTICAL PROFILE OF WEST COAST DHB

THE WEST COAST DHB

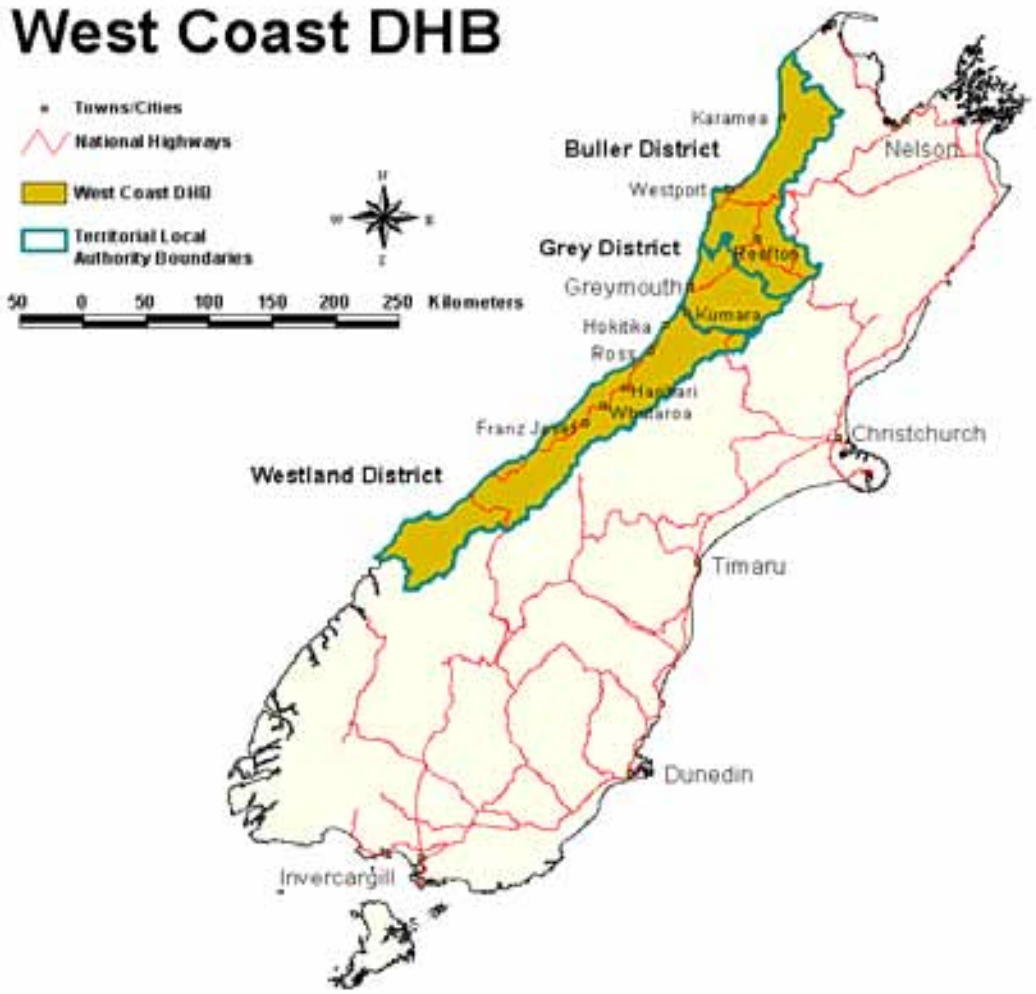
Geographical Location[1]

The following map shows the West Coast DHB geographical boundaries.

West Coast DHB covers the area between Karamea in the North and Big Bay in the South and is bounded on the Western side by the Tasman Sea and on the Eastern side by the main divide of the Southorn Alps. The length of this landmass is approximately equal to the distance between Auckland and Wellington, has a land area of 2.3 million hectares and has a population of 32,500. It is the most sparsely populated DHB in the country with a population density of 1.4 people per sq km. In the West Coast DHB, there are three Territorial Authorities: Buller, Grey and Westland. All Territorial Authorities fall neatly within the DHB boundary (see Map 1).

Because of the region's natural beauty, the West Coast is a popular tourist destination with an average of approximately 4,000 visitors every day.

Map 1. The West Coast DHB Territorial Authorities



Source: Exported from an Arcview project, with data sourced from the Health Visual Census provided to the Otago DHB in June 2002.

[1] Source Map 1 & 2: The maps were exported from an Arcview project, which sourced its data from the Health Visual Census provided to the Otago District Health Board in June 2002.

Political Environment

Local government on the West Coast comprises four local authorities; the West Coast Regional Council and three territorial authorities (Buller District Council, Grey District Council, and Westland District Council). All these local authorities work under a plethora of legislations that allow them to be involved in resource management issues to growth, employment creation and other service deliveries such as water, sewage and roads. These councils are also involved in economic development and employment creation via such groups as GROW and LEC.

The Regional Council administers the funding for the total Mobility Scheme. The Council has set in place a process for assessing total mobility users and for distributing yellow voucher books for use on taxis by those with a specific degree of immobility.

In 2001, a Development Trust was created with responsibilities of channelling funds from the $92m received from Central Government, for economic development purposes within the region.

Health Environment

The West Coast DHB is the major provider of health services on the West Coast and the largest employer. Health services are provided at Grey Base Hospital (Greymouth) Seaview Hospital (Hokitika), Buller Hospital (Westport), Reefton Hospital and the Hokitika Health Centre. There are also 8 Rural Clinics around the region.

Because the West Coast DHB covers a large geographical area, has a sparse population, rugged terrain, isolated areas, high deprivation, and low socioeconomic status, it is one of the most difficult and expensive areas in New Zealand for delivering any public or personal health service.

With the present purchasing framework based around national pricing for services and population based funding, West Coast DHB faces critical decisions regarding continued provisions of services. Although West Coast DHB is currently receiving a rural premium, this fails to address the true cost of providing health services to a remote rural population.

Clinical Viability is a key issue for West Coast DHB. A particular problem is the low numbers of senior medical specialist staff. On call rosters and cover are onerous. In a number of disciplines, specialists are on call for one day out of every two and one weekend out of every two. West Coast DHB also has significant recruitment problems with theatre nurses and other trained staff, which all contributes towards significant costs in recruiting and retaining those skilled staff.

The West Coast DHB has played a leading role in sustaining primary health services on the West Coast and has purchased GP practices at both Westport and Greymouth. In addition, a number of General Practitioners were recruited with the backing of the Ministry of Health. And in October 2001, a Primary Health Organisation (PHO) was established, which is working towards meeting the primary health Needs of the West Coast population.

West Coast DHB works closely with a variety agencies and groups involved in the fields of Personal Health, Mental Health, Mäori Health, Public Health, Social Support, Social Services and Education.

The Economy

The West Coast economy continues to be underpinned by natural resource extraction. However, other industries such as visitor services, manufacturing, processing and pastoral farming are making major strides both in terms of employment and income generation. According to an economic survey in 2001, the West Coast as a province came second in the South Island for its economic growth.

The West Coast is ready to expand, as it has huge not fully tapped coal resources. Investing the $92m Development Trust funding in sustainable growth sectors will give further dividends to the local economy.

Tourism on the West Coast

The visitor services industry has also great potential. With the increase in international tourists coming to New Zealand, the West Coast is well positioned to capitalise on the green, clean image to attract international tourists. Domestic tourism is also significant and important feature of the tourist industry, and together tourists swell the relative population of the region to levels well above the usually resident population, particularly during Spring and Summer.

Tourism is major contributor to the economy of the West Coast. In 2002, the West Coast received 888,800 visitor nights and this is forecast to be 1.14M by 2009. International tourists will represent 82.1% of the increase in visitor nights. Current tourist numbers average over 2,400 per day, although there is a distinct peak period from September to May, with the busiest months being January to April. In January 2002, there were just less than 4,500 tourists per day on the West Coast.

Tourists on the West Coast are more likely to be aged between 20-29 or over 55 years. This has implications for the health system.

The most frequent transport type used by international tourists is the rental car (38%) with 21% travelling on a tour bus or coach. 9% travel in a campervan. The roads on the West Coast can be difficult at times, especially for tourists not used to the road and weather conditions.

25% of international tourists do a glacier walk during their visit to the Coast. Other types of activities most frequently undertaken by international tourists include tramping, eating in restaurants and visiting the Franz Josef and Fox Valleys.

This has a significant impact on the local infrastructure. Projected tourism growth will lead to an increased demand for water and wastewater use and may lead to design capacity being exceeded in some centres on the West Coast. Solid waste disposal is currently reaching limits and potable water supplies are of low standards in some areas. In order to meet existing standards and anticipated peak demand, there is a need to improve the local infrastructure, and to develop water and waste disposal systems at an appropriate level.

Environment

The most distinguishable feature of the weather of the West Coast is the rainfall, which tends to be around twice the national average. The Mean temperatures do not vary greatly from the national means although the range tends to be slightly less, with lower than average maximums in the summer and warmer than average maximums in winter. The mean minimum temperature, summer and winter, are also close to the national means.

Climatic factors particularly the heavy rain fall and snow falls through the Mountain passes, at times physically isolate the West Coast from larger towns and cities by road, and wind conditions can isolate the area by air as well, making the transportation of people to health facilities on the West Coast or to larger health facilities outside of the region difficult if not impossible.

The heavy rainfall and older housing result in increased dampness, and combined with high level coal used to heat homes, and it's resultant smoke, may have implications for people with respiratory diseases, arthritis, and so forth.

DEMOGRAPHIC PROFILE

There are many key factors that influence demand for health and disability support services, including size, age, ethnicity and gender of a population, as well as socioeconomic status, technological advances, and people's expectations of health and disability support services.

The following chapters provide an overview of the population structure of the West Coast District Health Board.

Population

The projected population for West Coast DHB at 30 June 2001 (allowing for under reporting) is 31,035 (Statistics New Zealand, reproduced by the Ministry of Health 2004). This is a decrease of almost 4% on the 2001 projected population of 32,200 reported in the 2001 Health Needs Assessment (based on 1996 Census data).

The projected data shows the population distribution as follows: Buller (31.8%), Grey (42.6%) and Westland (25.7%).

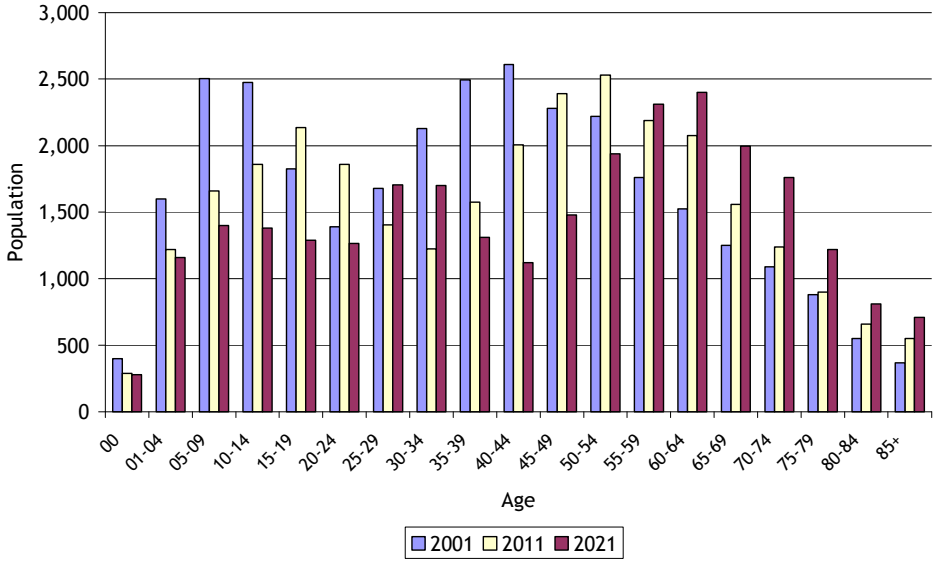
Looking toward 2021, the West Coast population is expected to decline by approximately 12.2% (this is different to the national trend predicting an increase of approximately 11.4% by 2021). This reduction is however not uniform across all age bands. Figure 3 shows that based on 2001 Census data, decreases are expected in the younger age groups (0 to 14 years) and increases in those age groups over 55 years. In 2021, the 10 to 19 age groups are expected to reduce by approximately 40%, whereas the 85 and older age group is expected to increase by 78%. The 40 to 44 age band is predicted to reduce by 57% by 2021.

Table 1. ***West Coast DHB Projected Population Age Distribution in 2001, 2011 and 2021***

Year	Total Population	Age Group (Years)			
		0-4	5-14	65+	85+
2001	31,035	6.4%	16.0%	13.3%	1.2%
2011	29,330	5.1%	12.0%	16.7%	1.9%
2021	27,235	5.3%	10.2%	23.8%	2.6%

Source: Sourced from Statistics New Zealand and reproduced by the Ministry of Health, 2004.

Figure 3. ***West Coast DHB Projected Population Age Distribution in 2001, 2011 and 2021***



Source: Sourced from Statistics New Zealand and reproduced by the Ministry of Health, 2004.

The Health of Older People Strategy (Ministry of Health 2002d) emphasises that older people are high users of health and disability support services, with estimated per capita expenditure increasing with advancing age. The Strategy further points out that while older people may be healthier for longer in

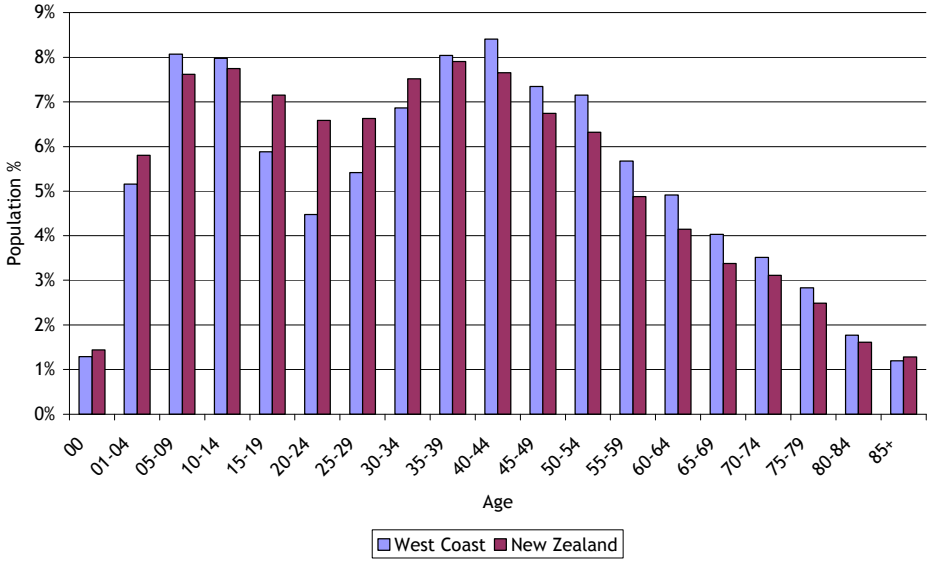
the future, the rapid growth in the number and proportion of older people, will inevitably increase pressure on health funding.

Figure 4 illustrates the age distribution for West Coast compared to the age distribution for New Zealand as a whole.

The overall age distribution for West Coast shows a peak in the age group 5 to 14 and another at 40 to 44. This is slightly different in the New Zealand population as a whole. The figure below shows much lower numbers for West Coast for the age groups of 20 to 29. Compared to the New Zealand population, West Coast has a higher proportion of its population in the ages between 10 and 14, and over 40 years, but a slightly less proportion in the ages over 85 year.

Although Buller District has a slightly higher proportion of residents aged 65+, there is no significant difference in the age structure between the Territorial Authority sub-districts.

Figure 4. ***West Coast DHB vs New Zealand Population Age Distribution (2001 Projected Population)***



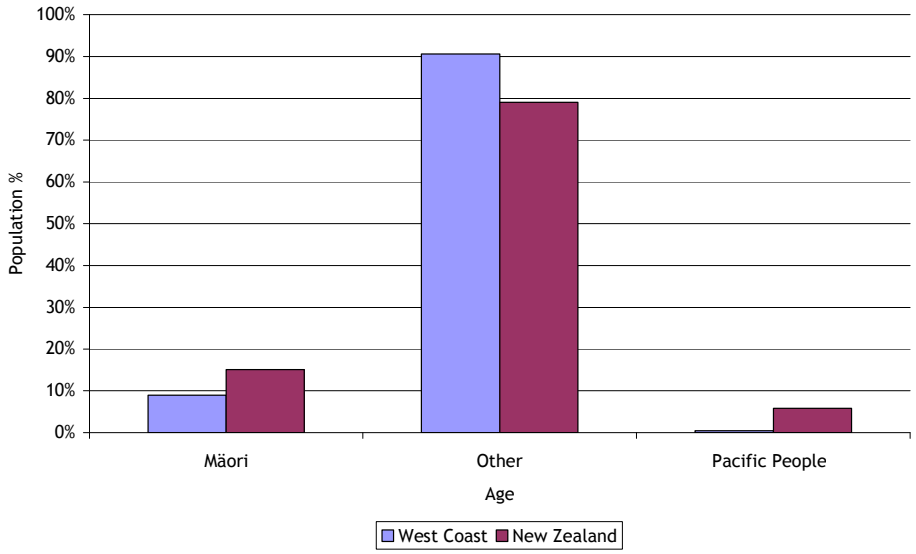
Source: Sourced from Statistics New Zealand and reproduced by the Ministry of Health, 2004.

Ethnic Identity

In West Coast, there are 2,790 Mäori, 135 Pacific people and 28,110 people from 'Other'[2] ethnic groups. Expressed in percentage terms (see Figure 5), the distribution of ethnicity differs somewhat from the national figures. As a proportion of the population, West Coast has 6% less Mäori, 5.4% less Pacific people and slightly over 10% more people from 'Other' ethnic groups than New Zealand as a whole. The distribution is relatively consistent across all West Coast sub-districts, although Westland District has a higher proportion of Mäori residents.

[2] The 'Other' ethnic group is made up largely of European/Pakeha, but also includes Asian people.

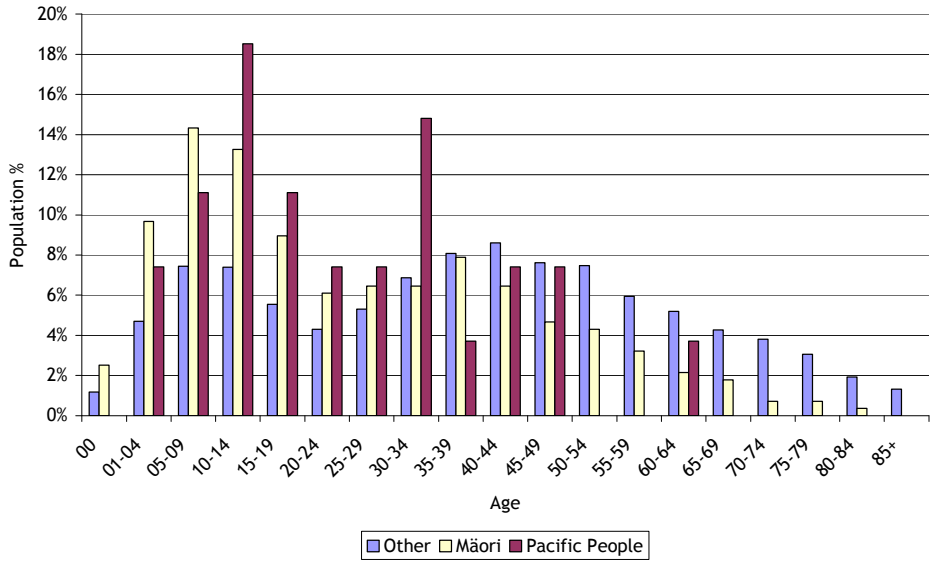
Figure 5. ***Ethnicity West Coast DHB vs New Zealand (2001 Projected Population)***



Source: Sourced from Statistics New Zealand and reproduced by the Ministry of Health, 2004.

The Age distribution by ethnicity for West Coast (see Figure 6) shows a higher proportion of younger Mäori and Pacific people and older Other ethnicity. While Pacific people in the 15 to 19 years age group appear to be almost three times that of 'Other' ethnicity. However, it should be remembered that Pacific people comprise less than 1% of the West Coast Population.

Figure 6. ***West Coast DHB Population Age Distribution by Ethnicity (2001 Projected Population)***



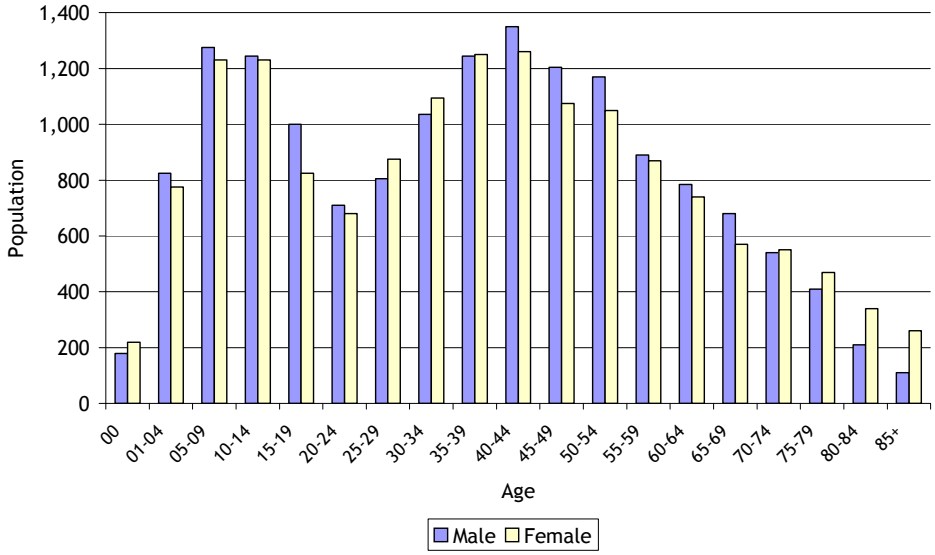
Source: Sourced from Statistics New Zealand and reproduced by the Ministry of Health, 2004.

Gender

Data analysis shows no significant differences for males and females compared to national figures. There is an equal proportion of males and females in West Coast. There is no significant difference in the gender structure between the Territorial Authority sub-districts.

The distribution of males and females by age (see Figure 7) shows a slightly greater number of males than females between the ages 5 to 29 and 40 up until the age 69. Females outnumber males slightly from 70 years, with females more double the number of males in the 85+ age group.

Figure 7. West Coast DHB Population Age Distribution by Gender (2001 Projected Population)



Source: Sourced from Statistics New Zealand and reproduced by the Ministry of Health, 2004.

Births

As in other developed countries, the fertility rates of New Zealand women are declining. On only two occasions during the past 20 years have New Zealand's fertility rates risen above replacement levels (Statistics New Zealand 2003). While fewer New Zealand women in their teens and 20s are having children, births to those over 30 years are increasing. Fertility rates also vary significantly by ethnicity, with Mäori and Pacific women having both higher fertility rates and on average younger maternal ages than women of European origin.

Table 2 summarises births by maternal ethnicity for the West Coast region during 1996 to 2002. This information is derived from the birth registration dataset (see teenage pregnancy section) and is based on the usual area of residence of women at the time of delivery, rather than the region in which they gave birth.

Table 2. Total Births by Maternal Ethnicity, West Coast DHB 1996 to 2002

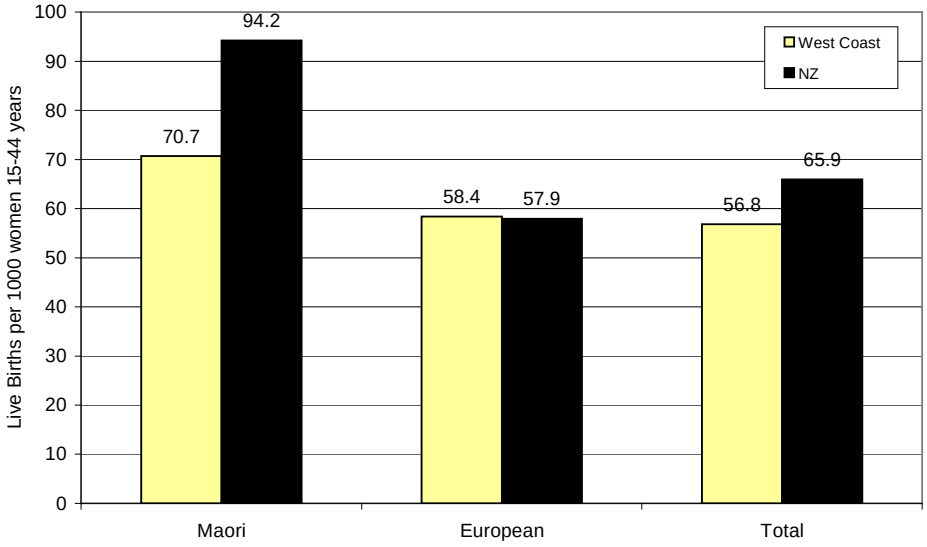
Year	European	Mäori	As/Ind/Other	Pacific	Total
1996	429	44	2	6	481
1997	359	55	7	1	422
1998	337	47	1	5	390
1999	336	55	0	6	397
2000	325	49	4	2	380
2001	327	50	3	0	380
2002	291	39	3	1	334

Source: Birth Registration Data NZHIS

Total births however are dependant on the age structure of the resident population and in particular the number of women of reproductive age resident within a particular region at a given time. Figure 8 summarises the fertility rates for West Coast women during 2002. Numerators for this analysis were derived from birth registrations for 2002 while denominators were based on the total number of women aged 15-44 years who resided within West Coast DHB boundaries at the 2001 census.

As Figure 8 demonstrates, fertility rates for Mäori were higher than for European women in the West Coast DHB during 2002. While fertility rates for European women were similar to the New Zealand European average, rates for West Coast Mäori were lower. The figures are not age standardised (for differences within the 15-44 age group) however, and thus care should be taken when comparing the fertility rates of the West Coast DHB with those of New Zealand.

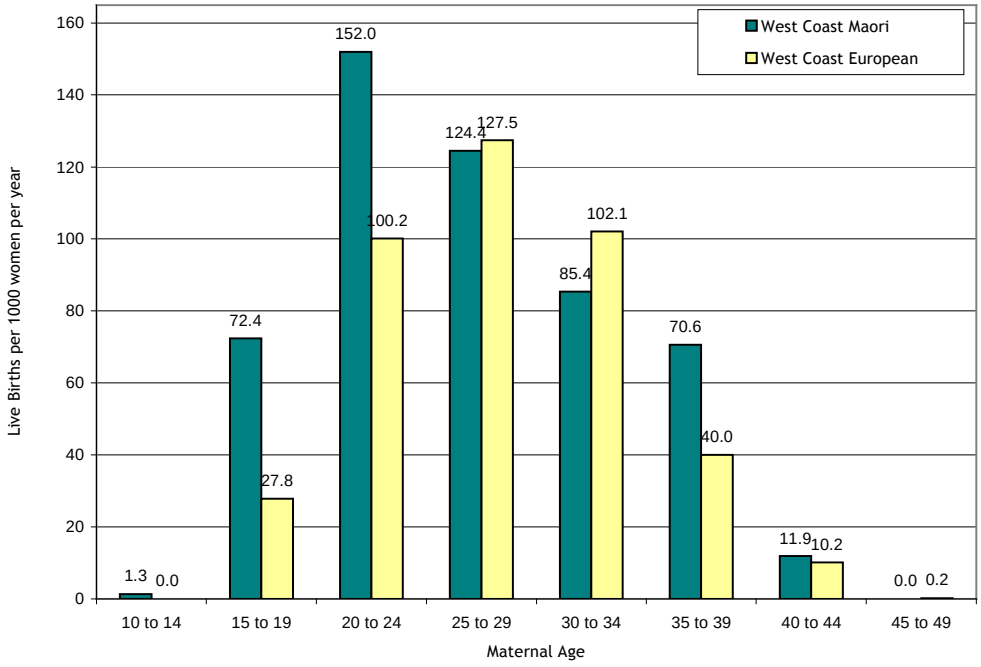
Figure 8. Birth Rates by Ethnicity, West Coast DHB vs New Zealand 2002



Source: Numerator Birth Registration Data NZHIS; Denominator Statistics New Zealand Census Data

Figure 9 compares the age stratified fertility rates of West Coast Mäori and European women during 1999 to 2003. Numerators are based on birth registrations during the period while denominators are based on 2001 census data. During 1999 to 2003 Mäori began childbearing at an earlier age than European women, with fertility peaking for Mäori in the 20-24 age bracket, and for Europeans in the 25-29 age bracket.

Figure 9. Birth Rates by Ethnicity and Age for West Coast DHB Women 1999 to 2003



Source: Numerator Birth Registration Data NZHIS; Denominator Statistics New Zealand Census Data

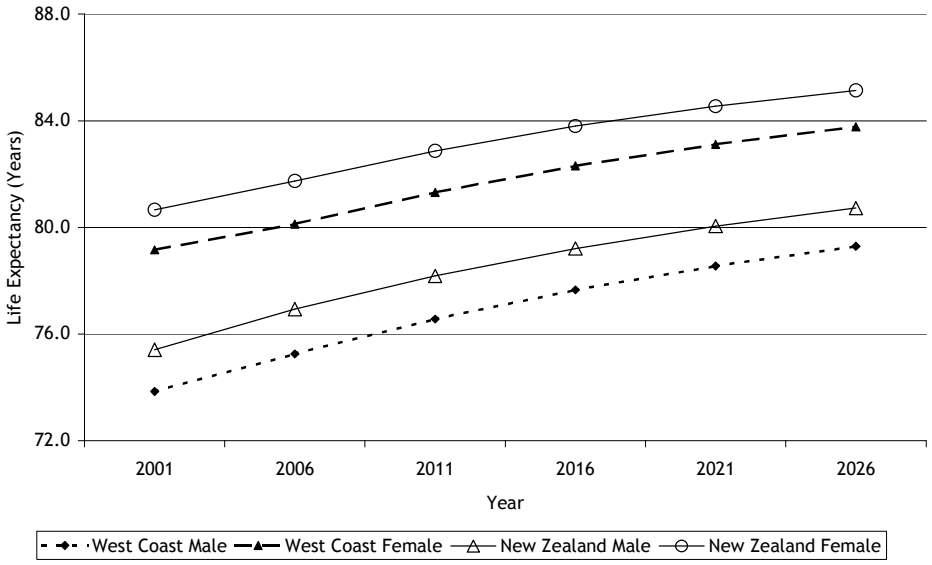
Life Expectancy

In the New Zealand population females have a better life expectancy (80.7 years) than males (75.4 years). Both males and females in West Coast have a poorer life expectancy than the New Zealand average, with males living on average 73.8 years and females 79.2 years.

Life expectancy by ethnicity by DHB was not calculated because of very small numbers.

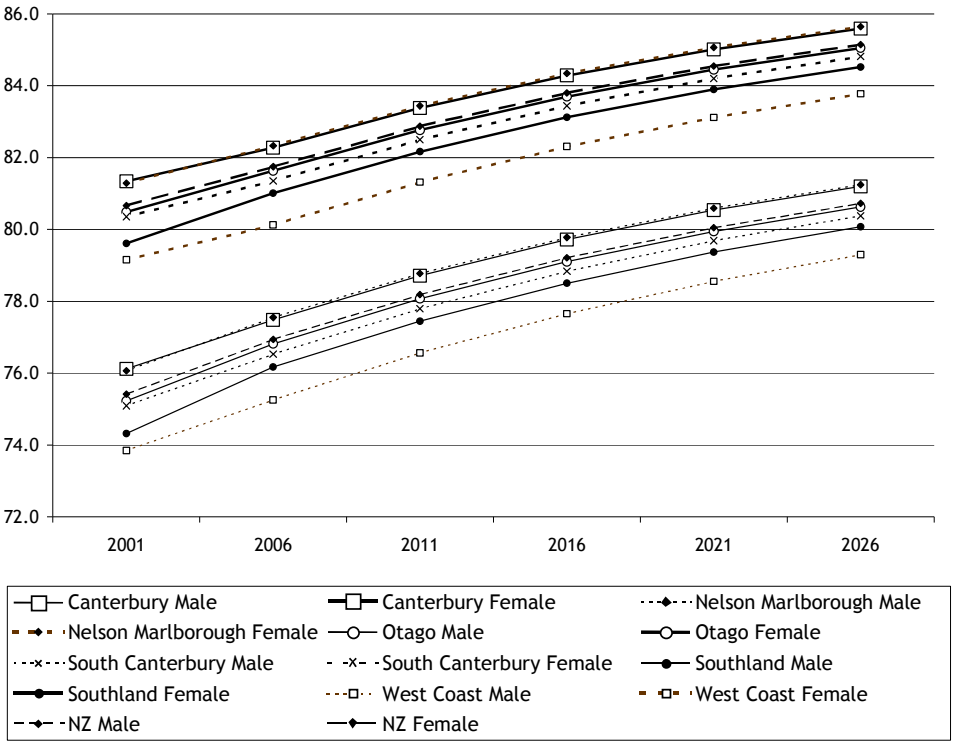
Life expectancy in both New Zealand and West Coast is expected to continue to increase for the period until 2026 (see Figure 10). However, West Coast life expectancy is predicted to remain below the national figures throughout this period.

Figure 10. Life Expectancy at Birth for West Coast vs New Zealand 2001 to 2026[3]



Source: Data has been obtained from Statistics New Zealand and issued by the Ministry of Health as part of PHI Counts, 2003.

Figure 11. Life Expectancy at Birth for all South Island DHBs vs New Zealand 2001 to 2026[4]



Source: Data has been obtained from Statistics New Zealand and issued by the Ministry of Health as part of PHI

[3] Statistics New Zealand (July 2003).

[4] Statistics New Zealand (July 2003).

SOCIOECONOMIC STATUS

Population Factors and the Need for Health Care

There are many factors that can contribute to an individual's health status.

The *New Zealand Health Strategy* (Ministry of Health December 2000) emphasises that socioeconomic factors are major determinants of health and well-being. The Strategy also acknowledges that disease and poor health may have an impact on socioeconomic position and can be part of a complex feedback loop in which personal health status becomes a driver of persistent disadvantage. People with disabilities in particular are affected by a complex set of intersectoral factors.

Health in old and middle age depends on past circumstances as well as present ones, and the effects of disadvantage may accumulate throughout a person's life. For example, social disadvantage can affect a person's education, which may lead to poorly paid work and poor housing (Ministry of Health 2002f).

It is well established that those who are less well off have poorer health. There is a consistent and pervasive correlation between increasing deprivation and worsening health and risk factor measures across the board. This includes shorter life expectancy, higher mortality rates, higher hospitalisation rates and higher smoking rates. Socioeconomic factors influence life expectancy at birth, which decreases markedly as the deprivation of the area of residence increases. The report *Health of People in the South* (Health Funding Authority 1998) showed that socioeconomically disadvantaged localities tend to have higher than average rates of premature death and hospitalisation for many causes. Socioeconomic factors, such as unemployment levels, poor housing standards and low-income levels are also shown to have a detrimental effect on mental health (see Section 2 – Mental Health).

The previous health needs assessment reports have shown that Mäori and Pacific people often have a higher percentage of its population being most deprived compared to other ethnic groups.

Improving the health status of those socially disadvantaged is one of the seven underlying principles of the *New Zealand Health Strategy*. The Strategy recognises that more effort is needed to address the health status of groups with low socioeconomic status. Efforts need to focus in particular on Mäori and Pacific people, and people with serious mental illness.

Measures of the Socioeconomic Status

There are a number of alternative statistical measures of the socioeconomic status of individuals, households, and regional communities. These indicators typically include income, level of educational qualification, occupational status, and work-force participation, as well as measures of health care access-related variables, such as car-ownership and telephone access.

The following sections examine different aspects of the socioeconomic status of people living in the West Coast DHB area.

Social Disadvantage and Deprivation

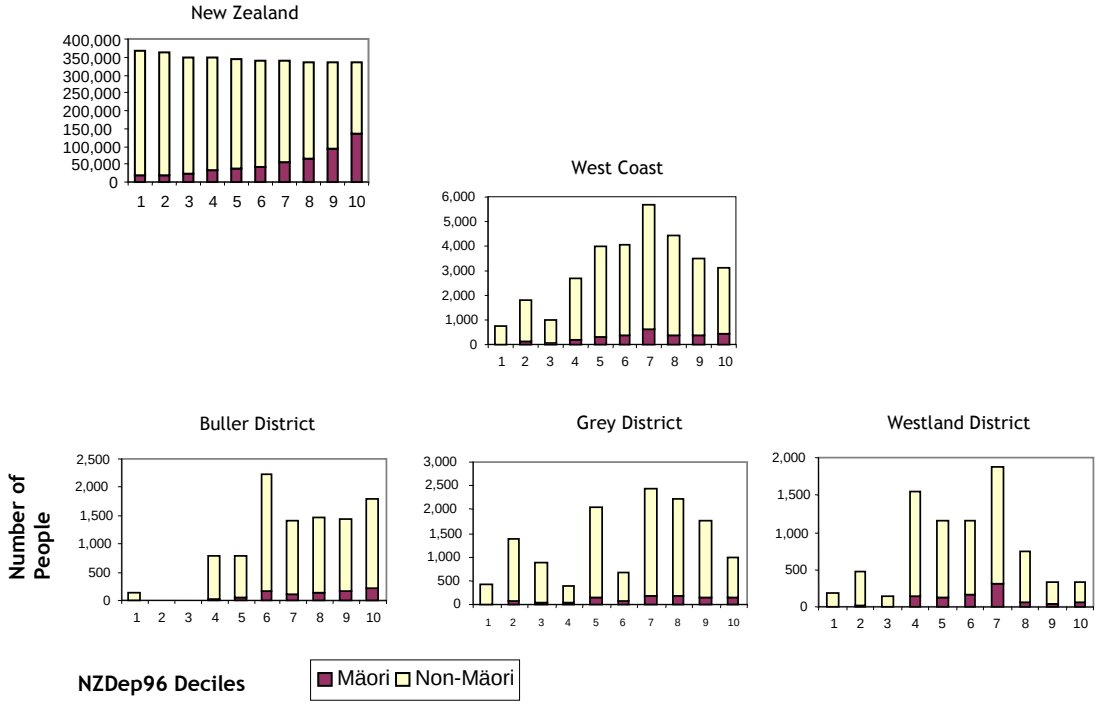
Because of the correlation between increasing social disadvantage and worsening health, high decile areas are an important indicator of likely areas of need.

For more information about NZDep96 and NZDep2001 Indices see Appendix 1.

Figure 12 and Figure 13 show deprivation in West Coast in 1996 and 2001 in comparison to New Zealand as a whole and within West Coast's Territorial Authorities, and is further broken down by ethnic identity.

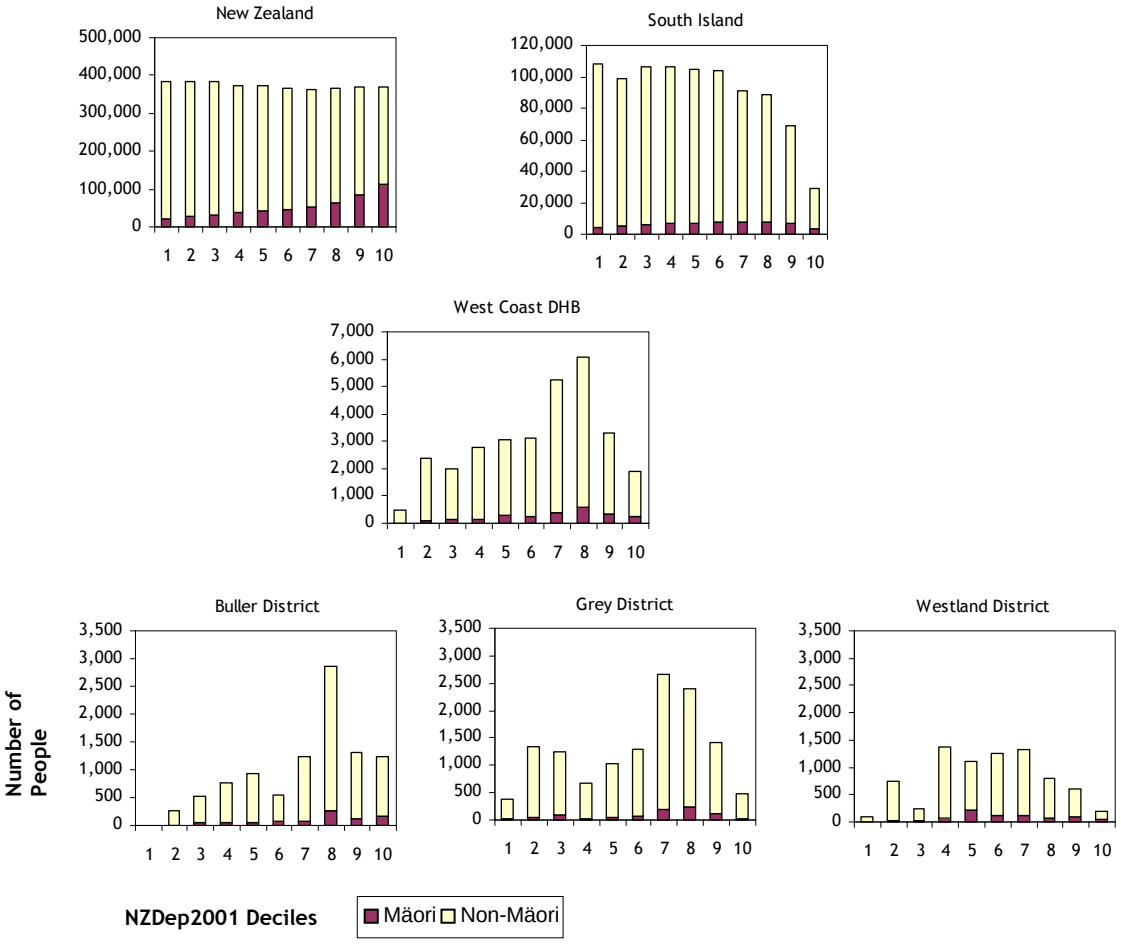
Differences observed between the 1996 and 2001 profiles may be due to a change in the way the NZDep Index of Deprivation was derived from one period to another rather than from any change of deprivation in those areas (Salmond and Crampton 2002). Comparisons over time are, therefore, not made in this document.

Figure 12. Deprivation Profiles for New Zealand, West Coast DHB and Territorial Authorities (NZDep96 Index)



Source: Statistics New Zealand from Census 1996 and sourced from Public Health Consultancy (2001b)

Figure 13. Deprivation Profiles for New Zealand, the South Island, West Coast DHB and Territorial Authorities (NZDep2001 Index)



Source: Statistics New Zealand from Census 2001 and sourced from Public Health Consultancy, Public Health Directorate and the Ministry of Health, September 2004.

From 1996 NZDep Index results, within a DHB where the overall level of deprivation was high, the Buller District had an extremely high level of social disadvantage. Grey District shows a similar, though not as extreme, trend toward the higher deprived areas, but with more people in the lower deprivation areas, particularly decile 2. Westland District shows the most people living in the mod range of deciles 4 to 7.

Figure 13 shows an increasing number of Mäori in higher deprivation areas in New Zealand with Mäori making up 30% of the total in Decile 10, yet only 14% of the total New Zealand population. The non-Mäori population shows a proportional decline from decile 1 to 10, while the Mäori proportion rises.

The South Island profile shows a decrease in the number of Mäori from decile 6 to 10, however there are still more Mäori residents in these deciles than in deciles 1 to 5. Non-Mäori figures show a downward trend from deciles 1 to 10, while the Mäori trend rises. This indicates that more Mäori live in the higher deprivation areas than the lower deprivation areas, though in proportionately fewer numbers than for New Zealand as a whole.

The West Coast DHB shows a trend toward the higher deprivation areas, a pattern that is in contrast to that for the South Island. The largest numbers of people live in deciles 7 and 8 and more people live in deciles 9 and 10 than in many of the lower deciles. This pattern is reflected in both the Mäori and non-Mäori profiles.

The Buller District profile is heavily skewed toward the higher deprivation areas. The largest numbers of people live deciles 7 to 10, with more than double in decile 8 than any other decile. There are no people in decile 1 and no Mäori in decile 2.

Grey District shows a similar, though less extreme, tendency toward the higher deprivation areas. There are more Mäori and non-Mäori in deciles 2 and 3 in Grey than any other district, but still a marked increase in the number of people in deciles 7 and 8.

Westland District, though still having a tendency toward the higher deprivation areas, shows greater numbers of people in the mid decile range. This tendency is skewed, however, due to the larger proportion of non-Mäori in these deciles. Mäori proportions in these deciles are consistent with their proportion of the total regional population - approximately 10% - but their representation is increased threefold in decile 10 to over 30%.

Despite some of the trends shown above, comparing the proportion of Mäori and non-Mäori populations in each decile with their total population in the regions show that Mäori are consistently over represented in the higher deciles.

Care should be exercised when comparing within and between regions, however, due to the small numbers involved.

Income

Key variables determining the financial position of a population and an individual include income, assets and accommodation costs. Standard of living can be described as the mix of resources and the product, services and social and other goods consumed.

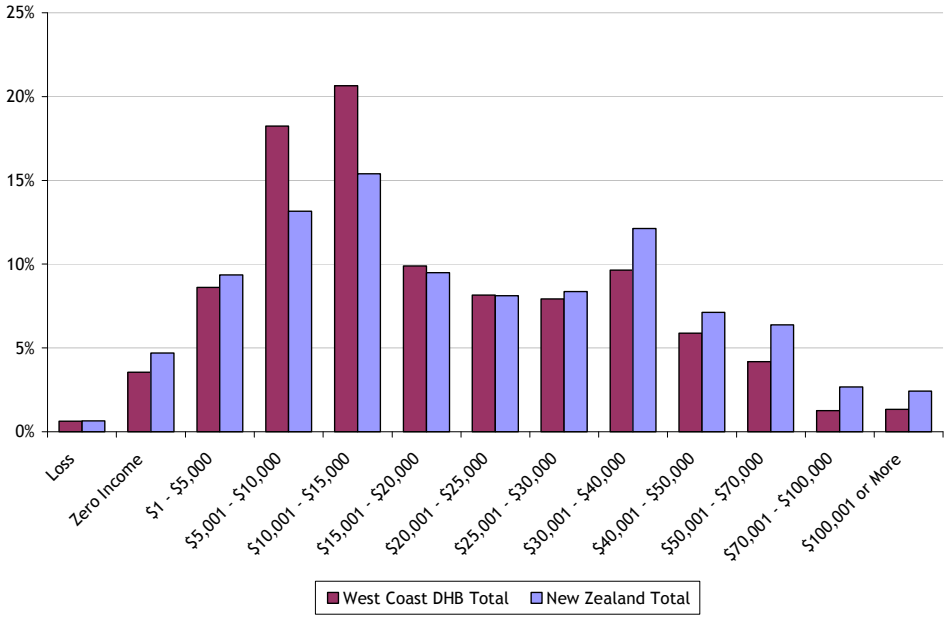
The following sections give an insight in the socioeconomic status based on the financial position of the West Coast DHB population.
Income has been claimed to be the most important modifiable determinant of health (Davis et al 1997) upon which many other determinants rest. A household's level of absolute income can have a material effect on the health of individuals in the household – through enabling people to pay for adequate food, appropriate housing and private health care (Lynch et al 2000). Strong associations have been observed between income and health status internationally (Kitagawa et al 1973, Sorlie et al 1995, van Doorslaer 1997, Backlund and Sorlie 1996, McDonough et al 1997, Ecob and Davey Smith 1999). Some of the association is undoubtedly causal. However, income is also a marker of previous education, family circumstances, and many other variables that may, in part at least, be responsible for the observed association of income and health (Blakely and Woodward 2000). Income is usually measured over a reasonably short period of time (eg one year), and therefore reflects short-term socioeconomic status. Incomes change markedly over the life-course – asset wealth may be a more durable measure of material socioeconomic status (Lynch et al 2000).

Income is generally shared among members of a given household, so that family or household income is generally thought to be the more relevant income measure. An additional step often taken is to try and take account of differences in household size and composition, by 'equivalising'. This means that an 'equivalence scale' is applied, which scales down the income of larger households. This allows for

the income having to be spread over more household members, but at the same time allowing for the fact that there are 'economies of scale' from more than one person living together.

West Coast DHB (see Figure 14) has a more condensed distribution of personal income than that of overall New Zealand but there are some similarities. The difference occurs where West Coast residents are less likely to earn over $30,000, with these people represented in the $5-15,000 range where they are significantly above the New Zealand average. This may suggest there are more part time employees in the DHB.

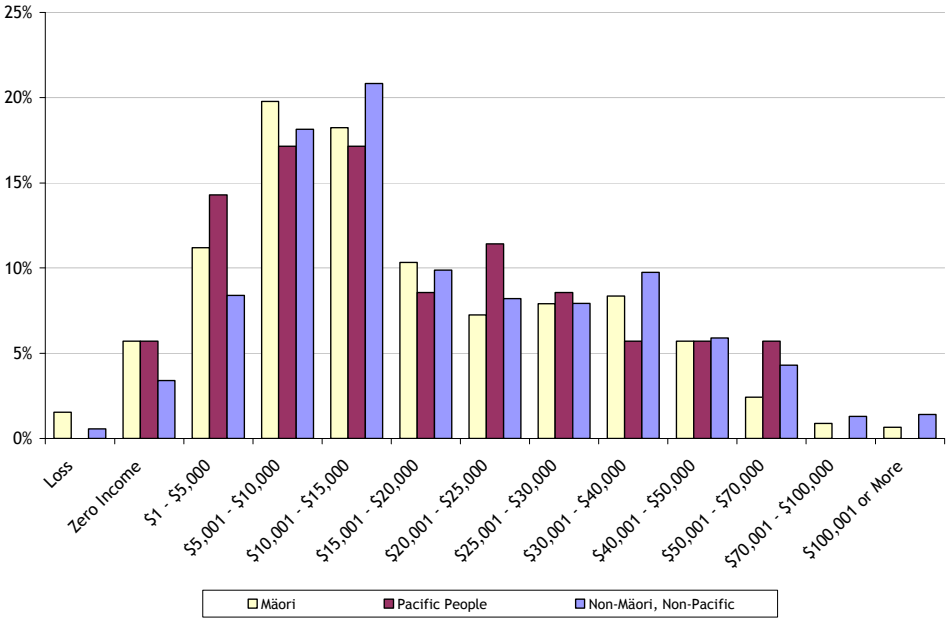
Figure 14. ***West Coast DHB vs New Zealand Total Personal Income Distribution (2001 Census Usually Resident Population Count, aged 15 Years and Over)***



Source: Statistics New Zealand from Census 2001.

Mäori are more likely than non-Mäori and non-Pacific people in the West Coast region to earn less than $10,000 and slightly less likely to earn incomes in the highest categories (see Figure 15). In comparison to overall New Zealand Mäori, West Coast Mäori again have a higher concentration earning incomes between $5,000 and $15,000 (Source: Statistics New Zealand from Census 2001).

Figure 15. ***West Coast DHB Total Personal Income by Ethnicity (2001 Census Usually Resident Population Count, aged 15 Years and Over)***



Source: Statistics New Zealand from Census 2001.

Buller District ($13,300) has the lowest median income of all Territorial Authorities in the South Island and, along with Grey District ($14,800), is significantly below the overall New Zealand level of $18,500. Westland District ($17,000) has a higher median income than the other two Territorial Authorities in the DHB, but is still below the remainder of the country (Source: Statistics New Zealand from Census 2001).

Housing

Housing Affordability

The AMP Home Affordability Report (Crews G. 2004) indicates housing affordability for housing in New Zealand can be assessed by comparing the average weekly earnings with the Median Dwelling Price and the mortgage interest rate. The earnings figure represents the money available to the family or household unit. The Median Dwelling Price combined with the mortgage interest rates provide an indicator of the expense involved.

This report shows the New Zealand Home Affordability Index for September 2004 recorded a quarterly decline of 1.6%. Over this period, house prices dipped slightly, interest rates continued to trend upward and average weekly wages showed little movement.

For the whole of New Zealand all but two regions (Auckland and Nelson/Marlborough) reported a quarterly lift in Median Dwelling Prices and all regions except Nelson/Marlborough recorded a quarterly decline in home affordability. Nelson/Marlborough was the only region to record a quarterly affordability improvement, at 2.8%.

The New Zealand index reflected a 12-monthly decline in home affordability (13.5%) for the eighth consecutive quarter, the steepest annual decline recorded in eight years. The Median Dwelling Price moved up 14.9% over the past year from $215,000 to $247,000. All 11 regions recorded a 12-monthly decline in home affordability. Nationally, Otago continued to rank highest for the third consecutive quarter at 37.3%. All regions reported an increase in Median Dwelling Prices over the past year. Otago continued the strongest showing, with an annual lift in house prices of 38.1%. Southland remains the most affordable region in New Zealand. Auckland remains the least affordable region followed in ranking by Nelson/Marlborough.

Table 3 shows the change in Home Affordability in the South Island for the 12 months to August 2004.

Table 3. Change in Home Affordability in the 12 Months to August 2004, South Island and New Zealand

Home Affordability Index			Percentage Decline in Home Affordability in the Last 12 Months
Region	May 2004	August 2004	
Canterbury/Westland	20.32	21.79	35.4%
Nelson/Marlborough	26.69	25.95	9.6%
Otago	17.85	18.64	37.3%
Southland	11.96	12.60	16.8%
New Zealand	**22.68**	**23.05**	**13.5%**

Source: Crews G. (September 2004). AMP Home Affordability Report Quarterly Survey, Department of Finance, Baking and Property, Massey University: September 2004 Volume 14, Number 3.

Housing is a basic human need and has one of the biggest impacts on people's wellbeing and quality of life. Issues related to housing crises, such as affordability problems, poor quality and household crowding, have many flow-on effects for people's health, education, community participation, community cohesion and safety. Poor quality and inappropriate housing can expose people to health problems (New Zealand City Councils' 2003).

Accommodation costs are commonly a major part of household expenditure. Accommodation costs are often a key determinant of overall standard of living for older people.

Crowded Houses

Crowding is an indicator of housing affordability. People having difficulty affording their accommodation because of low income may share with others as a way to reduce overall housing costs. It is also an indicator of housing need, providing information on the suitability of a dwelling for the people occupying it (New Zealand City Councils' 2003).

Crowded households are more likely than others to be located in deprived neighbourhoods, be work-poor, and have low incomes. Children, Mäori and Pacific people are over-represented in this category (Public Health Consultancy 2001a).

Overcrowding is the aspect of housing most directly related to health outcomes. Living in crowded situations can contribute to poor health outcomes such as respiratory and infectious diseases (particularly meningococcal disease) (New Zealand City Councils' 2003).

Households are also less crowded, with average household size in every district of 2.4 people compared to 2.7 nationally (Maxwell and Caton 2003).

Table 4 shows that the proportion of overcrowded households in West Coast DHB is less than half the New Zealand average. The DHB percentage is similar to the combined South Island rate. There appears to be disparity between ethnicities although there are a very low number of Asian and Pacific people households. Mäori are more likely than non-Mäori in the area to live in an overcrowded house but have a significantly lower rate than total Mäori in New Zealand. In fact, all ethnicities have a lower rate than their respective national percentages.

Table 4. Household Crowding for Households in Private Dwellings by Ethnicity

Ethnicity	Canterbury	Nelson Marlborough	Otago	Southland	South Canterbury	West Coast	New Zealand
European	2.3%	2.7%	1.8%	2.0%	1.3%	2.0%	3.0%
Mäori	8.2%	10.1%	6.3%	6.7%	5.6%	4.9%	13.5%
Pacific People	9.2%	9.1%	7.7%	6.6%	5.9%	5.6%	13.4%
Asian	15.7%	15.6%	12.8%	11.2%	11.8%	13.3%	27.0%
Total	**2.8%**	**2.9%**	**2.0%**	**2.2%**	**1.4%**	**2.1%**	**5.1%**

Source: Statistics New Zealand from 2001 Census of Population and Dwellings.

Table 5 shows that there is very little variation between the three Territorial Authorities within West Coast DHB.

Table 5. Household Crowding for Households in Private Dwellings by Territorial Authority, West Coast

Territorial Authority	Buller District	Grey District	Westland District
Percentage	2.2%	2.0%	2.0%

Source: Statistics New Zealand from 2001 Census of Population and Dwellings.

Home and Family

In comparison to the remainder of New Zealand, couples within the West Coast DHB are more likely to be without children (Table 6). However, this is not the case within Grey District, where there are just as many couples with children as without (Source: Statistics New Zealand from Census 2001).

West Coast DHB also has a lower proportion of one-parent families (Table 6) and this is especially so within Westland District (Source: Statistics New Zealand from Census 2001).

Table 6. Family Type for Occupied Dwellings (West Coast DHB), 2001 Census

Family Type	Number	West Coast %	New Zealand %
Couple without Children	**3,378**	**43.6%**	**39.0%**
Couple with dependent Child(ren)	2,700	34.8%	35.1%
Couple, other	453	5.8%	7.1%
Couple with Children Total	**3,153**	**40.7%**	**42.1%**
One Parent with dependent Child(ren)	963	12.4%	14.5%
One Parent, other	261	3.4%	4.4%
One Parent with Children Total	**1,221**	**15.8%**	**18.9%**
Total	**7,752**	**100.0%**	**100.0%**

Source: Statistics New Zealand from Census 2001.

Home Ownership

Howden-Chapman and Tobias (2000) state that owning a home is not just a proxy for greater income, higher social class or the protection and prestige that these confer. Owning a home seems to have direct health advantages.

Home ownership rates are steadily declining in New Zealand. This is influenced by a number of factors, including home mortgage interest rates, the changing nature of household formation, levels of employment, income and housing costs (New Zealand City Councils 2003).

Renting is becoming a permanent type of housing for a growing proportion of the population (Housing New Zealand Corporation 2004).

Table 7. House Ownership for West Coast DHB, 2001

Tenure of Household	Number of Houses	West Coast %	New Zealand %
Owned or Partly Owned by Usual Resident(s), with Mortgage	3,705	31.6%	33.0%
Owned or Partly Owned by Usual Resident(s), without Mortgage	4,281	36.5%	30.8%
Owned or Partly Owned by Usual Resident(s), Mortgage not defined	129	1.1%	0.9%
	8,112	**69.1%**	**64.6%**
Not Owned by Usual Resident(s), making Rent Payments	2,571	21.9%	26.7%
Not Owned by Usual Resident(s), without making Rent Payments	330	2.8%	2.9%
Dwelling Not Owned by Usual Resident(s), Rental not defined	174	1.5%	1.1%
	3,075	**26.2%**	**30.7%**
Not Elsewhere Specified	543	4.6%	4.7%
Total	**11,733**	**100.0%**	**100.0%**

Source: Statistics New Zealand from Census 2001.

Table 8. House Ownership for West Coast DHB Mäori, 2001

Tenure of Households	Number of Houses	West Coast %	New Zealand %
	Mäori		
Owned or Partly Owned by Usual Resident(s), with Mortgage	447	37.3%	31.4%
Owned or Partly Owned by Usual Resident(s), without Mortgage	234	19.5%	14.7%
Owned or Partly Owned by Usual Resident(s), Mortgage not defined	6	0.5%	0.7%
	684	**57.1%**	**46.8%**
Not Owned by Usual Resident(s), making Rent Payments	441	36.8%	47.3%
Not Owned by Usual Resident(s), without making Rent Payments	30	2.5%	2.1%
Dwelling Not Owned by Usual Resident(s), Rental not defined	12	1.0%	1.1%
	480	**40.1%**	**50.5%**
Not Elsewhere Specified	33	2.8%	2.7%
Total	**1,197**	**100.0%**	**100.0%**

Source: Statistics New Zealand from Census 2001.

West Coast DHB has a higher rate of residents owning their own home than the New Zealand average (see Table 7). Households in the DHB containing Mäori residents are less likely to be owned but have a higher rate of ownership than overall New Zealand Mäori (see Table 8).

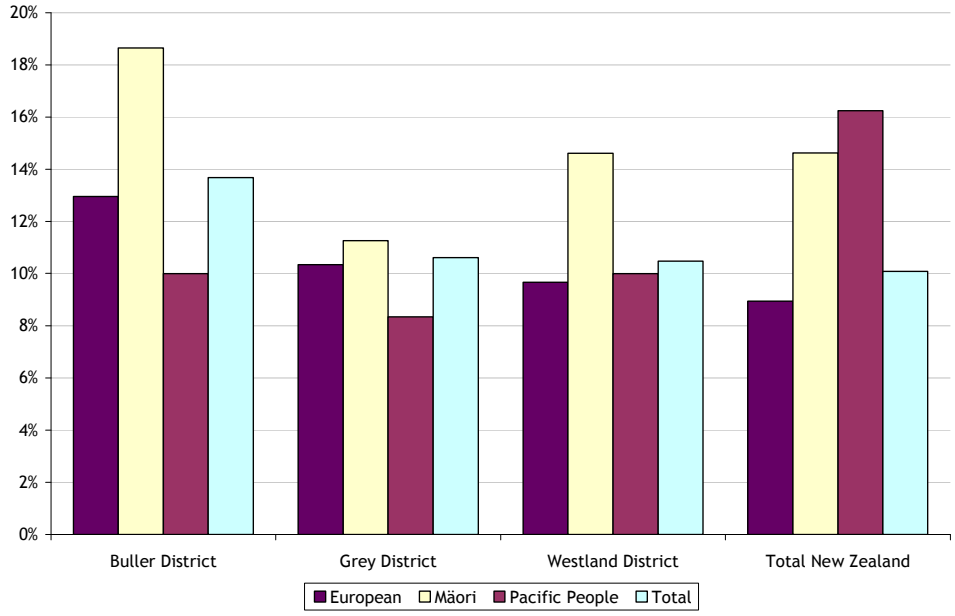
Transport and Communication

Access to Motor Vehicles

Mortality rates have been shown to be higher for both males and females with no car access (Filakti and Fox 1995).

Figure 16 illustrates access to motor vehicles.

Figure 16. No Access to Motor Vehicle by Ethnicity - West Coast DHB Territorial Authorities vs New Zealand Households in Private Occupied Dwellings, 2001 Census



Source: Statistics New Zealand from Census 2001.

West Coast DHB has a comparable percentage to New Zealand overall of households without access to motor vehicles. They do however have a lower average number of motor vehicles per household.

With the exception of Buller District having a slightly higher percentage without access, there is little variation between the Territorial Authorities within the DHB.

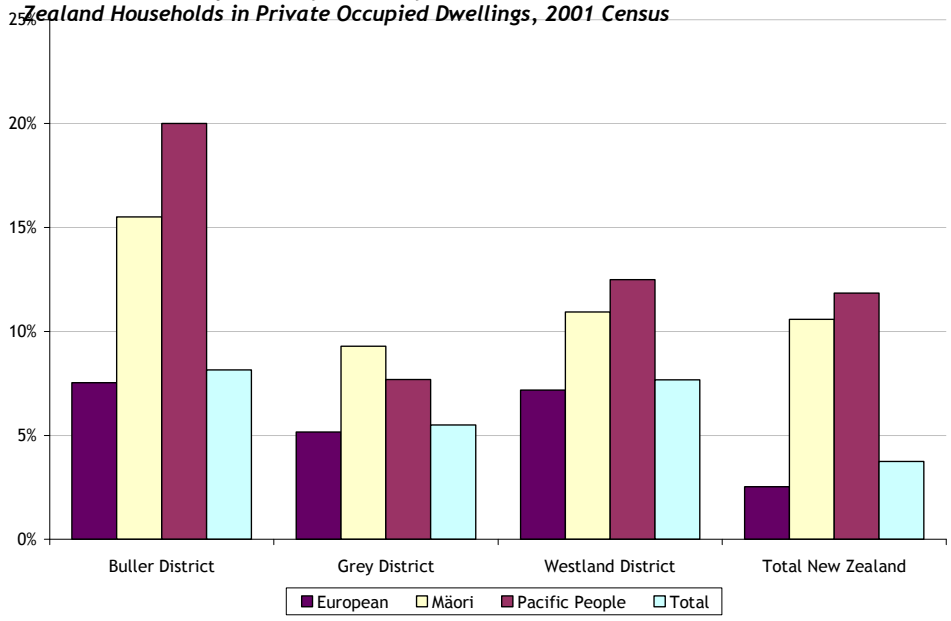
Mäori households within each Territorial Authority have a higher proportion without access to motor vehicles than Europeans in the same region. There is variation in comparison to overall Mäori nationwide however – Mäori households in Grey District have greater access than total New Zealand Mäori; Buller District have lower access; while Westland District are equivalent to overall Mäori nationwide.

Access to Telecommunications

As well as being an important means of contact to health services, telephones provide a means of social connection to others and facilitate a range of other activities of daily life. A phoneless household is a dwelling in which there is no working telephone. This includes a cell telephone that is available to the household most of the time.

Figure 17 shows the proportion of people having no access to telephones.

Figure 17. No Access to Telephones by Ethnicity – West Coast DHB Territorial Authorities vs New Zealand Households in Private Occupied Dwellings, 2001 Census



Source: Statistics New Zealand from Census 2001.

West Coast DHB, and more specifically Buller District, has the lowest percentages with access to each of the telecommunications within the South Island.

All three Territorial Authorities have a significantly lower percentage with access to either the phone or internet than the New Zealand average, although Westland District households are just as likely to have access to a fax machine than in overall New Zealand.

Mäori households within all West Coast DHB Territorial Authorities have a higher proportion without access to a phone than Europeans in the same regions, but only in Buller District are they worse off than overall Mäori nationwide. There are too few Pacific people households in any of the three Territorial Authorities to draw any conclusion.

Employment

Labour Force Status

The population can be divided into three groups: the employed, the unemployed, and those not in the labour force. The unemployed are those actively seeking and available for work, and they are regarded as part of the labour force. Those not in the labour force include those on full-time 'domestic duties' as well as the retired, full-time students, and those without work, but not satisfying the statistical definition of 'unemployed'.

Mortality risk and poor health are markedly elevated among those not in the labour force, undoubtedly due to selection of sick people out of the labour force. However, there is also usually an elevated mortality risk for the unemployed compared to the employed (Martikainen and Valkonen 1996). Whilst some of this elevated mortality and poor health among the unemployed may be due to confounding by other socioeconomic factors, most commentators agree that there is still some underlying causal association between unemployment (relative to employment) and health.

Table 9 shows work and labour force status for the Nelson Marlborough/West Coast regions and New Zealand. It can be seen that the unemployment rate has dropped from 2001 to 2004 by just under 2% in the Nelson Marlborough/West Coast region and by 3.5% for New Zealand as a whole. The total unemployed has fallen in both the Nelson Marlborough/West Coast region and for New Zealand as a whole, despite the increase in population. The Labour Force participation rate for the Nelson Marlborough/West Coast region has increased by 1.3% indicating that proportionately more people have entered the labour market place and, given the reduction in total unemployed, have found employment. The rate is consistent with the national average, which has decreased slightly.

Table 9. 2001 and 2004 (June) Work and Labour Force Status for Tasman, Nelson, Marlborough and West Coast Regions, All Ethnic Groups

	2001		2004 (June)	
	Tasman, Nelson, Marlborough, West Coast Regions	New Zealand	Tasman, Nelson, Marlborough, West Coast Regions	New Zealand
Total Employed	73,590	1,727,271	86,700	1,992,100
Unemployed	3,987	139,908	2,900	81,900
Total Labour Force	**77,589**	**1,867,179**	**89,500**	**2,074,100**
Not in Labour Force	38,823	933,909	45,800	1,052,200
Working Age Population*	119,493	2,889,537	135,300	3,126,300
Labour Force Participation Rate	64.9%	66.7%	66.2%	66.3%
Unemployment Rate	5.1%	7.5%	3.2%	4.0%

Source: Statistics New Zealand from Census 2001 and Household Labour Force Survey 2004.
*Notes: *Civilian non-institutionalised usually resident New Zealand population aged 15 and over.*
Ethnic breakdowns for 2004 (June) Statistics New Zealand data are not available at present.

Level of Education

Education is related to health in several ways. Firstly, education is a marker of parental socioeconomic status and socioeconomic conditions of childhood and early adulthood, giving it a firm place in the life course (Lynch and Kaplan 2000, Kuh et al 1997). It may be that childhood and early adulthood socioeconomic factors (as indicated by education) affect adult mortality by latent effects, or by adding to a life-course of cumulative social (dis)advantage, or by determining adult socioeconomic factors which in turn affect mortality.

Secondly, education may be thought of as a measure of 'health capital'. Education may influence health outcomes through its influence on choice of lifestyle behaviours (eg exercise, diet), problem solving capacity, and values (eg importance of preventive health-related behaviour) (Liberatos et al 1988).

Thirdly, people with different educational attainment vary in unobservable ways, including time preferences for investing in their future (including their future health) (Fuchs 1979). Thus, some third factor may be associated with both higher education and lower mortality risk (ie confounding).

Lower education qualifications and fewer years of education have been consistently associated with all-cause and most causes of mortality in international studies (Fox and Goldblatt 1982, Sorlie et al 1995, Mackenbach et al 1999). These gradients have tended to increase in the United States in recent decades (Feldman et al 1989, Pappas et al 1993). Many studies support the idea that education may influence mortality risk in part via income. Better education predicts a higher income, which then determines one's mortality risk (Schrijvers et al 1999, Lantz et al 1998, Backlund et al 1999). Likewise, health behaviours may explain some of the association of education and mortality (Schrijvers et al 1999).

Table 10. West Coast and New Zealand Census Usually Resident Population Count Aged 15 Years and Over Without Any Qualifications, 2001

	Male	Female	Total	Mäori
West Coast %	41.6%	38.2%	39.9%	45.6%
New Zealand %	28.2%	27.1%	27.6%	43.6%

Source: Statistics New Zealand from Census 2001.

Table 10 shows that the West Coast DHB has a proportion of their usually resident population without any qualifications that is 45% higher than the New Zealand average. Perhaps not surprisingly, West Coast DHB has the highest DHB rate in the South Island. Males are slightly more likely to be without any qualifications than females. Although Mäori have an even higher proportion with no qualifications than non-Mäori in the area, they are only slightly above the rate for total Mäori in New Zealand. Buller District has the highest percentage of the three Territorial Authorities within West Coast DHB.

Table 11. ***West Coast and New Zealand Census Usually Resident Population Count Aged 15 Years and Over with University Degrees, 2001***

	Male	Female	Total	Mäori
West Coast %	5.2%	5.3%	5.3%	2.3%
New Zealand %	12.4%	11.2%	11.8%	4.8%

Source: Statistics New Zealand from Census 2001.

The proportion of the usually resident population in West Coast DHB with a university degree is less than half of the New Zealand average (Table 11). Perhaps not surprisingly, they have the lowest DHB rate in the South Island. There was no significant difference between the male and female percentages. Mäori have a significantly lower proportion with a degree than both non-Mäori in the area and total Mäori in New Zealand. There was little variation between the Territorial Authorities within West Coast (Table 12).

Table 12. ***West Coast Territorial Authorities Census Usually Resident Population Count Aged 15 Years and Over with University Degrees, 2001***

	Total	Mäori
Buller District	4.3%	2.4%
Grey District	5.1%	2.5%
Westland District	6.6%	1.3%

Source: Statistics New Zealand from Census 2001.

Occupational Structure

Occupational classifications of socioeconomic status represent a key underlying socioeconomic stratification in society. In health, the Registrar General's occupational classification of socioeconomic status commenced use in 1911 to analyse infant mortality rates. Socioeconomic groupings of occupations are referred to either as 'occupational classes' or, more loosely, 'social classes'. Occupational class is most commonly determined as a function of education (an 'input' to the type of occupation one has) and income (an 'output' of one's occupation). A major limitation of occupational class as a socioeconomic status measure is the absence of a recent occupation for large sections of the population and the difficulties of assigning a status to women (ie should they be assigned on their last occupation or that of their spouse when they are not in the labour force).

Perhaps not surprisingly, West Coast DHB has a much higher proportion of Agriculture & Fishery workers in comparison to overall New Zealand (see Table 13). In contrast, they have less Professionals, Clerks, and Technicians & Associate Professionals relative to the remainder of the country.

Table 13. ***Occupation, Labour Force Status, for the Employed Census Usually Resident Population (West Coast DHB) Count Aged 15 Years and Over, 2001***

Occupational Group	Full-Time	Part-Time	Total	West Coast	New Zealand
Agriculture and Fishery Workers	1,641	351	1,992	14.3%	8.0%
Clerks	786	459	1,248	8.9%	12.5%
Elementary Occupations	627	525	1,149	8.2%	5.8%
Legislators, Administrators and Managers	1,371	153	1,524	10.9%	12.5%
Plant and Machine Operators and Assemblers	1,413	174	1,587	11.4%	8.3%
Professionals	1,080	252	1,332	9.6%	13.9%
Service and Sales Workers	1,191	945	2,133	15.3%	14.0%
Technicians and Associate Professionals	756	312	1,068	7.7%	11.0%
Trades Workers	1,047	78	1,125	8.1%	8.4%
Not Elsewhere Included	558	228	789	5.7%	5.5%
Total	**10,473**	**3,474**	**13,947**		

Source: Statistics New Zealand from Census 2001.

Social Capital

Successful communities, in terms of their health, governance and economic development, are those which have a high amount of "social capital" (Kawachi et al 1997). That is, the features of social organisation (including networks, norms and trusts), which facilitates co-ordinated voluntary actions for the benefit of the community. Social capital is a "moral resource" whose supply increases through use, and becomes depleted if not used. Credible mutual commitment between residents depend upon the degree of "social capital" that exists in a community.

Features of communities contributing to high levels of social cohesion include strong family/whanau ties; high levels of civil and political participation; good housing; good public transport and other public services; good social networks and strong community identity.

People with strong family, cultural and community ties have better health than people who are socially isolated (Kawachi et al. 1996). In contrast, single parent families, people with mental illness or disabilities, people living alone and the elderly are particularly vulnerable to social isolation and consequently lower health status.

Recent research (Howden-Chapman et al) aimed at linking income levels, social capital and health status by developing a model of social capital – the New Zealand Social Capital Index (SoCIND). This model is underpinned by two hypotheses, (a) communities with more equal incomes develop more social capital and (b) communities with more social capital will have a better health status. The model is based on the assumption that considerable differences in income (average household income and income inequalities) at a community level increase the differences in living standards between population groups. Different living standards cause structural inequalities, social distance, power differentials, suppressed formation of participation, and will eventually lead to a decrease in social capital and a reduction in health status.

The study identifies Southland, Kaikoura, East Coast, Northland, Nelson Marlborough and Wellington as areas high in social capital. Areas identified as being low in social capital are West Coast and Auckland.

Howden-Chapman et al draw the following conclusions when assessing the impact of social capital on health status and mortality:

- the level of social capital in the community has a small, but negative, relationship to mortality, ie the level of social capital in the community provides some health protection
- 46% of the variation in mortality is explained by social capital, income, age and ethnicity
- social capital is not distributed equally. New Zealand has relatively high rates of social capital, but there are significant regional variations
- social capital can be utilised and health seems to be improve or decline accordingly
- social capital has a small, but robust and statistically significant impact on variations in regional mortality (as well as household income)
- middle-aged people generate most of the social capital, but the main beneficiaries are older people in communities with higher social capital.

SECTION 2: HEALTH STATUS

MORTALITY

Health care impacts on mortality in two ways: through lack of needed care (access), and through unanticipated adverse events resulting from care received (quality/safety). (Ministry of Health March 2004)

The 2001 Health Needs Assessments (Public Health Consultancy 2001c) stated the interpretation of rates for mortality statistics for DHBs could be problematic for two main reasons. Firstly, actual numbers involved are often very small and therefore rates become unstable, such that even a single extra case could change the rate significantly. Therefore, although rates appear different for the DHB, caution is required in interpreting these figures. Secondly, reporting of some conditions may be unreliable. This may relate to coding practices or variation in the diagnosis recorded, or simply non-recording of the diagnosis.

There were problems obtaining reliable mortality data for this report, age standardised mortality and ethnic breakdowns were not available.

Given the difficulties with data reliability, the following chapter does not include any comments on potential differences in either numbers or rates.

Table 14 shows the number and rate per 100,000 of deaths by age group and gender for both West Coast DHB and New Zealand for the period 1999 to 2001.

Table 14. Number and Rate of Deaths (per 100,000) by Age Group and Gender, West Coast and New Zealand, 1999 to 2001

Age Groups	Gender	West Coast		New Zealand	
		Deaths	Rate per 100,000	Deaths	Rate per 100,000
0 - 4 Years	Female	3	93	531	128
	Male	3	91	715	164
5 - 14 Years	Female	2	27	142	16
	Male	1	13	192	21
15 - 24 Years	Female	0	0	341	43
	Male	10	179	867	108
25 - 44 Years	Female	12	87	1,361	76
	Male	20	146	2,473	146
45 - 64 Years	Female	55	514	5,236	415
	Male	76	640	7,455	601
65 - 74 Years	Female	68	2,061	6,383	1,634
	Male	119	3,401	9,854	2,715
75 - 84 Years	Female	108	4,691	12,223	4,424
	Male	136	7,984	13,055	6,926
85+ Years	Female	113	15,768	14,533	14,479
	Male	75	23,120	7,716	18,040
Total All Ages	**Female**	**361**	**775**	**40,750**	**691**
	Male	**440**	**918**	**42,327**	**745**

Source: New Zealand Health Information Service.
Notes: Deaths are based on Death registration from 1999 to 2001, 36 months.
Cause of Death categories with less than 5 deaths in the three-year period do not show actual volume of deaths due to confidentiality and are represented by <5.
Death rate per 100,000 is not calculated for Cause of Death categories with low volume deaths(<5) or no recorded deaths.

The analysis of causes of death at the condition level provides useful information for planning health care services, especially secondary and tertiary care services (Ministry of Health March 2004).

Table 15 shows the number and rate per 100,000 of selected causes of death by gender for both West Coast DHB and New Zealand for the period 1999 to 2001.

Table 15. Number and Rate of Registered Deaths (per 100,000) for Selected Causes of Death by Gender, West Coast and New Zealand, 1999 to 2000

Cause of Death All Ages	West Coast Registered Deaths 1999-2001						New Zealand Registered Deaths 1999-2001					
	Female		Male		Total		Female		Male		Total	
	Deaths	Deaths per 100,000	Deaths	Deaths per 100,000	Deaths	Deaths per 100,000	Deaths	Deaths per 100,000	Deaths	Deaths per 100,000	Deaths	Deaths per 100,000
Ischaemic Heart Disease	69	148	106	221	175	185	8,610	146	10,302	181	18,912	163
Other Heart Disease	26	56	22	46	48	51	2,137	36	1,610	28	3,747	32
Stroke/Cerebrovascular Diseases	33	71	26	54	59	62	5,070	86	3,211	57	8,281	72
Cancer of Lung and Trachea	18	39	27	56	45	48	1,708	29	2,575	45	4,283	37
Colorectal Cancer	22	47	21	44	43	46	1,691	29	1,756	31	3,447	30
Prostate Cancer	0	0	29	61	29	31	0	N/A	1,738	31	1,738	15
Breast Cancer	15	32	0	N/A	15	16	1,884	32	<5	N/A	1,888	16
Cervical Cancer	0	N/A	0	N/A	0	N/A	200	3	0	N/A	200	2
All Other Forms of Cancer	40	86	54	113	94	99	5,272	89	6,276	110	23,104	200
Chronic Respiratory Disease	31	67	39	81	70	74	2,465	42	2,885	51	5,350	46
Influenza and Pneumonia	6	13	2	4	8	8	882	15	527	9	1,409	12
Diabetes Mellitus	15	32	11	23	26	28	1,126	19	1,197	21	2,323	20
Injury from Fall	2	4	4	8	6	6	460	8	351	6	811	7
Intentional Self Harm	3	6	15	31	18	19	333	6	1,147	20	1,480	13
All Causes	**361**	**775**	**440**	**918**	**801**	**848**	**40,750**	**691**	**42,327**	**745**	**83,077**	**718**

Source: *New Zealand Health Information Service.*
Notes: *Deaths are based on Death registration from 1999 to 2001, 36 months.*
Cause of Death categories with less than 5 deaths in the three-year period do not show actual volume of deaths due to confidentiality and are represented by <5.
Death rate per 100,000 is not calculated for Cause of Death categories with low volume deaths(<5) or no recorded deaths.

For information on Ethnic Mortality Trends in New Zealand see *Decades of Disparity: Ethnic Mortality Trends in New Zealand 1980-1999 (*Ajwani et al 2003*).*

LIFESTYLE ISSUES

Smoking

Smoking is a significant contributor to morbidity and premature mortality.

Smokers have a mortality rate twice that of non-smokers and approximately half of all continuing smokers die prematurely from smoking. Smoking is a risk factor for cancers of the lung, mouth, pharynx, oesophagus, larynx, pancreas and kidney. It also increases the risk of heart disease, stroke and chronic respiratory diseases. It is a major cause of blindness, with about 1,300 people in New Zealand having untreatable blindness due to current and past smoking (Ministry of Health 2003j).

Smoking is an important child health risk factor and contributes to increased rates of sudden infant death syndrome (SIDS), respiratory conditions, glue ear and subsequent hearing loss. Smoking during pregnancy can result in miscarriages and premature birth (Ministry of Health 2003j).

Maternal smoking is a preventable risk to children dying of SIDS. In recent years, 46% of SIDS deaths among Mäori, 24% of deaths among Pacific people and 24% of deaths among European/other groups were attributable to smoking (Ministry of Health 2003j).

Tobacco control is a priority health gain area for Mäori. It is more prevalent in deprived areas, among unemployed, among workers in 'disadvantaged' occupational classes, among low income households and among crowded households (Robson 2004).

Although tobacco use has generally declined in the last twenty years and many current smokers want to quit or cut down their tobacco use, there has been an increase in smoking among 15-17 year olds. An estimated 19,000 young New Zealanders start smoking each year.

Tobacco causes the greatest range of health-related harm of all drugs used in New Zealand. Health effects include lung cancer, chronic obstructive respiratory disease, sudden infant death syndrome and heart disease. In addition, there is strong evidence of the negative health effects of second-hand smoke.

Annually, approximately 4,300-4,600 deaths in New Zealand are attributable to tobacco, including approximately 390 deaths caused by second-hand smoke (Alcohol Drug Association New Zealand 2004).

Smoking Prevalence

Prevalence of cigarette smoking is defined using census and New Zealand Health Survey data as *the proportion of the population aged 15 and over who currently smoke cigarettes.*

Smoking questions were not included in the 2001 census, but will be included in 2006. The latest data by DHB remains the 1996 census data.

The overall smoking prevalence for adults aged 15 years and older on the West Coast in 1996 was 27% compared with 24% for New Zealand overall (Wellington School of Medicine 2001). During the period of 1998 to 2000, smoking prevalence for West Coast appeared to have increased for males and females (Table 17).

Table 16. Prevalence of Cigarette Smoking (Percentage), West Coast DHB vs New Zealand, 1996

	Coast Health Care	New Zealand
Average smoking rate of females	27.0	25.8
Average smoking rate of males	28.2	26.8
Average smoking rate of Mäori	36.7	40.0
Average smoking rate of non-Mäori	26.5	23.4
Average smoking rate of 15-19 year olds	23.7	23.4
Average smoking rate of females aged 20-24 years	37.2	40.1
Average smoking rate of Mäori females aged 20-24 years	57.8	57.0
Average proportion of deaths attributable (CS NZ 1996)	18.4	17.3

Sources: Wilson and Borman 1998; Census New Zealand, 1996.

Table 17. Prevalence of Cigarette Smoking (Indirectly Standardised) by DHB Region, 1998-2000

Region	Male	Female
	% Male	% Female
Canterbury	23	24
Nelson Marlborough	26	25
Otago	28	25
South Canterbury	29	29
Southland	28	26
West Coast	**32**	**38**
National Average	**25.9**	**24.9**

Source: ACNielsen (NZ) Ltd (from Ministry of Health 2001e)

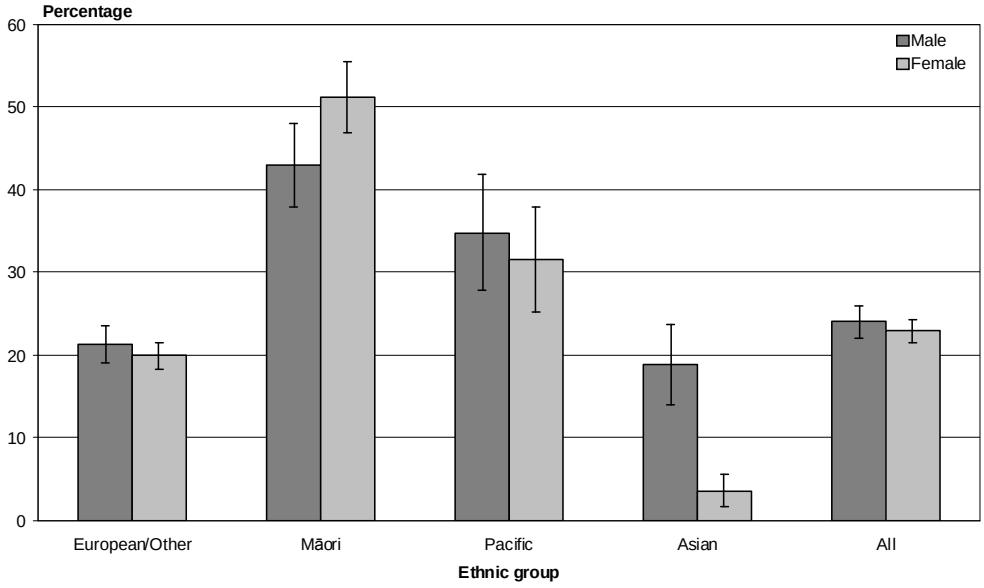
Notes:

1. *Prevalence was calculated by multiplying crude New Zealand gender-specific rates (male 26%, female 25%) by the indirectly age-standardised DHB region rate ratio.*
2. *The matching from TLAs to DHB regions is approximate only.*

The New Zealand Health Survey 2002/03 surveyed 12,929 New Zealander's aged 15 years and over, in face to face interviews.

The survey found overall, one in four adults (22.9%; CI 21.8-24.0) reported smoking one or more tobacco cigarettes a day (excludes cigars) (Ministry of Health 2004g). This is slightly lower than the 1996 New Zealand prevalence of 24% (Statistics New Zealand, Census data 1996), but not significantly different.

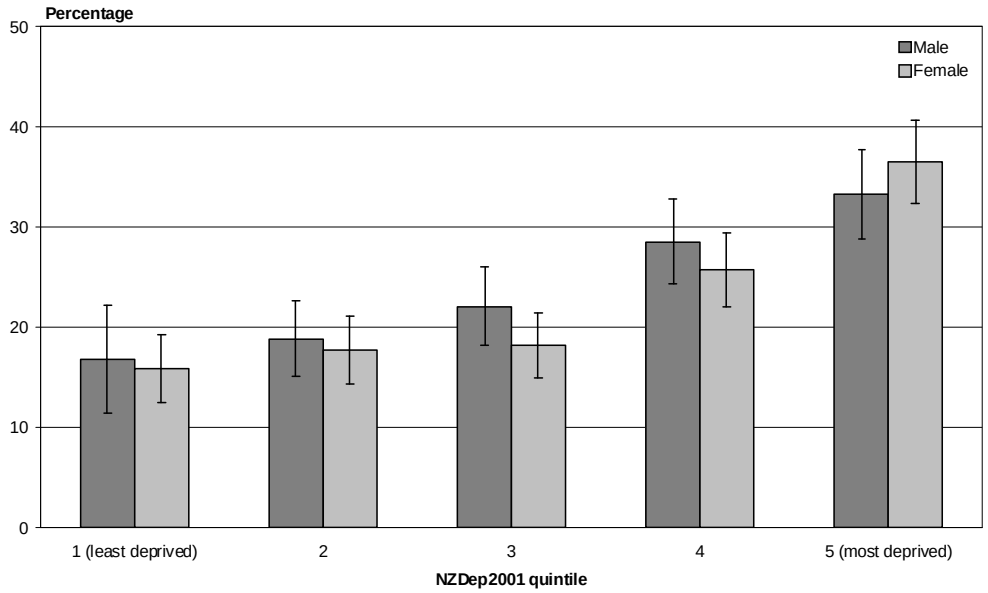
Figure 18. Current Smoking, by Ethnic Group and Gender (Age-Standardised), New Zealand



Source: Ministry of Health 2004b

In both males and females, Mäori were most likely to be current smokers, followed by Pacific people, European /Other, and Asian ethnic groups (Figure 18).

Figure 19. Current Smoking, by NZDep2001 Quintile and Gender (Age-Standardised), New Zealand



Source: Ministry of Health 2004b

The prevalence of smoking was significantly higher for both males and females in NZDep2001 quintile 5 (most deprived) than in quintile 1 (least deprived), which correlates with higher Mäori and Pacific people in quintile 5 (Figure 21).

The Action on Smoking and Health (ASH) 2003 Survey Results for Youth Smoking provides yearly prevalence data for Year 10 students. ASH manages the data collection for annual surveys of Year 10 students in New Zealand schools. The students answer an anonymous self-administered questionnaire.

ASH has surveyed around 30,000 Year 10 students aged 14 to 15 years since 1997. The results are available by District Health Board.

In 2003, 32,927 students participated in the national ASH survey. On the West Coast 292 students participated.

Table 18. Prevalence Rates (Percentage) of Year 10 Students Smokers, overall Ranking with 21 DHB Areas and Ranking of Girls and Boys per South Island DHB

District Health Board	Total No. Interviewed	% Mean*	% Boys*	% Girls*	Overall Ranking** out of 21 DHBs	Boys Ranking**	Girls Ranking**
Canterbury	3,741	20.25	17.4	23.1	9	11	6
Nelson Marlborough	1,552	17.65	15.1	20.2	3	7	4
Otago	1,473	21.2	18.9	23.5	10	16	7
South Canterbury	603	20.1	14.6	25.6	7	6	10
Southland	674	26.05	18.1	34	18	13	19
West Coast	**292**	**22.3**	**14.2**	**30.4**	**12**	**5**	**16**
Total New Zealand	**32,927**	**20.65**	**16.4**	**24.9**			

Source: ASH 2003 Smoking Survey
*Notes: *Daily, weekly or monthly smokers, total percentage of girls and boys*
*** Lowest daily, weekly or monthly smokers being 1.*

West Coast Year 10 students ranked 12th in smoking prevalence among the 21 DHBs and second highest of the South Island DHBs.

In the report prepared for ASH, of 1999-2003 trends in adolescent smoking prevalence, there was more of a decline in smoking among boys (from 14.1% in 1999 to 9.9% in 2003, a relative 31% decrease) than in girls (from 17.1% in 1999 to 14.2% in 2003, a relative 17% decrease) (Scragg 2004).

Trends in daily smoking varied by ethnicity, with the relative change: among girls being Mäori -5%, Pacific people -26%, and Asian and European each -24% and among boys, Mäori -17%, Pacific people -

24%, Asian -18%, and European -39%. These trends indicate that the gap in daily smoking prevalence has increased between Mäori and Pacific people students compared to European during 1999-2003 (Scragg 2004).

Of interest was that daily smoking declined only among students who lived in houses where smoking was not allowed (relative change -23% (95% CI -28%, -18%) from 2001-2003), adjusting for age, gender and ethnicity; whereas the change in daily smoking among students living in smoky houses was 0%(95% CI: -5%, 5%) (Scragg 2004).

Nicotine Addiction

Nationally, two thirds of boys and four fifths of girls who smoke daily indicated they had the first symptoms of nicotine addiction[5].

Table 19. Students with First Symptoms of Nicotine Addiction as a Percentage of Year 10 (Aged 14-15 Years) Daily Smokers, by District Health Board, November 2003

District Health Board	Total No. of Year 10 Students Interviewed	% of Daily Smokers Showing First Symptoms of Addiction to Nicotine		% of Year 10 Students Who Smoke Daily*
		% males	% females	
Canterbury	3,741	61	77	11.1
Nelson Marlborough	1,552	55	72	8.9
Otago	1,473	53	72	12.5
South Canterbury	603	66	73	12.8
Southland	674	71	85	18.0
West Coast	**292**	**62**	**80**	**13.4**
Total New Zealand	**32,927**	**64**	**78**	**12.0**

Source: *Ministry of Health prevalence data from AC Neilson 1998-2000 pooled data, indirectly age-standardised*
Notes: **both genders combined*

The percentage of girls smoking daily and addicted to smoking was higher for girls than boys in all the DHBs.

The percentage of girls smoking daily and addicted to smoking was higher for girls than boys in all the District Health Boards.

Prevalence rate for year 10 students who 'smoke daily' on the West Coast in 2003 was 13.4% slightly higher than the national rate of 12.0% for New Zealand overall. This is the highest in the South Island DHBs.

The full report is available on the ASH website www.ashnz.org.nz

Uptake of Smoking

The Health Sponsorship Council survey of youth has showed a concerning trend of experimentation at 7-8 years of age for Mäori.

Research and strategic development for effective early intervention to prevent uptake at a younger age is required.

The Health Sponsorship Council (HSC) survey of youth has indicated a concerning trend of experimentation at 7-8 years of age for Mäori. The data collected in the Youth Lifestyle Survey (YLS) which is undertaken every two years by a research company called TNS on behalf of the Health Sponsorship Council will be available in the New Year. Research and strategic development for effective early intervention to prevent uptake at a younger age is required.

Pregnancy and Smoking

There is a lack of reliable data available on smoking during pregnancy.

Cigarette smoking during pregnancy is a significant and preventable factor affecting complications such as ectopic pregnancy, placental abruption, placenta previa and premature rupture of the membrane.

[5] Ten questions are asked called the Hooked on Nicotine Checklist or HONC; anyone replying positively was counted as early addiction.

There is also a well-known association with intrauterine growth retardation, prematurity, increased perinatal morbidity and mortality. It is a major risk factor associated with SIDS (Schluter et al 2002).

A cross sectional study of smoking prevalence undertaken with women booked into maternity services in Marlborough in June 1995, 1996, September 2000 and October 2003 has shown little change in self-reported smoking prevalence. Rates were reported between 25.94% and 24.7%. But a biochemical prevalence study of pregnant women smoking in Christchurch in 1997 describes under-reporting between 5% and 25% in different studies, and anticipates denial of smoking to increase as smoking becomes increasingly stigmatised (Schluter et al 2002). It is reasonable, based on these studies that any self reported smoking prevalence is under-reported.

Household Smoking

The effect of parental smoking is reflected in the ASH survey results.

Daily smoking prevalence varied more than 2-fold, from 8.9% up to 20.4%, between DHB regions. 78% of the regional variation in student daily smoking was explained by variations in the percent of students with smoking parents, and 60% of the regional smoking variation by living in a smoky house (Scragg 2004).

Ethnic differences in parental smoking explain about half of the increased prevalence of daily smoking among Mäori and Pacific people students compared with Pakeha.

Ethnic differences in adolescent daily smoking have increased during 1999-2003. Parental smoking and related factors explain much of the regional variation in daily smoking prevalence, and much of the ethnic variation in daily smoking (Scragg 2004).

Addressing cessation for parents of students is a strategy needed to address this disparity gap.

National Services

The Quitline offers free and confidential support to 35,000 callers per year who have decided to quit.

An evaluation carried out for the Ministry of Health between March 2002 and September 2003 indicated that people who used the full Quitline service had a quit rate of 18% at 12 months.

The Quitline provides eligible smokers with telephone support and subsidised nicotine patches and gum.

At this stage only South Island data is available but the Quitline is working to make DHB data available in 2005.

Table 20. Callers Registering with the Quitline, January 2000 to 31 May 2003 for the South Island

Gender	2000	2001[6]	2002	2003	Total
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Male	887 (39)	8,219 (45.2)	4,071 (46.7)	1,313 (46.6)	14,490 (45.3)
Female	1,384 (60.9)	9,958 (54.8)	4,625 (53.1)	1,484 (52.7)	17,451 (54.6)
Unknown	1 (0.0)	1 (0.0)	22 (0.3)	18 (0.6)	42 (0.1)
Total	**2,272**	**18,178**	**8,718**	**2,815**	**31,983**

Source: The Quit Group

20% of callers identified as Mäori and 67% were New Zealand European. Mäori smokers wanting to quit may be using the Aukati Kai Paipa programme as a more acceptable face to face alternative to Quitline, which may explain the lower percentage of Mäori callers when Mäori smoking prevalence is taken into account.

The Ministry of Health fund each District Health Board to provide NRT through the Quitline.

[6] The reason for the increase in numbers in 2001 compared with 2000 was that NRT became a subsidised product in November 2000 and there was a big increase in calls to the quitline.

Cessation Services

It is beneficial to stop smoking at any age. The earlier smoking is stopped the greater the health gain. A comprehensive tobacco control programme needs to address cessation.

Regional Cessation Services

Aukati Kai Paipa is a smoking cessation programme funded by the Ministry of Health through Te Hotu Manawa Mäori to provide appropriate and accessible cessation services for Mäori smokers ready to quit. Te Roopu Tautoko ki te Tonga are contracted to deliver this service in Dunedin. Te Hauora O Ngati Rarua in Marlborough, Te Awhina Marae in Motueka and Whakatu Marae in Nelson City provide this service. Hauora Mataraka provides the service for West Coast and South Canterbury.

Evaluation of the pilot programme for Mäori women and their families indicated a quit rate nationally for Aukati Kai Paipa 2000 of 29%, significantly higher than the latent quit rate of 12.5% (Ministry of Health 2003b).

Utilising the criteria used in the evaluation of Aukati Kai Paipa 2000, the quit rate for clients in the programme provided through Te Hauora O Ngati Rarua in Marlborough is 28% over the months from June 2003 to July 2004.

There appears to be a lack of consistency in collection of quit data around the regions.

Smokefree Legislation

Preceding changes to the smokefree legislation DHBNZ announced an initiative declaring all DHBs would go smokefree from May 2004. Implementation has varied, all DHBs have implemented smokefree policies for grounds, buildings and vehicles. Support for staff and clients by providing cessation services has been supported by the Ministry of Health who are in the process of funding for gaps in service delivery. Table 21 indicates present progress as of October 2004.

Table 21. Status of Hospital Based Cessation Service Contracts with Ministry of Health, October 2004

District Health Board	Status
Canterbury	Contract for Smokefree Hospital Coordination in place
Nelson Marlborough	Proposal with the Ministry of Health for smokefree hospitals/smoking cessation.
Otago	Contract for smoking cessation/smokefree hospitals just about finalised
South Canterbury	In Discussion with Ministry of Health
Southland	In Discussion with Ministry of Health
West Coast	**Contract for smoking cessation/smokefree hospitals just about finalised**

Source: Ministry of Health Dunedin 2004

Estimated Hospitalisation Attributed to Smoking and Associated Costs

Smoking related diseases account for a considerable burden on health services. There are long term financial benefits to be gained by funding prevention uptake and cessation services.

For South Island District Health Boards

Table 22. Number of Hospitalisations Attributable to Smoking and Costs by District Health Board, 35+ Years

District Health Board	Number of Smoking Attributable Hospitalisations (Annual Average 1997-99)	Cost of Smoking Attributable Hospitalisations (2000/01$)
Canterbury	8,853	$18,283,520.00
Nelson Marlborough	2,284	$6,034,610.00
Otago	4,060	$10,540,666.00
South Canterbury	1,582	$4,149,678.00
Southland	2,213	$5,716,611.00
West Coast	**981**	**$2,547,662.00**
Total New Zealand	**78,816**	**$203,990,109.00**

Source: DHB Funding and Performance Directorate, Ministry of Health, January 2003.

Notes:
1. *Costs are based on Victorian cost weights modified by the HFA for deriving 2000/01 contracted prices with HHS's.*
2. *Prices exclude the costs of adjusters paid to HHS's for: complexity(tertiary), rurality, diseconomies of scale, Mäori health, capital adjustment, acute demand and blood and are GST exclusive.*

For West Coast District Health Board

Table 23. ***Estimated Number of Hospitalisations Attributed to Smoking and Associated Costs, Estimated Number of Deaths Attributable to Smoking, Population 35+ Years, West Coast***

Disease	Hospitalisations		Deaths (No.)
Lung Cancer	26	$100,048.00	13
Upper aerodigestive cancer	8	$39,144.00	3
Other cancer	47	$177,190.00	12
CORD	90	$157,680.00	17
Other medical	810	$2,073,600.00	49
Total	**981**	**$2,547,662.00**	**94**

Source: The Quit Group 2003
Notes:
1. *Estimated numbers of hospitalisations and deaths based on annual average for 1997-1999*
2. *Costs based on 2000/01 contracted prices and are GST exclusive*
3. *Costs are $3,848 for lung cancer; $4,893 for upper aerodigestive cancer (pertaining to the respiratory and digestive tracts, or parts of them, considered together); $3,770 for other cancers; $1,752 for CORD (Chronic Obstructive Respiratory Disease); $2,560 for other medical*

Nutrition

The Ministry of Health published Health Eating Healthy Action (HEHA) in 2003 after extensive consultation, it has provided a strategic framework with background support and an implementation plan for service provision through 2004 to 2010.

It relies on a cross sectoral approach to addressing issues of nutrition, physical activity and obesity.

Fruit and Vegetables

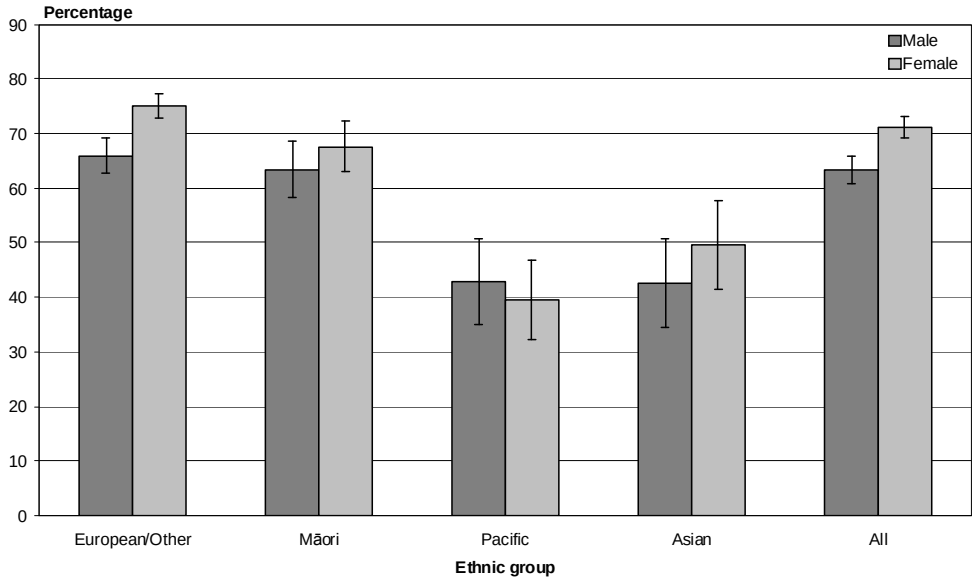
Fruit and vegetables are highly nutritious and have been shown to protect against a range of chronic diseases, including heart disease, stroke and many cancers. In New Zealand it is recommended that adults eat at least three servings of vegetables and at least two servings of fruit each day.

Key findings of the New Zealand Health Survey (Ministry of Health 2004g) are reported here.

Fruit and vegetable intake was measured by asking participants how many servings of vegetables they eat each day on average and how many servings of fruit they eat each day on average. They were provided with information on serving size and the range and type of vegetables and fruit to include.

Two out of three adults ate the recommended three or more servings of vegetables every day, and just over half of the adults ate the recommended two or more servings of fruit every day. Females were significantly more likely to eat the recommended number of servings than males.

Figure 20. Vegetable Intake (Three or More Servings per Day) in Adults, by Ethnic Group and Gender (Age-Standardised), New Zealand



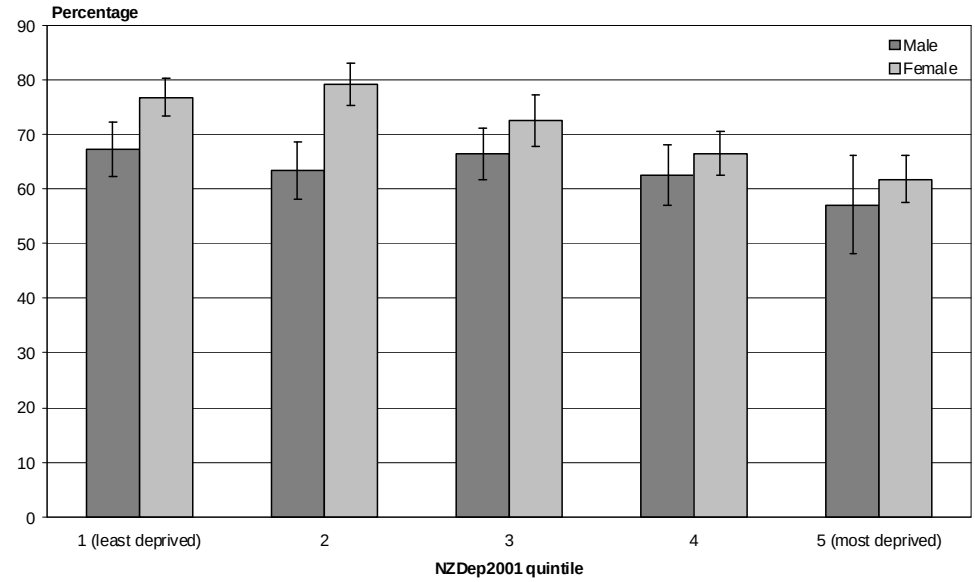
Source: Ministry of Health 2004b

In both females and male, the proportion of adults eating three or more servings of vegetables each day increased with age.

In both males and females, the proportion of adults eating two or more servings of fruit each day was lowest in the 25 -34 years of age group, and then increased with age.

In both males and females, the proportion of adults eating three or more servings of vegetables each day was higher in NZDep2001 quintile 1 (least deprived) than in quintile 5 (most deprived), although the difference was only significant for females.

Figure 21. Vegetable Intake (Three or More Servings per Day) in Adults, by NZDep2001 Quintile and Gender (Age-Standardised), New Zealand



Source: Ministry of Health 2004b

Improving the consumption of fruit and vegetables would contribute to lowering the risk of chronic diseases and the increasing obesity risk.

The National Children's Nutrition Survey 2002 (Parnell et al 2003) showed that 43% of New Zealand children ate fruit at least twice a day, with one exception, (females consumed more oranges or mandarins than males), the consumption of fruit by males and females was the same. Children 11-14

years consumed fruit at least twice a day (males3 9%; females 36%) compared with children 5-6 years (46%; 55%).

57% of New Zealand children ate vegetables three or more times a day, and the frequency of weekly consumption of individual vegetables was similar for males and females and didn't show any consistent variation with age.

Barriers to meet the Fruit and Vegetable Guidelines

In 2003, the Cancer Society and SPARC undertook a mail survey (Nielson 2004) to better understand opportunities to change behaviours of those not meeting the Ministry of Health fruit and vegetable intake targets.

From 14,000 randomly selected households they received 8,163 usable responses, a response rate of 61%.

The following tables focus on responses from those who are described as the 'Don't but Might' group (42%), and excludes those already eating three servings of vegetables and two of fruit and the 6% who appeared most resistant to change who failed to meet both intake levels and stated they had no intention to reach either target in the next six months.

Table 24 shows the most common perceived barriers to eating more fruit and vegetables, with cost and convenience being recurrent themes.

Table 24. Perceived Barriers and Excuses for Not Meeting the Guidelines

Barriers	Percentage
Fruit costs too much	34%
Vegetables costs too much	30%
Fresh fruit spoils too quickly	28%
Prefer to eat other snacks	25%
Vegetables 'difficult' when on the go	24%
Fresh vegetables spoil too quickly	24%
Fruit isn't filling enough	23%

Source: Nielson 2004

More than 25% of the group rated the five interventions as likely to be effective (see Table 25).

Table 25. Interventions most Likely to Improve Intake

Intervention	Percentage
Free cookbook about fruit/veges	38%
Free or low cost fruit/veges at work	33%
My Dr or nurse advised	32%
Free advice from dietitian	31%
Place buy lunch had more fruit and veges	28%

Source: Nielson 2004

The National Children's Nutrition Survey 2002 (Parnell et al 2003) showed that among the three main ethnic groups, New Zealand European/Other children had the lowest levels of prevalence of inadequate intakes and were less likely to be overweight or obese compared to Mäori and Pacific people children.

Iodine

The survey reinforced the need to augment the iodine intake of New Zealand children as a matter of priority. The International Council for Control of Iodine Deficiency Disorders recommend that no more than 20% of children have a urinary iodine concentration less than 5 µg/dL. 28% of New Zealand children were below this level (males 25% and females 31%).

There are significant differences in urinary iodine between North Island and South Island children. The mean for the North Island is 7.79ug/dL compared with 4.91 in the South Island.

The reason for differences between the islands is not clear. The Ministry of Health are working on strategies to look at increasing levels in the diet on a national basis.

Iron

Iron status was satisfactory for most children, as assessed by both dietary intake and biomedical indices, with the exception of 11-14 year old menstruating females.

Calcium

The prevalence of inadequate intake of calcium in New Zealand children was 12.2% for males and 18.2% for females. New Zealand children obtained one third of their calcium from milk.

Younger females (5-6 years) obtained more calcium from milk than older females (11-14 years).

Fat

The mean contribution to daily energy from total fat was lower for New Zealand European/Other children (males 32.6%; females 32.3%) than Mäori (34.2%; 34%) and Pacific people children (35%; 34.3%).

Saturated fat was the main type of dietary fat contributing 14.5% of energy followed by monounsaturated fat (10.9%) and polyunsaturated fat (3.8%).

All DHBs intake levels were similar to the national mean.

Food Security

'Food security' is an internationally recognised term that encompasses the ready availability of nutritionally adequate and safe foods and the assumed ability of people to acquire personally acceptable foods in a socially acceptable way (Ministry of Health 2003h).

Every year since 1973, dietitans at the University of Otago have carried out surveys at supermarkets and speciality shops around the country's larger cities. Since 2003 the costs have been calculated from supermarkets only.

The surveys show weekly food costs for a family, breaking it down to age and gender. The most expensive person to feed is a teenage boy, estimated at $64 a week. A family of two adults and three children aged 7-11 would have to pay $213 per week to keep in good health.

Table 26. Estimated Weekly Family Food Costs 2004

	Costs
Man	$50
Woman	$48
Adolescent boy	$64
Adolescent girl	$53
10 year old	$43
5 year old	$29
Children aged 1-4 yrs	$24-$27
2 adults & 3 children aged 7-11 yrs	$213
Non food items (family)	$16

Source: Department of Human Nutrition. University of Otago

The costs presented in the table assume that food is prepared and eaten at home using few pre-prepared items and eating seasonally. Costs increase by approximately $14 per adult, if more expensive meat cuts and greater variety of fruit and vegetables are included and by a similar increment to include a greater range of prepared foods.

Many families and individuals spend less than these estimated food costs on a weekly basis. The risk of consuming a diet, which does not meet the New Zealand recommendations for good health, increases as expenditure falls below this (Department of Human Nutrition 2004).

The median income for the West Coast region is $14,600 compared with $18,500 for New Zealand overall (Statistics New Zealand from Census 2001). This would equate to an income of $280.76 per week.

Food security is highly influenced by income and addressing issues of determinants requires an intersectoral approach by health and other government and non-government agencies.

Obesity

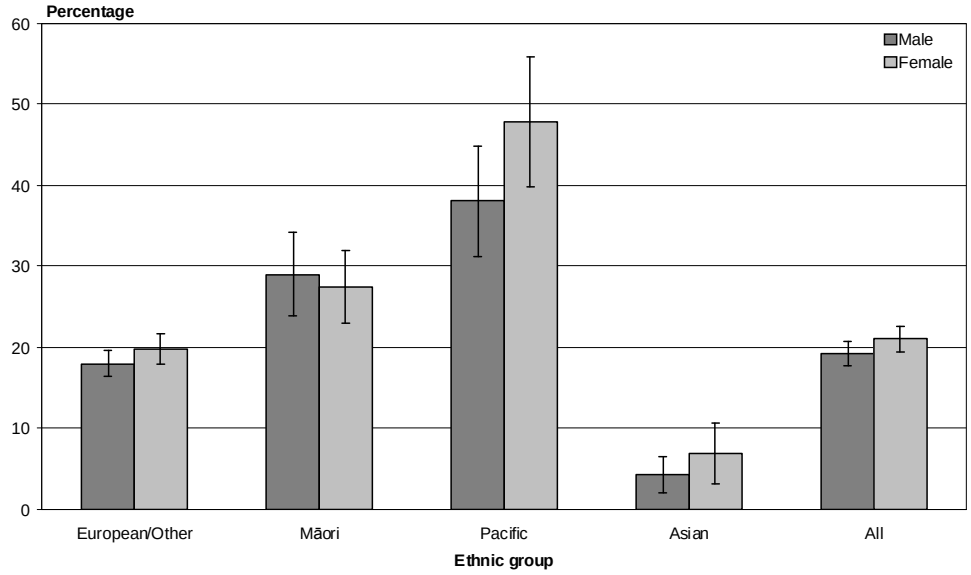
Overweight and obesity are important risk factors for several diseases, including type 2 diabetes, ischaemic heart disease, ischaemic stroke and several common cancers (Ministry of Health 2004g).

Evidence is emerging to suggest that the prevalence of overweight and obesity is increasing worldwide at an alarming rate. New Zealand is no exception, with more than half the adult population already either overweight or obese (see Figure 22). The problem is increasing rapidly in children as well and the health consequence of this will become fully apparent in the future (Ministry of Health 2001g).

In 1996, the annual cost of obesity was conservatively estimated to be $135million. This figure excludes downstream health costs from chronic diseases that result from obesity (Ministry of Health 2001g).

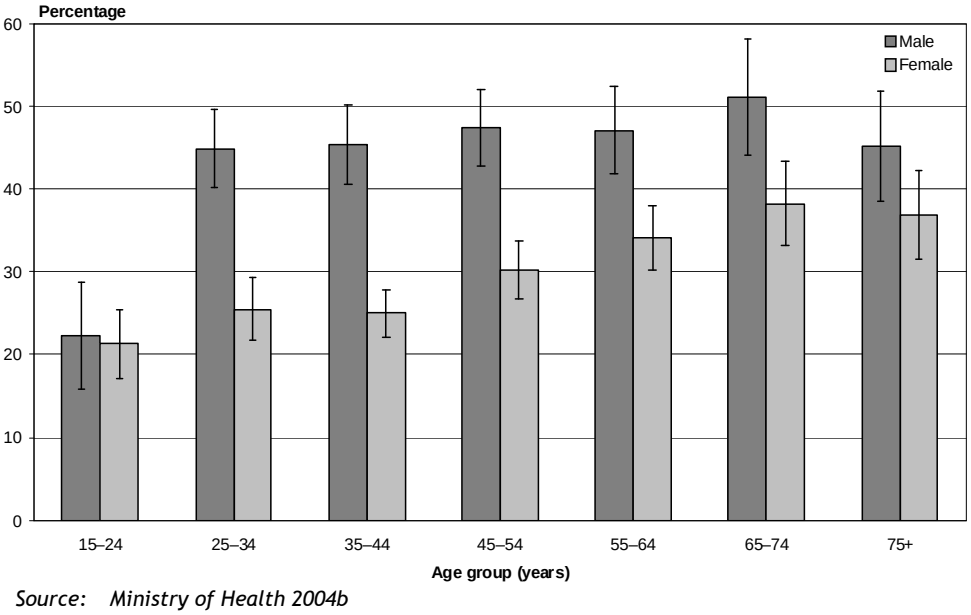
In 2002/2003, there was no significant difference in the proportion of males (19.2%; 17.7-20.6) and females (21.0%; 19.5-22.5) who were obese (see Figure 22) (Ministry of Health 2004b).

Figure 22. Obesity in Adults, by Ethnic Group and Gender (Age-Standardised), New Zealand



Source: Ministry of Health 2004b

Figure 23. Overweight in Adults, by Age Group and Gender

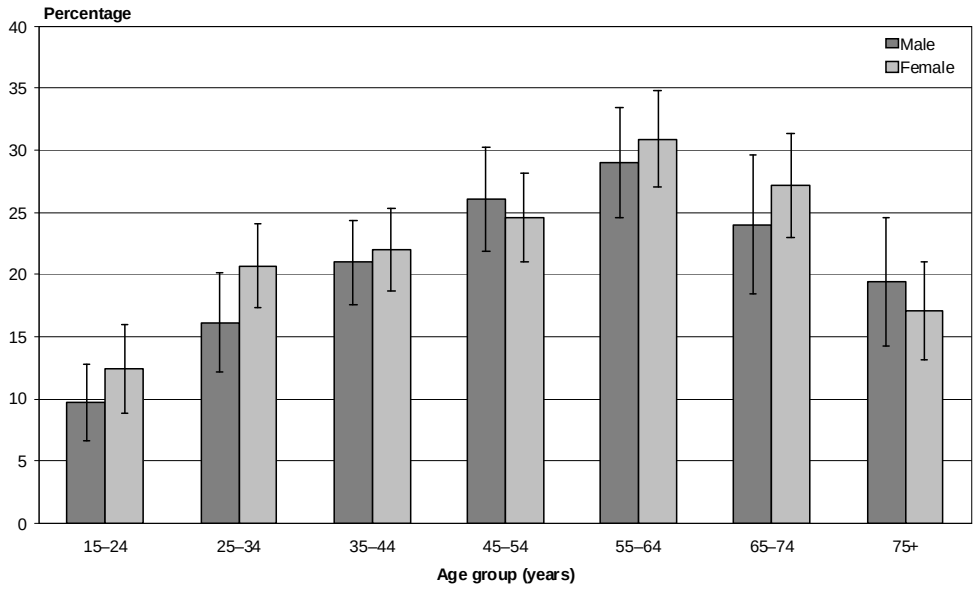


Source: Ministry of Health 2004b

One in three adults was overweight (excludes obese). Males (40.5%; 38.3-42.8) were significantly more likely than females (27.5%; 25.8-29.2) to be overweight (Figure 23).

A further one in five adults was obese. There was no significant difference in the proportion of males (19.2%;17.7-20.6) and females (21.0%;19.5-22.5) who are obese.

Figure 24. Obesity in Adults, by Age Group and Gender, New Zealand



Source: Ministry of Health 2004b

Adults living in NZDep2001 quintile 5 (most deprived) were twice as likely as adults living in quintile 1 (least deprived) to be obese. Over half of all adults has gained 10kgs or more since 18 years of age (Ministry of Health 2004b).

Main findings of the National Children's Nutrition Survey 2002 (Parnell et al 2003) showed that in general among New Zealand children, younger children had better food and nutrient intakes than older children and were less likely to be overweight or obese.

Table 27. Estimated Percentage of Overweight Children 5-14 Years in West Coast compared with New Zealand

	West Coast % (CI)	New Zealand % (CI)
Total	19.6 (17.5-21.7)	21.3 (19.3-23.3)
Male	18.6 (15.8-21.5)	20.0 (17.3-22.6)
Female	20.6 (17.5-23.7)	22.8 (19.9-25.6)
Male 5-6yrs	14.8 (8.7-20.8)	16.4 (11.2-21.6)
Male 7-10yrs	16.1 (12.3-19.9)	18.1 (14.7-21.4)
Male 11-14 yrs	23.1 (19.1-27.1)	23.7 (20.2-27.1)
Female 5-6yrs	18.5 (12.2-24.8)	21.8 (16.3-27.2)
Female 7-10 yrs	22.0 (17.1-27.0)	23.5 (19.2-27.9)
Female 11-14yrs	20.2 (14.3-26.0)	22.4 (17.0-27.8)

Source: LINZ 2004.
Notes: New Zealand Figures are based on the CNS02 data. The DHB estimates are based on the national figures, but weighted for ethnic and age distribution for each DHB. The underlying assumption when making the estimates is that there is no regional difference after accounting for ethnicity.

Table 28. Estimated Percentage of Obese Children 5-14 Years in West Coast compared with New Zealand

	West Coast % (CI)	New Zealand % (CI)
Total	7.0 (5.6-8.5)	9.8 (7.8-11.8)
Male	6.4 (4.6-8.2)	9.0 (6.9-11.2)
Female	7.7 (5.5-9.9)	10.7 (8.2-13.1)
Male 5-6yrs	5.5 (2.3-8.6)	8.6 (5.4-11.7)
Male 7-10yrs	5.9 (3.5-8.3)	8.7 (6.2-11.1)
Male 11-14 yrs	7.4 (4.2-10.6)	9.7 (6.1-13.2)
Female 5-6yrs	3.4 (0.9-5.9)	6.7 (3.6-9.7)
Female 7-10 yrs	9.0 (5.4-12.6)	11.6 (8.3-15.0)
Female 11-14yrs	8.4 (4.7-12.1)	11.5 (7.5-15.5)

Source: LINZ 2004.
Notes: New Zealand Figures are based on the CNS02 data. The DHB estimates are based on the national figures, but weighted for ethnic and age distribution for each DHB. The underlying assumption when making the estimates is that there is no regional difference after accounting for ethnicity.

Physical Activity

Physical activity comes second to tobacco as a modifiable risk factor for poor health and is associated with 8% of all deaths. Physical inactivity is estimated to account for over 2,600 premature deaths per year. A 10% increase in participation in physical activity could result in 600 fewer premature deaths per year (Ministry of Health 2003d).

Physical activity is protective against chronic diseases such as heart disease, stroke, certain cancers and type 2 diabetes. Physical activity also helps lower risk factors for these diseases, such as high blood pressure and high cholesterol.

Healthy Eating Healthy Action (Ministry of Health 2003d) recommends people be active every day for at least 30 minutes in as many ways as possible and add some vigorous exercise for extra benefit and fitness.

Types of Physical Activity

The benefits of physical activity are considerable. Activities, other than sport and recreation, include those that promote lifetime habits, walking or biking to and from work or school, and taking the stairs instead of the lift. Physical activity is also beneficial for the environment and reduces hazards at the school gate.

The environment needs to be conducive to this type of activity with the provision of cycle ways, safe walkways and footpaths. Working in an intersectoral manner with councils, workplaces, LTSA and community groups is required to address many of these issues.

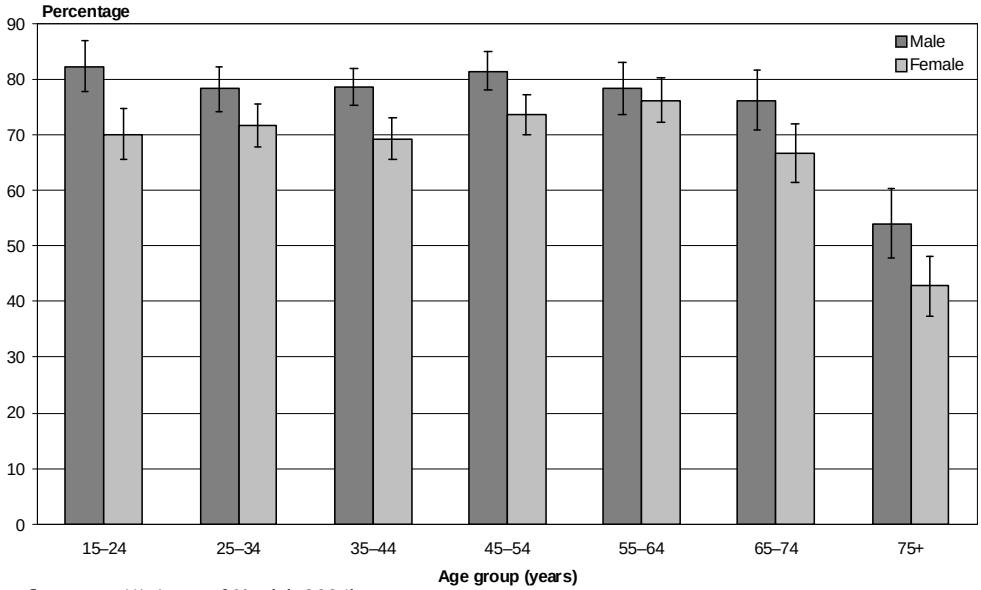
Definitions of physical activity used in the New Zealand Health Survey are:

- physically active - at less 2.5 hours of physical activity in the last week, with exercise accumulated on one or more days of the week
- regularly physically active - at least 2.5 hours of physical activity in the last week, comprising at least 30 minutes of physical activity per day on five or more days of the last week
- sedentary - less than 30 minutes of physical activity in the last week.

The New Zealand Health Survey (Ministry of Health 2004g) indicated that three out of four adults did at least 2.5 hours of physical activity in the last week. One in eight adults did less than 30 minutes of activity in the last week. Males (78.4%; 76.6-80.2) were significantly more likely than females (69.9%; 67.9-71.9) to be physically active. A smaller proportion of adults (52.1%; 50.7-53.6) were regularly physically active. Males (56.7%; 54.5-58.9) were significantly more likely than females (48.6%; 46.5-50.6) to be regularly physically active.

In both females and males, physical activity was relatively stable across all age groups from 15 to 74 years, decreasing significantly in the oldest age group (75 years plus) (see Figure 25).

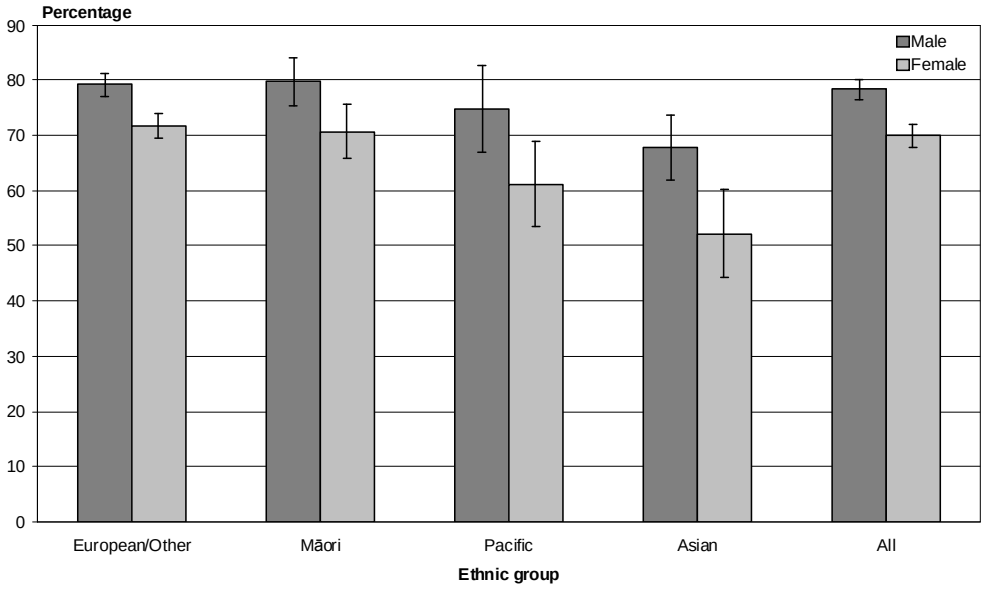
Figure 25. Physically Active Adults, by Age Group and Gender, New Zealand



Source: Ministry of Health 2004b

In both males and females, Asian peoples were significantly less likely to be physically active than European/Other and Mäori ethnic groups (see Figure 26).

Figure 26. Physically Active Adults, by Ethnic Group and Gender (Age-Standardised), New Zealand



Source: Ministry of Health 2004b

Some of the key activity findings of the National Children's Nutrition Survey 2002 (Parnell et al 2003) were:

- males (29%) were more likely than females (15.6%) to be in the highest activity quartile
- mäori children were the most active compared to Pacific people and European
- almost 50% of New Zealand children were transported to and from school, the proportion declined with increasing age
- about 45% of Mäori children were transported to and from school
- the proportion of children reporting no active behaviour during weekends was highest in females 11-14 years(22.8%)
- no weekend physical activity was reported by 20% of Mäori boys and 28% Mäori girls aged 11-14 years
- activity levels for females decreased at PE class, school breaks, after school and in the evenings and weekends significantly between 7-10 years and 11-14 years

- about 10% of Mäori children watched more than 4 hours of TV/videos per day.

Physical Activity Time Profiles

An increasing number of children in New Zealand are being transported to and from school. Age increases the independence of children and by the age 11, 40% of children are actively travelling to school. This may be because the Road Safety Council does not recommend children bike to school independently until they are 10 years old. Personal safety is also an important consideration for parents, even in smaller towns. Walking school buses have been a successful initiative in many areas to address safety issues and promote physical activity.

Table 29. Estimated Percentage of Children who Actively Travelled to or from School at Least Six Times in the Last 10 Occasions, West Coast

	West Coast % (CI)	New Zealand % (CI)
Total	35.26 (31.32-39.40)	37.25 (33.45-41.05)
Male	36.19 (31.45-40.93)	38.46 (34.04-42.88)
Female	34.51 (29.33-39.69)	35.97 (31.39-40.55)
Male 5-6yrs	32.30 (24.63-39.97)	34.23 (27.55-40.92)
Male 7-10yrs	32.37 (27.06-37.69)	35.25 (30.20-40.30)
Male 11-14 yrs	42.03 (34.22-49.84)	43.82 (36.91-50.74)
Female 5-6yrs	23.59 (14.62-32.57)	25.03 (17.58-32.47)
Female 7-10 yrs	34.65 (28.04-41.26)	36.92 (30.89-42.95)
Female 11-14yrs	39.91 (31.76-48.06)	40.21 (33.25-47.17)

Source: LINZ 2004.
Notes: New Zealand Figures are based on the CNS02 data. The DHB estimates are based on the national figures, but weighted for ethnic and age distribution for each DHB. The underlying assumption when making the estimates is that there is no regional differences after accounting for ethnicity.

Table 30. Estimated Percentage of Children who 'Sat Down' or 'Stood Around' Most of the Time at Morning Break and Lunch, West Coast

	West Coast % (CI)	New Zealand % (CI)
Total	5.3 (2.5-8.1)	5.0 (2.6-7.4)
Male	4.5 (0.8-8.2)	4.1 (1.1-7.2)
Female	6.1 (2.0-10.3)	6.0 (2.3-9.7)
Male 5-6yrs	0.2 (-0.1-0.5)	0.6 (0.0-1.2)
Male 7-10yrs	1.9 (0.5-3.2)	2.0 (0.8-3.2)
Male 11-14 yrs	9.4 (1.4-17.4)	8.1 (1.3-14.8)
Female 5-6yrs	0.2 (-0.1-0.6)	0.5 (-0.1-1.1)
Female 7-10 yrs	0.9 (-0.2-2.1)	1.1 (0.1-2.2)
Female 11-14yrs	14.6 (5.7-23.4)	13.6 (5.9-21.3)

Source: LINZ 2004.
Notes: New Zealand Figures are based on the CNS02 data. The DHB estimates are based on the national figures, but weighted for ethnic and age distribution for each DHB. The underlying assumption when making the estimates is that there is no regional difference after accounting for ethnicity.

School students become more sedentary between the ages of 11 and 14 years. This is especially apparent in girls. On the West Coast less than 1% of females aged 5-10 years were sedentary during schools breaks and there is an increase up to 14.6% by the age 11 years and a similar degree for males.

Table 31. Estimated Percentage of Children who 'Ran Around' or who 'Ran Around and Played Hard' most of the Time during Morning Break and Lunch, West Coast

	West Coast % (CI)	New Zealand % (CI)
Total	66.2 (60.3-72.0)	66.5 (61.1-71.8)
Male	74.4 (66.5-82.3)	74.3 (67.3-81.3)
Female	57.8 (50.3-65.3)	58.2 (51.5-65.0)
Male 5-6yrs	92.7 (88.1-97.2)	91.8 (88.0-95.5)
Male 7-10yrs	85.6 (81.6-89.6)	84.7 (81.0-88.4)
Male 11-14 yrs	53.7 (40.9-66.4)	55.0 (43.7-66.2)
Female 5-6yrs	86.4 (80.8-92.0)	85.5 (80.6-90.3)
Female 7-10 yrs	73.0 (67.8-78.2)	73.0 (68.7-77.3)
Female 11-14yrs	27.3 (18.4-36.3)	29.9 (21.5-38.2)

Source: LINZ 2004.
Notes: New Zealand Figures are based on the CNS02 data. The DHB estimates are based on the national figures, but weighted for ethnic and age distribution for each DHB. The underlying assumption when making the estimates is that there is no regional difference after accounting for ethnicity.

Males were more active during school breaks and at PE than their female counterparts but females were more active after school. Physical activity reduced significantly for both females and males in the 11 to 14 year age group.

Working with Regional Sports Trusts and within the Health Promoting Schools framework there are times within the school day that programmes could increase the physical activity levels of students.

Green Prescription

Note the small numbers involved in the surveys in the regions are small and the results should be treated with caution. They should be taken as indicative rather than conclusive.

Green Prescription has been showing some promising results nationally. In May 2004 a survey of over 1200 patients given Green Prescription showed that 49% were still more active 6-8 months after receiving their Green Prescription from their practice nurse or GP. The collection of ethnicity data remains a problem that is presently being addressed.

Green Prescription Survey Results

293 people were surveyed in Canterbury/Westland with 166 respondents and 137 people were surveyed in Tasman with 97 respondents and on the NZDep2001 scale 39% were between Deprivation 6 and 10 (Van Aalst & Daly 2004).

Table 32. Self Reported Improvements in Health following Participation in Green Prescription[7]

Respond with 'Yes'	Tasman %	Canterbury/ Westland %	Otago %	Southland %	New Zealand %
Changes in health	71	72	63	76	73
Lost weight	57	39	53	57	48
Generally feeling better	51	50	51	46	49

Source: PS Services

Of the referrals, 68%, (cf 58% nationally) were referred with weight issues, followed by high blood pressure/stroke, diabetes and high cholesterol.

Because most of the scripts were issued for weight problems the survey asked about changes in diet and found that:

[7] The regions reported in this table are based on the Regional Sports Trust Regions: Nelson Marlborough under Sport Tasman regional sports trust area, Otago is from the Sport Otago regional sports trust area, South Canterbury under the Sport Canterbury/Westland regional sports trust area, Southland under Sport Southland regional sports trust area and West Coast is a mix of Sport Canterbury/Westland and Tasman regional sports trust area.

- 30% had cut down on fats/low fat foods
- 31% were drinking more water
- 20% were eating less or avoiding sugar, sugary foods, sweets and soft drinks.

SPARC Regional Profiles

SPARC undertakes national level research. When this is reduced to regions the sample size is small and the reliability of the data is marginal.

SPARC profiles combine data from 1997/98, 1998/99 and 2000/01 in their Sport and Physical Activity surveys.

In Canterbury/Westland, 975 adults and 273 young people were surveyed (SPARC 2002c). In Tasman, 1,013 adults and 312 young people were surveyed. The West Coast is covered by both Canterbury/ Westland and Tasman Sport Trusts.

The following tables present some of the key results for Canterbury/Westland young people and adults and compares with other South Island Sports Trust areas and all New Zealand results.

Table 33. Key Figures for Young People in South Island Regional Sports Trusts

New Zealand Young People (5-17 Year olds)	All New Zealand %	Tasman[8] %	Canterbury/ Westland[9] %	Otago/ Southland[10] %
Active young people	68	78	71	72
Inactive young people	32	22	29	28
Interest in doing new sports/activities	62	59	62	60
Participate in sport & active leisure overall	92	94	96	94
Participate during school	69	71	70	69
Participate before /after school	21	20	15	29
Participate with club	33	38	50	34
Participate with family friends	68	73	72	68
Are coached	62	66	73	64
Number of Young People Surveyed	**4,078**	**308**	**269**	**270**

Source: SPARC Facts - Canterbury/Westland
Notes:
Active = doing 2.5 hours or more of sport and active leisure a week.
Inactive= doing less than 2.5 hours of sport and active leisure a week.
Buller is included in the Tasman data.

71% of young people in Canterbury/Westland are active, spending an average of 6.5 hours per week taking part in sports and active leisure this compares with 68% of all young New Zealander's who are active for an average 6.6 hours per week.

Between 1997 and 2001, the proportion of Canterbury/Westland young people who are highly active has risen, especially for girls. In 1997, 27% of girls in this region were highly active compared with 53% in 2001.

[8] The Tasman region used in this survey includes the Buller District, the Kaikoura District, the Marlborough District, Nelson City, and the Tasman District.

[9] The Canterbury/Westland region used in this survey includes Ashburton District, Banks Peninsula District, Chatham Island District, Christchurch City, Grey District, Hurunui District, Mackenzie District, Selwyn District, Timaru District, Waimakariri District, Waimate District and Westland District.

[10] The Otago/Southland region used in this survey includes Central Otago District, Clutha District, Dunedin City, Queenstown Lakes District, Waitaki District, Gore District, Invercargill City, and Southland District.

Table 34. Key Figures for Adults in South Island Regional Sports Trusts

New Zealand Adults (18+yrs)	All New Zealand %	Tasman %	Canterbury/ Westland %	Otago/ Southland %
Active young people	68	71	70	67
Inactive young people	32	29	30	33
Interest in doing new sports/activities	57	55	55	55
Participate in sport & active leisure overall	98	98	98	97
Participate during school	83	85	83	79
Participate before /after school	36	32	37	36
Participate with club	26	24	26	26
Participate with family friends	23	22	22	20
Are coached	27	32	27	29
Number of Adults Surveyed	**12,569**	**1,013**	**975**	**982**

Source: SPARC Facts - Canterbury/Westland
Notes:
Active = doing 2.5 hours or more of sport and active leisure a week.
Inactive= doing less than 2.5 hours of sport and active leisure a week.

Seven in ten (70%) of adults living in Canterbury/Westland are active, this is similar to the proportion of all adults in New Zealand.

Men in this region spend more time over the week being active than women (10.5 hours compared to 7.9 hours per week).

Over half the adults in Canterbury/Westland (55%) want to be more active.

Mäori in Canterbury/Westland are more likely than all other ethnic groups to be active (75% compared with the region average of 70%). They are also more active than their national counterparts (67%).

When planning programmes to increase physical activity in the region it is worthwhile to look at the' perceived barriers and excuses for being more active outlined in Obstacles for Action' (SPARC 2003) (see Table 35).

The target group SPARC used to identify barriers were those who were not already regularly active (unless for less than the past six months), but had some intention of becoming regularly active in the next six months or they were active for two or more days in the previous week.

Table 35. Perceived Barriers and Excuses

Commitment		Community-Related		Physical & Knowledge	
Barriers & Excuses	% Agree	Barriers & Excuses	% Agree	Barriers & Excuses	% Agree
Lack of time due to work	63%	No one to do physical activities with	**52%**	Arthritis or health problems	**34%**
Too hard to stick to a routine	61%	Others discourage me	**38%**	PA is uncomfortable for me	**30%**
Lack of energy/ too tired	58%	Costs too much	**38%**	I don't know how	**22%**
There are other things I would rather do	**56%**	Facilities too hard to get to	**38%**		
Lack of time due to family	53%	I worry about my safety	**35%**		
Too many household chores	**41%**				
Get bored easily	**31%**				

Source: Sullican et al 2003
Notes: Bold = Highest of all segments
Percentage Agree - 5,6,7 on 7-Point Scale

Membership of Sport Organisations

Half of the young people in this region (50%) play sport with a club, which is substantially higher than for all New Zealand young people (33%). As a country as a whole, more boys than girls play sport with a club (56%and 44% respectively). This is also the case for all age groups and especially 9-12 year -olds, where 67% participate in a club compared to 40% of all New Zealand 9-12 year-olds.

Over one third of adults (37%) in Canterbury/Westland are currently active members of a club or gym. The figure is higher for men than women.

Older adults (65 years and over) in this region are more likely to be club members than their national counterparts (44% compared to 35% respectively).

As Regional Sport Trusts develop their physical activity plans and improve monitoring and outcomes, more useful information will become available to contribute to health need assessments.

CANCER

Key Findings

- Cancer mortality rates increase with age, with the most rapid increase in the older age groups (from age 60 onwards)
- Non-Mäori males in West Coast have a higher cancer mortality rate than their South Island and New Zealand counterparts. The reverse is true for non-Mäori females in West Coast. However, these results are not statistically significant
- With the exception of Mäori females, the cancer prevalence rates in West Coast are slightly higher than those of the respective population groups in New Zealand
- The rate of cancer hospitalisation in the South Island is lower than the rate of cancer hospitalisation in New Zealand for both males and females
- Females have a noticeably higher cancer registration rate among young to middle age adults (25-59 year age range). This could be due to early detection through to screening programmes
- Mäori females in West Coast experience substantially higher breast cancer mortality than their South Island and national counterparts
- Males in West Coast have higher cancer hospitalisation rates than their South Island and New Zealand counterparts. This result is statistically significant for both Mäori and non-Mäori males
- Non-Mäori females in West Coast have a markedly lower cervical cancer hospitalisation rate than that of their South Island and national counterparts
- Non-Mäorifemales in West Coast have a higher cancer registration rate than that of their South Island and New Zealand counterparts, however this result is not statistically significant
- The breast cancer screening rate in females across both ethnic groups in West Coast is slightly higher than the rate in the South Island and nationally

The Ministry of Health identifies the control of cancer as a priority within the New Zealand Health Strategy. Cancer is the second leading cause of death (27%) and a major cause of hospitalisation (7%) in New Zealand. Cancer is a major cause of premature mortality and disability for all ethnic groups in New Zealand.

There are about 17,000 new registrations of cancer each year, with the highest rates in the middle and older age groups (Ministry of Health 2003k). Females have a noticeably higher cancer registration rate among young to middle age adults (25-59 year age range), which could be due to early detection through screening programs.

Cancer mortality rates increase with age, with the most rapid increase in the older age groups. Cancer is the leading cause of death among females and is second only to cardiovascular disease among males (Ministry of Health 2003k).

The following chapter examines the burden of cancer in the West Coast population. This is done by comparing patterns in cancer prevalence, mortality, hospitalisation, registration and screening of the West Coast population with that of the South Island and New Zealand[11].

The following four subcategories of cancer are examined in greater detail:

- Lung Cancer
- Female Breast Cancer
- Cervical Cancer
- Melanoma

Lung cancer, female breast cancer and cervical cancer are priority areas as identified in the New Zealand Health Strategy. Melanoma has been included in this chapter, as there has been a steady increase in Melanoma registrations.

[11] Note data from the New Zealand Health Survey only enablers comparisons to the New Zealand population, not the South Island.

1. Lung Cancer

Among the selected subcategories of cancer, lung cancer currently ranks third for males and fourth for females in terms of incidence. For mortality, the corresponding rankings are first and third, respectively. Lung cancer registrations and mortality in males has been declining since the 1980s. However, for females, lung cancer registrations and mortality have been relatively stable since the 1990s. The New Zealnd Health Strategy identifies Smoking Cessation is an important factor for reducing the incidence of lung cancer.

2. Female Breast Cancer

Breast cancer is the most common cancer among New Zealand females. It contributes to over a quarter of new cancers diagnosed in women, and almost one in five cancer deaths. Since the early 1980s breast cancer registration rates have gradually increased, but breast cancer mortality has decreased. However, Mäori and Pacific rates increased in the 1990s. As a result of the introduction of the National breast screening programme, breast cancer registrations are expected to increase further over the next decade, whereas mortality is expected to decline.

3. Cervical Cancer

Cervical cancer mortality rates have declined since the 1980s and from the 1990s registrations also declined. Although cervical cancer registrations are higher in the 25-44-year-old age group, mortality is higher in the 45-64-year-old group. Cervical cancer is associated with human papillomavirus infection, and is preventable through safer sexual behaviours.

For further information on cervical screening see Section 3: Primary Health Care Services.

4. Melanoma

Melanoma is a serious form of skin cancer that develops in the pigment-producing cells of the skin. The risk of the disease has increased due to the rise in ultraviolet radiation levels as a result of the depletion of the ozone layer. There has been an increase in melanoma registrations since the mid-1990s within all ethnic groups and mortality has been the highest in Europeans. Mortality from Melanoma has remained relatively stable since the 1980s.

Notes on the Data presented in this Chapter

Numbers for the Pacific and Asian population were too small to provide statistically meaningful results. Thus the analysis for this chapter is carried out for prioritised ethnicity, Mäori and non-Mäori. The use of prioritised ethnicity is in keeping with usual Ministry of Health practice. People were assigned to one ethnic group in the order, Mäori and non-Mäori. Mäori numbers are often small, so care must be taken when interpreting results.

The ethnicity classification system is likely to be consistent across the South Island. Any variation between DHBs and the South Island and New Zealand is thus due to other sources, not misclassification of ethnicity.

Small numbers of cases or populations are an issue throughout the data presented, and therefore results need to be interpreted with caution.

An overview of the methodology applied for this section is provided in Appendix 2. Life cycle stage specific cancer mortality, hospitalisation and registration rates for West Coast are presented in Appendix 3. Appendix 3 also provides a summary of indicators at DHB level. Data from other South Island DHBs are presented for comparative purposes.

Prevalence

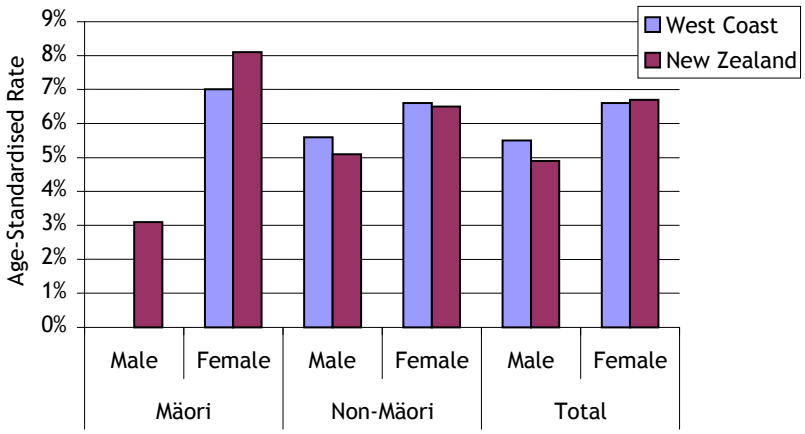
Table 36 and Figure 27 compares the age-standardised (including 95% CIs) self-reported cancer prevalence rates in West Coast to those of New Zealand. With the exception of Mäori females, the cancer prevalence rates in West Coast are slightly higher than those of the respective population groups in New Zealand. Mäori females in West Coast have a lower prevalence of cancer than their counterparts in New Zealand, however this result is not statistically significant.

Table 36. Age-Standardised Cancer Prevalence Rates (including 95% CIs) by Ethnicity and Gender, West Coast and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	New Zealand
Mäori	Male	-*	3.1% (1.2%, 5%)
	Female	7.0% (3.0%, 11.0%)	8.1% (5.7%, 10.5%)
Non-Mäori	Male	5.6% (4.1%, 7.1%)	5.1% (4.4%, 5.8%)
	Female	6.6% (4.1%, 9.1%)	6.5% (5.7%, 7.3%)
Total	**Male**	**5.5% (4.1%, 6.9%)**	**4.9% (4.2%, 5.6%)**
	Female	**6.6% (4.2%, 9.0%)**	**6.7% (5.9%, 7.5%)**

Source: Ministry of Health 2004b.
*Notes: * Number too small to calculate age-standardised rate.*

Figure 27. Age-Standardised Cancer Prevalence Rates by Ethnicity and Gender, West Coast and New Zealand, 2002 to 2003



Source: Ministry of Health 2004b.

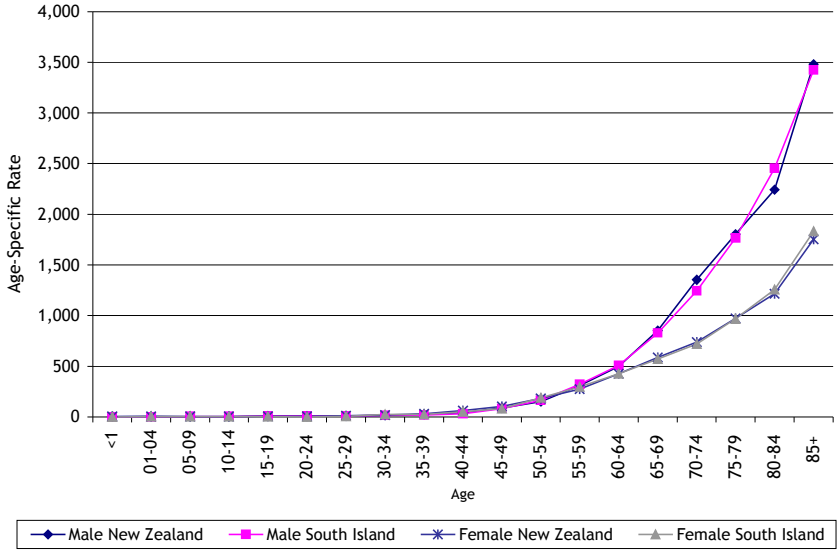
All Cancers

Mortality

In 2000 to 2001, there were 15,346 deaths in New Zealand due to cancer. Of these, 4,143 (27%) occurred in the South Island, and 140 (1%) in West Coast.

Figure 28 compares the age-specific all cancer mortality rates in the South Island to those in New Zealand. Cancer mortality rates increase with age, with the most rapid increase in the older age groups (from age 60 onwards). Cancer mortality rates between the South Island and New Zealand are similar. However, there is a marked difference between male and female rates. Males show a substantially higher mortality rate from age 55 years, with the greatest contribution from being lung and colorectal cancers.

Figure 28. Age-Specific All Cancer Mortality Rates (per 100,000), South Island and New Zealand, 2000 to 2001



Source: *New Zealand Health Information Service.*
Notes: *The numbers at West Coast level were too small to present by the five-year age grouping, however the pattern is largely the same. Rates by life cycle stage are presented in Appendix 3.*

Table 37 presents age-standardised rates comparing all cancer mortality in West Coast to those of the South Island and New Zealand broken down by ethnic group and gender. 95% confidence intervals are presented along with the rates.

Non-Mäori males in West Coast have a higher cancer mortality rate than their South Island and New Zealand counterparts, however this result is not statistically significant. Non-Mäori females in West Coast have a lower cancer mortality rate than their South Island and New Zealand counterparts, however this result is not statistically significant.

Table 37. Age-Standardised All Cancer Mortality Rates (per 100,000) (including 95% CIs) by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	366	202 (153, 263)	295 (273, 318)
	Female	337	200 (153, 258)	246 (229, 265)
Non-Mäori	Male	190 (151, 236)	175 (168, 183)	171 (167, 175)
	Female	106 (78, 140)	121 (115, 126)	116 (114, 119)
Total	**Male**	**197 (158, 244)**	**176 (169, 183)**	**178 (174, 182)**
	Female	**118 (89, 154)**	**123 (117, 128)**	**125 (122, 128)**

Source: *New Zealand Health Information Service.*
Note: *CIs are not presented for counts less than 10.*

When using deprivation as a proxy for socioeconomic position, Table 38 shows that a socioeconomic gradient in cancer mortality rate is evident in the South Island and nationally, with lowest rates in quintile 1 and highest in quintile 5. West Coast does not follow this pattern. The difference in mortality rates between deprivation quintiles in West Coast compared with the South Island and New Zealand maybe due to small numbers and not a real difference.

Table 38. Age-Standardised All Cancer Mortality Rates (per 100,000) by Deprivation Quintiles and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Quintile	Gender	West Coast	South Island	New Zealand
1	Male	130	146	155
	Female	185	118	113
2	Male	233	160	165
	Female	123	110	113
3	Male	258	193	173
	Female	163	127	126
4	Male	199	193	189
	Female	89	141	130
5	Male	216	216	218
	Female	139	115	147

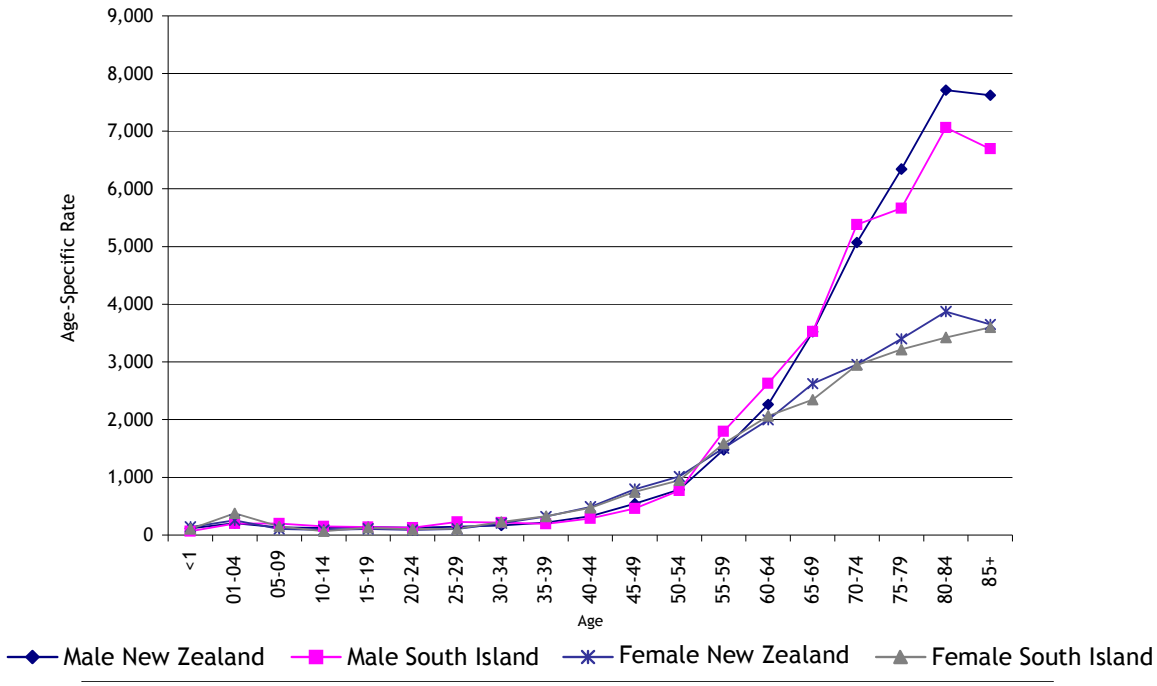
Source: New Zealand Health Information Service.

Hospitalisations[12]

In 2002 to 2003, there were 66,776 hospitalisations in New Zealand due to cancer. Of these, 17,761 (27%) were in the South Island and 705 (1%) were in West Coast.

Figure 29 compares the age-specific all cancer hospitalisation rates in the South Island to those of New Zealand. Cancer hospitalisation rates increase exponentially with age, but tend to fall at the most advanced age group (age 85+). The rate of cancer hospitalisation in the South Island is lower than the rate of cancer hospitalisation in New Zealand for both males and females. Females have higher cancer hospitalisation rate than males at the younger age categories.

Figure 29. Age-Specific All Cancer Hospitalisation Rate (per 100,000), South Island and New Zealand, 2002 to 2003



Source: New Zealand Health Information Service.

Table 39 shows age-standardised all cancer hospitalisation rates in West Coast compared with cancer hospitalisation in the South Island and New Zealand broken down by ethnic group and gender. Males in West Coast have higher cancer hospitalisation rates than their South Island and New Zealand counterparts. This difference is statistically significant for both Māori and non-Māori males. Māori females in West Coast have a lower cancer hospitalisation rate than their counterparts in New Zealand,

[12] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

however this result is not statistically significant. Non-Mäori females in West Coast have a higher cancer hospitalisation rate than their counterparts in the South Island and New Zealand, however this result is only significant when compared to New Zealand.

Table 39. Age-Standardised All Cancer Hospitalisation Rates (per 100,000) (including 95% CIs), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	1,801 (1240, 2529)	536 (467, 611)	745 (715, 775)
	Female	738 (437, 1166)	678 (602, 761)	754 (726, 782)
Non-Mäori	Male	955 (860, 1059)	790 (774, 806)	753 (745, 761)
	Female	711 (631, 797)	620 (606, 633)	608 (601, 615)
Total	**Male**	**1,037 (938, 1144)**	**783 (768, 799)**	**760 (752, 768)**
	Female	**742 (661, 830)**	**625 (611, 638)**	**619 (612, 626)**

Source: New Zealand Health Information Service.
Note: CIs are not presented for counts less than 10.

When using deprivation as a proxy for socioeconomic position, Table 40 shows that a socioeconomic gradient in cancer hospitalisation, with highest hospitalisation rates in quintile 5 and lowest in quintile 1, is evident in the South Island and New Zealand. West Coast does not follow this pattern.

Table 40. Age-Standardised All Cancer Hospitalisation Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Quintile	Gender	West Coast	South Island	New Zealand
1	Male	1,141	676	633
	Female	3,263	546	519
2	Male	1,116	719	694
	Female	-*	550	548
3	Male	716	860	817
	Female	757	671	657
4	Male	1,143	980	879
	Female	680	811	722
5	Male	2,340	851	931
	Female	1,055	606	775

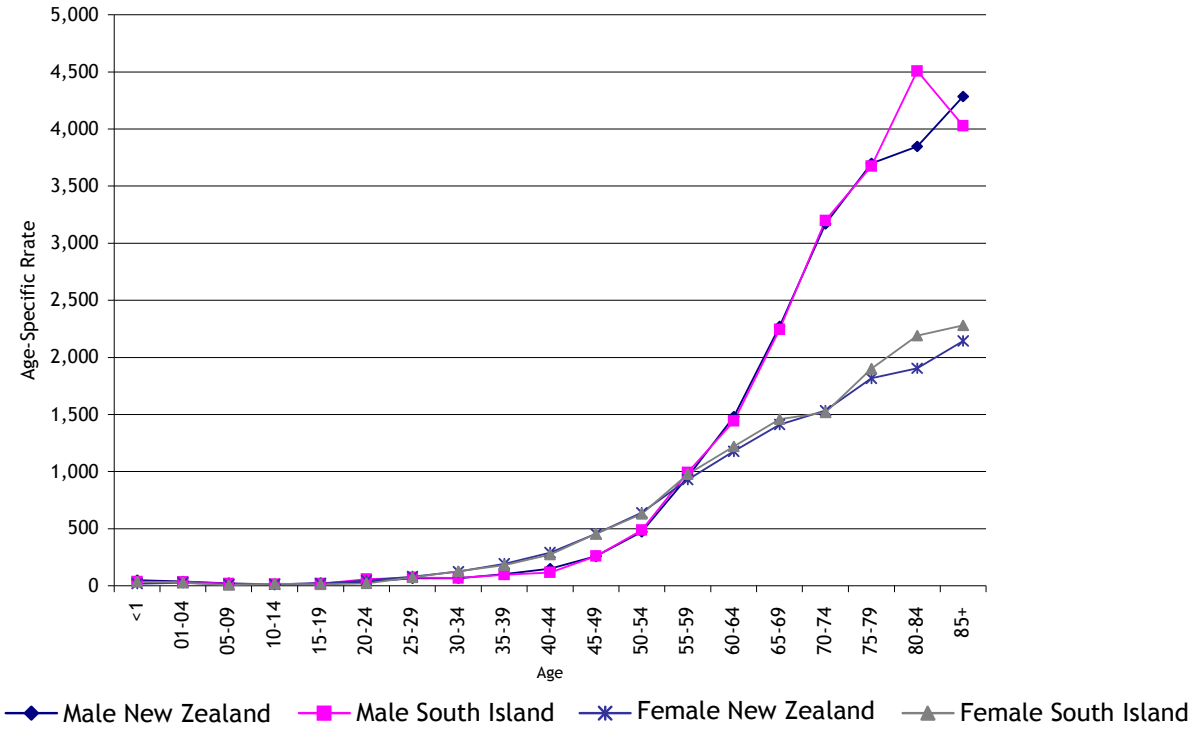
Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Registrations

In 2000, there were 18,073 cancer registrations in New Zealand. Of these, 4,924 (27%) were in the South Island and 164 (1%) were in West Coast.

Figure 30 shows that cancer registration rates increase exponentially with age. Females have a noticeably higher cancer registration rate among young to middle age adults (25-59 years). This could be due to early detection through screening programmes. There is a crossover between males and females at age 55-59 years, where the registration rate for males exceeds the female registration rate. The sites most likely to contribute to this are an increase in lung and colorectal cancer registrations in males in older age groups.

Figure 30. Age-Specific All Cancer Registration Rate (per 100,000), South Island and New Zealand, 2000



Source: New Zealand Health Information Service.

Table 41 presents the cancer registration rates in West Coast broken down by ethnic group and gender compared to the national average (gender and ethnic groups combined). Non-Māori males in West Coast have a similar cancer registration rate to that of their South Island and New Zealand counterparts. Non-Māori females in West Coast have a higher cancer registration rate than that of their South Island and New Zealand counterparts, however this result is not statistically significant.

Table 41. Age-Standardised All Cancer Registration Rates, by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000

Ethnicity	Gender	West Coast	South Island	New Zealand
Māori	Male	500	280 (204,375)	394 (359,430)
	Female	296	266 (196,353)	398 (368,429)
Non-Māori	Male	431 (344,534)	440 (423,457)	434 (425,443)
	Female	382 (299,480)	346 (332,361)	336 (328,343)
Total	**Male**	**442 (354,544)**	**436 (419,453)**	**432 (423,440)**
	Female	**376 (297,471)**	**344 (330,358)**	**340 (332,347)**

Source: New Zealand Health Information Service.
Note: CIs are not presented for counts less than 10.

When using deprivation as a proxy for socioeconomic position, Table 42 shows that cancer registration rates increase with increasing deprivation in the South Island and nationally.

Table 42. Age-Standardised All Cancer Registration Rate (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2000

Quintile	Gender	West Coast	South Island	New Zealand
1	Male	453	364	408
	Female	315	326	322
2	Male	498	379	419
	Female	118	296	313
3	Male	205	479	432
	Female	600	372	347
4	Male	490	538	469
	Female	372	382	355
5	Male	773	451	433
	Female	508	398	369

Source: New Zealand Health Information Service.

Lung Cancer

Mortality

Table 43 compares age-standardised lung cancer mortality rates for West Coast to that of the South Island and New Zealand, broken down by ethnicity and gender. Males have a higher lung cancer mortality rate than females in the South Island and New Zealand. Mäori males in West Coast have a markedly higher lung cancer mortality rate than their South Island and national counterparts.

Table 43. Age-Standardised Lung Cancer Mortality Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	166	48	88
	Female	52	58	87
Non-Mäori	Male	36	37	32
	Female	19	17	17
Total	**Male**	**40**	**38**	**37**
	Female	**21**	**18**	**21**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 44 shows that the socioeconomic gradient in lung cancer mortality, with lowest rates in quintile 1 and highest in quintile 5, is evident in the South Island and nationally. West Coast does not follow this pattern.

Table 44. Age-Standardised Lung Cancer Mortality Rates (per 100,000), by Deprivation Quintiles and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Quintile	Gender	West Coast	South Island	New Zealand
1	Male	-*	28	26
	Female	-*	13	16
2	Male	-*	32	31
	Female	123	16	16
3	Male	89	43	34
	Female	17	20	20
4	Male	45	44	39
	Female	16	21	24
5	Male	14	62	59
	Female	35	21	31

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Hospitalisations[13]

Table 45 shows that males have markedly higher lung cancer hospitalisation rates in West Coast, the South Island and New Zealand.

Table 45. Age-Standardised Lung Cancer Hospitalisation Rates (per 100,0000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	487	93	106
	Female	202	111	103
Non-Mäori	Male	96	49	42
	Female	48	29	28
Total	**Male**	**104**	**51**	**46**
	Female	**52**	**31**	**33**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 46 shows that a socioeconomic gradient in lung cancer hospitalisation, with highest hospitalisation rates in quintile 5 and lowest in quintile 1, is evident in the South Island and nationally. This pattern is not observed West Coast. Note meaningful hospitalisation rates could not be calculated for most of the quintiles in West Coast because of small numbers.

Table 46. Age-Standardised Lung Cancer Hospitalisation Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2000 to 2003

quintile	Gender	West Coast	South Island	New Zealand
1	Male	-*	28	29
	Female	292	24	18
2	Male	250	42	40
	Female	-*	29	23
3	Male	82	65	48
	Female	33	27	35
4	Male	113	67	56
	Female	51	45	39
5	Male	57	70	73
	Female	33	38	57

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Registrations

Table 47 shows that the lung cancer registration rate is higher in males than females in the South Island and nationally.

Table 47. Age-Standardised Lung Cancer Registration Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	-*	67	92
	Female	108	58	96
Non-Mäori	Male	30	44	39
	Female	14	23	21
Total	**Male**	**30**	**46**	**43**
	Female	**19**	**23**	**25**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

[13] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

When using deprivation as a proxy for socioeconomic position, Table 48 shows that a socioeconomic gradient is evident with lung cancer registration in the South Island and nationally, with highest registration rates in quintile 5 and lowest in quintile 1.

Table 48. Age-Standardised Lung Cancer Registration Rates (per 100,000) by Deprivation and Gender, West Coast, South Island and New Zealand, 2000

quintile	Gender	West Coast	South Island	New Zealand
1	Male	-*	25	28
	Female	-*	17	17
2	Male	-*	40	36
	Female	-*	13	17
3	Male	53	55	42
	Female	55	28	26
4	Male	28	58	51
	Female	20	35	29
5	Male	27	60	58
	Female	-*	31	41

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Female Breast Cancer

Mortality

Table 49 shows that in general, the breast cancer mortality rate is the highest in Mäori, followed by non-Mäori females in the South Island and nationally. However, in West Coast, Mäori females experience substantially higher breast cancer mortality than their South Island and national counterparts.

Table 49. Age-Standardised Female Breast Cancer Mortality Rates (per 100,000), by Ethnicity, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	West Coast	South Island	New Zealand
Mäori	55	33	36
Non-Mäori	16	23	22
Total	**19**	**24**	**23**

Source: New Zealand Health Information Service.

Table 50 presents age-standardised melanoma mortality rates when using deprivation as a proxy for socioeconomic position. Breast cancer mortality does not show a consistent relationship with deprivation.

Table 50. Age-Standardised Female Breast Cancer Mortality Rates (per 100,000), by Deprivation quintiles, West Coast, South Island and New Zealand, 2000 to 2001

quintile	West Coast	South Island	New Zealand
1	-*	24	24
2	-*	22	22
3	28	24	23
4	12	27	25
5	17	16	24

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Hospitalisations[14]

Table 51 shows that in the South Island and nationally, Mäori have a higher breast cancer hospitalisation rate than non-Mäori.

Table 51. Age-Standardised Female Breast Cancer Hospitalisation Rates (per 100,0000), by Ethnicity, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	West Coast	South Island	New Zealand
Mäori	48	92	139
Non-Mäori	92	82	83
Total	**89**	**83**	**86**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 52 shows that a socioeconomic gradient in breast cancer hospitalisation rate is apparent in the South Island and New Zealand. West Coast does not follow this pattern. Note meaningful hospitalisation rates could not be calculated for most of the quintiles in West Coast because of small numbers.

Table 52. Age-Standardised Female Breast Cancer Hospitalisation Rates (per 100,000), by Deprivation, West Coast, South Island and New Zealand, 2000 to 2003

quintile	West Coast	South Island	New Zealand
1	172	68	72
2	-*	72	75
3	132	95	94
4	87	107	101
5	169	103	111

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Registrations

Table 53 shows that nationally, female breast cancer registration rates are higher in Mäori than non-Mäori. This pattern is not observed in the South Island and West Coast.

Table 53. Age-Standardised Female Breast Cancer Registration Rates (per 100,000), by Ethnicity, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	West Coast	South Island	New Zealand
Mäori	39	67	109
Non-Mäori	88	98	102
Total	**87**	**98**	**103**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 54 shows that the breast cancer registration rate is similar across all quintiles in West Coast, the South Island and New Zealand.

[14] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

Table 54. Age-Standardised Female Breast Cancer Registration Rates (per 100,000) by Deprivation, West Coast, South Island and New Zealand, 2000 to 2001

quintile	West Coast	South Island	New Zealand
1	86	90	101
2	53	89	98
3	120	102	101
4	82	114	108
5	83	101	105

Source: New Zealand Health Information Service.

Screening

Screening rates measure the coverage of the national screening programmes for breast cancer.

Table 55 shows that the female breast cancer screening rates in West Coast are slightly higher than the rates in the South Island and nationally. In contrast to the South Island and national rate, Mäori in the West Coast have higher female breast cancer screening rates.

Table 55. Female Breast Cancer Screening Rates (per 100), by Ethnicity, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	West Coast	South Island	New Zealand
Mäori	60	55	37
Non-Mäori	64	62	49
Total	**64**	**62**	**48**

Source: National Screening Unit, Ministry of Health[15].

For further information on Breast Cancer Screening refer to Section 3: Primary Health Care.

Cervical Cancer

Mortality

Table 56 shows that Mäori females have a substantially higher cervical cancer mortality rate than non-Mäori females.

Table 56. Age-Standardised Cervical Cancer Mortality Rates (per 100,000), by Ethnicity, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	West Coast	South Island	New Zealand
Mäori	-*	8	9
Non-Mäori	-*	2	2
Total	**-***	**3**	**3**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

When using deprivation as a proxy for socioeconomic position, Table 57 shows that, nationally, the cervical cancer mortality rate increases with increasing deprivation.

[15] Limited data on numbers for breast and cervical cancer screening are available.

Table 57. Age-Standardised Cervical Cancer Mortality Rates (per 100,000), by Deprivation quintiles, West Coast, South Island and New Zealand, 2000 to 2001

quintile	West Coast	South Island	New Zealand
1	-*	1	2
2	-*	3	3
3	-*	6	4
4	-*	7	4
5	-*	4	7

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Hospitalisations[16]

Table 58 shows that, nationally, Mäori females have a higher cervical cancer hospitalisation rate than non-Mäori. Non-Mäori females in West Coast have a markedly lower cervical cancer hospitalisation rate compared to their South Island and national counterparts, although the actual number of cases is likely to be small.

Table 58. Age-Standardised Cervical Cancer Hospitalisation Rates (per 100,0000), by Ethnicity, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	West Coast	South Island	New Zealand
Mäori	-*	18	25
Non-Mäori	2	14	12
Total	**2**	**13**	**14**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

When using deprivation as a proxy for socioeconomic position, Table 59 shows that, nationally, cervical cancer hospitalisation rate increases with increasing deprivation. Note meaningful hospitalisation rates could not be calculated for many of the West Coast cervical cancer quintiles because of small numbers.

Table 59. Age-Standardised Cervical Cancer Hospitalisation Rates (per 100,000), by Deprivation, West Coast, South Island and New Zealand, 2000 to 2003

quintile	West Coast	South Island	New Zealand
1	-*	14	9
2	-*	9	11
3	-*	15	15
4	4	17	20
5	-*	13	18

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Registrations

Table 60 shows that nationally, Mäori have twice the cervical cancer registration rate of non-Mäori.

Table 60. Age-Standardised Cervical Cancer Registration Rates (per 100,000), by Ethnicity, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	West Coast	South Island	New Zealand
Mäori	-*	10	16
Non-Mäori	7	8	9
Total	7	**9**	**9**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

[16] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

When using deprivation as a proxy for socioeconomic position, Table 61 shows that, nationally, a socioeconomic gradient for cervical cancer registration is apparent, with highest registration rates in quintile 5 and lowest in quintile 1.

Table 61. Age-Standardised Cervical Cancer Registration Rate (per 100,000) by Deprivation, West Coast, South Island and New Zealand, 2000 to 2001

quintile	West Coast	South Island	New Zealand
1	-*	8	9
2	-*	7	7
3	-*	6	8
4	17	15	11
5	-*	10	14

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Screening

Screening rates measure the coverage of the national screening programmes for cervical cancer.

For further information on Cervical Cancer Screening refer to Section 3: Primary Health Care.

Table 62 shows that females in the younger age groups, 20–49 years, have higher cervical cancer screening rate than females at the older ages.

Table 62. Cervical Cancer Screening Rate (per 100), by five-Year Age Groupings and all Ethnic Groups Combined, West Coast, South Island and New Zealand, 2001 to 2003

Age Group	West Coast	South Island	New Zealand
20-24 Years	65	80	75
25-29 Years	69	79	78
30-34 Years	76	85	83
35-39 Years	73	78	77
40-44 Years	76	80	79
45-49 Years	74	76	75
50-54 Years	54	61	62
55-59 Years	60	66	66
60-64 Years	53	55	56
65-69 Years	49	47	47

Source: National Screening Unit, Ministry of Health[17].

Melanoma

Mortality

Table 63 shows that there are very similar rates of melanoma mortality in non-Mäori in the South Island and New Zealand, with males having consistently higher rates than females.

Table 63. Age-Standardised Melanoma Mortality Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	-*	4	1
	Female	-*	-*	1
Non-Mäori	Male	16	7	7
	Female	3	4	4
Total	**Male**	16	**7**	**7**
	Female	3	**3**	**3**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

[17] Limited data on numbers for breast and cervical cancer screening are available.

Table 64 presents age-standardised melanoma mortality rates when using deprivation as a proxy for socioeconomic position. There does not appear to be a relationship between melanoma mortality and deprivation.

Table 64. Age-Standardised Melanoma Mortality Rates (per 100,000), by Deprivation quintiles and Gender, West Coast, South Island and New Zealand, 2000 to 2001

quintile	Gender	West Coast	South Island	New Zealand
1	Female	-*	4	3
	Male	-*	4	7
2	Male	-*	8	8
	Female	-*	2	3
3	Male	12	8	8
	Female	19	5	3
4	Male	26	6	7
	Female	-*	4	5
5	Male	-*	6	6
	Female	-*	2	3

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Hospitalisations[18]

Table 65 shows that in the South Island, the melanoma hospitalisation rates for non-Mäori males and females are slightly lower than for New Zealand, and consistently higher in males than females

Table 65. Age-Standardised Melanoma Hospitalisation Rates (per 100,0000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	-*	-*	4
	Female	-*	6	6
Non-Mäori	Male	26	21	27
	Female	14	16	22
Total	**Male**	25	**20**	**25**
	Female	14	**16**	**20**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Table 66. Age-Standardised Melanoma Hospitalisation Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2000 to 2003

quintile	Gender	West Coast	South Island	New Zealand
1	Male	-*	23	22
	Female	-*	10	15
2	Male	-*	16	21
	Female	-*	14	19
3	Male	33	22	27
	Female	48	15	25
4	Male	29	26	33
	Female	3	26	24
5	Male	58	22	32
	Female	39	8	22

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

[18] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

Table 66 presents age-standardised melanoma mortality rates when using deprivation as a proxy for socioeconomic position. There does not appear to be a relationship between melanoma hospitalisation and socioeconomic deprivation.

Registrations

Table 67 shows that nationally and in the South Island, non-Mäori males have a higher melanoma registration rate than Non-Mäori females. This pattern is not observed in West Coast.

Table 67. Age-Standardised Melanoma Registration Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	-*	-*	3
	Female	-*	7	6
Non-Mäori	Male	44	40	46
	Female	48	38	42
Total	**Male**	**41**	**38**	**43**
	Female	**45**	**37**	**39**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

When using deprivation as a proxy for socioeconomic position, Table 68 shows that the socioeconomic gradient is reversed for melanoma registration rate in the South Island and in New Zealand. Nationally, the numbers of melanoma cases are small, thus this gives rise to large fluctuations in the age-standardised melanoma rate in West Coast.

Table 68. Age-Standardised Melanoma Registration Rates (per 100,000) by Deprivation and Gender, West Coast, South Island and New Zealand, 2000 to 2001

quintile	Gender	West Coast	South Island	New Zealand
1	Male	147	46	49
	Female	49	45	46
2	Male	233	38	46
	Female	-*	36	39
3	Male	-*	37	43
	Female	68	34	38
4	Male	59	42	43
	Female	48	38	39
5	Male	46	20	31
	Female	103	29	31

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

CARDIOVASCULAR DISEASES

Key Findings

- Cardiovascular disease mortality rates in the South Island and New Zealand are similar
- Non-Mäori in West Coast have higher heart disease prevalences than their New Zealand counterparts. Mäori males have a considerably lower rate than their national counterparts
- Non-Mäori males in West Coast have a higher rate of cardiovascular disease mortality than that of their South Island and New Zealand counterparts. However, this result is not statistically significant
- Mäori males in West Coast have a markedly lower cardiovascular disease hospitalisation rate than that of their South Island and national counterparts. This result is statistically significant
- The socioeconomic gradient (with lowest rates in quintile 1 and highest in quintile 5) in cardiovascular disease mortality evident in the South Island and New Zealand is not as clear in West Coast, with highest rates in quintile 5 and lowest in quintile 1
- The socioeconomic gradient (with lowest rates in quintile 1 and highest in quintile 5) in cardiovascular disease hospitalisation is evident in the South Island and New Zealand but no clear pattern emerges in West Coast
- Mäori in West Coast have lower cardiovascular disease hospitalisation rates than their national counterparts. The reverse is true for non-Mäori
- The stroke prevalence rates in West Coast are higher than those of the respective population groups in New Zealand, particularly for males. However, the rate of stroke mortality in West Coast is lower than that for the South Island and New Zealand
- Mäori males in West Coast have a substantially higher rate of stroke hospitalisation than their New Zealand counterparts, and Mäori females a considerably lower rate.

One of the 13 population health objectives of the New Zealand Health Strategy is to reduce the incidence and disease impact of cardiovascular disease in New Zealand. Cardiovascular diseases are major causes of mortality and morbidity for all ethnic groups in New Zealand. They are the leading cause of mortality in New Zealand and accounted for 41% of all deaths in 1999. Cardiovascular diseases are also the leading cause of years lost to premature mortality, accounting for 33% of life years lost between 45–64 years of age. Mäori have the highest rates of mortality for all categories of cardiovascular disease.

The major modifiable risk factors for cardiovascular diseases include smoking and alcohol consumption, hypertension, high serum cholesterol, (pre)diabetes, obesity, physical activity level and diet (especially saturated fat, energy, salt, fruit and vegetable and folate intakes). Those with the highest risk derive the most benefit from treatment. (Ministry of Health 2003m)

The following chapter examines the burden of cardiovascular diseases in the West Coast population. This is done by comparing patterns in cardiovascular disease prevalence, mortality and hospitalisation of the West Coast population with that of the South Island and New Zealand[19].

Cardiovascular diseases are diseases affecting the heart and circulatory system. They include ischaemic heart disease, rheumatic heart disease, cerebrovascular disease and other forms of vascular and heart disease.

The following three subcategories of cardiovascular diseases are examined in greater detail:

- Ischaemic Heart Disease
- Acute Myocardial Infarction
- Stroke

[19] Note data from the New Zealand Health Survey only enables comparisons to the New Zealand population, not the South Island.

1. Ischaemic Heart Disease

Ischaemic heart disease (IHD) includes heart attack, angina, abnormal heart rhythm and heart failure and is a significant cause of both morbidity and mortality in New Zealand. It is caused by the progressive narrowing and hardening of the arteries, which reduce the blood supply to the heart, and is associated with high blood cholesterol, tobacco smoking, physical inactivity, diabetes, and inadequate vegetable and fruit intake, as well as genetic factors. Incidence and mortality for ischaemic heart disease have been declining steadily since the early 1980s, in adults aged over 65 years.

2. Acute Myocardial Infarction

Acute myocardial infarction (AMI) refers to death of myocardial cells (heart muscle). Coronary artery disease has been declining in New Zealand. However, it still results in the highest number of deaths of cardiovascular disease-related deaths (91 per 100,000). It is the second leading cause of death following cancer. Coronary heart disease accounted for 23% of all deaths in 1999, of which just over 52% were attributable to myocardial infarction. 85% of coronary heart disease deaths occur in those over 65 years. (Ministry of Health 2003m)

3. Stroke

Stroke (also referred to as cerebrovascular accident) refers to the sudden onset of neurological deficit caused by an interruption of the brain's blood supply. Stroke is the third leading cause of death in New Zealand (33 per 100,000). It accounted for 10% of all deaths in 1999, with most deaths occurring in those over 65 years of age. Between 1981 and 2000, stroke mortality in New Zealand has halved. However, this trend does not appear to be the result of incidence reduction but rather of lower case fatality (reflecting reduced severity, slower progression and better treatment).

Notes on the Data presented in this Chapter

Numbers for the Pacific and Asian population were too small to provide statistically meaningful results. Thus the analysis for this chapter is carried out for prioritised ethnicity, Mäori and non-Mäori.

The ethnicity classification system is likely to be consistent across the South Island. Any variation between DHBs and the South Island and New Zealand is thus due to other sources, not misclassification of ethnicity.

Small numbers of cases or populations are an issue throughout the data presented, and therefore results need to be interpreted with caution.

An overview of the methodology applied for this section is provided in Appendix 2.

Life cycle stage specific cardiovascular disease mortality rates for West Coast are presented in Appendix 4.

Prevalence

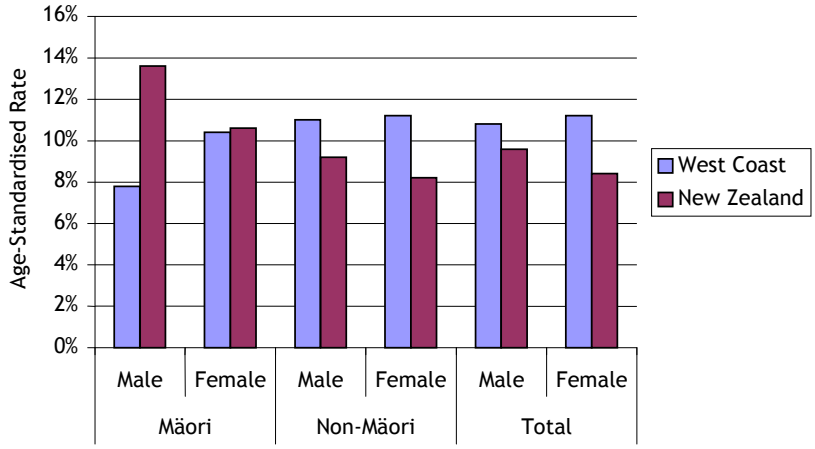
Table 69 and Figure 31 compare the age-standardised self-reported heart disease prevalence rates in West Coast to those of New Zealand. For non-Mäori, the heart disease prevalence rates in West Coast are higher then those for New Zealand. For Mäori, the heart disease prevalence rates are lower in the West Coast compared to their national counterparts. However the differences are not statistically significant.

Table 69. Age-Standardised Heart Disease Prevalence Rates (including 95% CIs), West Coast and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	New Zealand
Mäori	Male	7.8% (3.0%, 12.6%)	13.6% (9.5%, 17.7%)
	Female	10.4% (6.9%, 13.9%)	10.6% (8.6%, 12.6%)
Non-Mäori	Male	11.0% (7.8%, 14.2%)	9.2% (8.1%, 10.3%)
	Female	11.2% (8.6%, 13.8%)	8.2% (7.3%, 9.1%)
Total	**Male**	**10.8% (7.7%, 13.9%)**	**9.6% (8.5%, 10.7%)**
	Female	**11.2% (8.7%, 13.7%)**	**8.4% (7.5%, 9.3%)**

Source: Ministry of Health 2004b.

Figure 31. Age-Standardised Heart Disease Prevalence Rates, West Coast and New Zealand, 2002 to 2003



Source: Ministry of Health 2004b.

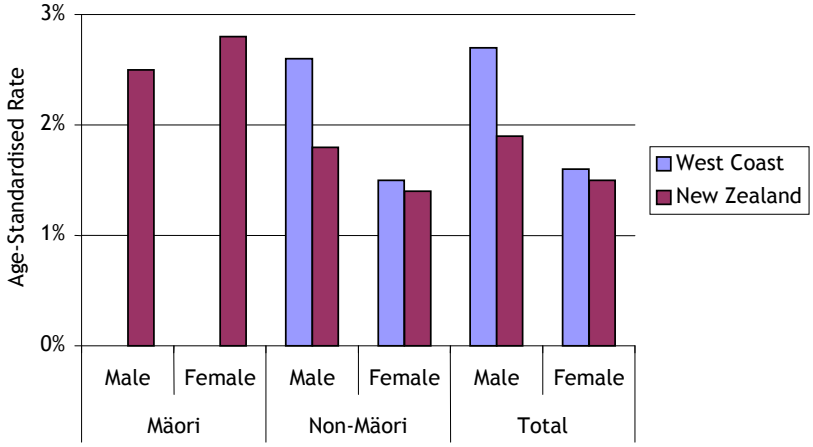
Table 70 and Figure 32 compare the age-standardised stroke prevalence rates in West Coast to those of New Zealand. The stroke prevalence rates in West Coast are higher than those of the respective population groups in New Zealand, in particular for males. Note relatively large confidence intervals accompany these numbers.

Table 70. Age-Standardised Stroke Prevalence Rates (including 95% CIs), West Coast and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	New Zealand
Mäori	Male	-*	2.5% (0.9%, 4.1%)
	Female	-*	2.8% (1.4%, 4.2%)
Non-Mäori	Male	2.6% (1.3%, 3.9%)	1.8% (1.4%, 2.2%)
	Female	1.5% (0.9%, 2.1%)	1.4% (1.1%, 1.7%)
Total	**Male**	**2.7% (1.4%, 4.0%)**	**1.9% (1.5%, 2.3%)**
	Female	**1.6% (1.0%, 2.2%)**	**1.5% (1.2%, 1.8%)**

Source: Ministry of Health 2004b.
*Notes: * Number too small to calculate age-standardised rate.*

Figure 32. Age-Standardised Stroke Prevalence Rates, West Coast and New Zealand, 2002 to 2003



Source: Ministry of Health 2004b.

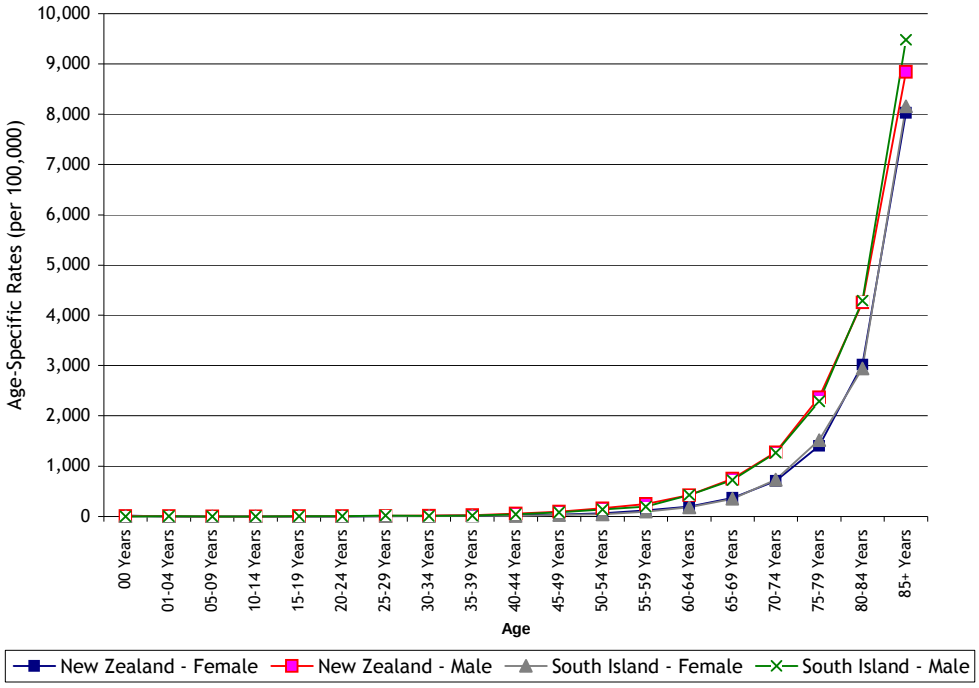
All Cardiovascular Diseases

Mortality

In 2000 to 2001, there were 22,245 deaths in New Zealand due to cardiovascular disease. Of these, 6,150 (28%) occurred in the South Island and 200 (1%) were in West Coast.

Figure 33 compares the age-specific cardiovascular disease mortality rates in the South Island to those of New Zealand. Cardiovascular disease mortality rates increase exponentially with age. They are similar between the South Island and New Zealand as a whole. New Zealand males have, at all ages, higher cardiovascular disease mortality rates than New Zealand females.

Figure 33. Age-Specific Cardiovascular Disease Mortality Rates (per 100,000), South Island and New Zealand, 2000 to 2001



Source: New Zealand Health Information Service.

Table 71 shows age-standardised cardiovascular disease mortality rates broken down by ethnic group and gender in West Coast and compares them to those of the South Island and New Zealand.

Non-Mäori males in West Coast have a higher rate of cardiovascular disease mortality than that of their South Island and New Zealand counterparts, however this result is not statistically significant. Non-Mäori females in West Coast have a similar rate of cardiovascular disease mortality to that of their national counterparts.

Table 71. Age-Standardised Cardiovascular Disease Mortality Rate (per 100,000) (including 95% CIs), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	118	336 (270,413)	417 (391,445)
	Female	538	230 (174,299)	324 (302,347)
Non-Mäori	Male	266 (218,321)	220 (212,228)	214 (210,218)
	Female	131 (105,162)	141 (136,146)	135 (132,137)
Total	**Male**	**263 (216,318)**	**224 (216,232)**	**227 (223,231)**
	Female	**140 (113,172)**	**143 (138,172)**	**145 (142,148)**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 72 shows the South Island and New Zealand show a socioeconomic gradient in cardiovascular disease mortality, with the more deprived quintiles showing higher mortality rates. This patter is not clear in West Coast.

Table 72. Age-Standardised Cardiovascular Disease Mortality Rates (per 100,000), by Deprivation quintiles and Gender, West Coast, South Island and New Zealand, 2000 to 2001

quintile	Gender	West Coast	South Island	New Zealand
1	Male	315	181	184
	Female	-*	118	122
2	Male	211	206	200
	Female	-*	126	130
3	Male	259	228	223
	Female	197	144	142
4	Male	250	270	248
	Female	149	177	158
5	Male	245	247	296
	Female	161	161	180

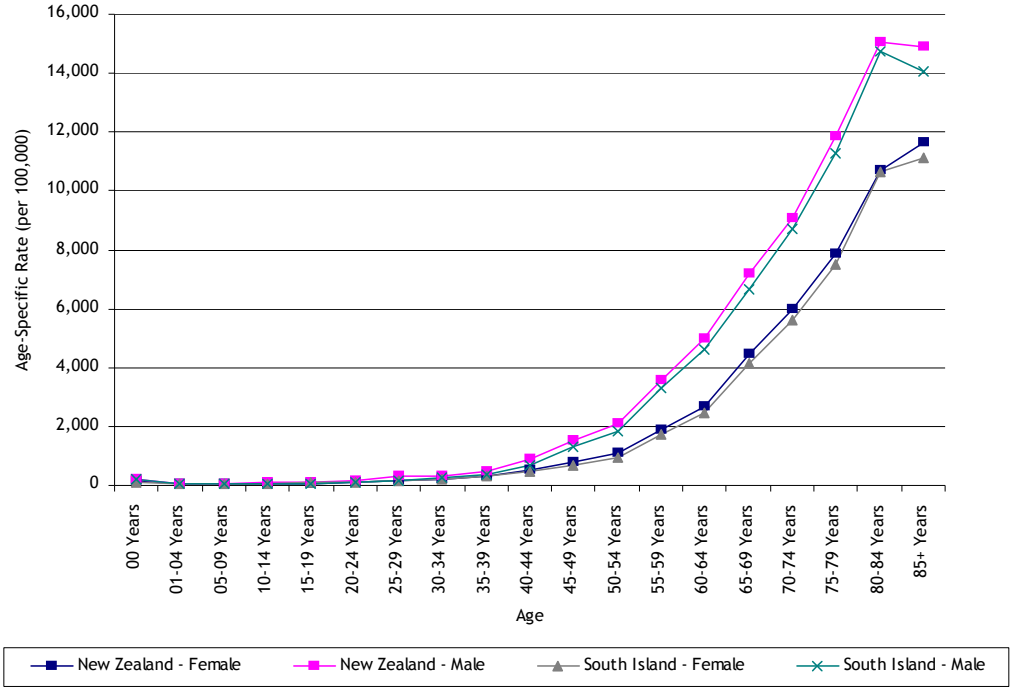
Source: New Zealand Health Information Service.

Hospitalisations[20]

In 2000 to 2001, there were 126,414 hospitalisations in New Zealand due to cardiovascular disease. Of these 31,416 (25%) were in the South Island and 1,326 were in West Coast.

Figure 34 compares the age-specific cardiovascular disease hospitalisation rates in the South Island to those of New Zealand. The rate of cardiovascular disease hospitalisation increases with age, but tends to flatten out after age 80. The rate of cardiovascular disease hospitalisation in New Zealand is, for both genders, slightly higher than cardiovascular disease hospitalisation rates for the South Island. The rate of cardiovascular disease hospitalisation is higher for males than for females.

Figure 34. Age-Specific Cardiovascular Disease Hospitalisation Rate (per 100,000), South Island and New Zealand, 2002 to 2003



Source: New Zealand Health Information Service.

Table 73 presents the age-standardised cardiovascular disease hospitalisation rates in West Coast broken down by ethnic group and gender, compared to the South Island and national average (gender and ethnic groups combined).

[20] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

Table 73. Age-Standardised Cardiovascular Disease Hospitalisation Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	521 (238, 988)	1,436 (1317, 1562)	2,186 (2133, 2240)
	Female	1,546 (1019, 2250)	1,286 (1167, 1414)	1,803 (1757, 1850)
Non-Mäori	Male	1,735 (1611, 1866)	1,378 (1357, 1399)	1,470 (1459, 1481)
	Female	1,131 (1040, 1229)	864 (850, 879)	883 (875, 891)
Total	**Male**	**1,692 (1571, 1819)**	**1,385 (1365, 1406)**	**1,528 (1517, 1540)**
	Female	**1,167 (1075, 1265)**	**878 (863, 892)**	**953 (945, 961)**

Source: New Zealand Health Information Service.

Table 73 shows that Mäori males in West Coast have a markedly lower cardiovascular disease hospitalisation rate than that of their South Island and national counterparts. This result is statistically significant. Mäori females in West Coast have a lower cardiovascular disease hospitalisation rates than that of their national counterparts, however this result is not statistically significant. Non-Mäori males and females have higher cardiovascular disease hospitalisation rates than their South Island and national counterparts. These differences are statistically significant. In West Coast, non-Mäori males have a significantly higher rate of cardiovascular disease mortality than non-Mäori females.

When using deprivation as a proxy for socioeconomic position, Table 74 shows that the socioeconomic gradient in cardiovascular disease hospitalisation is evident in the South Island and New Zealand, with lowest rates in quintile 1 and highest in quintile 5, but is not as marked in West Coast, particularly among females.

Table 74. Age-Standardised Cardiovascular Hospitalisation Rates (per 100,000), by Deprivation quintiles and Gender, West Coast, South Island and New Zealand, 2002 to 2003

quintile	Gender	West Coast	South Island	New Zealand
1	Male	1,518	1,105	1,193
	Female	1,638	696	712
2	Male	2,339	1,267	1,367
	Female	593	768	824
3	Male	1,937	1,658	1,640
	Female	1,448	964	969
4	Male	1,932	1,674	1,751
	Female	1,450	1,135	1,083
5	Male	2,568	1,665	2,010
	Female	1,259	1,066	1,349

Source: New Zealand Health Information Service.

Ischaemic Heart Disease

Mortality

Table 75 shows that, overall, the rate of ischaemic heart disease mortality in West Coast males is higher than for their counterparts in the South Island and New Zealand, but for females the rates are similar. Mäori males in West Coast have a substantially lower rate of ischaemic heart disease mortality than Mäori males in New Zealand. The reverse holds for Mäori females in West Coast. These results, however, are likely to be due to small numbers. Non-Mäori males in West Coast have a higher rate of ischaemic heart disease mortality than their counterparts in the South Island and New Zealand, but for females the rates are similar.

Table 75. Age-Standardised Ischaemic Heart Disease Mortality Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	70	248	261
	Female	500	123	168
Non-Mäori	Male	167	134	131
	Female	67	71	67
Total	**Male**	**165**	**138**	**139**
	Female	**74**	**72**	**72**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 76 shows that a socioeconomic gradient in ischaemic heart disease, acute myocardial infarction and stroke mortality is evident in the South Island and New Zealand, with more deprived quintiles showing higher mortality rates. This pattern is stronger for ischaemic heart disease and acute myocardial infarction than for stroke. A socioeconomic gradient is not evident in West Coast.

Table 76. Age-Standardised Ischaemic Heart Disease Mortality Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2000 to 2001

quintile	Gender	West Coast	South Island	New Zealand
1	Male	124	112	111
	Female	-*	57	56
2	Male	123	126	121
	Female	-*	65	66
3	Male	125	142	139
	Female	90	74	72
4	Male	181	159	154
	Female	82	87	80
5	Male	184	168	184
	Female	80	86	91

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Hospitalisations[21]

Table 77 shows that, overall, the rate of ischaemic heart disease hospitalisation in West Coast is higher than for the South Island and New Zealand. Mäori in West Coast have considerably lower rates of ischaemic heart disease hospitalisation than their counterparts in the South Island and New Zealand.

Table 77. Age-Standardised Ischaemic Heart Disease Hospitalisation Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	295	609	681
	Female	292	495	529
Non-Mäori	Male	748	615	648
	Female	411	308	300
Total	**Male**	**731**	**617**	**655**
	Female	**407**	**314**	**318**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 78 shows that a socioeconomic gradient in ischaemic heart disease hospitalisation is evident in the South Island and New Zealand, with

[21] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

highest hospitalisation rates in the most deprived quintiles. However, no clear pattern emerges in West Coast, largely due to the results being unduly influenced by small numbers.

Table 78. Age-Standardised Ischaemic Heart Disease Hospitalisation Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2002 to 2003

quintile	Gender	West Coast	South Island	New Zealand
1	Male	114	473	503
	Female	132	228	226
2	Male	2,018	560	588
	Female	-*	261	274
3	Male	903	741	708
	Female	517	347	328
4	Male	774	766	781
	Female	523	417	363
5	Male	1,299	753	830
	Female	419	440	453

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Acute Myocardial Infarction

Mortality

Table 79 shows that, overall, the rate of acute myocardial infarction mortality in West Coast is higher than that in New Zealand and the South Island. Māori females in West Coast have a considerably higher rate of acute myocardial infarction mortality than Māori females in the South Island and New Zealand. This higher rate, however, is likely to reflect the small size of this population group.

Table 79. Age-Standardised Acute Myocardial Infarction Mortality Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	Gender	West Coast	South Island	New Zealand
Māori	Male	-*	110	129
	Female	377	60	87
Non-Māori	Male	94	76	68
	Female	38	39	35
Total	**Male**	**91**	**78**	**72**
	Female	**43**	**40**	**38**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Table 80. Age-Standardised Acute Myocardial Infarction Mortality Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2000 to 2001

quintile	Gender	West Coast	South Island	New Zealand
1	Male	82	59	57
	Female	-*	27	27
2	Male	-*	70	62
	Female	-*	37	35
3	Male	46	79	72
	Female	61	41	38
4	Male	120	97	81
	Female	46	49	44
5	Male	94	94	95
	Female	46	53	49

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

When using deprivation as a proxy for socioeconomic position, Table 80 shows that a socioeconomic gradient in acute myocardial infarction mortality is evident in the South Island and New Zealand, with more deprived quintiles showing higher mortality rates. This pattern is stronger for ischaemic heart disease and acute myocardial infarction than for stroke. A socioeconomic gradient is not evident in West Coast.

Hospitalisations[22]

Table 81 shows that, overall, the rate of acute myocardial infarction hospitalisation in West Coast is similar to that for the South Island and New Zealand. However, Mäori have considerably lower and non-Mäori higher acute myocardial infarction hospitalisation rates than their counterparts in the South Island and New Zealand.

Table 81. Age-Standardised Acute Myocardial Infarction Hospitalisation Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	250	205	304
	Female	73	117	205
Non-Mäori	Male	281	234	274
	Female	138	101	114
Total	**Male**	**277**	**234**	**279**
	Female	**136**	**102**	**121**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 82 shows that a socioeconomic gradient in acute myocardial infarction hospitalisation is evident in the South Island and New Zealand, with highest hospitalisation rates in the most deprived quintiles. However, no clear pattern emerges in West Coast, largely due to the results being unduly influenced by small numbers.

Table 82. Age-Standardised Acute Myocardial Infarction Hospitalisation Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2002 to 2003

quintile	Gender	West Coast	South Island	New Zealand
1	Male	-*	195	226
	Female	34	68	85
2	Male	314	210	257
	Female	-*	92	108
3	Male	363	273	300
	Female	159	109	122
4	Male	300	292	319
	Female	183	142	139
5	Male	583	311	356
	Female	104	131	174

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

[22] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

Stroke

Mortality

Table 83 shows that, overall, the rate of stroke mortality in West Coast is lower than in the South Island and New Zealand. This is true for both genders and ethnicities.

Table 83. Age-Standardised Stroke Mortality Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	-*	22	52
	Female	38	51	69
Non-Mäori	Male	34	42	42
	Female	30	41	39
Total	**Male**	**33**	**42**	**43**
	Female	**33**	**42**	**41**

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

When using deprivation as a proxy for socioeconomic position, Table 84 shows that a socioeconomic gradient in stroke mortality is evident in the South Island and New Zealand, with more deprived quintiles showing higher mortality rates. This pattern is stronger for ischaemic heart disease and acute myocardial infarction than for stroke. A socioeconomic gradient is not evident in West Coast.

Table 84. Age-Standardised Stroke Mortality Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2000 to 2001

quintile	Gender	West Coast	South Island	New Zealand
1	Male	95	36	37
	Female	-*	40	40
2	Male	89	38	41
	Female	-*	36	38
3	Male	61	39	40
	Female	14	40	39
4	Male	23	57	46
	Female	51	53	42
5	Male	12	42	54
	Female	42	43	48

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

Hospitalisations[23]

Table 85 shows that, overall, the rate of stroke hospitalisation in West Coast is higher than for the South Island and New Zealand. Mäori males in West Coast have a substantially higher rate of stroke hospitalisation than Mäori males in New Zealand, and Mäori females a considerably lower rate. These results are likely to be due to small numbers.

[23] Hospitalisation data is influenced by the prevalence of the disease as well as admission policies.

Table 85. Age-Standardised Stroke Hospitalisation Rates (per 100,000), by Ethnicity and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	South Island	New Zealand
Mäori	Male	66	104	239
	Female	444	173	266
Non-Mäori	Male	208	161	171
	Female	148	122	131
Total	**Male**	**204**	**160**	**175**
	Female	**160**	**124**	**141**

Source: New Zealand Health Information Service.

When using deprivation as a proxy for socioeconomic position, Table 86 shows that socioeconomic gradients in stroke hospitalisation is evident in the South Island and New Zealand, with highest hospitalisation rates in the most deprived quintiles. However, no clear pattern emerges in West Coast, largely due to the results being unduly influenced by small numbers.

Table 86. Age-Standardised Stroke Hospitalisation Rates (per 100,000), by Deprivation and Gender, West Coast, South Island and New Zealand, 2002 to 2003

quintile	Gender	West Coast	South Island	New Zealand
1	Male	282	130	151
	Female	467	108	111
2	Male	-*	161	168
	Female	-*	115	127
3	Male	327	174	174
	Female	77	123	135
4	Male	206	191	195
	Female	200	164	160
5	Male	282	198	228
	Female	237	151	203

Source: New Zealand Health Information Service.
*Notes: * Number too small to calculate age-standardised rate.*

DIABETES

Reducing the incidence and impact of diabetes is one of the thirteen population health objectives for New Zealand and also a key health gain priority for West Coast District Health Board.

Diabetes is defined by abnormalities in the regulation of blood glucose levels, but its impacts are wide reaching and can affect most body systems. Although there are many types of diabetes, there are two main types that this section has concentrated upon.

Type 1 diabetes, also known as insulin dependent diabetes mellitus (IDDM) or juvenile onset diabetes:

- is an auto-immune condition, the cause of which is not clear
- is normally diagnosed in children and younger people
- is associated with rapid onset of symptoms, with diagnosis often associated with acute hospital admission
- accounts for less than 10 percent of diabetes in New Zealand.

Following diagnosis, people with type 1 diabetes are reliant on balancing injected insulin, diet and exercise to maintain health.

Type 2 diabetes, also known as non-insulin dependent diabetes mellitus (NIDDM) or adult onset diabetes:

- has traditionally been diagnosed in adults but is increasingly found in younger people
- is related to many factors including older age, obesity and lack of physical exercise, and is at least partly avoidable
- represents over 90 percent of diabetes cases in New Zealand
- is the leading cause of avoidable blindness in New Zealand.

The prevalence of type 2 diabetes is increasing both in New Zealand and around the world.

Once diabetes has been diagnosed, effective management - including treatment, education and support - is required to maintain health and prevent the development of diabetes-related complications. To improve the quality and effectiveness of treatment, services should aim to intervene at an early stage, intervene effectively, and increase the uptake of interventions. Services therefore need to be structured and well co-ordinated, with effective information flows and collaboration between providers.

Linkages

Diabetes Links to Cardiovascular Disease

Even in healthy people before clinical diabetes has developed, there is evidence that blood glucose[24] and HBA1c[25] may be independent risk factors for the development of cardiovascular disease. Once diabetes has developed it is very strongly associated with other risk factors for the development of cardiovascular disease, to the extent that lipid abnormalities, raised blood pressure and type 2 diabetes may be regarded as features of a common metabolic syndrome.

Diabetes Links to Nutrition

Nutrition influences weight. Diet and nutritional planning that prevents weight gain during adult life will have the positive benefits of reducing the risk and improving the management of diabetes. Diet is also fundamentally important in managing insulin treatment for people with both type 1 and type 2 diabetes. There is substantial and mounting evidence that changes to diet and lifestyle significantly reduce the incidence and impact of type 2 diabetes.

Diabetes Links to Obesity and Physical Activity

People who are overweight or physically inactive have a higher chance of developing type 2 diabetes than their contemporaries. Weight loss and/or increased physical activity will reduce the chance of

[24] Blood glucose: the main sugar that the body makes, mostly from carbohydrates, as well as from the other two elements of food – proteins and fats. Glucose is the major source of energy for living cells and is carried to each cell through the bloodstream.

[25] HBA1c: a blood test used to measure glycosylated haemoglobin levels that indicate glycaemic control.

these people developing diabetes in future. In New Zealand and comparable countries, increasing obesity rates have led to a significant increase in the proportion of people who develop type 2 diabetes in any given age group. For people with newly diagnosed type 2 diabetes, both weight loss and physical activity can be very effective in managing diabetes – provided that they are sustained in the long term.

Diabetes Links to Smoking

People with diabetes who smoke are at significantly higher risk of developing cardiovascular complications associated with diabetes, including coronary heart disease and stroke. It is of particular concern that rates of smoking remain high among Mäori, a population with a higher prevalence of diabetes than the general population.

National Prevalence

The impact of diabetes in terms of illness and mortality is significant. It is estimated that about 200,000 people in New Zealand are affected by diabetes, but with around half of these people having been diagnosed. The prevalence of diabetes is estimated at around 4%, although the prevalence among Mäori and Pacific people is around 3 times higher than among other New Zealanders. (Ministry of Health 2003[26])

New Zealand Health Survey 1996/97 estimated the prevalence in adults 15 years and over at 3.7% and a review of New Zealand studies estimate prevalence for Mäori to be 5-10% and 4-8% for Pacific people once the age of the population is standardised.

Results from the New Zealand Health Survey 2002/03, found that one in 23 adults (4.3%) had been diagnosed with diabetes (other than in pregnancy). There was no significant difference in the prevalence of diabetes between males and females, but that there is a significant difference in prevalence between European/Other ethnic group and Mäori and Pacific people ethnic groups (for both males and females). Prevalence peaks in the 65-74 age group. In both males and females, the prevalence of diabetes was about four times higher in NZDep2001 quintile five (most deprived) than in quintile 1 (least deprived). There were no significant differences in the proportion of males and females who received medical treatment, nor between ethnic groups. (Ministry of Health 2004[27])

In 2000, the estimated number of people in New Zealand with **known** diabetes was 115,000 and this was predicted to increase to over 160,000 by 2021.

West Coast DHB Prevalence

The Ministry of Health provides estimates of the prevalence of diabetes in the region (expected number of people in the population with diabetes) based upon a prediction formula. This data suggests that there has been a significant increase (5.6%) in the estimated prevalence of diabetes between 2001 and 2003 (see Table 87). This increase is higher than expected and likely to be due (at least in part) to a change in the method of estimation used by the Ministry (as discussed with Dr Sandy Dawson, Ministry of Health).

Table 87. Expected Number of People with Known Diabetes in the West Coast DHB Region

Ethnic Group	2001	2002	2003	2004
Mäori	110	117	125	
Pacific People	3	3	3	
All Others	742	759	775	
Total	**855**	**879**	**903**	**930**

Predicted Future Prevalence

A Ministry of Health publication[28] forecasts that, under the 'most likely' scenario, the number of people diagnosed with diabetes (mainly type 2) will increase by 78% (1.8 fold) from 1996 to 2011. The increase is greater for Mäori and Pacific people (around 130–150%) than for Europeans (around 58%).

[26] Ministry of Health (2003), Toolkit

[27] Ministry of Health , A Portrait of Health, Aug 2004

[28] Modelling Diabetes: A Summary; Public Health Intelligence: Occasional Bulletin No. 11, March 2002.

It is difficult to give accurate long-term forecasts of the future prevalence for West Coast (because of multiple variables such as changing population demographics such as growth versus migration, age, sex and ethnicity structure of the population; trends in risk factors; and levels of screening activities). However, the West Coast region can, like the rest of New Zealand, reasonably expect an increase in the prevalence of diabetes.

Morbidity and Hospitalisation

Variability in coding for the reason for admission can cause difficulty in measuring diabetes-related hospital admissions. Further complexity is added since the reason for admission often relates more to a complication of diabetes rather than the disease itself. To take account of these issues, in this report the hospital admission data is been presented in two ways:

- al hospital discharges for people with diabetes (Table 88)
- hspital discharges, by type of diabetes and reason for admissions for those discharges diabetes of diabetes-related complications are recorded as the primary reason for admission (Table 89).

There is likely to be an under-estimation of the true impact of diabetes on hospital admissions due to the occurrence of less "direct" chains of causation. For example, musculoskeletal injuries are not recognised as direct complications of diabetes, and not included in this data set. However, hospitalisations for more serious injuries may occur as a result of diabetes *complications* such as retinopathy-related vision impairment, or impaired balance or mobility following a stroke.

Table 88. Hospital Discharges for Patients with Diabetes (including all Reasons for Admission), by Ethnicity and District of Domicile, West Coast DHB Region (12 Months ending 30June 2004)

District of Domicile	Ethnicity				Total
	Other	Mäori	Pacific People	Not Stated	
Buller	96	13	-	5	114
Reefton	26	-	-	1	27
Grey	146	5	1	2	154
Hokitika	72	3	-	2	77
South Westland	9	1	-	1	11
Outside region	6	-	-	1	7
Total	**355**	**22**	**1**	**12**	**390**

When all reasons for admission are included there were 390 admissions involved 217 patients with diagnosed diabetes [of whom 136 had a single admission (63%), 76 had 2-5 admissions (35%), and 5 had 6 or more admissions (2%) – to a maximum of 11 admissions]. Seven admissions were for people not usually resident on the West Coast; all of who had a single admission only and all of whom identified in the "Other" and "Not Stated" ethnicity categories. Mäori are under-represented in these admissions, comprising 5.6% of the total, compared with an expected 13.8% (misclassification of ethnicity status should also be considered as a possible partial explanation for low admission rates for Mäori - a project was commenced in 2004 by West Coast DHB to improve ethnicity recording processes).

This data suggests that in 2003-04 an estimated 23% of all usually resident people on the West Coast DHB region with diagnosed or expected diabetes (210 out of 903) were admitted to hospital on at least one occasion.

When admissions are restricted to those West Coast residents where the primary reason for admission was either diabetes or one of the recognised complications of diabetes (Table 89), there were 112 admissions involving 70 people. Of these, 48 had a single admission (68.6%), 22 had 2-5 admissions (31.4%), with none any more than 5 admissions. Therefore, compared with the total admissions for people with diabetes (all reasons), there were slightly fewer re-admissions for the sub-group admitted for reasons directly related to their diabetes. Mäori were also under-represented in this group of diabetes-related admissions (only 2.8% compared with an expected 13.8%. This related to only 2 individuals; one of whom had 4 admissions and the other just one admission.

Excluding five people who were in long-term care, there were a total of 459 acute inpatient admission-days for this group (range 1-35 nights, with a mean stay of 4.6 inpatient nights per acute inpatient admission), plus an additional 13 day-stay admissions. Those in the group ranged in age from 11 to 95 years, with 37 admissions (33%) for people age 65 or younger (involving 22 individuals under 65 years –

or 31% of those admitted for diabetes or one of its recognised complications). Three of those in the group were aged less than 16 years old and accounted for 7 admissions.

Thus, in 2003-04 an estimated 7.7% of people with diabetes in the region needed admission to hospital for reasons directly related to their diabetes. 42 admissions (37.5%) were for loss of glycaemic control. The largest group required admission because of cardiovascular complications (51%), particularly ischaemic heart disease (41%). Other important complications included skin infections and ulceration, as well as urinary tract infections (12%). Ophthalmic and renal complications associated with diabetes did not feature in discharges from West Coast hospitals, as these are usually referred to tertiary facilities away from the West Coast for treatment.

23 admissions (20.5%) involved people with type-1 diabetes, indicating over-representation of this group which is estimated to comprise approximately 10 percent of diabetes overall. In particular, patients with type-1 diabetes comprised 55% of admissions for loss of glycaemic control, suggesting that regular review for people with type-1 diabetes should be a priority.

Table 89. Hospital Discharges for West Coast Residents only, by Type of Diabetes and Reason for Admission, West Coast DHB Region, where Diabetes or Diabetes-Related Complications are recorded as the Primary Reason for Admission (12 Months ending June 30 2004)

Reason for Admission	Type of Diabetes			
	Type 1	Type 2	Unspecified	Total
Hypoglycaemia	3	6	-	9
Hyperglycaemia/ ketoacidosis	20	13	-	33
Ischaemic heart disease:				
- angina, coronary artery disease	-	10	-	10
- myocardial infarction	-	8	-	8
- heart failure	-	28	-	28
Cerebrovascular diseases (stroke and TIA)	-	9	-	9
Peripheral vascular disease	-	2	-	2
Skin ulceration and infection	-	9	-	9
Renal disease *	*	*	*	*
UTI	-	4	-	4
Ophthalmic disease or complication *	*	*	*	*
Cataract *	*	*	*	*
Total	23	89	0	112

*Notes: * Undertaken at hospitals at other DHBs for West Coast residents - data not available.*

Co-Morbidity and Complications

People with diabetes have increased risk for serious health complications, including blindness, kidney failure, and lower extremity amputations. People with diabetes are also 2 to 4 times more likely to develop heart disease or stroke and have a worse prognosis than people without the disease. Cardiovascular disease, kidney failure, amputations, and ketoacidosis are complications of diabetes that frequently require hospitalisation.

In future is would be useful to include data on complications such as kidney dialysis (number of people currently receiving due to diabetes), lower limb amputations and diabetic retinopathy.

Management of Diabetes

Annual Check Rates

People diagnosed with diabetes are entitled to receive a free annual check with their general practitioner. The following analysis of diabetes prevalence, incidence and population on the West Coast is based on data gathered from these annual checks and supplied by the General Practices of the West Coast Primary Health Organisation (WCPHO) via Southlink Health. While this information provides a useful guide to relative percentage rates of diabetes detection and management, it has limitations, as it is not based on a complete dataset for the whole of the West Coast region. People living in areas that were covered by three of the four former Special Area General Practices remain outside the WCPHO and their information is not included in the dataset. The areas thus excluded are Karamea, Ngakawau, and South Westland (south of the Waitaha river). As such, a sizeable section of our community (some 3690 usually resident people, or 12.18% of the West Coast population as at the 2001 census) are not featured in the following analysis; thus limiting the accuracy of the results. This is an

area that the West Coast DHB is looking to address for future years in order to gain a more comprehensive understanding of the impact of diabetes in our region.

Information concerning the estimated coverage of free annual checks for the WCPHO-covered population in the region in 2003 is summarised in Table 90.

Table 90. Number of People with Diabetes who receive Free Annual Checks and Coverage Rates, West Coast DHB Region, 2003

Ethnic Group	Type 1 Diabetes	Type 2 Diabetes	Other Diabetes	Number Checked	As % of Total Annual Review
Mäori	5	33	0	38	6.8%
Pacific People	0	1	0	1	0.2%
All Others*	58	462	2	522	93.0%
Total	**63**	**496**	**2**	**561**	**100%**

Notes: Uses Data reported by WCPHO for their registered population.
** includes 6 patients for whom ethnicity is 'not stated'.*

At the time of writing, the latest available provisional data update for the 2004 calendar year (review period: 1 January – 19 September 2004) from the West Coast PHO shows the number of enrolled diabetic patients stands at 746, including 86 with type 1 diabetes and 660 with type 2 diabetes. These patients include 362 males and 384 females, ranging in age 10 to 98, including 6 aged 15 and under. Those in the latest reported group include 677 of European descent, 51 Mäori, 1 Pacific people, 9 of other specified ethnic origin and 8 who did not wish to advise the ethnicity. (WCPO, Diabetes Watch – Diabetes Feedback, 19 October 2004).

With 25,396 people registered with the WCPHO as at 30 June 2004, the latest provisional WCPHO data for 2004 would indicate a diagnosed diabetes rate among its associated catchment population of 2.94% - matching very closely to the Ministry of Health projection of 3% of the population as having diabetes. It would be reasonable to assume that a similar rate also exists among those areas of population not covered by the WCPHO data. This would indicate that there would indicate that there are likely to be some 108 diagnosed diabetic patients in the Karamea, Ngakawau and South Westland districts – bringing the total overall to around 854 – some 92 % of the Ministry of Health calculated estimated diabetic population of 930 for the West Coast region in 2004.

There remains some concern about the number of people with diabetes who may not yet be diagnosed and accessing annual checks. The opportunity for support to improve lifestyle, improve control of their diabetes and to minimise the progression to complications is then lost. Efforts are continuing to be being made by the various primary and secondary providers on the West Coast to further improve detection and the uptake of the annual checks. Indeed, improved access to GP services, training, detection, closer inter-sectoral liaison, and promotion of healthy lifestyles are all among the priority areas identified by the Local Diabetes Team for improvement in the status of people with diabetes and for reducing risk factors identified in the onset and development of diabetes within the West Coast population.

Control of Diabetes

A key performance indicator to monitor achievement in diabetes management is the average level of sugar in the blood over a period of time – glycosylated haemoglobin (HBA1c). Maintaining blood sugar levels to normal or near normal will mitigate resulting damage. Reduction in HBA1c is a marker to a reduction in potential or established morbidities. Any reduction to HBA1c levels will significantly improve health outcomes in particular of the eye, kidney, heart and nervous system.

Generally, slightly poorer control is observed for Mäori compared with "other" ethnic groups. There has been a marked improvement as measured by the percentage change in glycaemic control observed in all groups among those recorded in each year as having their annual checks over the period 2001-2003 (see Figure 5), with the exception of Pacific people [- noting that the small numbers in this category can result in large fluctuations in percentage rates from year to year]. The West Coast Diabetes team have set a goal of reducing the number of diabetics with poor glycaemic control for 2004 down to 10%, so that efforts to improve glycaemic control remain a high priority for all ethnic groups.

Table 91. Poor Glycaemic Control (HBA1c>=8%) amongst People receiving Free Annual Checks, by Ethnicity, West Coast DHB Region

Ethnic Group	2001		2002		2003	
	Number	%	Number	%	Number	%
Mäori	8	44.4	8	29.6	10	26.3
Pacific People	0	0	1	100	1	100
All Others*	77	32.1	107	28.8	123	23.5
Total	**85**	**32.9**	**116**	**29.0**	**134**	**23.9**

Notes: Uses data reported by WCPHO for their registered population.
**includes 1 patient in 2001 and 2 patients in 2002 and 2003 for whom ethnicity is 'not stated'.*

Retinal Screening

The diabetes services aim to encourage routine retinal screening examinations every 2 years (for patients without evidence of retinopathy). Table 92 presents the number and percentages of those people recorded in each year as having had received retinal examination within the previous two years over the period 2001-2003. Retinal screening coverage in the region is reasonably high both for Mäori and "other" populations, with the 2003 result only slightly less than the overall target of 77% set for 2004 by the West Coast Diabetes Team. Latest available provisional data update for the 2004 calendar year (review period: 1 January – 19 September 2004) from the West Coast PHO indicates that 627 of the 746 enrolled diabetic patients have had their eye examinations performed – a rate of 84%. (WCPO, Diabetes Watch – Diabetes Feedback, 19 October 2004)

Table 92. Retinal Screening amongst People receiving Free Annual Checks, by Ethnicity, West Coast DHB Region

Ethnic Group	2001		2002		2003	
	Number	%	Number	%	Number	%
Mäori	10	55.5	19	70.4	27	71.0
Pacific People	0	0	1	100	1	100
All Others*	124	51.7	260	69.9	393	75.3
Total	**134**	**51.9**	**280**	**70.0**	**421**	**75.0**

Notes: Uses data reported by WCPHO for their registered population.
** includes 6 patients in 2001 and 2002, along with 5 patients in 2003 for whom ethnicity is 'not stated'.*

The West Coast DHB is currently working with the West Coast PHO to introduce a visiting retinal screening camera service to the West Coast, and hopes that this service will be operational by early in 2005. This will provide greater access to services as well as an improvement to the sensitivity measurement currently achieved by GP ophthalmoscopy retinal screening on the West Coast and is expected to bring significant improvement to the longer-term management of diabetic related eye disorders such as blindness and macular degeneration for the people of the region.

Smoking Prevalence among People with Diabetes having Annual Checks

The number and proportions of people having free annual checks who are smokers has reduced for Mäori but not for the overall population.

Table 93. Smoking Prevalence amongst People receiving Free Annual Checks, by Ethnicity, West Coast DHB Region

Ethnic Group	2001		2002		2003	
	Number	%	Number	%	Number	%
Mäori	7	38.8	11	40.7	10	26.3
Pacific People	0	0	1	100	1	100
All Others*	23	9.58	48	12.9	73	14.0
Total	**30**	**11.6**	**60**	**15.0**	**84**	**15.0**

Notes: Uses data reported by WCPHO for their registered population.
** includes 0 patients in 2001 and 1 patient in 2002 and 2003 for whom ethnicity is 'not stated'.*

Latest available provisional data update for the 2004 calendar year (review period: 1 January – 19 September 2004) from the West Coast PHO indicates that 115 of the 746 enrolled diabetic patients (15.4%) who have had their annual examinations performed are current smokers. (WCPO, Diabetes Watch – Diabetes Feedback, 19 October 2004).

Longer Term Information Needs

In the longer term, it will be useful to get a greater understanding of the number of people in the community who have the pre-diabetes conditions of Impaired Glucose Tolerance (IGT); Impaired Fasting Glucose (IFG), and Metabolic Syndrome. There will need to be increased efforts to reach these people with strategies to prevent the development of diabetes.

ORAL HEALTH

This section discusses the key issues for adult oral health. The Child and Youth Health chapter includes oral health information about children and young people.

The current pattern of dental disease in New Zealand has three noteworthy characteristics. First tooth decay has reduced due to water fluoridation and the use of fluorides in other forms. Second, a concurrent attitudinal change has meant that more people choose to keep their teeth. Third, even though disease has fallen, large groups in the community still have high levels of disease (Ministry of Health 2004c).

Diseases of the teeth and gums are among the most common of all health problems and are experienced by all New Zealanders at some stage of their life. Dental problems cause much pain and discomfort and can often contribute to a loss of self-esteem (Ministry of Health 2003g). The pain and discomfort of dental disease also results in absenteeism from work and results in economic loss to the community. Most dental disease is preventable (Public Health Consultancy 2001a).

A "dental transition" is occurring in New Zealand in which an increasing proportion of older New Zealanders are keeping their natural teeth. This is thought to be due to a number of factors, such as improvements in oral health, shifts in societal norms with respect to tooth retention and changes in the dental profession's treatment provision (Thomson et al 2003). A 1991 study (Cutress and Hunter 1991) predicted that New Zealanders' future oral health and use of dental services would decrease due to a continuing decline in dental caries. However, more recent evidence suggests that this predicted decrease in disease has not occurred uniformly across the population, and that factors relating to the cost, access, appropriateness, and acceptability of dental services are at least partially responsible for this (Jamieson and Thomson 2002). It has also been shown that older people, categorised as being 50 plus, are a caries-active group, experiencing new disease at a rate which is at least as great as that of adolescents (Thomson 2004a).

Oral Health Status

Social, cultural and economic factors influence oral health as they do general health (National Health Committee 1981). It is apparent that there are significant inequalities in oral health status between different population groups particularly Mäori and Pacific people and low socioeconomic groups. Good dental health is generally associated with being European and middle class; older, institutionalised people and people with disabilities, ethnic minorities and low socioeconomic status (SES) groups are disproportionately represented among those who are dentally disadvantaged (Jamieson and Thomson 2002). Socioeconomic differences in oral health reduce during school years when children generally have access to free dental care but these inequalities re-emerge in adulthood. Factors such as maternal oral health and maternal education levels are believed to influence child oral health with adult oral health thought to be strongly influenced by childhood experiences, such as knowledge of dental hygiene and access to services (Public Health Advisory Committee 2003).

A study (Thomson et al 2004a) in 2004 looked at the socioeconomic inequalities in oral health in childhood and adulthood and found that childhood disadvantage has an enduring effect on oral health. This is of particular note because in New Zealand the dental care system ensures access to state-funded free dental care until 18 years of age when there is an abrupt transition to self-funded dental care. The study showed that profound socioeconomic differences had re-emerged in adults at 26 years of age after having been very much reduced during school years. This suggests that while universal access may lessen the effect of SES inequity, the effect does not persist once universal access ends.

Factors Influencing Access to Oral Health Services

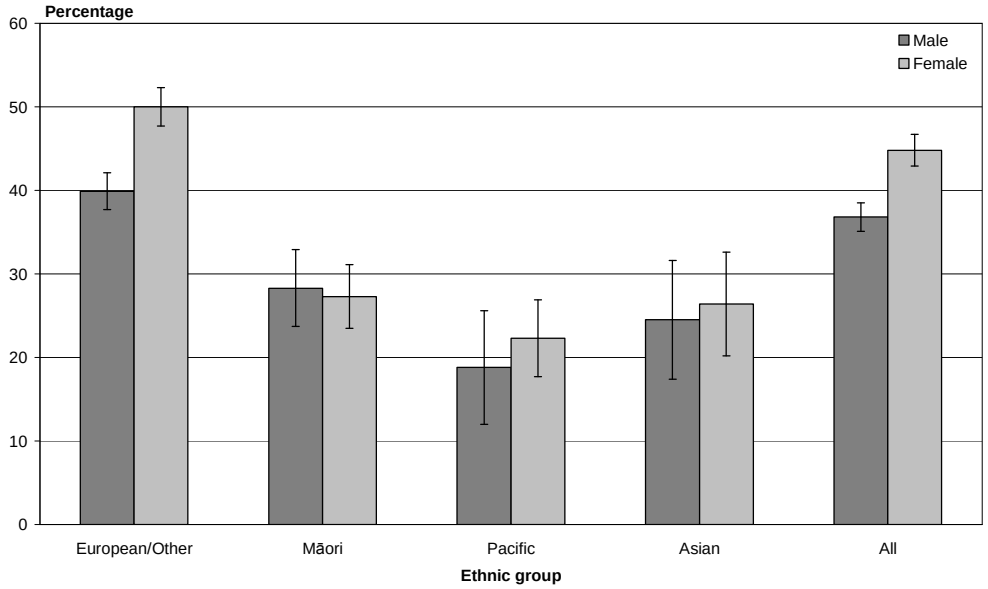
Economic and geographic factors influence use of dental services, but the relationship is not simple. Unlike other personal health services, there is considerable private-sector spending on oral health through either medical insurance or out-of pocket payments, principally by adults (Ministry of Health 2003c). A Dunedin study in 2002 found that having to pay privately for dental care appeared to be a substantial barrier with over 80% of people mentioning cost as a deterrent to regular dental care (Jamieson and Thomson 2002). Although dentistry is perceived as costly, removal of financial barriers to care has not shown to increase demand markedly (Dixon et al 1999). A study undertaken on the West Coast of the South Island in found that geographic isolation and lack of choice of dental practitioner do not appear to be factors in determining self-utilisation (Dixon et al 1999). However, a study of dental health in the Chatham Islands in 2003 found that adults there may have been dentally

disadvantaged due to limited dental service access and dentist availability (Jamieson and Thomson 2003).

The Dunedin study also found that compared with past national and regional oral health surveys a higher proportion of respondents rated their oral health poorly, did not pay for their last dental treatment and received their last dental care from a public dental service. Although the study was small in scale and was conducted in an area in which there is access to low-cost dental care through the School of Dentistry, University of Otago, the findings are considered a useful contribution to the overall picture of the use of dental services by New Zealanders (Jamieson and Thomson 2002). This is particularly so as there is very little information available on adult oral health as there is no formal way of collecting and collating data, as there is with child and adolescent dental care.

Two characteristics associated with poorer self-reported dental health and infrequent use of dental services are lower socioeconomic status and self-reported dental anxiety (Dixon et al 1999). Dental anxiety is common and has been described as the main reason for avoidance of routine dental care (Neverlien 1994). Moreover, only about 50% of the New Zealand population utilise dental services regularly, the needs of the remaining 50% being met on a largely *ad hoc* basis (Jamieson and Thomson 2002). Age and social class (the latter represented by income and education) are most often reported to be associated with unfavourable dental attendance patterns, with routine use of services declining across age groups and being lowest among individuals of lower social class (Dixon et al 1999). The social impact of oral conditions due to episodic dental visiting behaviours is evidenced by feelings of self-consciousness or embarrassment because of problems with teeth, mouth or dentures (Dixon et al 1999).

Figure 35. Seen Dentist or Dental Therapist in the last 12 Months, by Ethnic Group and Gender (Age-Standardised), New Zealand



Source: Ministry of Health 2004g.

Overall, four out of ten adults (40.4%; 39.1–41.7) had seen a dentist or dental therapist in the last 12 months.

Females (44.8%; 42.9–46.6) were significantly more likely than males (36.8%; 35.1–38.6) to have seen a dentist or dental therapist in the last 12 months.

In both males and females, European/Other were significantly more likely to have seen a dentist or dental therapist in the last 12 months than other ethnic groups (see Figure 35).

Reducing Inequalities

Oral Health is one of the 13 population health objectives identified in the New Zealand Health Strategy. The value and priority placed on oral health, and the individual's perceptions of the value of health visits, means that people use dental services in different ways (Dixon et al 1999). The extent to which dental health services interventions can reduce oral health inequalities must recognise the enduring effect of childhood disadvantage on oral health (Thomson et al 2004a).

Water fluoridation is an effective public health measure for dental health and can reduce dental decay by 20-60%. As such it makes an important contribution to reducing oral health inequalities (National Health Committee 2003). Water fluoridation is also shown to reduce the rates of dental decay by 20-60 per cent. It also decreases the pain and suffering associated with decay, as well as the cost and risks of hospital treatment for severe dental disease. It is a highly effective public health measure for dental health, particularly for Mäori and disadvantaged people, such as low socioeconomic groups, who would benefit most from fluoridation (Public Health Consultancy 2001a).

Dentate older people should also be the target of intensive monitoring and preventative efforts at both the clinical practice and public health levels. There is no easily identifiable "magic bullet" for preventing caries in that age group, but the use of evidence- based preventative interventions (such as fluoride) should suffice (Thomson 2004a).

Three distinct strategies have been identified for reducing the inequalities in oral health (National Health Committee 2003):

(a) changing basic socioeconomic determinants, such as reducing the prevalence of poverty and improving educational and employment opportunities

(b) changing intermediary factors between oral health and its socioeconomic determinants, such as increasing availability of topical fluoride

(c) developing oral health services, which are more suitable, both by developing new services where appropriate, and by making appropriate changes to existing services.

It has been noted that the first of these has the greatest potential for reduction inequalities, but that it is likely to be the most difficult and involve the greatest delay (Thomson et al 2004a).

INTERPERSONAL VIOLENCE

Interpersonal violence is an internationally recognised Public Health issue. It is a preventable form of harm and social disruption, with wide ranging and long lasting health, social and economic effects on individuals, families and society.

The prevalence of interpersonal violence varies according to the type and definition of violence. Interpersonal violence has two categories. Firstly 'family violence', which is perpetrated amongst family members, and includes child abuse, partner violence and elder abuse. Secondly, 'acquaintance and stranger violence', which includes assault, stranger rape or sexual assault, youth violence, violence occurring during property crimes and violence in institutional settings such as schools, workplaces and hospitals (Waters et el 2004).

In line with the Ministry of Health's identified areas of focus, this chapter concentrates on 'family violence' and on 'acquaintance and stranger violence' occurring in schools and communities.

Family Violence

Family violence involves the use of power and control by one person to violate another person's human rights. The Department of Social Welfare (1996) defines family violence as

> *"a range of behaviours perpetrated by partners and former partners, family members, household members and within other close personal relationships. Family violence encompasses physical abuse, sexual abuse, psychological abuse, which is defined as including intimidation, threats of physical, sexual or psychological abuse and (in relation to a child) causing or allowing the child to witness physical, sexual or psychological abuse of another"* (Department of Social Welfare 1996).

Family violence affects the psychological, physical, cultural, mental and spiritual wellbeing of the victim and to a lesser degree, the abuser (Ministry of Health 1998). Family violence can result in physical injury, depression eating and sleeping disorders, drug and alcohol abuse (Ministry of Health 1998), and death (Department of Social Welfare 1996). Physical manifestations include: epilepsy, burns, fractures, soft tissue injuries damaged hearing and vision, and damage to teeth (Clark 2003).

Family violence has no boundaries. It crosses all cultures, classes and ages in New Zealand society. Mäori and Pacific people are considered to have a disproportionately high experience of family violence (Ministry of Health 1998). People with disabilities, older people, individuals experiencing mental illness, as well as immigrants and refugees are thought to be particularly vulnerable in this regard (Ministry of Health 1998).

It has been reported that violence initiated by intimates is more severe than violence perpetrated by strangers (Sisely et al 1999). Furthermore, in New Zealand between 1988 and 1993, 40% of all homicides were a result of domestic violence. In addition to this, 4% were the direct result of child abuse (Department of Social Welfare 1996).

Partner Violence

Partner violence is a pattern of power and control, whereby one partner exerts power and control over the other with the intention of causing physical, psychological or sexual harm, or controlling their partner's thoughts, beliefs or actions.

Partner violence can result in physical injury, anxiety, depression, loss of appetite, eating disorders, chronic pain, loss of sleep, posttraumatic stress disorder and suicidal behaviour (Clark 2003, Everingham 2000). In fact, family violence is the highest precursor of female suicide or attempted suicide, with up to 80% of these linked to domestic violence (Everingham 2000). Furthermore, psychological abuse is more prevalent than physical and sexual abuse, when perpetrated by men against women, and may result in greater negative effects (Semple 2002).

In one Community based New Zealand study, 26% of women sampled were experiencing psychological distress. Of these women 17% reported they had experienced violence by a family member at some time in their lives. Further, 12% of all cases of psychological distress and 7% of all cases of serious physical illness were attributable to Partner Violence (Kazantzuis et al 2000).

Reported prevalence rates of partner violence range between 17% and 52% (Poorman 2001; Ristock 2002), with the large range being partly explained by the difference in definitions[29]. While true prevalence rates are difficult to find/calculate[30] current literature suggests that the perpetration of violence in intimate heterosexual and same sex relationships occurs at similar rates and severity (Coleman 1994; Hamburger 1996).

The largest burden of intimate partner violence, however, is that perpetrated by men against their female partners (Waters et al 2004[31]). A review of the Domestic Violence Act (1995), carried out in 1998, reported that 96% of protection orders are granted against men, 35% involved husbands and 50% de facto partners (Atkin 1998). However, there is a lack of knowledge about the extent of family violence concerning male victims (of female partner violence) or same sex partners. These groups also experience barriers in accessing legal protection and social support, so the use of rates of service utilisation as prevalence, can mask the extent of violence perpetrated by women against their male partners, or in same sex relationships.

The New Zealand Women's Safety Survey (Morris 1998) (excluding women in relationships with women) found that:

- one in seven women reported they had experienced at least one act of physical or sexual abuse by their current male partner. The figure was one in four for Mäori
- 2% of these women reported they had experienced 10 or more acts of physical or sexual abuse by their partners
- Mäori women were more likely than non-Mäori to report that they had experienced one act of physical or sexual abuse, or more than 10 acts of physical or sexual abuse
- 1% of women who had reported abuse, had been treated or admitted to hospital as a result of their current partners violence, a further 1% reported they had received medical treatment from a primary care doctor as a result of their current partners violence. 3% reported that they had been afraid that their current partner would kill them. In each case, the figures were higher for Mäori.

Over the past 10 years, New Zealand has experienced a rise in the discussion of partner violence as an important public health issue deserving of screening in primary care settings. In 1994 family violence was recognised as a 'disease' in which General Practitioners in New Zealand were failing to deal with successfully (McNeil 1994). A small New Zealand study carried out in Wellington concluded women are not offended when screened for partner violence and in-fact that women want their doctors to ask them directly about abuse (McNeil 1994). More recently international research has supported this conclusion (McGeorge 2000).

Additionally, evidence suggests that routine screening in accident and emergency clinics would also be valuable. In one international study, 23% of women who said they were in the Emergency Department because of partner violence, presented with an acute traumatic diagnosis. The other 77% presented with standard medical complaints, indicating the need for screening for partner violence. Once screening is in place, disclosure rates of partner violence increased from about 4% to 30% (Everingham 2000). A New Zealand article suggest that "a case finding approach will discover only 2% of abuse but routine asking will identify closer to 25% of women who have experienced intimate partner abuse" (Clark 2003), and concludes that General Practitioners are in an ideal position to screen, and recognise partner violence and respond to it early before a crisis occurs (Clark 2003). While there have been no studies into routine screening for violence in same sex relationships, the similar prevalence rates, and severity of violence perpetrated in same sex relationships, indicates that routine screening may also be valuable in this population.

Furthermore, some consideration, should also be given to the role that public health nurses, practice nurses and midwives could play in the early identification of family violence (McNeil 1994, Everingham 2000), and the routine screening of pregnant women, particularly given the increase in the rates of partner violence during pregnancy.

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[29] When the studies included emotional, psychological, verbal and sexual abuse (as the Ministry of health's definition does), the rates reported were higher than those studies defining violence as physical (McLeod 2003).

[30] Because of the inability to know numbers of gay and lesbian people.

[31] This is due in part to the larger number of heterosexual couples, and the under-reporting of violence by same sex couples due to heterosexism and homophobia (McLeod, 2001 and 2003).

Violence during Pregnancy

Evidence suggests that partner violence often begins or worsens during pregnancy. Studies have shown that partner violence affects almost 20% of pregnant women, and is more common than placenta praevia or diabetes, diseases for which antenatal screening is available (Everingham 2000).

Exposure to violence during pregnancy increases the likelihood of miscarriages and abortions, leads to low birth weight, low weight gain, anaemia, infections (Everingham 2000) higher rates of still births, premature labour, increased risk of difficulties during pregnancy (Taft and Watson 2004) and poor attendance at antenatal care (Clark 2003).

Additionally Taft & Watson (2004) found that miscarriages or abortions are five times more likely amongst young women experiencing violence during pregnancy when compared to young women who do not. Even when researchers allowed for other factors that may contribute to problems during pregnancy, such as smoking and drinking, abused women still experienced a higher risk of experiencing complications in pregnancy (Taft and Watson, 2004).

Child Abuse and Neglect[32]

Children are also primary victims of family violence. Children are victims of either direct violence or are witnesses to the violence perpetrated against others (Department of Social Welfare 1996). Between 4% and 10% of New Zealand children experience physical abuse and approximately 18% of all children experience sexual abuse (Ministry of Health 2001c).

Furthermore, estimates of the number of New Zealand children who die each year as a result of family violence range from 8 to 12 (Department of Social Welfare 1996, Clarkson and Kenny 2001, Clark 2003).

Child abuse and neglect have long and short term effects. Follow up of children who have been physically abused, neglected, or have failed to thrive, has shown that more than 50% have long term developmental, educational and emotional consequences. Furthermore, child abuse by family members, and witnessing violence between adults have been found to be linked to most mental health problems in adulthood (Budd 2002). Victims of child abuse and neglect have been shown to experience worse Mental Health Outcomes, including longer and more frequent admissions to psychiatric hospitals, more frequent relapse, receive more psychiatric medication and are more likely to attempt suicide or to self-harm (Budd 2002).

Sexual Abuse of children has been shown to cause depression, suicidality, behavioural problems, phobia and poor self esteem. The more severe the sexual abuse the greater the probability of mental health problems, this reduces if the child tells someone and is believed and supported (Budd 2002). Another effect of sexual abuse is the transmission of Sexually Transmitted Infections. The Child Abuse Assessment Unit at Auckland's star ship hospital saw 12 cases of Genital Gonorrhoea in pre – pubertal children in the five years between 1998 and 2002. This was a significant increase on the 2 case in the previous 6 years (Kelly 2002). Child Youth and Family report that Sexually Transmitted Infections are found in between 3-13% child and youth who have been sexually abused, (Child Youth & Family 2001).

It is commonly recognised that a consequence of experiencing violence within the family of origin is the intergenerational transmission of violence, hence strengthening the cycle of violence (Department of Social Welfare 1996). If there is violence between adults in the family it is almost certainly known by the children, and both men and women underestimate what the children know (Budd 2002). Furthermore, despite the reports of parents, children witness the majority of partner violence or it's aftermath (Kelly et al 2003). In fact, 90% of children of women seeking refuge in New Zealand had witnessed violence through being present at 97% of incidents in which their caregiver was victimised (Cargo et al 2002, cited in Kelly et al 1993, p.74).

Research suggested that child neglect and emotional abuse are the most common forms of abuse and are highly destructive to the developing child (Clarkson and Kenny 2001). Children who witness or experience violence have an increased risk of experiencing social problems, and feelings of guilt, shame, worry, sadness and confusion and fear for their own and others safety (Kelly et al 2003). Witnessing violence has also been linked to nightmares, sleep disturbance, emotional distress, and regression in previously developed behaviours, such as language, as well as a fear of leaving home (Kelly et al 2003).

[32] Definitions of the age children and young people are very difficult to tie down, with different studies and indeed government departments using different age ranges for children and youth. The Children, young Persons and Their families Act (1989) defines children as under 14 years and young people as 14 to 17 Years.

The effects of witnessing violence between adults is thought to differ between boys and girls, with girls becoming introverted, distressed and having increased rates of bedwetting. Boys are more likely to be aggressive at school as they act out the violence (Budd 2002). Youth reporting higher levels of exposure to inter-parental violence perpetrated by their fathers, have higher rates of anxiety and conduct disorder, and property crime. Exposure to violence perpetrated by mother's results in an increased risk of alcohol abuse and dependence (Fergusson and Horwood 1998).

There is evidence also that boys will become perpetrators and girls will become victims and while this is not always the case (Budd 2002), there is an intergenerational transmission of family violence. Desol and Margolin concludes that approximately 60% of men who have been violent within their marriage report family of origin violence, whereas only slightly over 20% of the comparison group of men who are not violent within their marriage, report family of origin violence (Desol and Margolin 2004).

True prevalence of child abuse is very difficult to determine. However one indicator is the number of notifications to Child Youth and Family. In 2000/2001 Child Youth and Family responded to more than 24,500 notifications for child and youth who may have been abused, neglected or have other care and protection problems (Clarkson and Kenny 2001). This means that CYF were required to carry out investigations to determine the need for care and protection for between 2-3% of the child and youth population (Clarkson and Kenny 2001).

Child Youth and Family reports show that there has been a steady increase in notifications throughout New Zealand. There was an increase of over 10,000 notifications, to approximately 43,300, between 2002/03 to 2003/04 (Department of Child Youth and Family 2003). This increase does not necessarily mean there has been an increase in the incidence of child abuse[33], it does indicate however, that a significant numbers of children and youth in New Zealand have care and protection issues.

The 1998 review of the Domestic Violence Act (1995), found that just over 1% of applications to the family court for protection orders were made by children. While this overall percentage is low, it represents more than 70 children seeking legal protection from violence perpetrated by members of their own family (Atkin 1998).

Elder Abuse

Elder abuse, is a less studied and less discussed form of interpersonal violence and is defined as

> *"occurring when a person aged 65 years or more experiences harmful physical, psychological, sexual, material/financial or social effects caused by the behaviour of another person with whom they have a relationship implying trust"* (Age Concern 2002).

Elder abuse can be perpetrated by family members as well as by those involved in the care of older people. Elder abuse includes causing physical pain or injury, under or over medicating, intimidation, harassment, humiliation, the removal of decision-making powers, sexual abuse and illegal or improper use of funds or resources (Age Concern 2002). Neglect, (whether intentional or resulting from infirmity or lack of knowledge) involves deprivation, and the failure by a carer to provide basic necessities (Age Concern 2002).

It is generally recognised in New Zealand and internationally that between 2% and 5% (Ministry of Health 2001c, Age Concern 2002), and sometimes up to 10%, of elder people are victims of abuse (United Nations 2002).

Between 80-90% of perpetrators of abuse of the elderly are close family members, most frequently the spouse. Adult children are the main perpetrators of financial abuse and abandonment (Kerase 2004). Abusers of the elderly are as likely to be women as men, although the majority of physical violence is perpetrated by men. Victims of elder abuse are 3.2 times more likely to die in the next year than those who are not victims of elder abuse (Kerase 2004).

Elder abuse has similar characteristics as other forms of family violence, such as the powerless, dependent and isolated position of the victim, lack of family support and history of family conflict. Elder abuse and neglect have wide ranging and long term effects on an individual's physical and mental health, family relationships and living arrangements, as well as their finances (Age Concern 2002). Psychological abuse can present as insomnia, helplessness, nervousness, and hopelessness (Kerase 2004).

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[33] An increase in awareness of the seriousness of child abuse and neglect and the Importance of notifying CYF may explain some of this increase in referrals to Child Youth and Family.

Research into elder abuse in New Zealand is very limited, with most discussion being taken from anectodotal evidence or the level of use of support services (Kriechbaum and Simons 1996). Elder abuse is however, part of a continuum of intrafamilial violence, child abuse- partner abuse – elder abuse.

Elder abuse, as with other forms of family violence, is considered private and as a result remains hidden and under-reported (Age Concern 2002; Kriechbaum and Simons 1996). As a result it is rarely disclosed overtly, even by victims, who may become socially isolated. Detection of abuse by health professions is low, with GP recognition prevalence or presentation prevalence found to be less than 0.4% (Kriechbaum and Simons 1996). Suggesting that there is a lack of professional awareness of elder abuse as a problem, something which most likely occurs also in the general population.

Kriechbaum and Simons (1996) found that the majority of abusers (82.4%) were family member, most likely the spouse (41%), followed by adult children and the adult 'in law'. This was also found in another New Zealand which attempted to establish the occurrence of elder abuse in residential care facilities. The most common forms of abuse were psychological abuse, followed by financial and physical abuse, a spouse, child or other relative was named responsible in 63% of instances (Weatherall 2001).

Utilisation of elder abuse and neglect services are one indication of the prevalence of abuse and neglect experienced by elder people[34]. Table 94 demonstrates that Age Concern services have steadily increased in both the number of referrals and the number of established cases of elder abuse and neglect. Of these, 81% of all cases involved one or more individual abusers, 8% institutional abuse and 11% were reported as self neglect , not occurring in conjunction with abuse from another perpetrator. Women accounted for approximately 65% of reported cases.

Table 94. Referrals to Age Concern New Zealand 1997/98 to 2000/01

Type of Contact	Year			
	1997/98	1998/99	1999/2000	2000/01
Number of Referrals of Suspected Abuse or Neglect	706	821	897	975
Number of established Case of Abuse or Neglect	543	506	607	623
Proportion of Referrals established to be Cases of Abuse or Neglect	77%	62%	68%	64%

Source: Age Concern 2002.

Age concern statistics also show that 83% of reported cased cases involved multiple incidents of abuse, with Table 95 showing that in 56% of all cases, victims experienced psychological abuse, and 46% experienced material or financial abuse, while physical abuse was less than these, almost 1 in 4 cases involved physical abuse.

Table 95. Type of Violence Reported to Age Concern 1997 to 2001

Type of Abuse or Neglect	Number of Times Reported	% of All Cases
Psychological Abuse	869	56%
Material Financial Abuse	718	46%
Physical Abuse	334	22%
Active Neglect	217	14%
Self Neglect	204	13%
Passive Neglect	59	4%

Source: Age Concern 2002.

Institutional abuse of the elderly occurs within various settings, such as rest homes and hospitals, and when policies or practices result in abuse or neglect. Examples include, providing food that does not meet nutritional guidelines, imposing unreasonable routines, and preventing individuals from exercising choice (Age Concern 2002). Abuse of elderly in residential care is largely un-discussed, in a US study 36% of workers in long-term care facilities had witnessed physical abuse and 81% had witnessed psychological abuse of patients in the proceeding year (Kerase 2004).

[34] However, this is not a true reflection of the prevalence of abuse, because numbers are under-reported. It also only reflects access to one type of social service, which is not available in all areas of New Zealand.

In New Zealand, Kriechbaum and Simons (1996) study found that 19% of the perpetrators of elder abuse were paid carers, 11.1% were carers in rest homes and 6.5% were domiciliary care providers. Weatherall's (2001) study of elder abuse in rest homes in Wellington found 21% of perpetrators of elder abuse were facility care workers and 17% were Other abusers (including home care workers, and non related acquaintances).

Cost and Impact of Family Violence

The Department of Social Welfare (1996) acknowledges that family violence is a major problem, which affects the entire New Zealand community and generates significant social and economic costs. The social costs of family violence are largely intangible and therefore immeasurable. However, the social and economic costs of violence have an influence across a wide range of sectors including justice, education, welfare and health.

Societal costs include death, injury, poor health, inequality, reduction in quality of life, an increase in violence, and the intergenerational transmission of violence (Ministry of Health 1996). There is also a social cost relating to an unhealthy population caused by injuries and psychological harm (Cresswell 1999) chronic illness (Sisely et al 1999), drug and alcohol abuse, and eating and sleeping disorders (Department of Social Welfare 1996).

Society endures the cost of the loss of social capital through mortality caused by family violence (for further information on Social Capital see Section 1: Socioeconomic Status).

In addition, family violence is passed from generation to generation when children experience or witness violence, resulting in the extension of the cycle of family violence into future generations and thus the costs are endured by the future members of society (Department of Social Welfare 1996). A report on violence within Mäori whanau comments on this phenomena suggesting that whanau violence adversely affects the whole of Mäoridom, not only partners and whanau members (Balzar, Haimona and Henare et al 1997).

Family Violence can be regarded as a 'cradle' for the perpetration of violence in the wider community. Thus, it could be suggested that all forms of violence are increased by the perpetration of violence within families. Societal costs are also incurred through educational loss and decreased opportunities for children and Youth who have experienced and witnessed family violence. Further, Family violence effects the future productivity of individuals; and has immediate implications for the education sector and the provision of appropriate health services. The intangible cost of family violence and the economic cost to society are linked, because of the necessity to provide justice, health and specific violence services.

Economic costs of family violence include; the cost of supporting the victims, imprisonment and treatment cost of perpetrators (Snively 2000), medical costs such as the use of emergency services, hospitalisation, and treatment of long term injuries and psychological illnesses (Ministry of Health 1998) and costs incurred by the Police, Family Court and the Department of Child Youth and Family. Further, there is an impacts on economic growth as victims of violence may become economically unproductive members of society, and perpetrators are unproductive during terms of imprisonment (Snively 1994).

A study into the economic cost of family violence estimate the cost in 1993/1994 being somewhere between $1.187 billion and $5.302 billion, given that equal numbers of those who seek help also report the violence to the police (Snively 1994). However, this is likely an underestimate, as the violence is not always reported. The cost alone of visits to General Practice due to family violence was estimated to be $26.5 million dollars in 1993/94 (Snively 1994).

We can only guess what the total cost 10 years on would be. There is no doubt however, that this cost is substantial, with the cost of providing women's refuge services in 1997/1998 estimated to be $19,399,694[35] (Snively 2000), and $193 million was spent on care and protection Services with an additional 3 million on prevention services by Child Youth and Family the cost in 2003/04 (Department of Child Youth and Family 2003).

The effects and costs associated with elder violence and neglect remain largely undocumented (Waters 2004).

[35] $3.3 million was government funded, the remaining $14 was provided without funding.

Acquaintance or Stranger Violence

Acquaintance or Stranger Violence is defined by the World Health Organisation as

> *"Violence between acquaintances and strangers that is not intended to further the aims of any formally defined group or cause"* (Waters 2004).

Including assault, stranger rape or sexual assault, youth violence, violence occurring during property crimes and violence in institutional settings such as schools, workplaces and hospitals, With the Ministry of Health prioritising violence that occurs in schools and communities (Ministry of Heath 2001).

Violence in Schools

Bullying

The DHB Toolkit on Interpersonal Violence states that 8% of school children experience persistent, very serious bullying (Ministry of Health 2001c). International research has found bullying in schools a common occurrence. One New Zealand Study found that 75% of students[36] indicated they had been victims of bullying using listed bullying behaviours, and 58% reported having being bullied, by their own definition (Adair et al 2000). Furthermore 44% reported that they had bullied others, 76% of all incidents involved boys, either alone or with others. Alarmingly only 21% of those who identified as being victims of bullying reported this bullying at school, and when others witnessed violence they were as likely to ignore it, as they were to report it. In-fact, almost 50% of students believed that bullying could not be stopped at school and had no strategies to deal with it (Adair et al 2000).

The New Zealand Youth Health Survey[37] concludes that bullying at school is a significant problem for some students (Adolescent Health Research Group 2003c). A disturbing number of males, 9.2%, and females, 5.2%, report being bullied at least once a week. Particularly younger students are affected, with 38.8% of year 9 students reporting being bullied at school, compared with 13.3% of Year 13 students. 31.4% of males and 31.5% of females reported that being bullied was pretty bad, really bad, or terrible. While most students feel safe at school at least most of the time, about 5% of students reported missing school at least once in the last month because they felt unsafe while either on their way to school, at school, or coming home from school (Adolescent Health Research Group 2003c).

Table 96. Bullying Findings of the Youth 2000, National Secondary School Youth Health Survey by South Island Regional and National Findings

Region	Bullied at least once a Week		Feel Safe at School	
	Males	Females	Male	Female
Canterbury[38]	10.8%	7.4%	80.3%	84.1%
Otago[39]	12.8%	7.3%	81.0%	80.5%
Southland[40]	14.2%	7.1%	79.0%	83.4%
Tasman[41]	9.3%	5.5%	77.8%	83.8%
New Zealand	**9.2%**	**5.2%**	**77.3%**	**78.8%**

Source: Adolescent Health Research Group 2003c.

A Further indication of the extent of bullying in schools are the stand-down and suspension rates in New Zealand Schools. Table 97 shows the number of student stand-downs for physical and verbal assaults on other students. Ministry of Education (2004) reports 2003 stand-down rates for physical and verbal assault on other students, West Coast results are included in the Tasman region.

36 Year 9-11 students.
37 A Recent New Zealand Study of 10,000 13-18 Year Olds
38 Adolescent Health Research Group (2003b)
39 Adolescent Health Research Group (2003d)
40 Adolescent Health Research Group (2003e)
41 Adolescent Health Research Group (2003f)

Table 97. Number of Student Stand-Downs for Physical and Verbal Assault against other Students by Region in 2003

Cases	Physical Assault on other Students	Verbal Assault in other Students	Total Number of Stand-Down Cases	Rate per 1,000 for Region
Canterbury	522	78	2519	30
Marlborough	32	7	169	25
Nelson	38	<5	168	19
Otago	140	19	621	20
Southland	124	17	537	30
Tasman	21	<5	143	19

Source: Ministry of Education 2004

14.6% of stand downs in the Tasman Region were for physical assault on students and Student suspensions for physical attacks on other students made up 12% of suspensions in the region.

Suspension rates for physical and verbal assault against other students are outlined in Table 98.

Table 98. Number of Suspensions for Physical and Verbal Assault against other Students by Region in 2003

Cases	Physical Assault on other Students	Verbal Assault on other Students	Total Number of Suspension Cases	Rate per 1,000 for Region
Canterbury	85	<5	531	6
Marlborough	21	<5	84	12
Nelson	7	0	36	4
Otago	23	<5	133	4
Southland	19	<5	100	6
Tasman	6	0	50	7

Source: Ministry of Education 2004

Violence towards Teachers

Teachers are also subject to violence in schools. The number of stand-downs and suspensions is one indicator of the extent to which this occurs. In 2003, 637 students nationwide were stood down for assaulting teachers. An increase of more than 15% from 2002 (n=537) (Ministry of Education 2004). Furthermore, 70% of teachers surveyed in an online PPTA survey, indicated that they wanted panic buttons installed in their classrooms to provide assistance from the increase in violence attacks (The News 2004).

Table 99. Number of Student Stand-Downs for Physical and Verbal Assault against Staff by Region in 2003

Cases	Physical Assault on Staff	Verbal Assault on Staff	Total Number of Stand-Down Cases	Rate per 1,000 for Region
Canterbury	93	559	2519	30
Marlborough	6	8	169	25
Nelson	7	16	168	19
Otago	9	131	621	20
Southland	11	117	537	30
Tasman	<5	24	143	19

Source: Ministry of Education 2004

Stand down's and suspensions for violence towards teachers, are predominantly for verbal assault on staff, this trend is different than for suspensions and stand downs for assaults on other students which are predominantly for physical attacks.

Verbal assault on teachers resulted in 16% of stand-downs in the Tasman Region.

Table 100. Number of Suspensions for Physical and Verbal Assault against other Staff by Region in 2003

Cases	Physical Assault on Staff	Verbal Assault on Staff	Total Number of Suspension Cases	Rate per 1,000 for Region
Canterbury	34	45	531	6
Marlborough	<5	<5	84	12
Nelson	0	<5	36	4
Otago	<5	14	133	4
Southland	<5	7	100	6
Tasman	<5	<5	50	7

Source: Ministry of Education 2004

Violence in the Community

Police Statistics for 2003/04 show a drop in the national crime rate (recorded offences) of 4.7% over the past year and an increase in the number or crimes solved by Police. Additionally these has been a reduction in the number of violent offences recorded, and the overall percentage of crime which is violent has increased slightly (10.3% of all crime in 2002/03 to 10.7% in 2003/03. Nationally there were over 45,000 violent crimes and 3,000 sexual crimes reported to Police in the 2003/04 financial year (Office of the Police Commissioner 2004a).

Violent Crime

In New Zealand between 1988 and 1993, 60% of homicides were a result of stranger or acquaintance violence in the community (Department of Social Welfare 1996). Between 1996 and 2000, assault was the fifth highest cause of injury fatalities in New Zealand, with 298 (4%) of all injury related fatalities resulting from assault (Injury Prevention Research Unit 2004).

Violent crime is increasing over the entire South Island with the West Coast experiencing a 12.3% increase in violent offences between 2002/03 and 2003/04. The increase in violent crime perpetrated, throughout the South Island is shown in Table 101.

Table 101. Percentage Increase in Violent Offences by Region

Region	Violent Offences 2002/03	Violent Offences 2003/04	% Change
Dunedin	1,491	1,576	5.7%
Marlborough	702	715	1.9%
Nelson Bay	730	935	28.1%
Rural Otago	539	711	31.9%
South Canterbury	425	484	13.9%
Southland	1,020	1,025	0.5%
West Coast	317	356	12.3%

Source: Office of the Police Commissioner, 2004 a,b,c,d

The types of violent crime perpetrated within the Police Districts[42] covering the South Island are shown in Table 102. The West Coast is included in the Tasman Region for which minor assaults followed by serious assaults are the major violent crimes reported. The west Coast numbers however, are not available separate from Nelson Marlborough.

[42] The Tasman Police District covers – Nelson Bays, Marlborough and West Coast, the Southern District Includes Dunedin, Rural Otago and Southland, and the Canterbury District includes South Canterbury.

Table 102. Police Statistics 2003/04: Violent Crime by South Island Region and National Total

Violent Crime	Tasman[43]	Canterbury[44]	Southern[45]	Nationally
Grievous Assault	141	282	226	3,351
Group Assemblies	50	42	50	446
Homicide	0	13	2	100
Intimidation/Threats	6	974	708	10,901
Kidnapping & Abdication	0	17	8	214
Minor Assaults	666	1,532	1,103	13,045
Robbery	24	199	55	1,835
Serious Assaults	643	957	1,160	15,620
Total	**2006**	**4,083**	**3,312**	**45,515**

Source: Office of the Police Commissioner, 2004 a,b,c,d

Violent Crimes are also a major cause of injury and hospitalisation. On the West Coast there were 33 injury hospitalisations caused by assault between 1996 and 2000. Table 103 shows the major causes of these injuries.

Table 103. Cause of Injury Hospitalisations resulting from Assault by Gender 1996 to 2000, West Coast

Cause of Injury	Gender			% Total
	Male	Female	Total	
Struck by or against	20	3	23	70%
Cut/Pierce	1	0	1	3%
Other Causes of Injury	0	1	1	3%
Unspecified	8	0	8	24%
Total	**29**	**4**	**33**	**100%**

Source: Injury Prevention Research Unit 2004.

Further more violent crimes contribute to injury fatalities. On the West Coast there were three injury fatalities from assault between 1996 and 2000. The major causes of these injuries are shown in Table 104.

Table 104. Causes of Injury Fatality from Assault, 1996 to 2000, West Coast

Cause of Injury	Gender			% Total
	Male	Female	Total	
Struck by or against	1	0	1	33%
Drowning	1	0	1	33%
Firearm	1	0	1	33%
Total	3	0	3	100%

Source: Injury Prevention Research Unit 2004.

Sexual Crimes

In 2003/04 there were 3,179 sexual offences were reported to the police nation wide, the lowest number of sexual offences reported over the past three years. As a percentage of crime in New Zealand however, the rate was unchanged. Sexual offences make of 0.7% of all reported crimes in 2003/04 (Office of the Police Commissioner, 2004a). Police resolved 58.4% of sexual offences in 2003/04.

More than 70% of Sexual Crimes reported to the Police were Sexual Assaults, with Sexual Affronts[46] accounting for 18%. Table 105 shows the type of crimes in each South Island region in New Zealand.

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43 Office of the Police Commissioner (2004b)

44 Office of the Police Commissioner (2004c)

45 Office of the Police Commissioner (2004d)

46 Sexual Affronts include Indecent Acts (including touching, over or under clothes), intent to assault, Indecent Acts, Indecent Exposure and Offensive Exposure.

Table 105. Police Statistics 2003/04: Sexual Offences

Sexual Crimes	Tasman	Canterbury	Southern	New Zealand
Abnormal Sex	0	1	2	13
Immoral Behaviour	15	37	21	270
Immoral Behaviour/ Miscellaneous	6	43	25	144
Sexual Affronts	17	85	54	604
Sexual Attacks	107	257	120	2,285
Total	**145**	**423**	**222**	**3,179**

Source: Office of the Police Commissioner 2004 a,b,c,d.

The number of sexual offences reported in the West Coast decreased from 2002/03 to 2003/04, as with most areas of the South Island. The decrease on the West Coast was 13.9%.

Table 106. Percentage Change for Sexual Offences reported to Police 2003/04

Region	Sexual Offences 2002/03	Sexual Offences 2003/04	% Change
Dunedin	94	110	17.0%
Marlborough	33	39	18.2%
Nelson Bays	71	75	5.6%
Rural Otago	48	31	- 35.4%
South Canterbury	46	32	-30.4%
Southland	91	81	- 11.0%
West Coast	36	31	-13.9%

Source: Office of the Police Commissioner 2004 a,b,c,d.

Workplace Violence and Bullying

Workplace violence and bullying are areas of interpersonal violence which are often not considered. Workplace violence is defined by the Department of Labour as

> *"any incident in which an employee is abused, threatened or assaulted by fellow employees or by a member of the public in circumstances arising out of the cause of his or her employment"* (Department of Labour 1995).

Violence in the workplace includes sexual and other forms of harassment, verbal abuse, and threats. Physical violence also occurs but is considered comparatively rare. The causes of violence in the workplace vary, and include random violence with no clear intent, displaced anger from past situations, intimidation to achieve a desired end, cultural or religious differences, and revenge or thrill seeking[47].

The impact of violence in the workplace effects both employers and employees, including impacting on staff morale and organisational image, making retaining or attracting staff difficult, creating financial cost, absenteeism, lost productivity, and high personal cost of emotional trauma, pain, suffering, disability and death. While physical attacks are dangerous by definition, serious or persistent verbal abuse or threats and intimidation also damage individual health, particularly through anxiety or stress (Department of Labour 1995).

Workplace bullying, refers to the continuous ill treatment of a person by another individual or group at work and includes behaviour that intimidates, offends, degrades and humiliates the recipient, such as verbal abuse, threats, sarcasm, teasing and unjust criticism[48]. Workplace bullying can cause stress - related illnesses affecting work performance and personal lives, as well as causing anxiety, sleep disturbance low self-esteem, panic attacks, and loss of confidence. These in turn can result in unsafe work practices, reduced efficiency and increased absenteeism. The majority of victims of workplace bullying leave the organisation because of the personal cost. Costing the organisation between 50 and 100% of the employee's salary, and creating cost to the employer and the New Zealand economy through high staff turnover, and lost productivity (Swanwick 2004).

The full Impact or cost of being harmed at work are often not measured or recorded in official statistics. In-fact many consequences cannot be measured in direct economic terms, such as the pain

[47] www.acc.co.nz - violence at work 17/9/2004

[48] www.acc.co.nz. Workplace Bullying 17/9/2004

and isolation caused to the individual and the impact on family friends and colleagues (Department of Labour 2002). There is some suggestion that workplace bullying in New Zealand is 4 times more likely than sexual harassment and causes between 30 and 50% of all workplace stress (Swanwick 2004). One indication of the severity of the problem was, when the workplace bully hotline was established in 2003, 1100 phone calls were made in the first three days of operation (Swanwick 2004).

Statistics on the prevalence of violence in the workplace are very difficult to access. There is however, considerable discussion in medical journals about workplace violence and bullying in the nursing profession, and more recently violence and bullying experienced in schools (Ministry of Education 2004). In both instances however, discussions are predominantly around the violence & bullying that staff experience from patients or students, rather than violence and bullying perpetrated by management or amongst colleagues.

Cost and Impact of Stranger and Acquaintance Violence

As with family violence there are many Costs and Impacts both social and economic associated with stranger and acquaintance violence, and again as with family violence the social costs are largely intangible and therefore immeasurable. However, depending on the type of violence we are discussing there are different social and economic cost attached.

For example, the societal costs such as injury, poor health, loss in self-esteem, trauma, pain, suffering, depression, anxiety and stress, disability and death may result from all forms of stranger and acquaintance violence. However, workplace violence and bullying can result also in low staff morale, and recruitment and retention issues (Department of labour 1995). Further, there are financial impacts on employers such as the cost of absenteeism and a reduction in productivity, which are not associated with other forms, of stranger or acquaintance violence.

Furthermore, School Bullying has major implications around educational opportunity and achievement for individual victims, such as the implication of absenteeism, which are not associated with other forms of violence.

The intangible and the economic cost to society are linked, because of the necessity to provide justice, health and violence prevention or treatment services.

Economic costs of stranger and acquaintance violence include the cost of supporting the victims of violence, including the cost of hospitalisation, child abuse programs, sex offenders, incarceration, prevention programs, stopping violence programs, support for victims, and counselling (Snively 1994, Waters 2004). For example school bullying by peers has also been found to be linked to a board range of adverse mental health outcomes (Budd 2002), resulting in issues and costs around access to mental health and counselling services (Waters 2004).

One indication of the economic cost of violence is the calculated economic costs from homicide in New Zealand, when lost earnings, legal fees, incarceration and policing were included, Fanslow et al (1997), cited in Waters (1994) concluded the cost per homicide in New Zealand equates to $829,000 US.

MENTAL HEALTH

Prevalence of Psychiatric Disorders in our Communities

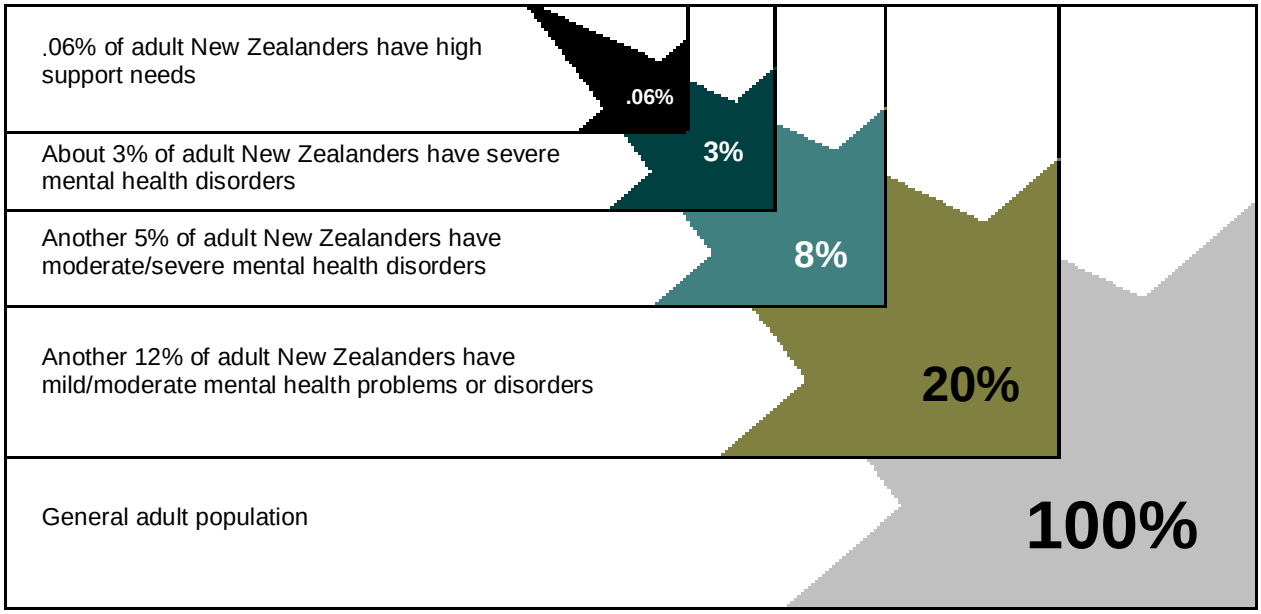
It is calculated that one in five New Zealanders will suffer from a mental illness at some time in their lives. World Health Organisation research has determined that mental illness (including alcohol and other drug abuse/misuse) accounted for almost 11% of the total global burden of human disease (measured in years lived with a disability) in 1990. This is expected to rise to almost 15% by 2020.

It also identified that five of the ten leading causes of disability worldwide were psychiatric conditions including unipolar depression, alcohol misuse, bipolar affective disorder, schizophrenia and obsessive compulsive disorder.

Based on international studies on the prevalence of mental illness (in particular, *The Tolkein Report* from New South Wales (Andrews 1991)) it was extrapolated that 3% of New Zealanders were likely to experience a serious psychiatric disorder.

This was supported by the only major community-based New Zealand study (Oakley-Browne et al 1989) which identified that approximately 20% of New Zealand's adult population have a diagnosable mental illness (including alcohol and drug disorders) at any one time. It was further estimated that 3% have a serious, ongoing and disabling mental illness requiring treatment from secondary mental health and alcohol and drug services and within that group, 0.06% have the highest support needs (see Figure 36).

Figure 36. Prevalence of Psychiatric Disorders



Source: Moving Forward: The National Health Plan for More and Better Services, July 1997.

Ministry of Health Monthly Access Targets

The Ministry of Health (MoH) has set benchmarks for access to secondary mental health services for children, young people and adults (see Table 107). These targets outlined in Table 107 are a useful guideline for determining the number of individuals who will require access to secondary mental health (**excluding access to Drug and Alcohol services**) provided by the District Health Board. These targets equate to approximately 3% of the total population seriously affected by mental illness. These targets will vary from the targets identified in the District Annual Plan, which are based on historical access statistics derived from the Mental Health Information National Collection (MHINC).

Table 107. Ministry of Health Monthly Access Targets for West Coast DHB

Age Groups	Access Target (% of Total Population)	2005 Monthly Estimated Target	2010 Monthly Estimated Target	2016 Monthly Estimated Target
0 – 9 Years	1.0%	38	33	29
10 – 14 Years	3.9%	98	75	62
15 - 19 Years	5.5%	116	122	87
20 – 64 Years	3.0%	530	519	498
65 plus Years*	3.0%	131	145	171
Totals		**913**	**894**	**847**

Source: Statistics New Zealand 2001 Census.
*Notes: * In the South Island, Mental Health services for people older than 65 years of age are primarily provided by the Care of the Elderly Services. The exception being when the person had a mental illness prior to turning 65 and has no age related conditions.*

Population projections indicate that West Coast DHB population is expected to decline by approximately 6.8% from 2005 to 2016[49]. However growth rates between age groups will vary with the 65 plus age group which is included in the 20 plus age group, expected to grow by 31.8% while the combined age groups 0 to 19 years are expected to decline by 28.2%. In New Zealand as a whole the 65 plus age group is expected to grow by 37% and the combined age groups 0- 19 years are expected to decline by 7%.

The changing population demographic will affect demand for services for the DHB. West Coast DHB in future years may require increased secondary mental health services for the adult population (20 plus). Within this adult population West Coast DHB may also be required to developed specific additional mental health services to meet the needs of the growing 65 plus age group.

While estimates based on age projections are useful for determining the quantity and type of mental health services required, other socioeconomic factors such as unemployment levels, poor housing standards and low income levels are all shown to have a detrimental effect on mental health. Other factors such as the numbers of prison inmates will also increase the demand for secondary mental health services.

Mental Health of Older People

The prevalence of serious mental illness and subsequent targets for services for older adults requires further research. As indicated above the 65 plus age group is expected to increase by greater than a third over the next 12 years, far outweighing growth in all other age groups. In older adults depression combined with physical deterioration, cognitive and sensory loss can create a negative cycle leading to further disability and deterioration in a persons well being.

Degenerative diseases such as Alzheimer's disease and dementia affect up to 20% of people over the age of 80 years. As the general population of New Zealand ages, the number of people suffering from these diseases is likely to increase.

Mental Health for Mäori

The exact extent of access needs for Mäori is unknown. However, until this need is identified, the Mental Health Commission[50] suggests that the access target for Mäori should be 6%, double that for the general population rate of 3%. Table 108 compares Mäori utilisation of provider arm services against the recommended 6%.

Table 108. West Coast DHB Mäori Utilisation of Secondary Mental Health Services, 2001 to 2003

Calendar Year	Mäori Population (Based on 2001 Census)	Volume of Mäori Accessing Services	% Accessing Services
2001	2,790	133	4.8%
2002	2,820	138	4.9%
2003	2,810	137	4.9%

Source: Mental Health Information National Collection (MHINC).

[49] Statistics New Zealand, Census 2001.
[50] Blueprint for Mental Health Services in New Zealand November 1998.

Mäori accessing secondary services has remained constant at about 4.9% for the last three years, which is below the target of 6%. In 2003 the average Mäori utilisation achieved for all six South Island DHBs combined was 3.5%.

Targets have not been established for the other ethnic groups within New Zealand.

In New Zealand Hospital admission rates for mental health or alcohol and drug related disorders are 40% higher for Mäori than for non-Mäori (Ministry of Health 2001h); Mäori have higher rates of presentation to crisis, acute and forensic services; and Mäori are more likely than non-Mäori to suffer from alcohol and drug disorders (MHC 1998).

A 2001 review of forensic services in New Zealand found that 50% of inpatients in forensic services at that time were Mäori. Overall Mäori represented 15% of all people receiving treatment (Ministry of Health 2001).

Te Waipounamu Mäori Mental Health Strategy 2003-2006

The Kaupapa[51] Mäori Mental Health Review has informed the development of three key strategies for Te Waipounamu (South Island) region to achieve over the next three years.

The three strategies are:

- strategy 1: Growth Path for Mäori Mental Health

  One of the key components of the strategy is to have a 50% growth in Kaupapa Mäori mental health services over a three-year period. The 50% growth target equates to $2.8 million dollars, which comprises of $0.6 million of new services and $2.2 million of re-configuration of existing services.

  In terms of regional access to services, the aim is for an improvement for Mäori to access mainstream services from 2002 levels of 2.26% to 3.96% in 2006.

- strategy 2: Project Development

  Eight key projects will be initiated and monitored over the next three years by Te Roopu Awhiowhioi[52].

- strategy 3: District Health Board Guidelines for Provider Contracting, Workforce Development, and Mainstream and Kaupapa Mäori NGO Relationships.

Delivery of Secondary Mental Health Services in West Coast[53]

West Coast DHB provides secondary mental health services for people with serious, ongoing and disabling mental illness through provider arm services and a number of Non Government Organisations (NGOs).

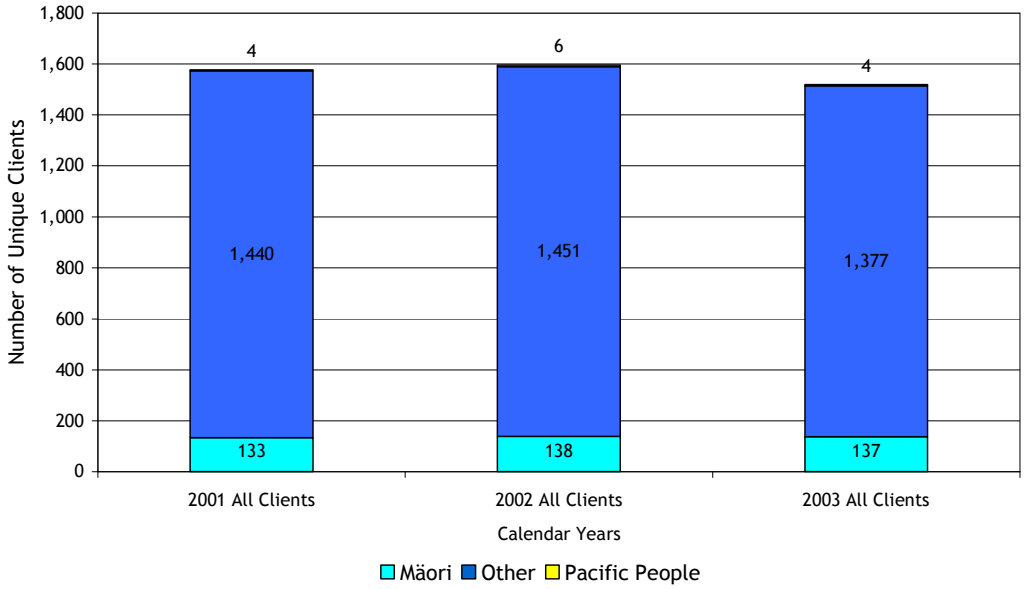
Figure 37 shows West Coast DHBs client utilisation of provider arm services by ethnicity over the last three years. This information is obtained from data reported by West Coast DHB to the Mental Health Information National Collection (MHINC). MHINC data does not currently capture utilisation for NGOs however most NGO clients will have contact with a provider arm service and are therefore recorded in this information.

[51] Kaupapa Mäori Services refer to Mäori centred services, which are offered within a Mäori cultural context.

[52] The name of the Kaupapa Mäori Health Services Review Team, translated means a 'whirlpool of knowledge rising forth'

[53] Including Alcohol and Other Drug Services.

Figure 37. Client Utilisation by Ethnicity (West Coast DHB Provider Arm)

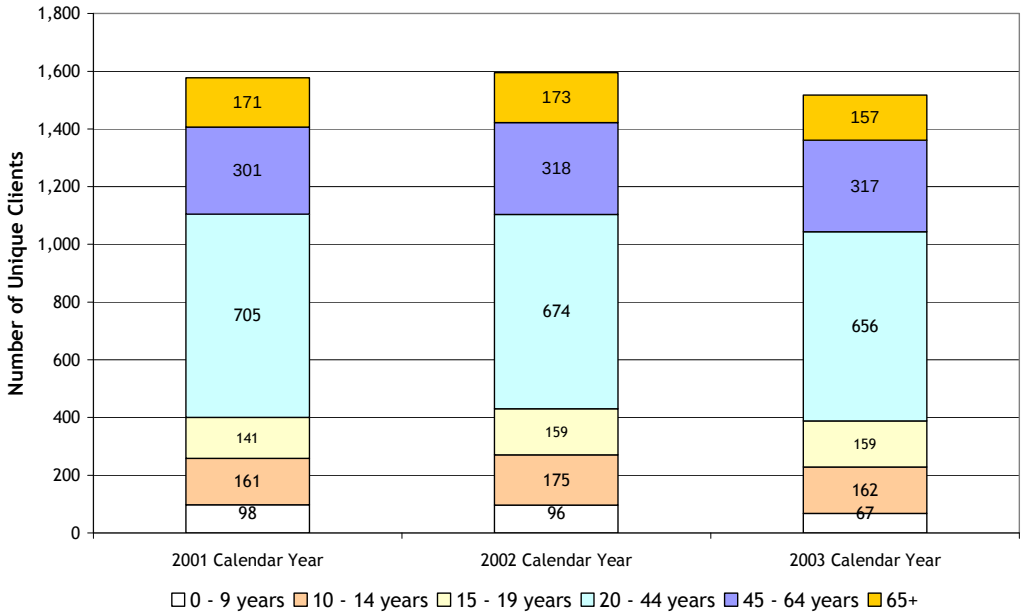


Source: MHINC 2001 to 2003

Total client utilisations in 2003 has decreased by approximately 4.8% from 2002. Māori utilisation has remained relatively constant over the three-year period. Pacific people utilisation numbers are to small to make any meaningful comparisons.

Figure 38 below shows the number of clients by age groups who have received a secondary mental health service over the last three years.

Figure 38. Client Utilisation by Age (West Coast DHB Provider Arm)



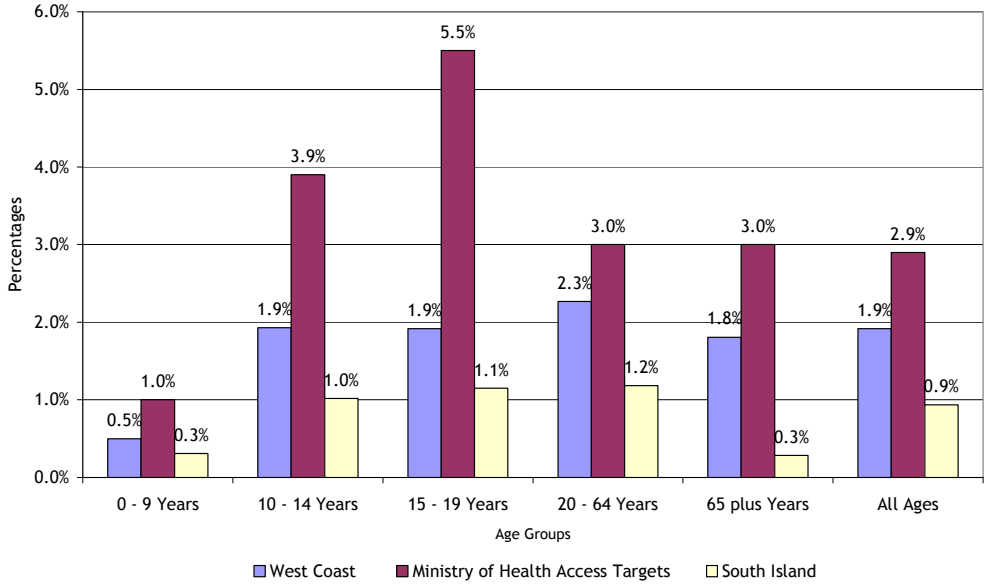
Source: MHINC 2001 to 2003

Figure 39 below shows West Coast DHB average monthly access levels compared to Ministry of Health access targets and the South Island monthly average for the 12-month period, June 2003 to May 2004. All six South Island DHBs are not meeting the Ministry of Health access targets but the West Coast DHB overall access rate of 1.9% is well above the South Island average access rate of 0.9%.

The low access rate for West Coast DHB could be due to:

- actual demand lower than 3%
- insufficient services to meet the 3% of population requiring secondary mental health services
- incomplete reporting of data to MHINC.

Figure 39. West Coast DHB Monthly Average Access Rates for the Period June 2003 to May 2004

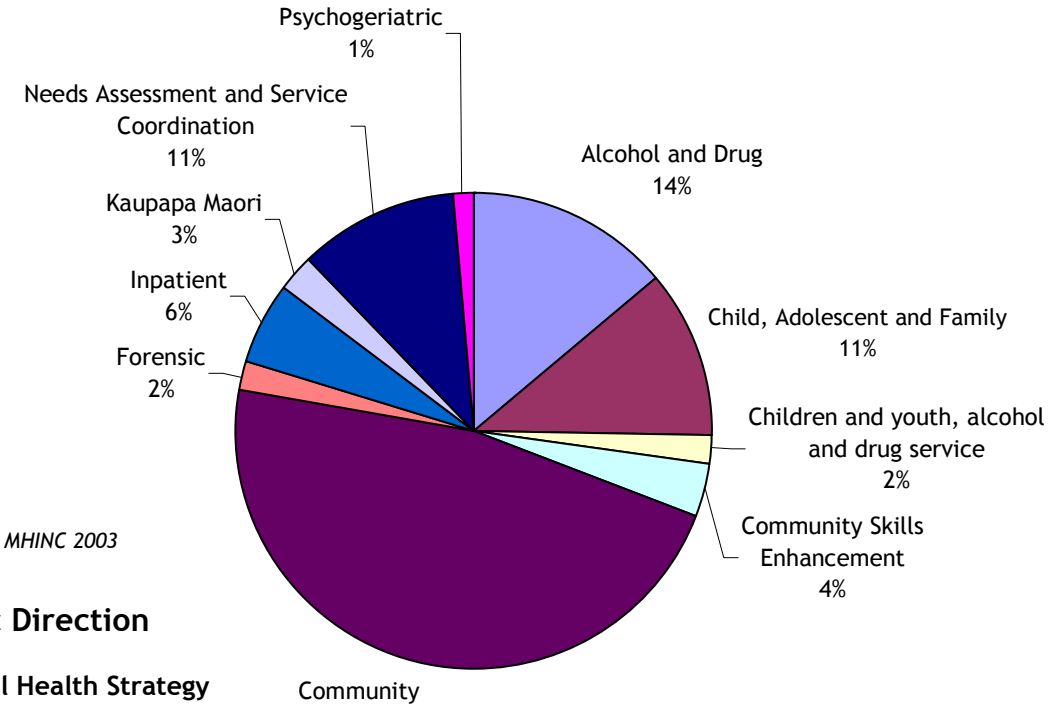


Source: MHINC 2003

Percentage of Clients Seen by Mental Health Service Team Types in 2003

West Coast DHB provided services to approximately 1,518 unique clients in the 2003 calendar year. Figure 40 below shows the percentage of clients seen by mental health team types in 2003.

Figure 40. Percentage of Clients Accessing Provider Arm Mental Health Services by Team Type



Source: MHINC 2003

Future Strategic Direction

The National Mental Health Strategy

The National Mental Health Strategy is founded on three key documents:

- Looking Forward, *Ministry of Health (1994)*

- Moving Forward, *Ministry of Health (1997)*
- The Blueprint for Mental Health Services in New Zealand: How Things Need to Be (Mental Health Commission, 1998).

The principle aim of the national mental health strategy is to provide more comprehensive services for the 3% of people experiencing serious mental disorders.

From a needs analysis perspective, the Mental Health Commission's *Blueprint for Mental Health Services* is the most significant in that it attempts to quantify the service need based on a population formula. To achieve this it provides detailed guidelines on the type and volume of services needed and identifies the resources required to provide a fully comprehensive range of mental health services per 100,000 population.

The *Blueprint* is currently used by Government to determine the funding provided to DHBs for mental health. This funding is then ring-fenced to ensure that mental health services can continue to grow and that the funding does not get redirected into other areas of healthcare provision.

In recognition that the goals of the National Mental Health Strategy have largely been achieved or reached the end of their current 'life-span', the Ministry of Health has embarked on developing a second National Mental Health Plan. This will update or supersede the existing strategy and it's component documents. The draft of the Second National Mental Health Plan will go out for public consultation later this year (2004).

In addition the Mental Health Commission has developed an issues paper: *Applying the Blueprint*. This paper is currently out for sector consultation (as of April 2004). The purpose of the paper is to prepare guidance notes for DHBs regarding the application of the *Blueprint* and to identify what needs to be included in an updated *Blueprint*.

Table 109 gives a snapshot of the current resources and services funded in West Coast DHB for the 2003/2004 financial year. It also provides an overview of the resources and services considered necessary to provide comprehensive mental heath services (including alcohol and drug services) to the 3% of the population requiring specialist mental health and alcohol and drug services by the year 2010.

West Coast DHB has achieved approximately 132% of the 2010 targeted volumes using 2003/2004 funding levels. **On average the six South Island DHBs are achieving approximately 79% of the 2010 targeted volumes.**

Table 109. Blueprint Service Categories for West Coast DHB

Blueprint Services	West Coast DHB 2003/2004 Volume	West Coast DHB 2010 Volume Target	% of 2010 Target Achieved
General Adult Services (20 – 64 years)			
Acute inpatient	10.0	4.7	214.1%
Medium term and extended inpatient services	24.2	3.6	664.3%
TOTAL Adult inpatient - Beds	**34.2**	**8.3**	**411.3%**
Community mental health teams, including General hospital liaison, Primary service liaison, Early intervention, Mental health and intellectual disability – specialist expertise	24.0	16.2	148.2%
TOTAL Adult community clinical - FTEs	**24.0**	**16.2**	**148.2%**
Community residential beds level I&II	19.1	9.1	209.9%
Community residential beds level III+, including Residential intensive long-term	0.0	12.6	0.0%
TOTAL Community residential - Beds	**19.1**	**21.8**	**87.9%**
Non residential home based support	10.1	4.7	215.8%
Day activities and living skills, plus Employment & educational support, Rural outreach	8.1	6.2	129.2%
Advocacy/peer support – consumers	1.7	1.3	132.8%
Advocacy/peer support – families	2.2	0.8	283.3%
TOTAL Adult non-clinical support - FTEs	**22.0**	**12.9**	**170.1%**

Blueprint Services	West Coast DHB 2003/2004 Volume	West Coast DHB 2010 Volume Target	% of 2010 Target Achieved
A&D – Community assessment and treatment, including Home & community detox	4.8	5.1	95.3%
Specialist expertise, Community teams	1.2	1.0	115.4%
TOTAL A&D Community - FTEs	**6.0**	**6.1**	**98.7%**
A&D – Methadone specialist	29.2	27.5	106.2%
A&D – Methadone GP	11.8	18.1	65.4%
TOTAL Methadone treatment - Places	**41.0**	**45.6**	**90.0%**
A&D – Residential treatment, plus Supported living services, Social, medical & inpatient detox, Dual diagnosis residential rehabilitation	3.9	4.0	97.2%
TOTAL A&D Inpatient and community - Beds	**3.9**	**4.0**	**97.2%**
C&Y – Acute inpatient, plus C&Y secure inpatient	0.5	0.7	81.8%
C&Y – Community residential services	0.0	0.6	0.0%
C&Y TOTAL BEDS	**0.5**	**1.2**	**44.6%**
C&Y – Day programmes, plus Respite Services	0.1	1.3	10.6%
C&Y TOTAL DAY PROGRAMME PACKAGES	**0.1**	**1.3**	**10.6%**
C&Y – Community mental health teams	7.7	7.9	98.3%
C&Y TOTAL COMMUNITY FTEs	**7.7**	**7.9**	**98.3%**
Forensic – all inpatient services	1.1	1.9	57.7%
Forensic – Community residential rehabilitation	0.0	0.2	0.0%
FORENSIC TOTAL BEDS	**1.1**	**2.1**	**51.4%**
Forensic – Community liaison services, including Court liaison, Prison liaison, Specialist expertise	1.1	0.7	172.7%
FORENSIC TOTAL FTEs	**1.1**	**0.7**	**172.7%**
Regional Specialist Total Beds	**0.4**	**1.1**	**34.2%**
Regional Specialist Total Clinical FTEs	**1.6**	**4.5**	**34.9%**
TOTAL - FTEs	**62.4**	**48.2**	**129.5%**
TOTAL - Beds or care packages	**59.3**	**39.8**	**149.0%**
TOTAL - Methadone	**41.0**	**45.6**	**90.0%**

Source: Ministry of Health and The South Island Shared Service Agency

The Mental Health Epidemiology Study (MHES) - Te Rau Hinengaro

The Mental Health Epidemiology Study (MHES) - Te Rau Hinengaro commenced in November 2003. The research will provide us with a population profile using age, gender, ethnicity, geographical areas, and describe other circumstances or factors that contribute to mental illness and how to target resources.

It aims to undertake a nation-wide survey of 12,000 households (targeting people over the age of 16 years and including statistically relevant sample groups of the Mäori and Pacific people population).

The collection of data will be not completed until the end of 2004 with the final report due for publication in mid 2006. Some of the early analytical reports from this study should be available in late 2005.

Suicide and Intentional Self-Harm

For information on youth suicide see the Child and Youth Health chapter.

Reducing the rate of suicides and suicide attempts is one of the thirteen population health objectives in the New Zealand Health Strategy (Ministry of Health December 2000). Suicide and deliberate self-harm (Minister for ACC 2003) is also one of the six national injury prevention priority areas in the New Zealand Injury Prevention Strategy.

Individuals at greatest risk of suicide include men, mental disorders (in particular, mood, substance use and psychotic disorders), a history of admission and contact with services for mental health care, exposure to recent stressful life events and low socioeconomic status. The single most significant risk factor for suicidal behaviour in adults is mood disorder. (Ministry of Health 2001d)

Suicidal behaviours occur on a continuum from idea and thoughts about suicide, which are not acted on, through to suicide attempts and completed suicide (Ministry of Health 2001d). A far greater number of people attempt suicide each year than die by suicide (see Table 111 and Table 112). Suicidal behaviour is preventable, and is a significant public health issue in New Zealand. It is a major source of morbidity and mortality, and is a significant contributor to social and health costs (Ministry of Health 2003g).

There is general agreement that a comprehensive approach to suicide prevention needs interventions to address the following eight themes (Ministry of Health 2001d):

1. mental health promotion including strengthening social cohesion and providing supportive environments
2. effective, accessible and responsive services for people with mental disorders or suicidal behaviours
3. training and skill development on suicide risk assessment and management
4. a managed approach to media and publicity about suicide
5. reducing access to the means of suicide
6. postvention management and support for families and friends following suicide
7. data collection, information dissemination and research
8. a framework for community action.

Suicide in New Zealand

The Commonwealth Fund (2004) benchmarked and compared health care system performance in Australia, Canada, New Zealand, the United Kingdom and the United States. The report identified New Zealand as having the highest suicide rate for the population aged 15-19 and 20-29.[54]

The report Suicide Facts highlighted the following (Ministry of Health April 2004):

- the total age-standardised suicide rate in 2001 was 11.7 deaths per 100,000 population (compared to 11.2 in 2000). Males continued to have a higher suicide death rate than females in 2001 (18.3 compared to 5.5 deaths per 100,000 population)
- in 2001, people aged 20-24 years had the highest suicide rate (25.3 deaths per 100,000 population), followed by people aged 25-29 years and 30-34 years (21.7 and 21.2 per 100,000 population respectively)
- in 2001, the total number of suicides was 499, up from 458 in 2000 but down from 516 in 1999. The 2000 number was the lowest total number since 1990 (455)
- the total rate of youth suicide (15-24 years) increased with 20.0 deaths per 100,000 population in 2001 compared with 18.1 per 100,000 population in 2000
- New Zealand has the highest male youth suicide rate (15-24 years), and the second highest female youth suicide rate compared to other OECD countries
- Mäori continue to have higher suicide rates than non-Mäori in 2001. In 2001, the rate of suicide among Mäori was 13.4 deaths per 100,000 population compared with 11.2 for non-Mäori
- the 2001 suicide rates for Mäori males and females were 20.7 and 6.8 per 100,000 population respectively and for non-Mäori males and females were 17.7 and 4.9 per 100,000 population respectively
- the Injury Prevention Research Unit (IPRU), University of Otago, has estimated that in 2000 suicide and intentional self-inflicted injury made up the greatest proportion of all injury related fatalities
- 79 Mäori died by suicide in 2001, compared to 80 in 2000 and 78 in 1999
- in 2001, 22 Pacific people died by suicide (20 males and two females), compared to 12 deaths in 2000 and 14 deaths in 1999
- in 2001, 20 Asian people died by suicide (15 males and five females).

[54] It was noted that additional investigation is necessary to determine if this represents differences in how death certificates are recorded or actual differences in quality of care, particularly mental health care.

Numbers of suicide attempts are difficult to quantify because many do not result in serious physical injury and do not need medical treatment. Data on suicidal behaviour are frequently misunderstood or misinterpreted. Key problems in analysing data on suicidal behaviour include incorrectly drawing conclusions from small numbers of suicide deaths; comparing data over a period that is too short; or incorrectly comparing city or regional data. (Ministry of Health 2001d)

South Island DHB Comparisons[55]

SMRs (Standardised Mortality Ratios) are a means of comparing regional variations in rates of mortality (or morbidity). In a regional analysis, SMRs compare subnational rates, in this case DHBs, with that of the national rate. These ratios indicate whether a region is below or above the national rate, ie, below or above 100.

The SMR for a DHB is significant if the 95% confidence interval does not include one hundred. If the confidence interval includes one hundred, then the region's rate is not significantly different from the national rate.

Although there is variation at the DHB level, no pattern in suicide rates is apparent. Caution should be used in interpreting regional variations due to small numbers and large fluctuations from year to year.

In the report *Suicide Facts* (Ministry of Health 2004) SMRs for the period 1997 to 2001 show that males in Nelson-Marlborough and West Coast DHBs have suicide rates significantly higher than the national rate[56]. These are highlighted in Table 110.

Table 110. Suicide Deaths by South Island DHB Region and Gender, 1997 to 2001

DHB Region	Male		Female		Total	
	SMR	95% CI	SMR	95% CI	SMR	95% CI
Canterbury	108.7	95.5-121.9	88.2	65.9-110.6	104.4	93.0-115.9
Nelson Marlborough	**129.5**	**102.0-157.1**	96.8	52.1-141.5	123.6	99.7-147.4
Otago	94.7	75.2-114.3	82.5	48.8-116.2	91.6	74.7-108.5
South Canterbury	130.2	87.6-172.7	88.6	23.0-154.2	121.9	85.4-158.3
Southland	117.6	89.5-145.8	88.4	42.1-134.7	112.7	88.1-137.2
West Coast	**184.0**	**118.2-249.9**	113.9	14.1-213.7	**172.6**	**115.4-229.8**

Source: Ministry of Health (April 2004). Suicide Facts: Provisional 2001 Statistics (all ages).
Notes: Shaded areas indicate regions with significantly higher or lower SMRs. For DHBs where there are very small numbers of suicides and very wide confidence intervals, no conclusion can be drawn. Numbers in this table are rounded to one decimal place.

Self-inflicted injury, ie injury resulting from intentional self-harm, was one of the three most common causes of injury fatalities in all New Zealand DHBs (and the South Island DHBs) between 1996 and 2000. Self-inflicted injury was most prominent for all South Island DHBs except South Canterbury, where there was little difference between self-inflicted and motor vehicle traffic fatalities. Self-inflicted made up a higher percentage of all injury fatalities in all the South Island DHBs in comparison to all New Zealand DHBs (see Table 111).[57]

Table 111. Injury Fatalities caused by Self-inflicted Injury by South Island DHB and Gender, 1996 to 2000

DHB	Male	Female	Total	% of Total Injuries
Canterbury	267	66	333	37%
Nelson Marlborough	75	19	94	35%
Otago	93	22	115	33%
South Canterbury	32	5	37	26%
Southland	69	12	81	35%

[55] Information provided here was sourced from: Ministry of Health (April 2004). *Suicide Facts: Provisional 2001 Statistics (all ages)*. Wellington: Ministry of Health.

[56] These regions have been highlighted because the SMR is high and the 95 confidence interval does not include one hundred.

[57] The data used is drawn from mortality (1996-2000) and morbidity (2000-2002) databases, sourced from the New Zealand Health Information Service (NZHIS). For hospitalisations, the data only includes patients that were discharged from a public hospital and had a primary diagnosis of injury. Readmissions for the same injury event, day patients, and those discharged dead were excluded. Injuries due to complications of medical care (adverse reactions to drugs or misadventures during surgical and medical care), late effects of conditions classified elsewhere, and sequelae that occur after the acute injury were also excluded. Similarly, the fatality data only includes those who died as a result of injury

West Coast	31	6	37	42%
South Island DHBs	567	130	697	35%
New Zealand DHBs	2058	577	2635	31%

Source: NZHIS via IPRU. Ministry of Health (April 2004). Suicide Facts: Provisional 2001 Statistics (all ages).

When broken down by 5-year age groups self-inflicted injury accounts for 52% of fatalities in the 35-44 age group, this is the highest percentage of any age group. Self-inflicted injury is the top cause of injury fatalities for all the age groups in the range 15 to 74 years for South Island DHBs as a whole (Injury Prevention Research Unit 2004).

Hospitalisation for Intentional Self-Harm

The report Suicide Facts (Ministry of Health April 2004) highlighted the following (Ministry of Health April 2004):

- the hospitalisation rate for intentional self-harm in 2002 was 85.5 cases per 100,000 population[58]
- more females are hospitalised for intentional self-harm than males (see Table 112). Females more commonly choose methods such as self-poisoning that generally are not fatal, but still serious enough to require hospitalisation
- the female to male ratio for intentional self-harm in New Zealand in 2002 was 2.1 female hospitalisations to every male hospitalisation
- in 2002, the male hospitalisation rate for intentional self-harm was 55.0 cases per 100,000 population (1044 cases). The female hospitalisation rate for intentional self-harm was 115.3 cases per 100,000 population (2223 cases)
- among Mäori in 2002 the hospitalisation rate for intentional self-harm was 79.2 cases per 100,000 population (431 cases). The hospitalisation rate for Mäori females for intentional self-harm was 97.9 cases per 100,000 population (279 cases) compared to 59.8 per 100,000 population (152 cases) for Mäori males
- among non-Mäori in 2002 the hospitalisation rate for intentional self-harm was 86.3 cases per 100,000 population (2836 cases). The hospitalisation rate for non-Mäori females for intentional self-harm was 118.3 cases per 100,000 population (1944 cases) compared to 53.9 per 100,000 population (892 cases) for non-Mäori males.

Self-inflicted injury appears in the list of the top ten causes of injury resulting in hospitalisation for all six South Island DHBs for 2000-2002 Injury Prevention Research Unit 2004).

Table 112. Injury Hospitalisations for Self-inflicted Injury by South Island DHB and Gender, 2000 to 2002[59]

[58] It is not possible to compare this rate with those in previous publications as the definition of intentional self-harm has changed so that now cases of hospitalisation are only included once, whereas in the past they could be counted more than once.

[59] The data used is drawn from mortality (1996-2000) and morbidity (2000-2002) databases, sourced from the New Zealand Health Information Service (NZHIS). For hospitalisations, the data only includes patients that were discharged from a public hospital and had a primary diagnosis of injury. Readmissions for the same injury event, day patients, and those discharged dead were excluded. Injuries due to complications of medical care (adverse reactions to drugs or misadventures during surgical and medical care), late effects of conditions classified elsewhere, and sequelae that occur after the acute injury were also excluded. Similarly, the fatality data only includes those who died as a result of injury

DHB	Male	Female	Total	% of Total Injuries
Canterbury	369	888	1257	9%
Nelson Marlborough	71	183	254	7%
Otago	155	343	498	9%
South Canterbury	31	40	71	4%
Southland	43	89	132	4%
West Coast	**26**	**57**	**83**	**7%**
South Island	695	1600	2295	8%
New Zealand	2583	5250	7833	6%

Source: NZHIS via IPRU. Ministry of Health (April 2004). Suicide Facts: Provisional 2001 Statistics (all ages).

Poisoning

Poisoning is a significant cause of self-harm injuries that result in hospitalisation and death in New Zealand (Trotter et al 2004).

- poisonings accounted for 38% of the 5,901 people recorded as having died as a result of self-harm between 1990 and 1999
- 90% of the 25180 people hospitalised as a result of self-harm between 1993 and 2002 were poisonings
- the number of fatalities from self-poisoning for males was consistently higher than the numbers for females across all ages.

The Cost of Suicidal Behaviour

The Ministry of Health (2001d) recognised that suicide mortality and morbidity have a major impact on cost on the health sector, but also to the society in general.

Costs of suicidal behaviour include:

- premature loss of life
- the provision of medical, surgical, mental health and rehabilitative services to those making non-fatal suicide attempts
- bereavement and other psychological impacts on family and other closely involved with individuals making fatal or non-fatal suicide attempts
- loss of productivity for those involved in the suicidal behaviour and those affected by it.

When comparing potential years of life lost (PHYLL) as a result of suicide with other selected leading causes of death, suicide accounted for only 2% of total deaths in 1997. However, the potential years of life lost from suicide was only 15% lower than the number lost from ischaemic heart disease. The disproportionately heavy loss is due to the fact that more suicide deaths occur at younger ages than do deaths from ischaemic heart disease (New Zealand Health Information Service 2001).

Alcohol and Other Drugs

Substance abuse causes significant harm to the health and social wellbeing of New Zealanders. The harm resulting from such abuse can include dependence, infectious and other diseases and death (Ministry of Health 2003g).

The National Drug Policy (Ministry of Health 1998) seeks to address the significant harm to the health and social wellbeing of New Zealanders of drug use. It relies on an intersectoral strategy to reduce all legal and illegal drug-related harm, using a three-pronged approach (Ministry of Health 2003g):

- supply control (limiting the availability of drugs), for example through law enforcement
- demand reduction (reducing people's desire to use drugs), for example through education programmes
- problem limitation (mitigating the harm already occurring from drugs), for example through treatment services.

The specialised treatment sector is small with around 700 workers nationally. Workers provide treatment in an estimated 264 varied services for an estimated 30,000 people each year for a cost of

approximately $72 million, this includes a range of intervention services, workforce development and research. These figures do not take into account people treated or money spent in private services or in correction facilities (Alcohol Drug Association New Zealand 2004).

Prevalence Data

Table 113 represents the best current estimates for New Zealand of six month prevalence rates.

Table 113. Estimated Six Month Prevalence Rates for Alcohol and Other Drug Problems

DSM IV Diagnosis*	% of the Population in a Six Month Period
Alcohol Abuse	10%
Other Drug Abuse	2%
Alcohol Dependence	5%
Other Drug Dependence (Other Drug is 90% Cannabis)	1%

Source: *Oakley-Browne et al 1989*
Notes: *Dependency rates for Mäori are estimated at 8% (Ministry of Health 2001f, p3).*
**Categories are mutually exclusive*

It is important to recognise there is a significant gap between the number of people needing some form of intervention and the actual demand for it. This is because problem Alcohol and Drug use in many situations is perceived by the community to be normal functional behaviour. In addition individuals are reluctant to acknowledge they have a problem because of the stigma attached to the diagnosis of Alcohol and Drug abuse or dependence. Consequently it is estimated that, based on annual admission data, only 15% of people with a problem are likely to be referred to some form of intervention. If the screening and identification of Alcohol and Other Drug Problems significantly increased in the Primary Health and Allied sectors the demand for Specialist treatment services would also significantly increase.

Co-Existing Disorders

Research showed that over 77% of clients in Alcohol and other Drug services present with another co-existing mental health disorder (Adamson 2003), and over 50% of clients presenting to other mental health services also present with and Alcohol and other Drug related disorder (Todd et al 1999).

Legal Drug Use

Legal drugs are responsible for most drug-related harm in New Zealand, although when used responsibly, most legal drugs (with the exception of tobacco and alcohol) are not harmful.

Alcohol

Alcohol is the most commonly used drug in New Zealand. 'The Way We Drink' survey (BRC Marketing & Social Research and Alcohol Advisory Council 2003), compares alcohol use and attitudes of 626 12-17 year olds and 1,157 adults 18 years and over in New Zealand (Alcohol Drug Association New Zealand 2004).

The main findings were:

- 82% of 12-17 year olds had tried alcohol compared to 96% of adults
- 52% of 12-17 year olds and 81% of adults defined themselves as current drinkers
- 3% of 12-17 year olds and 16% of adults drink every, or almost every day
- 10% of 12-17 year olds and 26% of adults drink 2-3 times a week
- 15% of 12-17 year olds and 22% of adults drink once a week
- 33% of 12-17 year olds drank a quantity of 5 drinks or more in their last drinking occasion, 38% and 27% of those were male and female respectively.
- 24% of adults drank 7 or more glasses of alcohol in their last drinking occasion, 32% of these were male and 17% female.

Provisional results from the 2002/03 New Zealand Health Survey (Ministry of Health 2003) indicate that almost one in six adults have hazardous drinking habits (Ministry of Health December 2003). Overall, men are more than twice as likely as women to have hazardous drinking[60] habits.

Findings from the Youth 2000 secondary school survey (Adolescent Health Research Group 2003a) estimates that 19.3% of male students and 15% of female students drank alcohol at least weekly across all the regions in New Zealand. 88.9% of male and 80.4% of female students reported they have tried drinking alcohol. 25.2% (males) and 13.8% (females) had used alcohol weekly or more frequently. More male (46.2%) than female (38.1%) students report at least one episode of binge drinking[61] in the last four weeks.

Non-Medical Use of Prescription Drugs and Over-the-Counter Medications

There is very little data about non-medical use of prescription drugs and over-the-counter medications. Tranquillisers (benzodiazepines), barbiturates, analgesics, steroids, inhalants, morphine and codeine products are the major drugs in this category. Studies of substance abuse services in New Zealand suggest that more than half the drugs abused come from legal prescriptions (Alcohol Drug Association New Zealand 2004).

Illicit Drug Use

Statistics about illicit drug use are difficult to obtain and validate. Results from the 2002/03 New Zealand Health Survey indicated one in seven adults reported they have used marijuana in the last year. Overall, men are significantly more likely than women to have used marijuana in the last year (Ministry of Health December 2003).

Findings from the Youth 2000 secondary school survey (Adolescent Health Research Group 2003a) show that 35.9% (males) and 32.9% (females), ie one third o young people, have tried using marijuana. 4.9% male students and 5.7% female students use marijuana at least once a week.

Recent information identifies the increase in use of drugs such as ecstasy, methamphetamine (P) and similar psycho stimulants (Alcohol Drug Association New Zealand 2004).

Opioid abuse carries a major cost to the community. For example intravenous drug users typically obtain on average over $1000 per week from criminal sources (Adamson and Sellman 1998).

People meeting criteria for Methadone Maintenance Treatment are generally at the severe end of the continuum of the drug-dependent population. They typically present with a raft of other medical, social and mental health-related problems. There is strong international evidence that the prescribing of methadone for opioid dependency significantly reduces the individual's criminal offending and illicit drug use and improves their health, social stability and ability to parent (Ministry of Health June 2001).

The South Island Alcohol and Other Drug Services Review (South Island District Health Boards 2004) identified a steady increase of opioid use in the general population and opioid related hospital admissions over the last five years, resulting in an increasing number of opiate dependant clients seeking opioid substitution treatment.

Drug Related Harm in New Zealand

Drink Driving

People drinking and driving (with a blood alcohol level over 80mg per 100ml) are three times more likely to be involved in a crash than a sober driver. People with a high blood alcohol level are more likely to be injured or killed in a crash than those who are sober (Alcohol Drug Association New Zealand 2004).

The Land Transport Safety Authority (2001) reports that the more serious a crash is, the more likely it is to involve alcohol. From 1998 to 2000, drink driving has been a factor in 25% of all fatal crashes, 20% of serious injury crashes and 13% of minor injury crashes. Further, for every 100 drink drivers or motorcyclists killed in road crashes, 59 of their passengers and a further 36 sober road users die with them.

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[60] For this survey hazardous drinking was determined using the AUDIT questionnaire, it is described as an established pattern of drinking that carries a high risk of future damage to physical or mental health, but has not yet resulted in significant health effects.

[61] Five or more alcoholic drinks in one session – within four hours.

Suicide

Dependency on alcohol and other drugs has been associated with increased risk of suicidal behaviours (Alcohol Drug Association New Zealand 2004).

For more information on suicide see the Suicide and Child and Youth Health chapters.

Anti-social Behaviour, Violence & Drug Related Offending

Recent Police statistics show an increase in the drug use and antisocial category particularly for non-cannabis related drug crimes such as those involving amphetamine type stimulants. During 2003 police put 200 clandestine methamphetamine laboratories out of action compared to 147 in 2002. Alcohol related strategies implemented in some districts are proving effective in combating increasing problems with disorder and these strategies will be further developed at district and national level. Previous New Zealand surveys of drinking patterns extrapolated to the New Zealand population indicated strong links with alcohol misuse and violence. There is also correlation between drinking alcohol and sexual, physical and emotional abuse. (Alcohol Drug Association New Zealand 2004)

Reduced Workplace Productivity

Findings from the National Alcohol Strategy (2001) show that reduced productivity in the workplace due to alcohol misuse represents a significant cost to industry.

Based on a study of almost 5,000 Aucklanders, which included about half who were drinkers in paid employment, the cost of alcohol-related lost productivity among the working population of New Zealand was estimated to be $57 million per year. Foremost amongst the costs was the cost of impaired work performance (estimated to be $41 million nationally). Absenteeism accounted for the remaining $16 million (Jones et al 1995).

The National Alcohol Strategy draws on other research that suggests a much higher annual cost, by factoring in 'downstream' costs such as loss of production caused by alcohol-related premature deaths, alcohol-related unemployment, and temporary removal from the workforce for treatment for alcohol-related problems or imprisonment for alcohol-related offences.

Impact on Health

One in six deaths in New Zealand is tobacco related. This means 4,500 New Zealanders die each year of smoking related illnesses. Alcohol is strongly associated with mouth, throat and liver cancers, as well as liver cirrhosis, pancreatitis and stroke. Unsafe injecting drug use has been directly associated with the increasing prevalence of Hepatitis C, and has contributed to the level of HIV infection in New Zealand (Alcohol Drug Association New Zealand 2004).

Hepatitis C is a viral infection of the liver and is a global and national health problem of significant clinical, personal and public health importance. In New Zealand an estimated 25,000 people are currently living with the virus and this number is predicted to increase by 50% in the next 10 years. Acute hepatitis C became notifiable in 1996. Since then 100 cases have been notified per year. However, disease modelling studies suggest that 1,280 new infections per year (around 15 times the number notified) is a more accurate estimate. The use of injecting drugs has become the single most important risk factor for acquiring hepatitis C and accounts for around 80% of infections; the equivalent of 1,024 new infections per year. (Ministry of Health 2002b)

In 2002, one 107 new diagnoses of HIV infections were notified in New Zealand. Of these it is suspected that 2.3% contracted the disease through intravenous drug use and an additional 1.3% from homosexual sexual activity or intravenous drug use. The incidence of transmission via intravenous drug use is low in New Zealand compared to other countries indicating the success of harm minimisation strategies such as needle exchanges. Most people diagnosed with HIV infection reside in the north and central New Zealand. This reflects the geographic distribution of population groups most vulnerable to HIV infection, in particular MSM[62] and refugees and migrants from high prevalence countries. The Southern region has a lower incidence of HIV infection with 13% of diagnosis's being reported in this region between 1 January 1996 and 31 December 2002 (n= 840). (Ministry of Health 2003e)

While the health impact of drug related accidents and violence is difficult to quantify, it is estimated that over half the work of emergency services (ambulances, casualty units, etc) is related to alcohol and other drug misuse (Alcohol Drug Association New Zealand 2004).

[62] Men having sex with men.

Treatment

It is now recognised that there are many different degrees of alcohol and other drug problems along the continuum of use, that require a range of responses in a variety of settings that are appropriate to the severity of the problem. (South Island District Health Boards 2004)

There is no 'cure' for 'addictions', only changes in lifestyle and thinking patterns that avoid the persistence of the problem. The overall goal of treatment is to reduce or eliminate the use of alcohol or other drugs as a contributing factor to physical, psychological, and social dysfunction.

Prevention, early intervention and treatment reduce the associated harm caused by alcohol and other drugs.

Direct and relatively straightforward treatment within community settings can deal effectively with a substantial proportion of the population with alcohol or other drug problems. People may receive a brief intervention if the problems are milder, be encouraged to join a self-help group or get intensive counselling over a number of weeks, perhaps after medical detoxification. Others will need specialised treatment and if the problems are severe, then residential treatment or a therapeutic community might be chosen (Alcohol Drug Association New Zealand 2004).

Alcohol and Other Drugs in the South Island

Changes Occurring in the Treatment Population

The South Island Alcohol and Other Drug Services Review (South Island District Health Boards 2004) identified a number of changes to the population accessing alcohol and other treatment services over the last five years. Some changes reflect actual changes to the population profile, while others may indicate a raised awareness and consequently increased screening for certain client features such as coexisting disorders or Foetal Alcohol Syndrome.

Changes include:

- an increased level of other drugs, especially cannabis, in association with alcohol
- a higher number of referrals from the Justice sector and the mental health sector particularly with a forensic component. There are correspondingly fewer self referrals
- referrals are presenting with more severe AOD problems
- growing complexity of clients in terms of coexisting mental, intellectual and physical disorders or disabilities, criminal offending and rehabilitation needs
- a gradual increase in the number of younger people, women and Mäori referred to treatment.

Changes occurring to the treatment population are having an impact on the ability of the alcohol and other drug treatment system to respond to the resulting needs.

Provision of Specialist Alcohol and Other Drug Services in the South Island

The following Alcohol and Other Drug Services are provided in the South Island:

- Assessment and Referral Outpatient Counselling
- Medical Detox
- Social Detox
- Home Detox
- Intensive outpatient and Day Treatment Programme
- Medium Term Residential
- Long Term Therapeutic Community
- Supported Accommodation
- Methadone Programme
- Aftercare Services.

There are no Short Term (less than 6 weeks) Residential Services, Dedicated Family Services or Alcohol and Other Drug Consumer Advocacy services funded by DHBs in the South Island (South Island District Health Boards 2004).
There is currently considerable debate about the validity of the resource guidelines as they apply to Alcohol and Other Drug Services on the basis they do not reflect the true extent of people with Alcohol

and Other Drug problems in the community. As a consequence the Mental Health Commission has currently contracted a review of the guidelines for Alcohol and Other Drug Services.

Primary Mental Health Care

Emerging data and feedback reported in national and international literature indicates that primary care plays a fundamental role in caring for people experiencing mental illness. In New Zealand, the Ministry of Health (2002e) expects that around 35% of people who see their general practitioner have a mental health component to their illness[63]. The Sainsbury Centre for Mental Health (2002) points out that primary care, as a gatekeeper to specialist services, plays an important role in *"determining the way in which secondary care resources are utilised* (2002:1)*"*.

Mental Illness and Physical Health

There is also growing awareness that people experiencing a mental illness often have poor physical health, which impact on their psychiatric disorder (Bathgate et. al. 2001, Sims 1987).

In its recent publication *Our Physical Health … Who Cares?*, the Mental Health Commission (2004) highlights the need to focus on improving the physical health of mental health service users. The report draws on international research and suggests that

- service users die at 2.5 to 4.3 times the rate of the general population, even when suicide has been factored out
- male service users can expect to live 14 years less than the general male population
- female service users can expect to live almost 6 years less than the general female population
- these rates stretch across ethnicity, diagnosis, nationality and gender.

The report identifies several areas where service users have worse physical health than the general population. These include:

- *heart disease deaths*, with service users having a death rate 2.2 times that of the general population
- *cancer (all sites) deaths*, with service users having a death rate 1.5 times that of the general population
- *influenza deaths*, with service users having a death rate 5 times that of the general population
- *diabetes deaths*, with service users having a death rate 3 times that of the general population.

The report further identifies several possible reasons why service users are sicker and dying younger than the general population. These are:

- exposure to risk factors, such as poverty and smoking
- lack of a clear, national statement of responsibilities for service users' physical health care
- no clearly defined responsibility for service users' physical health care exists between primary care services, community mental health teams, community Alcohol and Other Drug services, and inpatient facilities
- discrimination
- iatrogenic illness (harm caused by medical intervention), these include obesity, tardive dyskinesia (TD), and dental health of mental health service users. Although not considered a directly physical illness, addiction to prescription medications needs mentioning in light of indirect physical illness such as weight loss, sleeplessness and lowered immunity.

This report also discusses the distinct context for poor physical health of Alcohol and other Drug consumers. One example is the physical health needs of members of the intravenous (IV) drug community. New Zealand's needle exchanges are a mechanism to minimise physical disease for Alcohol and other Drug consumers. The New Zealand Health Strategy notes "Of particular concern is the risk to public health from the transmission of blood-borne viruses through the sharing of needles and syringes" (Ministry of Health 2000b). It is estimated that 70% of New Zealand's IV drug users have Hepatitis C (Mental Health Commission 2004).

[63] These are preliminary results of the MaGPIe study, which concludes that 35% of those attending primary health services have a DSM iv diagnosable mental illness and that of those 50% are diagnosed, leaving 50% undiagnosed and hence untreated.

Knowing the People Planning

The Ministry of Health also regards Knowing the People Planning (KPP) as an important initiative to improve outcomes for service users in line with the Blueprint recovery approach. KPP offers opportunities for improving the management of high user groups by implementing KPP. KPP is a planning method that focuses on service quality and client outcome, while addressing the management of information within systems. Its aim is to identify the needs of local consumers (long-term service users) and to find the best ways to improve results. KPP has already been implemented successfully by a number of DHBs. Reported results include reduced acute admissions (for an identified client group) and an increased number of people in employment. It also gives an indication of how well mental health services meet the needs of their service users.

The Role of Primary Health Care

The main focus of primary health care services are the needs of the 17% of the population experiencing mild to moderate mental health disorders requiring treatment. The 3% of the population with the most severe problems are targeted by specialist services. However, as needs change, individuals will move in, out of and between these two groups (Ministry of Health 2002e).

The role of primary health care is to ensure that individuals return to their full level of functioning by identifying and managing their mental health issues (Ministry of Health 2004e). The provision of primary mental health services in New Zealand is predominantly GP-based, but a range of primary providers also have a significant role including community health workers and nurses, social workers, pharmacists, community counselling and psychological services.

Primary Mental Health Care for People with Mild to Moderate Mental Health Problems

The move towards primary mental health care acknowledges that providing mental health services with a primary health focus, particularly for those with mild to moderate mental health problems could have many benefits. As the Health Research Council of New Zealand (2002) summarises, increased GP involvement could enable community mental health services to focus more on people who experience more serious illness than others. Further, care provided by GPs could improve physical health care. Additional education and training could enhance the ability of GPs to recognise early signs of serious mental illness, such as psychosis, and could enable the appropriate treatment of people with less severe mental illness. Innovative funding arrangements could enable mental health consumers to have free access to GP services. Attending GP practices alongside the rest of the community would also provide opportunities to reduce the stigma of mental illness.

Primary Mental Health and PHOs

Considering the Primary Health Care Strategy and the development of Primary Health Organisations, there is a clear expectation that mental health needs of most people with mild to moderately severe mental health problems should be met in a primary care setting. This indicates a need to ensure that mental health service provision is a key component of primary health care.

In May 2004, the Ministry of Health released a mental health service development toolkit for PHOs. The aim of the toolkit is to encourage PHOs and their practitioners to develop a mental health plan that will build on their existing strengths in order to develop better and more effective mental health services in primary care (Ministry of Health May 2004). Additional funding was also made available for the provision of mental health initiatives and innovations in PHOs. To receive funding proposals need to demonstrate

- a system where mental health is effectively integrated with primary health care services of the PHO
- a multi-disciplinary approach to managing mental illness in the primary sector
- as well as being aimed at reducing inequalities and improving health status of those groups with highest health needs.

To understand the extent of mental health service needs, PHOs need the following information (Ministry of Health 2004e):

- prevalence rates of common mental health disorders
- broader determinants of health and degree of deprivation within the PHO's enrolled population, such as adequacy of housing, employment rates, education attainment levels and socioeconomic status

- known indicators within their enrolled population that increase the risk of a person developing a mental health problem, for example, levels of violence, abuse and self-harm
- misuse of alcohol and other drugs; and problem gambling
- barriers to access that prevent or limit individuals and their families accessing care.

Primary Mental Health Care for People with Severe Mental Health Problems

It is acknowledged that people experiencing severe mental health problems often have high, multi-agency support needs requiring specialist mental health services with a recovery-oriented, case management and partnership approach. Therefore, this group requires a well integrated multiple services mental health sector addressing clinical and non-clinical needs, including those related to housing, education and employment. Unfortunately, the degree of involvement of primary health care providers in providing mental health services to this group is not clearly identified, in New Zealand nor overseas. (Ministry of Health 2002e).

Despite the clear expectation and evidence that primary health care plays a vital role in caring for people with a mental illness, the Ministry of Health (2002e) estimates that up to 50% of all mental health cases are not detected explicitly and are missed in primary care consultations. The MaGPIe Study concludes this. Studies from Great Britain, the USA and Australia also show that the rate of detection and diagnosis of mental disorders by general practitioners is low.

The Mental Health and General Practice Investigation (MaGPIe) study of attendees at New Zealand general practices concluded GPs identified about half their patients as having some type of psychological problems in the past year (The MaGPIe Research Group). Problems were considered to be moderate to severe in about one in ten patients. The most common disorders were anxiety disorders, depression, and substance use disorders.

In the current primary health care system, barriers to the provision of effective primary mental health services include: cost, workforce development needs and integration of services (South Island Shared Service Agency 2003).

The response to the above issues in New Zealand and overseas was the development and implementation of several primary mental health service delivery models.

A variety of initiatives have been undertaken to improve the detection, treatment and outcome in primary care, some of which are described below. However, there is a lack of conclusive evidence that would provide sufficient and comprehensive information on the most effective model. (Ministry of Health 2002e).

A growing trend nationally has been to focus on improving the interface with specialist services in order to encourage appropriate referrals and enhance the skills of the GP so that they can deliver services to those people with mild to moderate mental health problems (Ministry of Health 2002e).

Initiatives in Primary Mental Health Care

The following provides a list of current local initiatives in Primary Mental Health Care:

The West Coast DHB is in the final stages of developing a Primary Mental Health Strategic Plan. The plan is currently out for community consultation and we expect the process will be completed before completion of the HNA. Considerable community consultation has highlighted three key objectives of the strategy:

- enhance and Strengthen Primary Mental Heath Services on the West Coast
- improve the integration of primary and secondary care
- create a mentally healthy and supportive community.

The following Strategies are planned to address these objectives.

- develop a Brief Intervention Services
- employ a GP Liaison Worker
- training and Education (including the development of a mental health training plan)
- develop a Family Mental Health Counseling Service.
- shared care
- discharge Planning/transfers of care from IPU and CMH
- health Promotion and community education programme

- support Groups
- peer Support
- implement GP Link
- access West Coast to monitor the implementation of the plan and enhance communication links between primary and secondary providers.

The West Coast DHB provides specialist Child and Youth Mental Health Services coast wide through a community based services located in Greymouth. Child and Adolescent Mental Health, and Alcohol and other Drug workers are also located in community mental health teams in Hokitika and Westport. The CAMHS includes clinical psychologists, mental health worker, child and family therapists, youth alcohol and drug counsellors, and Child and Adult Resource workers.

Problem Gambling

Problem gambling is identified as patterns of gambling behaviour that compromise, disrupt or damage health, personal, family or vocational pursuits.

International studies and findings in New Zealand literature indicate that problem gamblers have a heightened risk of experiencing relationship problems, a range of physical and psychological problems, job loss, bankruptcy and even imprisonment (Gerstein et al 1999).

In New Zealand there has been very little problem gambling research undertaken but the Ministry of Health (Ministry of Health) intend to begin research projects over the next three years (Ministry of Health 2004d).

Problem gamblers have been recognised as having many characteristics and behaviours in common with other additive behaviours (particularly substance misuse), and in its most severe form problem gambling is acknowledged as a psychiatric disorder (American Psychiatric Association 1994).

Environmental risk factors include the availability and accessibility of gambling opportunities. Many forms of gambling exist in New Zealand, including track betting, casinos, Lotto and non-casino gambling machines (NCGMs). There is also increasing availability of Internet gambling and interactive betting.

Research by Breen and Zimmerman (2002) indicates the type of gambling appears to be an important risk factor for the development of problem gambling. Gambling forms that allow continuous play and short time span between staking and outcome such as NCGMs also known as Pokies can lead to excessive gambling which can lead on to problem gambling. Other forms of gambling like track betting have also been identified as increasing the risk of developing problem gambling.

NCGMs have been identified as the problem source for 75% of all new personal counselling clients and 80% of helpline callers who accessed Problem Gambling services in 2002 (Paton-Simpson et al 2003). NCGMs as well as being a continuous form of gambling also encourage winnings to be quickly reinvested back into NCGMs. In 2003 there were a total of 22,417 licensed NCGMs in New Zealand, an increase of 11% from 2002. West Coast DHB in 2003 had 323 licensed NCGMs located at 62 sites. NCGMs have increased by only 6.6% from 2002 in West Coast DHB (Ministry of Health 2004d).

One of the key determinants of problem gambling is socioeconomic deprivation which can be measured by the deprivation index NZ Dep 2001(NZ Dep 2001) (Wheeler 2003). NCGMs are not distributed evenly through the country, around 53% of all NCGMs are in census area units (CAUs) that belong to NZ Dep 2001 deciles 8, 9 and 10, which represent the most deprived CAUs in New Zealand. However these CAUs only represent approximately 32% of the total population in the 2001 census. In contrast only 12% of all NCGMs were located in CAUs that belonged to NZ Dep 2001 deciles 1,2 and 3 which represent the least deprived however these CAUs represent approximately 27.5% of the total population in the 2001 census (Ministry of Health 2004d).

Gambling Prevalence and Incidence

The information in

Table 114 is obtained from the 1999 New Zealand Gambling Survey (Abbott and Volberg 2000).

Table 114. Self-Reported Gambling Status by Gender, Age and Ethnicity (New Zealand)

Characteristics	Gambling Status			
	% Non Gamblers	% Past Six Months Gamblers	% Regular Non-Continuous Gamblers	% Regular Continuous Gamblers
Gender				
Male	13.1	43.7	31	12.1
Female	14.4	47.1	29.6	9.0
Age Group				
18 -24	13.2	61.2	13.9	11.7
25 - 34	11.5	50.3	28.2	10.1
35 - 44	12.1	48.0	30.8	9.1
45 -54	13.1	36.7	39.0	11.3
55 -64	14.5	36.2	36.3	13.0
65 plus	19.8	38.6	32.3	9.3
Ethnicity				
European	13.0	46.1	30.2	10.7
Mäori	9.6*	42.8	35.2	12.4
Pacific People	19.5*	44.8	26.5*	9.2
Asian	34.1	39.4	21.7*	4.8
Other	13.1*	52.0	29.3	5.7
Total	13.8	45.5	30.3	10.5

Source: 1999 New Zealand Gambling Survey.
*Notes: * cells have a relative sample error of 30-50%, so data should be used with caution.*

Regular continuous gamblers, which represent approximately 10.5% of the population, participate in activities that allow winnings to be reinvested shortly after a win, such as NCGMs and horse race betting. Regular continuous gamblers are more likely to be associated with problem gambling and require gambling treatment services.

The New Zealand Gambling Survey estimates that currently 0.8% of New Zealand adults have a gambling problem and an additional 0.5% are probable pathological gamblers furthermore 2.9% of New Zealand adults are estimated to have lifetime gambling problems or be lifetime pathological gamblers.

A total of 27,323 people in New Zealand have received counselling for problem gambling over the past six years. It is expected that there are large numbers of people with gambling problems not presenting at Problem Gambling services.

Information from the Problem Gambling Council show that in 2002 Mäori made up over 25% of all new gambling service clients (Paton-Simpson et al 2003).

The Ministry of Health has assumed responsibility for the funding and coordinating of problem gambling services. Ministry of Health has developed a strategic plan for preventing and minimising gambling harm that will require a comprehensive range of services and strategies to be built up over the next three years. West Coast DHB has three Problem Gambling service sites.

The Ministry of Health proposed national funding to achieve the goals of the strategic plan as follows (Figures include GST) (Ministry of Health 2004ds).

- 2004/05: $15,979,666
- 2005/06: $18,997,166
- 2006/07: $20,983,666

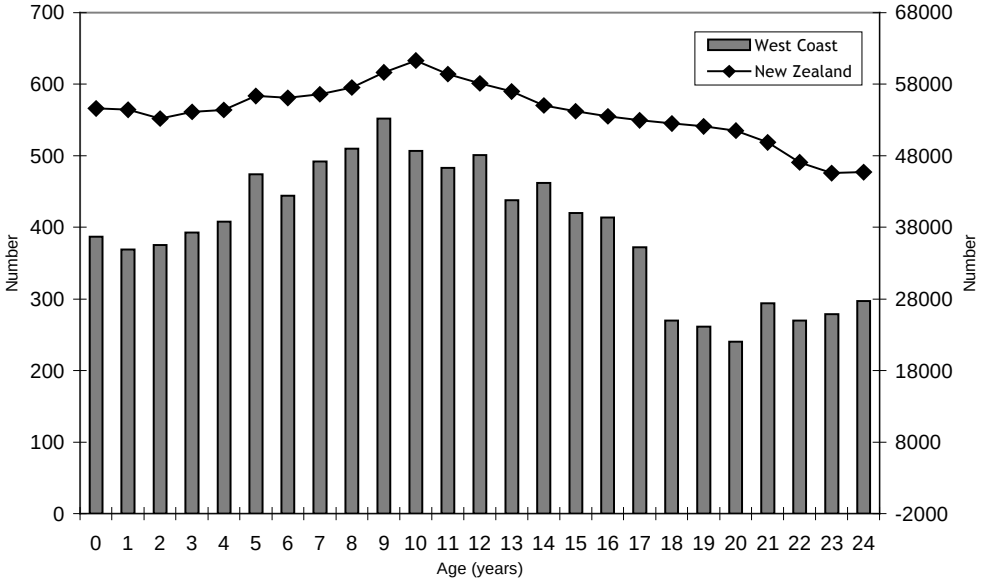
CHILD AND YOUTH HEALTH

Demographics

At the 2001 census there were 8,271 children 0-18 years residing within the West Coast's DHB boundaries. Of these 6,663 were European, 1,224 were Mäori, 72 were Asian/Indian, 39 were Pacific people and 12 were from Other ethnic groups. In addition 261 children had no ethnic affiliation recorded. A further 1,641 youth 19-24 years resided within the West Coast's DHB boundaries. Of these 1,329 were European, 177 were Mäori, 15 were Asian/Indian, 12 were Pacific people and 9 belonged to Other ethnic groups. A further 99 had no ethnic affiliation recorded (Statistics New Zealand prioritised ethnic group). In total, child and youth made up 32.7% of the West Coast's DHB population (for a distribution of West Coast's child and youth population by age and ethnic group see Section 1: Demographic Profile).

Figure 41 compares this age distribution with that of New Zealand's child and youth population as a whole. The modest tapering off in numbers of youth in the 18-24 age bracket in the West Coast DHB is in sharp contrast to South Island DHBs with large tertiary centres (eg Otago), where the youth population increases significantly after 17 years.

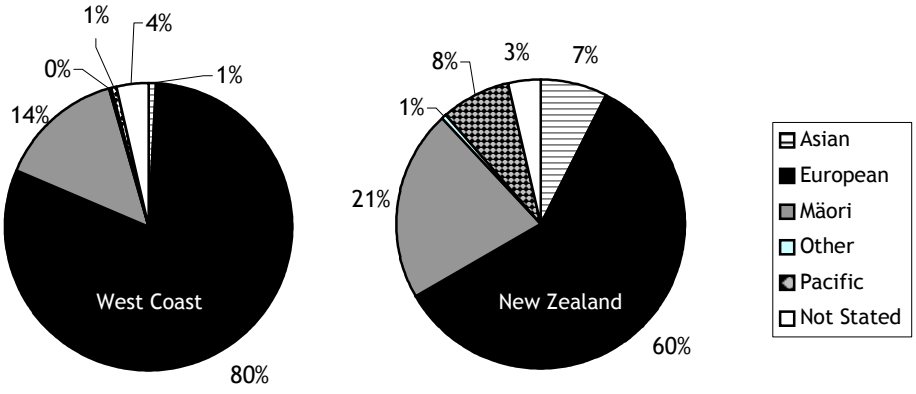
Figure 41. Distribution of Child and Youth Population by Age, the West Coast DHB vs New Zealand



Source: Statistics New Zealand 2001 Census

Figure 42 compares the ethnic composition of the West Coast's child and youth with that of the New Zealand population. At the time of the 2001 census, the West Coast DHB had a proportionately larger European population (80%) than the National average, and fewer children of Mäori, Pacific, Asian or Other ethnic origins.

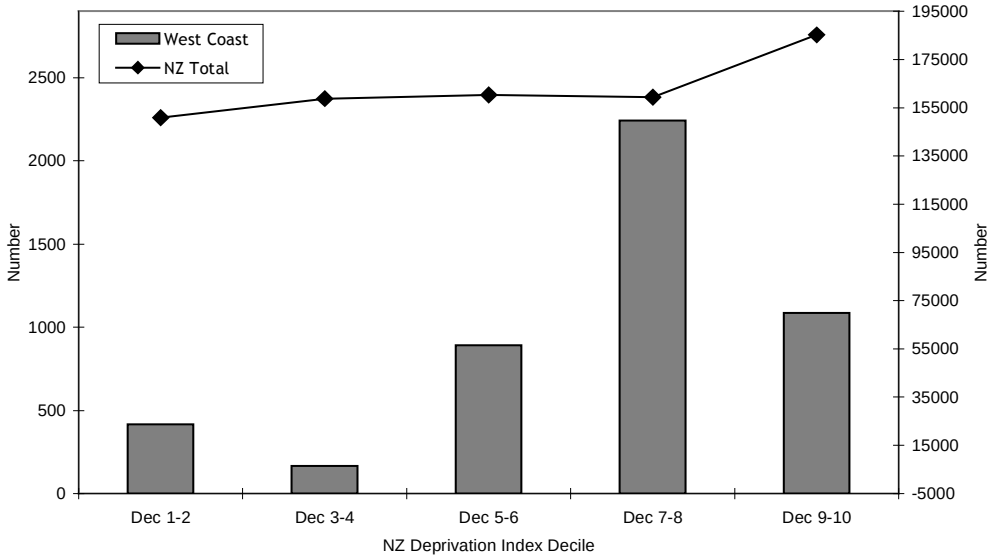
Figure 42. West Coast and New Zealand Child and Youth Population 0-24 Years by Ethnic Group



Source: Statistics New Zealand 2001 Census

Figure 43 compares the proportions of West Coast DHB children 0-14 years living in New Zealand Deprivation Index deciles 1-10 with those of New Zealand children nationally. Overall 38.6% of the West Coast's children lived in NZDep deciles 8-10 as compared to 33.0% of children nationally. When broken down by ethnic group, 37.9% of European/Other children and 43.0% of Mäori children in the West Coast DHB lived in NZDep Index decile 8-10 areas as compared to 21.4% of European/Other children and 54.4% of Mäori children nationally.

Figure 43. Distribution of Children by New Zealand Deprivation Index Decile, the West Coast DHB vs New Zealand



Source: Statistics New Zealand 2001 Census

In summary, child and youth make up 32.7% of the West Coast's population, and while exhibiting an age structure similar to that of the national average in mid to late childhood, this tapers off more rapidly once youth reach the age of 18 years. The West Coast DHB also has a more ethnically homogeneous child and youth population than the New Zealand average, with 80% of those in the 0-24 year old age bracket being of European origin and a further 14% being Mäori. Higher proportions of European/Other children 0-14 years in this region live in NZDep deciles 8-10, although the proportion of Mäori children in deciles 8-10 is slightly lower than the New Zealand average.

Teenage Pregnancy

High teenage pregnancy rates are a cause for concern, as young maternal age has been associated with a number of adverse birth outcomes (da Silva et al 2003). In New Zealand teenage pregnancy increases the risk of both preterm and small for gestational age birth (Table 116 Low Birth Weight Section). There is currently debate however, as to whether social or biological factors play the greatest role, with risk of adverse birth outcome amongst teens disappearing in a number of studies, once the effects of socioeconomic disadvantage were adjusted for (da Silva et al 2003).

Teenage pregnancy rates are made up of three components – births, terminations and miscarriages. In this analysis each component has been sourced from a different national dataset.

1. Information on **Teenage Births** was sourced from the Birth Registration Dataset. All births 20+ weeks gestation are notified by hospitals within five days of delivery, with information including maternal age, ethnicity and domicile code. In addition, parents complete a Birth Registration Form duplicating the above information. Once both forms are received, Internal Affairs, merge the information into a single entry. This process effectively captures 99.9% of births in New Zealand and cross checking at the receipting stage allows for the verification of birth details.
2. Information on **Terminations of Pregnancy** was sourced from the Abortion Supervisory Committee. While information on the age and ethnicity of women undergoing abortion was available, information on usual area of residence was not, precluding analysis of terminations by DHB or New Zealand Deprivation Index decile.
3. Rates of **Spontaneous Miscarriage** were estimated as being 10% of induced abortions and 20% of live births (Dickson et al 2000).

The population denominators utilised in this analysis were derived from census data for the years 1981, 1986, 1991, 1996 and 2001 with population estimates between census years being derived by linear extrapolation. Teenage birth rates were calculated as the number of births to women <20 years, divided by the number of women in the 15-19 year age bracket (Dickson et al 2000). Similarly abortion rates were calculated as the number of induced abortions for women <20 years divided by the number of women in the 15-19 age bracket (Dickson et al 2000). Miscarriage rates were calculated as specified above.

Teenage Pregnancy Rates

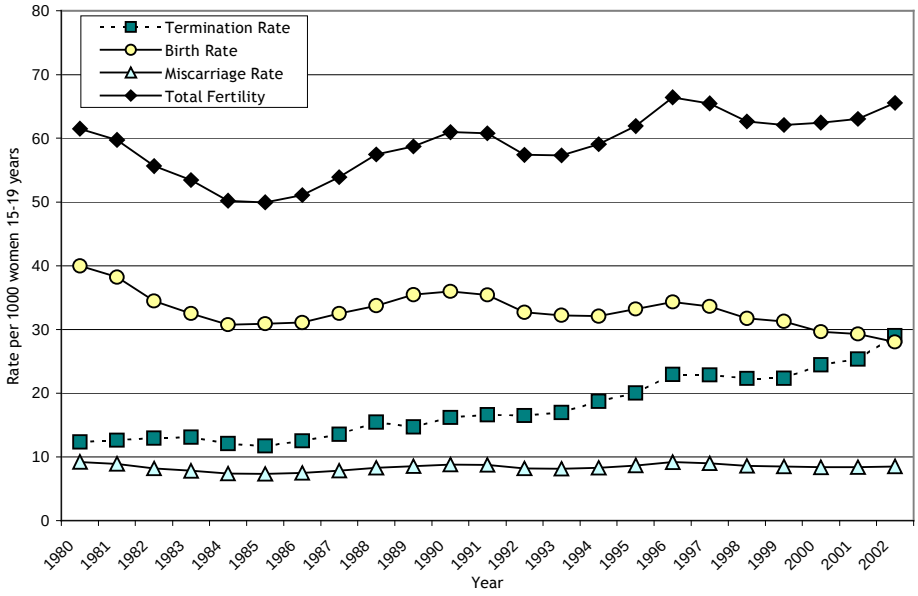
Table 115. Total Number of Teenage Births to Women on West Coast Region during 1990 to 2002

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Births	42	48	33	41	26	37	32	30	33	39	25	26	25

Source: Birth Registration Data NZHIS

Figure 44 summarises estimated teenage pregnancy rates for New Zealand women for the years 1980 to 2002. While rates of teenage birth declined between 1980 and 2002, rates of termination more than doubled, resulting in a modest increase in overall teenage pregnancy rates during this period.

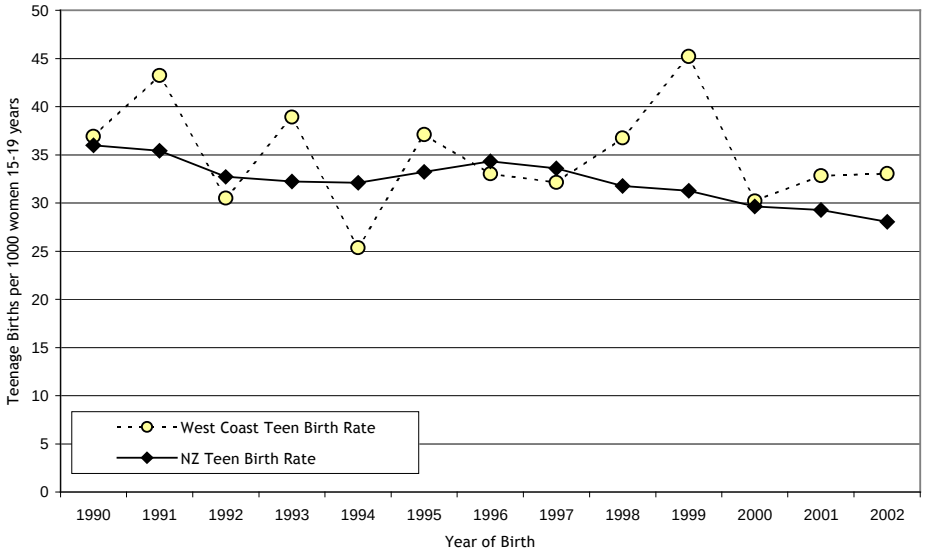
Figure 44. Estimated Teenage Pregnancy Rates for New Zealand Women 1980-2002



Source: Terminations Abortion Supervisory Committee; Births Birth Registration Data NZHIS; Denominators Statistics New Zealand Census Data
Notes: The Teenage Pregnancy Rate includes live and still births.

Figure 45 compares teenage birth rates in the West Coast DHB to the New Zealand average for the years 1990 to 2002. During this period teenage birth rates were similar to the New Zealand average. Unfortunately reliable information on abortion rates for West Coast teens was not available for this period.

Figure 45. Teenage Birth Rates, the West Coast DHB vs New Zealand 1990-2002



Source: Numerator Birth Registration Data NZHIS; Denominator Statistics New Zealand Census Data
Notes: The Teenage Pregnancy Rate includes live and still births.

Unfortunately, small numbers made comparison of West Coast Mäori teen births with New Zealand averages unreliable. Teen birth rates amongst European West Coast women however were higher than the New Zealand European average (Birth Registration Data NZHIS; Statistics New Zealand Census Data).

In summary, overall teenage birth rates in the West Coast DHB are similar to the New Zealand average although once stratified by ethnicity, rates for European women are higher. Small numbers meant that comparisons of West Coast Mäori rates with those nationally were unreliable. In addition, lack of information on termination of pregnancy by DHB precluded the calculation of total teenage pregnancy rates. If termination rates in the West Coast DHB are similar to the New Zealand average however, then for every teenage birth in the West Coast DHB during 2002 there was also one corresponding therapeutic abortion.

Low Birth Weight

Low birth weight, defined as a birth weight <2500g, is determined by two factors, the duration of gestation and fetal growth. Babies are born low birth weight either because they are preterm (<37 weeks) or because they are small for gestational age (birth weight <10th percentile for gestational age). While preterm birth and small for gestational age do not contribute equally to rates of low birth weight, with the majority of babies that are small for gestational age at term being above 2500g, changes in both of these birth outcomes do contribute significantly to trends in low birth weight at a population level.

Low birth weight is often used as a perinatal indicator in developing countries as it is predictive of perinatal morbidity and mortality and requires no estimation of gestational age. In developed countries however, where access to early ultrasound scanning and antenatal care is readily available, it has been suggested that the combining of preterm birth and small for gestational age can hinder progress in developing preventative interventions, as the etiologic determinants of the two conditions differ (Kramer 2003). While the main determinants of small for gestational age are poor maternal nutrition, smoking and hypertension, the main determinants of preterm birth are genital tract infection, multiple birth, pregnancy induced hypertension and obstetric problems (Kramer 2003).

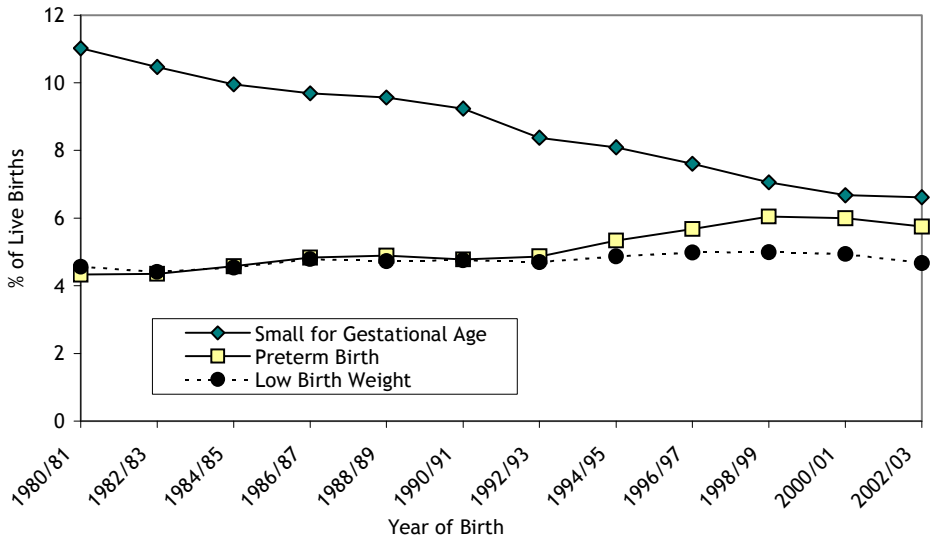
Perinatal Outcomes for the West Coast DHB

Currently one of the most complete data sources providing information on low birth weight is the New Zealand birth registration dataset. In New Zealand all births 20+ weeks gestation must be notified by the hospital/delivering midwife within 5 working day of delivery. Information on the notification form includes maternal age, ethnicity, multiple birth status, and baby's gender, birth weight and gestational age. In addition parents must complete a Birth Registration Form, duplicating the above information, with the exception of birth weight and gestational age, which are supplied only on hospital notification

forms. Once both forms are received by Internal Affairs, the information is merged into a single entry. This 2-stage process it is thought to capture 99.9% of births occurring in New Zealand and cross checking at the receipting stage allows for the verification of birth details. Birth weight percentile is not included in the birth registration dataset. Thus in this analysis the percentile charts used to calculate SGA rates were those derived by Thompson (1994) from New Zealand birth registration data for the 1990-91 period. While a single reference point is necessary for trend analysis, rising mean birth weights during this period mean that SGA rates in later years are less than the conventional 10%.

Figure 46 demonstrates New Zealand trends in low birth weight, small for gestational age and preterm birth for the period 1980/91 to 2002/03. During this period rates of preterm birth increased by 47.4% (95% CI 44.1%-50.7%) while rates of small for gestational age decreased by 45.4% (95% CI 46.7%-44.1%). In contrast rates of low birth weight increased by 9.6% (95% CI 7.1%-12.2%).

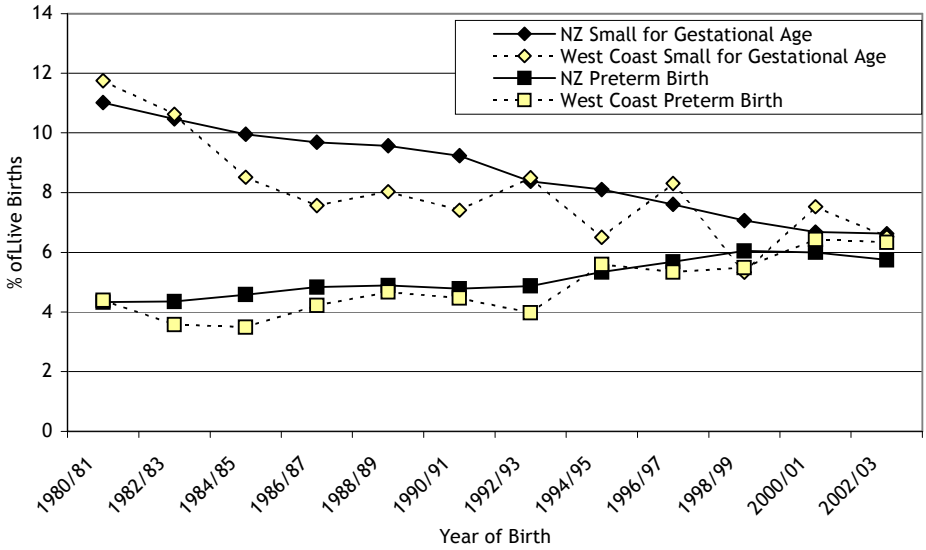
Figure 46. Rates of Small for Gestational Age, Preterm Birth and Low Birth Weight, New Zealand Singleton Live Births 1980/81 to 2002/03



Source: Birth Registration Data NZHIS

Figure 47 compares the small for gestational age and preterm birth rates of West Coast babies with the New Zealand average. During the 23-year period the West Coast's rates of both small for gestational age and preterm birth that were similar to the New Zealand average, with trends for both outcomes following those nationally.

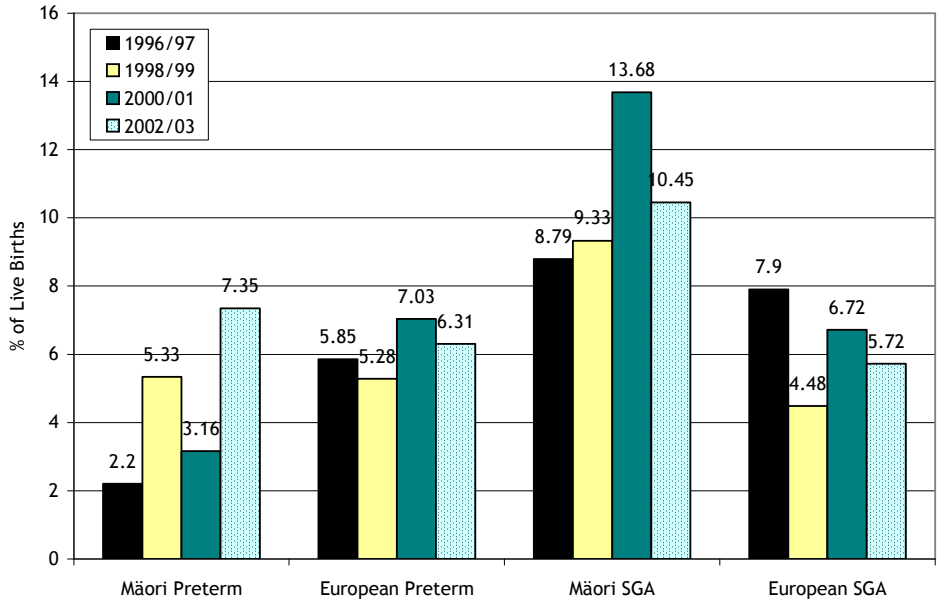
Figure 47. Rates of Small for Gestational Age and Preterm Birth, West Coast DHB vs New Zealand, Singleton Live Births 1980/81 to 2002/03



Source: Birth Registration Data NZHIS

Figure 48 demonstrates rates of preterm birth and small for gestational age for West Coast women for the years 1996/97 to 2002/03. During this period, while rates of preterm birth for Mäori and women appeared to be lower than for European women, this difference did not reach statistical significance (OR 0.64 95% CI 0.36-1.14). Rates of small for gestational age however were significantly higher for Mäori women than for European women (OR 1.55 95% CI 1.04-2.30). These odds ratios were adjusted for differences in age and NZDep distribution between the two groups.

Figure 48. Rates of Preterm Birth and Small for Gestational Age by Maternal Ethnicity, West Coast DHB Singleton Live Births 1996/97 to2002/03



Source: Birth Registration Data NZHIS

Table 116 demonstrates risk factors for preterm birth, small for gestational age and low birth weight for the New Zealand population and presents odds ratios for the West Coast DHB adjusted for age, ethnicity and NZDep. As the table suggests, risk of preterm birth nationally was slightly elevated amongst teens and those 35+ years, amongst Mäori and Indian women and amongst those living in the most deprived NZDep areas. In contrast small for gestational age was moderately elevated amongst teens, Mäori, Asian and Indian women and those living in the most deprived NZDep small areas. When the age, ethnic composition and the NZDep profile of the West Coast region were taken into consideration, risk of preterm birth and small for gestational age were not significantly different from the New Zealand average.

Table 116. Risk Factors for Preterm Birth, Small for Gestational Age and Low Birth Weight, New Zealand Singleton Births 1996 to 2003

Variable	Preterm Birth		Small for Gest Age		Low Birth Weight	
	OR	95% CI	OR	95% CI	OR	95% CI
Maternal Age						
<20 yrs	1.14	1.08-1.20	1.38	1.31-1.45	1.29	1.22-1.37
20-24 yrs	1.02	0.98-1.06	1.24	1.19-1.28	1.09	1.04-1.14
25-29 yrs	1.00	0.97-1.04	1.07	1.04-1.11	1.02	0.98-1.06
30-34 yrs	1.00		1.00		1.00	
35+ yrs	1.13	1.09-1.18	1.05	1.01-1.10	1.15	1.10-1.20
Maternal Ethnicity						
European	1.00		1.00		1.00	
Mäori	1.11	1.08-1.15	1.40	1.36-1.44	1.26	1.22-1.31
Pacific People	0.85	0.81-0.90	0.66	0.63-0.70	0.72	0.68-0.77
Asian	0.96	0.90-1.02	1.51	1.44-1.59	1.08	1.01-1.15
Indian	1.35	1.24-1.48	3.71	3.50-3.94	2.53	2.35-2.73
Other	0.89	0.77-1.04	1.38	1.22-1.56	1.00	0.85-1.18

Variable	Preterm Birth		Small for Gest Age		Low Birth Weight	
	OR	95% CI	OR	95% CI	OR	95% CI
New Zealand Deprivation Index Decile						
1	1.00		1.00		1.00	
2	1.03	0.96-1.11	1.04	0.97-1.11	1.00	0.92-1.08
3	1.07	1.00-1.15	1.05	0.98-1.13	1.07	0.99-1.16
4	1.05	0.98-1.13	1.09	1.02-1.17	1.07	0.99-1.16
5	1.04	0.97-1.12	1.12	1.05-1.19	1.07	0.99-1.16
6	1.12	1.05-1.20	1.20	1.12-1.28	1.16	1.08-1.25
7	1.08	1.01-1.16	1.31	1.23-1.40	1.22	1.13-1.31
8	1.14	1.07-1.22	1.34	1.25-1.42	1.26	1.17-1.36
9	1.15	1.08-1.23	1.37	1.29-1.46	1.31	1.22-1.40
10	1.17	1.10-1.25	1.48	1.39-1.58	1.34	1.25-1.44
District Health Board						
New Zealand	1.00		1.00		1.00	
West Coast DHB	0.99	0.84-1.16	1.07	0.92-1.24	0.95	0.80-1.14

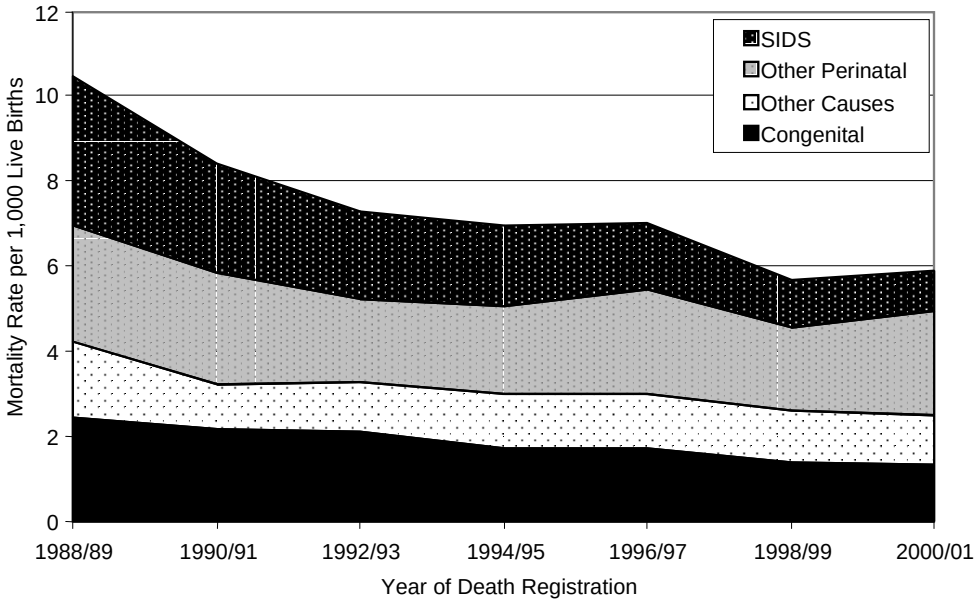
Source: Birth Registration Data NZHIS

In summary, rates of preterm birth are increasing in the West Coast DHB while rates of small for gestational age are declining. Both trends are consistent with changes occurring nationally. While there appear to be no ethnic disparities in rates of preterm birth amongst West Coast women, rates of small for gestational age are higher for Mäori women. Finally, once age, ethnicity and NZdep are taken into account, preterm birth and small for gestational age rates in the West Coast DHB do not differ significantly from the national average.

Infant Mortality

Infant mortality is defined as the death of a live born child prior to their first birthday. In New Zealand the four leading causes of infant mortality are perinatal conditions, sudden infant death syndrome (SIDS), congenital anomalies and pneumonia & influenzae, which together account for over 80% of deaths in this age group. While infant mortality rates have declined significantly in New Zealand during the past two decades, Mäori infant mortality remains higher than that of the rest of New Zealand.

Figure 49. Infant Mortality by Cause of Death, New Zealand 1988/89 to 2000/01



Source: Numerator NZHIS Mortality Dataset; Denominator NZHIS Birth Registration Dataset

Figure 49 summarises infant mortality rates by cause of death for the period 1988/89 to 2000/01. During this period, infant mortality rates declined by 44%, from 10.5 per 1,000 births in 1988/89 to 5.9 per 1,000 births in 2000/01. While SIDS was the leading cause of death at the beginning of this period, its rapid decline during the 1990s saw perinatal conditions and congenital anomalies emerge as the leading causes of death by 2000/01.

Infant Mortality Rates for the West Coast DHB

Infant mortality rates in this analysis were calculated by dividing the total number of infant deaths registered each year (deaths aged <1 year) by the number of live births registered during the same period. Numerators were derived from the Death Registration dataset maintained by NZHIS, with information on the cause of death being derived from death certificates and information contained in post mortem reports (ICD-9/ICD-10 main underlying cause). Denominators were derived from the Birth Registration dataset and comprised all live born babies registered in the same year as the reported death. DHB region was determined by domicile code (the usual area of residence at the time of birth or death registration).

The small number of deaths in the West Coast DHB during the period of 1988/89 and 2000/01 prevented an accurate comparison of the West Coast's infant mortality rates with the New Zealand average.

Table 117 summarises the total number of infant deaths in the West Coast during 1999 to 2001. During this period the leading cause of infant death was perinatal conditions.

Table 117. Total Infant Deaths in the West Coast DHB by Cause during 1999 to 2001

Cause	Number of Deaths 1999t to 2001	% of Deaths
Perinatal/Congenital	4	100
SIDS	0	0
Other Causes	0	0
Total	**4**	**100**

Source: NZHIS Mortality Dataset

Breastfeeding

Breastfeeding meets a term infant's nutritional needs for the first 4-6 months of life. In addition, it confers significant advantages in reducing the risk of diarrhoea, respiratory infections, otitis media, SIDS, diabetes, Chron's disease, asthma and atopy (American Academy of Paediatrics 1997). The World Health Organization recommends "infants should be fed exclusively on breast-milk from birth to 4-6 months of age; that they should be given no other liquids or solids than breast-milk, not even water during this period" (WHO 1995).

In line with WHO recommendations, in 2002 the Ministry of Health set the following breastfeeding targets for New Zealand (Ministry of Health 2002c):

1. increase breastfeeding (exclusive/fully) rate at 6 weeks to 74% by 2005 and to 90% by 2010
2. increase breastfeeding (exclusive/fully) rate at 3 months to 57% by 2005 and to 70% by 2010
3. increase breastfeeding (exclusive/fully) at 6 months to 21% by 2005 and to 27% by 2010.

While to date New Zealand's breastfeeding rates compare favourably with other OECD countries, they remain below the 2002 Ministry of Health targets, and are consistently lower for Mäori and Pacific people women (Ministry of Health 2002c). In addition, the Plunket National Child Health Study found that while breastfeeding rates were high at birth they declined significantly thereafter. Barriers to meeting breastfeeding targets include paternal attitudes, socioeconomic factors, returning to work and lack of workplace support, poor initiation of breastfeeding, and perceived inadequate milk supply (Ministry of Health 2002c) . At a DHB level one of the key initiatives to promote breastfeeding is the "Baby Friendly Hospital Initiative" which aims to encourage hospitals and health care facilities to adopt practices that fully protect, promote and support exclusive breastfeeding from birth.

Breastfeeding Statistics

While more detailed breastfeeding information is often available from time to time as the result of one off surveys, at a national level routinely collected information on breastfeeding comes from two main sources:

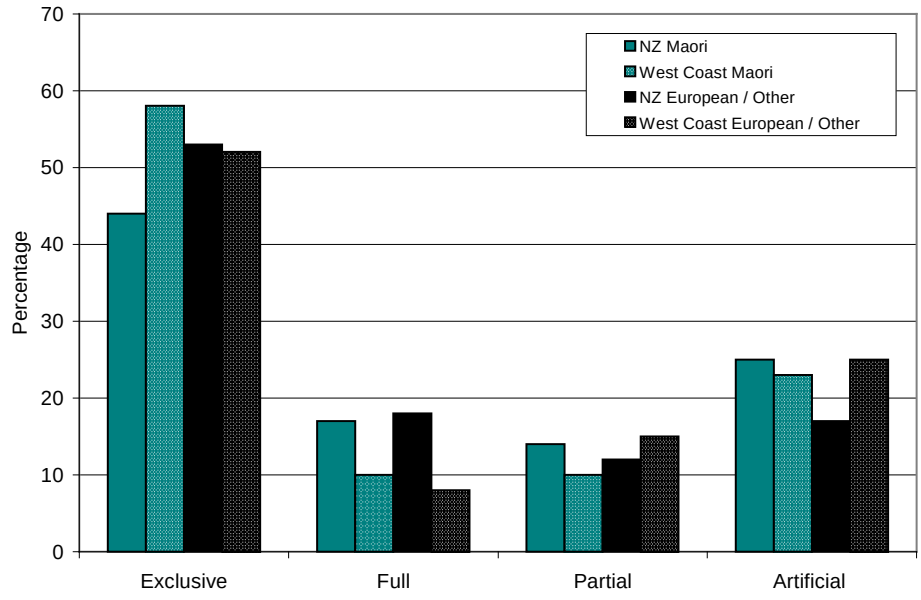
1. Plunket, who have information on breastfeeding rates dating back to 1922, with more detailed information (eg by ethnicity & DHB) being available in recent years. Plunket currently enrol about 85% of the new baby population, although Mäori and Pacific people may be potentially under-reported in these samples (see Figure 50 to Figure 52).
2. The Maternal and Newborn Information System, established by the Health Funding Authority in 1999, amalgamates information from LMC payment claims and data collected at hospital discharge through the National Minimum Dataset (NMDS). While breastfeeding status at time of transfer to well-child provider (usually 4-6 weeks) is collected on the Section 51 notice, this was not a mandatory field prior to 2002 and thus a substantial proportion of forms have breastfeeding status unrecorded. In addition, the terms "exclusively "and "partially" breastfed are not precisely defined on the Section 51 notice. These problems have been rectified with the new Section 88 Maternity notice effective from 1 July 2002 and it is hoped that 2003 figures will be more complete (Ministry of Health 2004f).

Breastfeeding Rates - Plunket Data

While New Zealand's breastfeeding rates compare favourably with other OECD countries, there has been little improvement in rates for the past 10 years. While the percentage of New Zealand infants fully breastfed at 5-6 weeks has remained at approximately 65%, rates for Mäori women during 1997 to 2001 were 54-57%, rates for Pacific people women were 54-60% and rates for European/Other women were 67-69%. Similarly, while rates for full breastfeeding at 3 months have remained at approximately 51%, rates for Mäori women during 1997-2001 were 36-41%, rates for Pacific people women were 41-46% and rates for European/Other women were 53-56% (Ministry of Health 2002c). Care should be taken however when interpreting these figures, as rates at 5-6 weeks were based on only 37-43% of Mäori births, 71-75% of Pacific people births and 45-55% of European births. Similarly rates at 3 months were based on 53-57% of Mäori births, 82-90% of Pacific people births and 88-91% of European births. In addition the age at which breastfeeding data was collected may vary (Ministry of Health 2002c).

Figure 50 compares the West Coast's breastfeeding rates at 6 weeks to the New Zealand average for the period July 2003 to June 2004 (Source Plunket data collected on infants 11-15 weeks). During this period, the percentage of West Coast Mäori infants that were either exclusively or fully breastfed was 68%, as compared to 61% nationally. Similarly, 60% of the West Coast's European/Other infants were either exclusively or fully breastfed, as compared to 71% nationally. For the region as a whole exclusive/full breastfeeding rates at 6 weeks were 62%, a figure slightly lower than the New Zealand average of 68%.

Figure 50. Breastfeeding Rates at 6 Weeks, West Coast vs New Zealand, July 2003 to June 2004

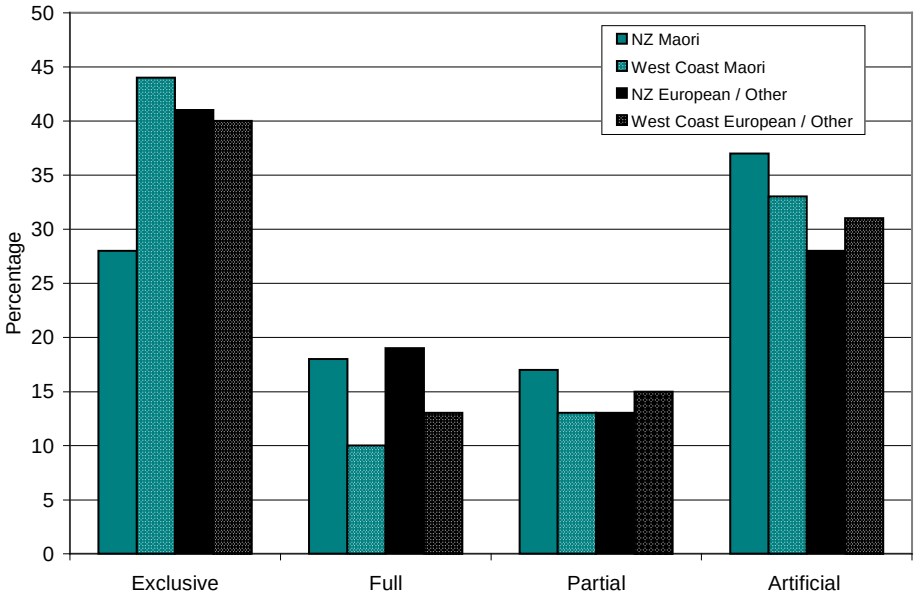


Source: Plunket.

Figure 51 compares the West Coast's breastfeeding rates at 3 months to the New Zealand average for the period July 2003 to June 2004 (Source Plunket data collected on infants 11-15 weeks). During this period, the percentage of West Coast Mäori infants that were either exclusively or fully breastfed at 3

months was 54%, as compared to 46% nationally. Similarly, 53% of the West Coast's European/Other infants were either exclusively or fully breastfed, as compared to 60% nationally. For the region as a whole exclusive/full breastfeeding rates at 3 months were 53%, a figure very similar to the New Zealand average of 55%.

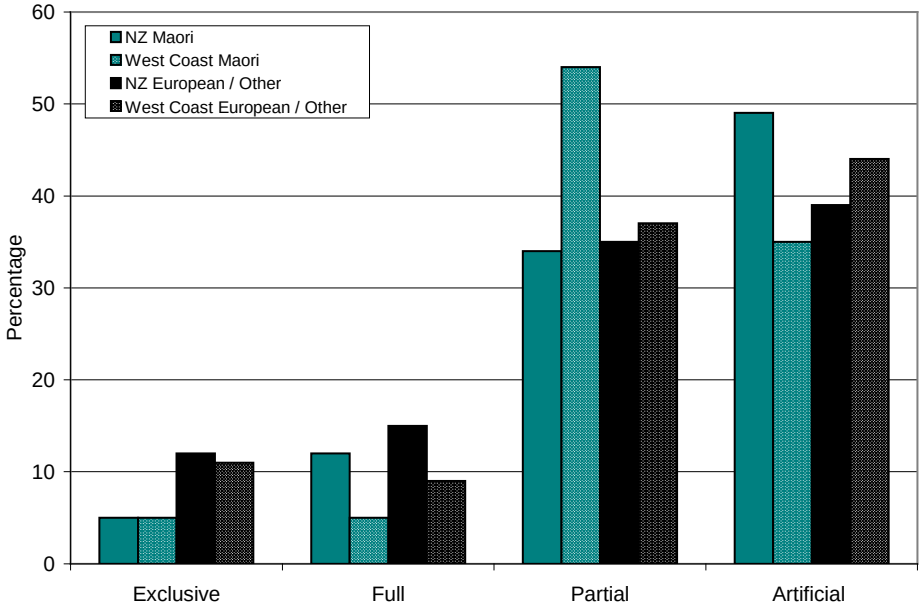
Figure 51. Breastfeeding Rates at 3 Months, West Coast vs New Zealand, July 2003 to June 2004



Source: Plunket.

Figure 52 compares the West Coast's breastfeeding rates at 6 months to the New Zealand average for the period July 2003 to June 2004 (Source Plunket data collected on infants 11-15 weeks). During this period, the percentage of West Coast Mäori infants that were either exclusively or fully breastfed was 10%, as compared to 17% nationally. Similarly, 20% of the West Coast's European/Other infants were either exclusively or fully breastfed, as compared to 27% nationally. For the region as a whole exclusive/full breastfeeding rates at 6 months were 18%, a figure slightly `lower than the New Zealand average of 24%.

Figure 52. Breastfeeding Rates at 6 Months, West Coast vs New Zealand, July 2003 to June 2004



Source: Plunket.

Breastfeeding Rates - Maternal and Newborn Information System

Data from the Maternal and Newborn Information System for 2002 suggests that at the time of transfer to a well-child provider (usually 4-6 weeks) 71.3% of babies in the West Coast were exclusively or fully breastfed as compared to 79.6% nationally. It is notable however that 27.7% of West Coast babies did not have their breastfeeding status recorded at the time of transfer to well-child provider and as Table 118 indicates, if these are included in the denominator, then only 51.6% of West Coast babies were known to be exclusively or fully breast fed at transfer (Ministry of Health 2004f). Figures from a year earlier (2001) suggest that 93.3% of West Coast babies were exclusively breastfed at the time of transfer to as compared to 67.7% nationally (Ministry of Health 2003i). This figure however was based on a sample of only 15 babies and is thus unreliable.

Table 118. Comparison of Breastfeeding Rates at Transfer to Well-Child Provider, the West Coast vs New Zealand 2002

	Exclusive/Fully		Partially		Artificial		Not Stated	
	n	%	n	%	n	%	n	%
West Coast	82	51.6	15	9.4	18	11.3	44	27.7
New Zealand	17,180	43.0	2,935	7.4	1,467	3.7	18,335	45.9

Source: MNIS Report on Maternity 2002.

In conclusion, Plunket data would suggest that the West Coast's has breastfeeding rates that are similar to or slightly lower than the New Zealand average (no confidence intervals available). Information from the Maternal and Newborn Information System, although potentially less complete than Plunket data, would also support this conclusion. Within the limitations of the data available, it appears that the West Coast may at this stage, not be on track to meet the Ministry of Health's 2005 Breastfeeding Targets at 6 weeks, although those at 3 and 6 months of age are closer to that suggested by the Ministry of Health.

Screening for Hearing Loss in Early Childhood

Hearing in infants and young children is essential for speech and language development and its loss during early life may lead to disability, the extent of which depending on the severity and timing of the loss (Elden and Potsic 2002). Hearing loss is often divided into two categories – sensorineural hearing loss, arising from problems in the cochlear or auditory nerve (often due to inherited genetic conditions, congenital anomalies, extreme prematurity or in-utero infections (Elden and Potsic 2002)) and conductive hearing loss arising from problems in the middle or external ear (often the result of chronic otitis media with effusion).

New Zealand's Well Child – Tamariki Ora National Schedule outlines the following timeframe for the screening and surveillance of infants and young children for hearing loss:

1. Newborn (0-5 days) – LMC/paediatrician to screen children for risk factors of sensorineural hearing loss eg severe neonatal jaundice, extreme prematurity, in-utero infections, cranio-facial anomalies, family history of congenital hearing loss. Where risk factors present, children referred to audiological centre for diagnostic assessment.
2. Hearing Surveillance and Surveillance for Otitis Media with Effusion by Well Child Provider at 6 week, 3, 5, 10, 15 and 24 month visits and referral if hearing impairment or otitis media with effusion suspected.
3. Age 3 Years - Screening at registered pre-school venues using tympanometry to detect chronic middle ear effusion. Immediate referral if evidence of obstruction or perforation, otherwise referral following 2 failed tympanometry tests with a 10-16 week test-retest interval.
4. Age 5 Years – Screening of all school new entrants with audiometry and tympanometry to detect undiagnosed hearing loss or persistent middle ear disorder. Immediate referral if hearing loss is marked, otherwise referral following 2 failed tests with a 10-16 week test-retest interval.

Evidence (Ministry of Health 2002h) would suggest that the screening of newborn infants for "risk criteria" has not led to a reduction in the age of detection of hearing loss, with the average age at detection during 1991-2000 being 28.6 months and "risk factor" approaches only picking up 40% of children.

Hearing Screening Results at Pre-School and School Entry

The National Audiology Centre is responsible for the co-ordination of the National Hearing and Vision Screening Program and collates and publishes national hearing data in their annual reports. The

following information is derived from the National Audiology Centres annual screening statistics for the years ending June 1992-2003. As 95% confidence intervals were not available in these reports, comparisons of DHB coverage and failure rates at 3 and 5 years are descriptive only, rather than implying statistically significant differences with national averages.

New Entrant Screening at 5 Years

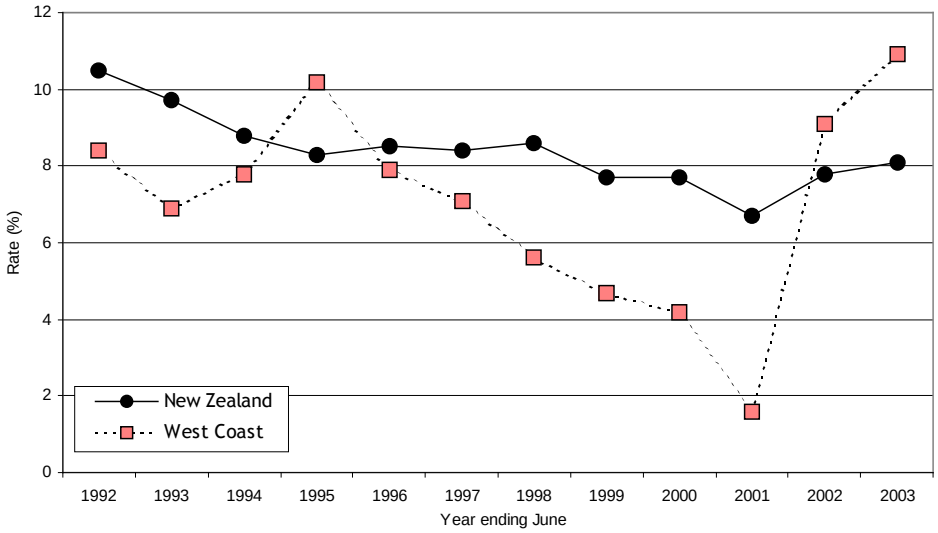
Because screening coverage of new entrants nears 100%, information collected at this age more accurately reflects the prevalence of hearing disorders than does that at 3 years. Coverage is calculated by dividing the total numbers screened in each DHB by the eligible population, as calculated from 5-yearly census data. Coverage is thus sensitive to population changes between the 5-year Census periods. Overall coverage for screening at school entry in 2002-2003 was 105%, with a failure rate of 8.1%. Screening failure rates for European children were 5.6%, for Mäori children were 12.6% and for Pacific people children were 16.1%.

Statistics from the National Audiology Centre summarises the new entrant coverage rates for the West Coast DHB for the years ending June 2001 to June 2003. Overall, the West Coast's coverage rates for hearing screening at school entry were similar to the national average. Coverage rates of over 100% may reflect anomalies in the statistical collection process, under-estimation of the population denominator from Census data or duplication of services (National Audiology Centre 2004).

Hearing failures at school entry are calculated by dividing the number of referrals (ie two consecutively test failures or severe hearing loss) by the number of new entrant children screened.

Figure 53 compares the West Coast's New Entrant Hearing Test Failures with the New Zealand average for the years ending June 1992 to June 2003[64]. Large variations are present in the year to year rates, possibly as a result of small numbers. Thus while in the middle of the period studied the West Coast's hearing failure rates were generally lower than the New Zealand average, during the last 2 years of this period rates were similar to or higher than the New Zealand average.

Figure 53. Failure Rates for Hearing Screening in New Entrants at 5 Years, the West Coast DHB vs New Zealand

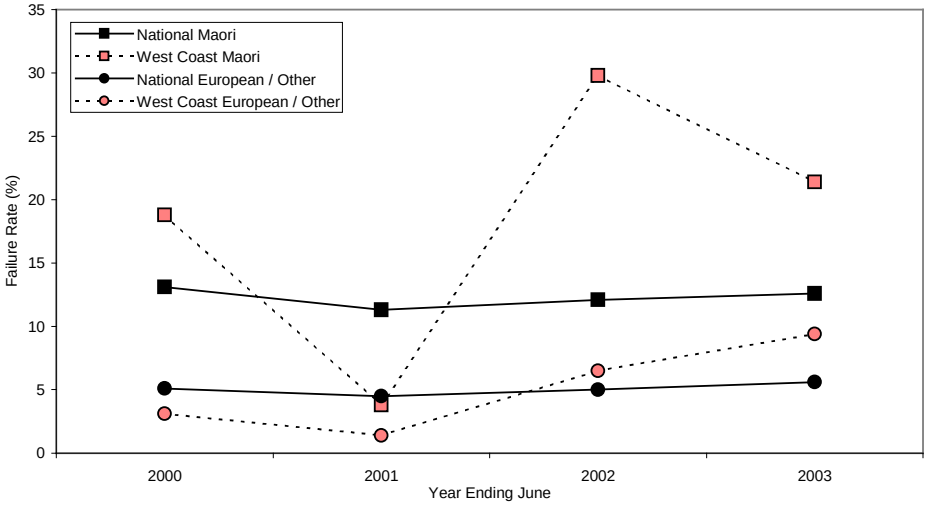


Source: National Audiology Centre
*Notes: *DHB boundary and title changes occurred in the year 2000/01*

Figure 54 compares the rates of hearing test failure at school entry for Mäori and European/Other children for the years ending June 2001 to 2003. Again, large fluctuations in rates make interpretation difficult, although for 3 out of the 4 years studied Mäori hearing failure rates were generally higher than the New Zealand Mäori rates and those of European/Other children living on the West Coast. European/Other rates appeared to be similar to the New Zealand average.

[64] Note: Minor DHB boundary and title changes occurred in 2000/01, which must be taken into consideration when interpreting trends.

Figure 54. Comparison of Mäori and European/Other Hearing Failure Rates at School Entry, the West Coast DHB vs New Zealand



Source: National Audiology Centre
*Notes: *Note For the year ending June 2001 the European/Other category includes other non-Mäori non-Pacific people ethnic groups, while for the years ending June 2002 and 2003 the European/Other category includes only European children*

Pre-School Screening at 3 Years

All 3 year old children attending registered pre-school settings in New Zealand are screened for persistent middle ear disorders with tympanometry. Because screening is dependant on pre-school attendance, coverage is not universal at 3 years of age. Referrals are made if serial screening with a test-retest interval of 10-16 weeks is suggestive of middle ear effusion or if there is evidence of perforation or obstruction. Formal audiometry is not undertaken in the pre-school environment. The overall national coverage rate for tympanometry screening in 3-year olds in 2002-2003 was 82.1%, with a failure rate of 6.9%. Screening failure rates for European children were 5.7%, for Mäori children were 11.1% and for Pacific people children were 14.3%.

Table 119 summarises hearing test failure rates at 3-years for the West Coast DHB for the years ending June 2001- June 2003. Overall failure rates during this period were similar to or lower than the New Zealand average during the three years for which data was available.

Table 119. Pre-School Hearing Failure Rates at 3 Years, the West Coast DHB vs New Zealand, 2000/01 to 2002/03

	2000/01	2001/02	2002/03
West Coast DHB	3.7	7.7	4.8
New Zealand	6.3	7.8	6.9

Source: National Audiology Centre

In summary, the West Coast DHB had coverage rates for both pre-school (3 years) and school entry (5 years) hearing screening that are similar to or higher than the national average. Large variations in rate, possibly as a result of small numbers however made interpretation of hearing test rate failures at 5 years difficult, although failure rates at 3 years were more consistently below the New Zealand average. Hearing failure rates for Mäori children were generally above both the New Zealand Mäori and the West Coast European/Other rates, suggesting ethnic inequalities in hearing test failure at 5 years. Because no confidence intervals were available however, these findings are of a descriptive nature only and care should be taken when interpreting them in relation to national figures.

Oral Health in Children

Up until the early 1990s, dental caries rates amongst New Zealand children were gradually declining. More recently however rates have become static or increased slightly (National Health Committee 2003) . In addition large ethnic, socioeconomic and regional differences remain, with Mäori and Pacific people children and children living in socioeconomic disadvantage being consistently more likely to experience poorer oral health outcomes (National Health Committee 2003) .

The School Dental Service was established in 1921 and currently provides basic preventative and restorative dental care for preschoolers and primary and intermediate school children via its team of dental therapists. While enrolment for preschool age children was only 56% in 1997, enrolment of school age children is high (>95%) (Thomson et al 2003) . Children are seen annually, unless deemed to be at high risk of dental disease, when 6-monthly visits are indicated. After Year 8 (Form 2), adolescents are eligible for dental care under the General Dental Benefit system up until the age of 18 years. This care is provided by private dentists working under contract with local DHBs.

Dental caries data is collected and reported annually by the School Dental Service. Since 1988 data has been collected on two key indicators: Percentage of Children Caries Free at 5 Years, and Mean DMFT Score at Year 8 (Form 2).

Data are reported by ethnic group and by community water supply fluoridation status. Data limitations include the unavailability of individual level data, making the calculation of standard deviations difficult as well as preventing multivariate analysis and the adjusting for potential confounders.

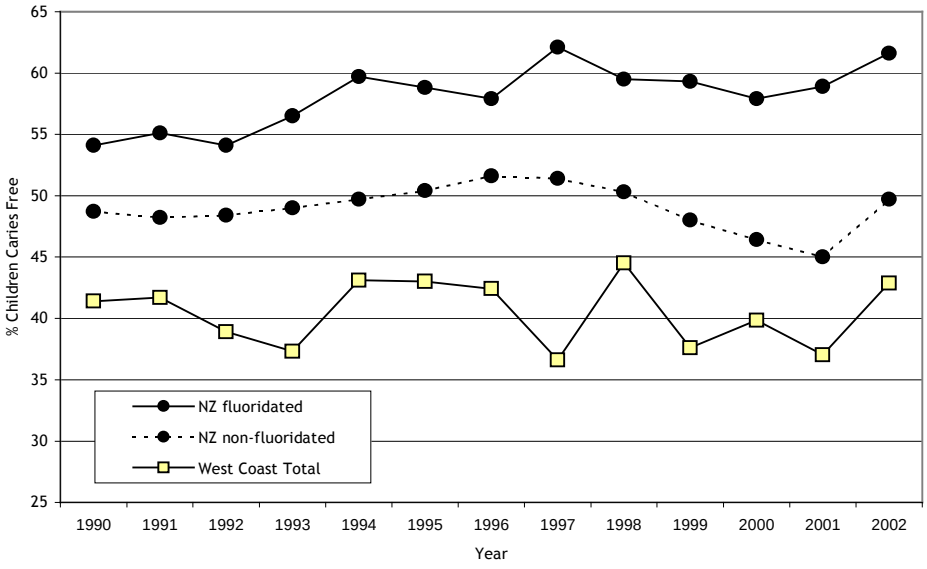
During 2002 approximately 48% of New Zealand 5 year olds lived in communities with fluoridated water supplies (Ministry of Health 2004c). Water fluoridation is known to reduce dental decay by up to 50% and has been shown to be particularly effective in reducing socioeconomic and ethnic disparities in dental caries (Thomson et al 2003) . Thus, where available, figures in the following sections are presented in conjunction with the fluoridation status of the communities from which they were derived.

Oral Health Status of West Coast DHB Children

During 2002 School Dental Service statistics indicate that no (0%) children on the West Coast DHB had access to fluoridated drinking water.

Figure 55 compares the percentage of West Coast children caries free at 5 years to the New Zealand average for 1990 to 2002. As the figure indicates, the percentage of children cares free at 5 years was consistently lower than both the New Zealand non-fluoridated and fluoridated averages for all of the years studied.

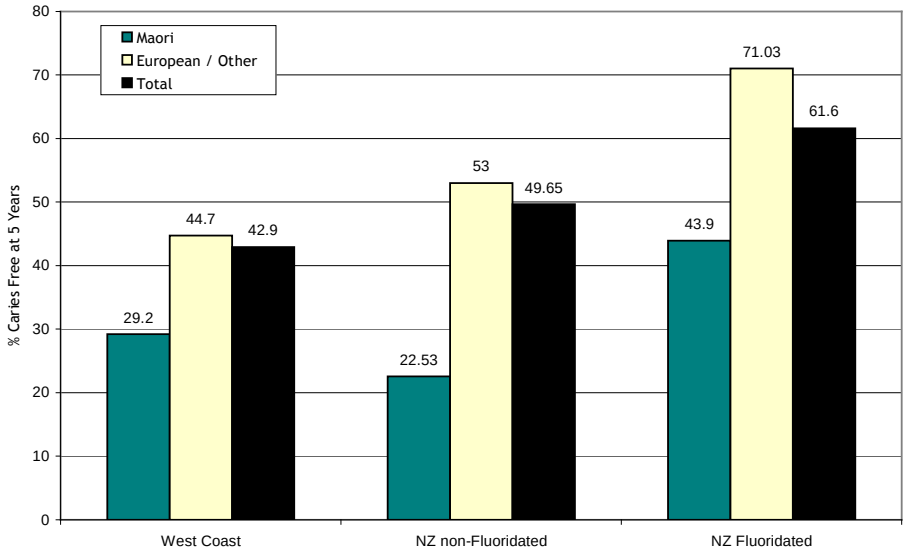
Figure 55. Percentage of Children Caries Free at 5 Years, West Coast DHB vs New Zealand, 1990 to 2002



Source: Ministry of Health School Dental Service Data

Figure 56 compares the percentage of Mäori and European/Other children caries free at 5 years with the New Zealand average. During 2002 marked ethnic disparities in the proportion of children caries free at 5 years were present amongst West Coast children. While these disparities were similar to those in non-fluoridated areas nationally, percentages for both ethnic groups were much lower than the New Zealand fluoridated average.

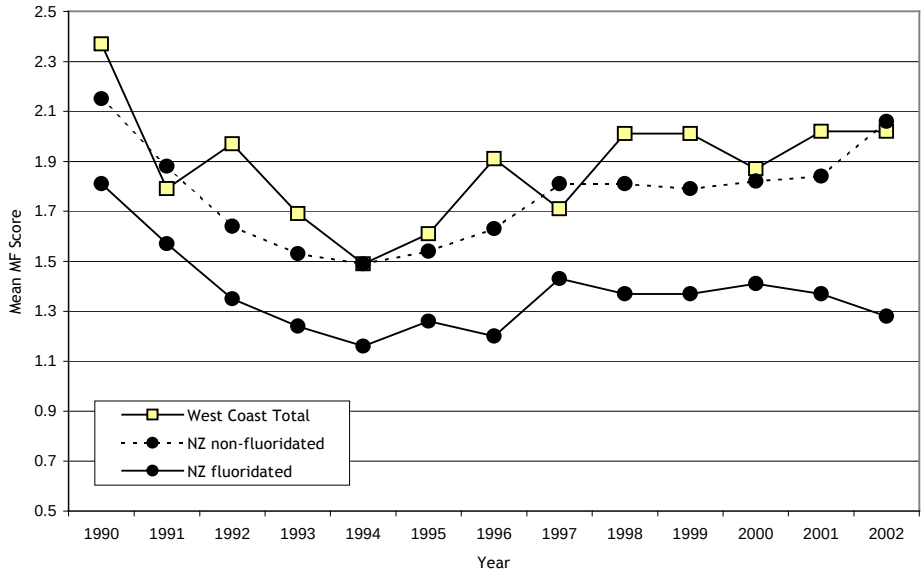
Figure 56. Percentage of Children Caries Free at 5 Years by Ethnic Group, West Coast DHB vs New Zealand 2002



Source: Ministry of Health School Dental Service Data

Figure 57 compares the mean MF Scores of West Coast children at 12 years with those of the New Zealand average for 1990 to 2002. During this period the West Coast's mean MF scores were consistently higher than the New Zealand fluoridated average but were similar to the New Zealand non-fluoridated average.

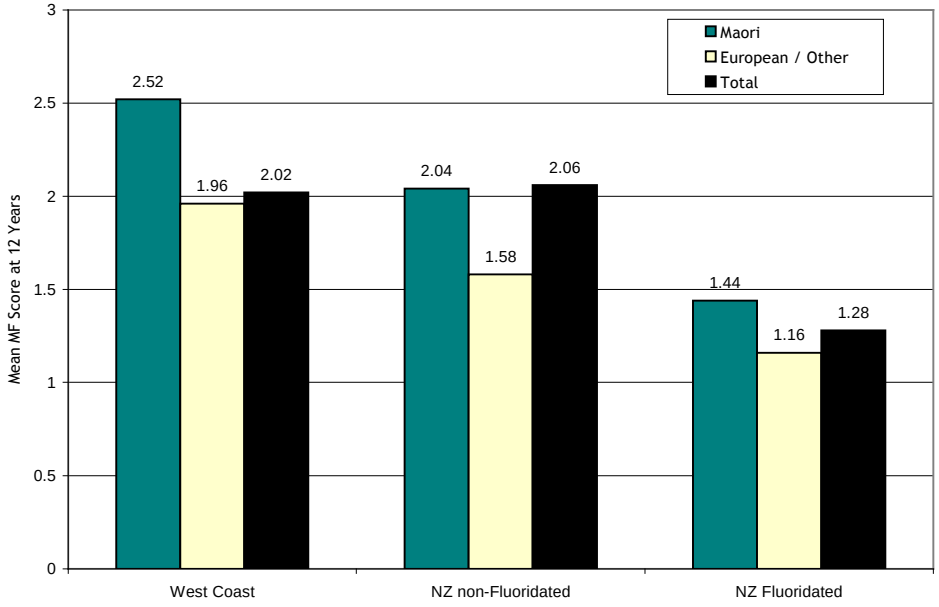
Figure 57. Mean MF Scores at 12 Years, West Coast DHB vs New Zealand, 1990 to 2002



Source: Ministry of Health School Dental Service Data

Figure 58 compares the mean MF Scores for Mäori and European/Other children in the West Coast DHB to the New Zealand average for 2002. During 2002, disparities were evident between the mean MF scores of Mäori and European/Other children. While the mean MF scores of Mäori children were higher than the New Zealand non-fluoridated average, means for European/Other children were similar. Mean scores for both ethnic groups however, were higher than the New Zealand fluoridated average.

Figure 58. Mean MF Score at 12 Years by Ethnic Group, West Coast DHB vs New Zealand 2002



Source: Ministry of Health School Dental Service Data

Table 120 compares the % of children caries free at 5 years and mean DMFT scores during Year 8 by TLA for the West Coast Region during 2003. While the % of children caries free varied little by TLA, mean DMFT scores were slightly higher in Westland, although no 95% confidence intervals were available to determine the significance of this difference.

Table 120. Percentage Caries Free at 5 Years and Mean DMFT Score at 12 Years, West Coast DHB Children by Territorial Authority, 2003

Territorial Authority	Number of Children 5 Years	% Caries Free at 5 Years	Number of Children in Year 8	Mean DMFT Score Year 8
Buller	79	45.6	144	1.90
Grey	185	47.0	186	1.91
Westland	98	45.9	120	2.46

Source: School Dental Service

In summary, at present no West Coast children have access to fluoridated drinking water. While mean MF scores at 12 years are similar to the New Zealand non-fluoridated average, rates of children caries free at 5 years are lower than both the New Zealand fluoridated and non-fluoridated averages. In addition, ethnic disparities exist between the dental health status of Mäori and European/Other children at both 5 and 12 years of age. Comparison of West Coast DHB figures with fluoridated New Zealand averages would suggest that if access to fluoridated drinking water could be secured for West Coast children, both the poor dental health status of the region as a whole, and the prominent ethnic disparities in oral health for West Coast children could be improved.

Immunisation

International evidence would suggest that immunisation is one of the most cost-effective and successful public health interventions (Ministry of Health 2003f). Coverage rates are a key child health indicator, often reflecting the adequacy of and access to primary health care. New Zealand however, has not achieved its target of 95% of children being fully vaccinated by the age of 2 years and inequalities exist, with coverage rates being lower for Mäori and Pacific people children (Ministry of Health 2003f).

While there is routine national surveillance of vaccine preventable diseases, to date surveillance of immunisation coverage rates in children has been problematic. HelathPAC immunisation claims data is collated by the New Zealand Health Information Service from GPs and clinics claiming for subsidised immunisation visits. Information from providers who are capitated for immunisations however, does not appear in this dataset, making coverage incomplete. In addition, prior to 1999 the NZHIS immunisation data warehouse did not contain information on person or vaccine received, only on the

number of immunisations (New Zealand Health Information Service 2003a) . At a primary care level, information on immunisation coverage is often held in an appropriate recall system, but the amount of time practices have been fully computerised varies and claim submitted electronically may be captured in IPA coverage data differently from those made manually. In addition, opportunistic immunisations given by other providers (eg secondary care, after hours facilities) may not be captured in primary care recall systems. As a result, no reliable immunisation coverage rates were available for inclusion in this report.

It is anticipated that with the roll out of the National Immunisation Register (NIR) in 2005, many of the difficulties in obtaining reliable immunisation coverage information will be overcome. All children born after a specified point in time will be enrolled with the NIR and their details forwarded to their nominated primary health provider, who in turn will oversee their routine well child care. Information on immunisation events will be forwarded to the NIR and if the child becomes overdue for a vaccine for a prolonged period, the NIR will contact the provider to ensure follow up. Those outside the usual birth cohort will become enrolled with the NIR at their first point of contact for vaccination (Ministry of Health 2004i) . Such an approach will ensue reliable denominators for calculation of immunisation coverage rates and a central registry will ensure that opportunistic as well as routine immunisation events are captured for each child. Thus while it has not been possible to provide information on immunisation coverage rates for this DHB health needs assessment, it is anticipated that this information will be readily available by the end of the next 3-yearly reporting cycle.

Hospital Admissions and Mortality

The following tables summarise the major causes of mortality and hospital admissions for children (0-14 yrs) and youth (15-24 years) residing in the West Coast region. Hospital admission data was derived from the National Minimum Dataset and includes all publicly funded hospital discharges for the period 2001-2003. Mortality data was derived from the NZHIS's mortality collection and includes all deaths occurring during the 1999-2001 registration years. It is intended that the following tables provide only a snapshot of the major causes of hospital admission and mortality during this period, with the later sections on ambulatory sensitive admissions, asthma and injury providing a more detailed look at areas of particular public health importance.

Table 121. Child and Youth Mortality in the West Coast DHB for the Years 1999 to 2001

Cause of Death	Total Number	Annual Average	% of Deaths in Age Group
Age 0-14 Years			
Perinatal/Congenital	4	1.3	4.4
Medical Condition	3	1.0	33.3
Injury	2	0.7	22.2
Age 15-24 Years			
Injury/Suicide	9	3	90.0
Medical Condition	1	0.3	10.0

Source: NZHIS Mortality Dataset

Table 122. Total Deaths and Rates per 1,000 by Ethnicity, West Coast DHB Child and Youth 0-24 Years, 1996/97 to 2000/01

Year	West Coast Mäori Total	West Coast Mäori Rate	New Zealand Mäori Total	West Coast European Total	West Coast European Rate	New Zealand European Rate
1996/97	3	0.94	1.29	10	0.54	0.70
1998/99	0	0.00	1.10	16	0.92	0.59
2000/01	1	0.35	1.00	12	0.74	0.59

Source: Numerator NZHIS Mortality Dataset; Denominator Statistics New Zealand Census Data

Table 123. Hospital Admissions for West Coast DHB Children 0-14 Years, 2001 to 2003

Diagnosis	Number	Annual Average	% of Admission Type	% of Total Admissions
Acute Admissions				
Injury	252	84	14.3	8.7
Respiratory Infections	240	80	13.6	8.3
Gastroenteritis	164	55	9.3	5.7
Viral Infection NOS	132	44	7.5	4.6
Bronchiolitis	83	28	4.7	2.9
Epilepsy	82	27	4.7	2.8
Asthma	79	26	4.5	2.7
ENT Infections	47	16	2.7	1.6
Abdominal Pain	43	14	2.4	1.5
Other Causes	640	213	36.3	22.2
Total	1,762	587	100.0	62.8
Arranged Admissions				
Gastroenteritis	41	14	12.4	1.4
Newborn Feeding Prob	38	13	11.5	1.3
Neoplasms	36	12	10.9	1.2
Prematurity	26	9	7.9	0.9
Dental	25	8	7.6	0.9
Other Causes	165	55	49.8	5.7
Total	331	110	100.0	11.5
Waiting List Admissions				
Dental Conditions	179	60	24.1	6.2
Tonsils and Adenoids	122	41	16.4	4.2
Other ENT Infections	111	37	14.9	3.8
Inguinal Hernia	31	10	4.2	1.1
Strabismus	27	9	3.6	0.9
Neoplasms	21	7	2.8	0.7
Other Causes	252	84	33.9	8.7
Total	743	248		25.7
ACC Covered*				
ACC Covered	51	17	100.0	1.8
Total Admissions	2,887	962		100.0

Source: NZHIS National Minimum Dataset, Publicly Funded Hospital Discharges (excluding births)
*Notes: *An ACC patient covered by ACC for treatment*

Table 124. Hospital Admissions for West Coast DHB Youth 15-24 Years, 2001 to 2003

Diagnosis	Number	Annual Average	% of Admission Type	% of Total Admissions
Reproductive				
Early Pregnancy Loss	49	16	8.6	2.7
Induced Abortion	34	11	6.0	1.9
Pregnancy & Delivery	485	162	85.4	27.2
Total	568	189	100.0	31.8
Acute Admissions				
Injury	200	67	27.9	11.2
Mental Health	76	25	10.6	4.3
Other Infections	51	17	7.1	2.9
Abdominal Pain	46	15	6.4	2.6
Skin Sepsis	27	9	3.8	1.5
Other Causes	316	105	44.1	17.7
Total	716	239	100.0	40.1

Diagnosis	Number	Annual Average	% of Admission Type	% of Total Admissions
Arranged Admissions				
Neoplasms	21	7	17.8	1.2
Dental	14	5	11.9	0.8
Injury	13	4	11.0	0.7
Other Causes	70	23	59.3	3.9
Total	118	39	100.0	6.6
Waiting List Admissions				
Tonsils and Adenoids	43	14	15.5	2.4
Cervix non-inflammatory	18	6	6.5	1.0
Neoplasms	17	6	6.1	1.0
Other Causes	200	67	71.9	11.2
Total	278	93	100.0	15.6
ACC Covered*				
ACC Covered	106	35	100.0	5.94
Total Admissions	1,786	595	100.0	100.0

Source: NZHIS National Minimum Dataset, Publicly Funded Hospital Discharges
*Notes: *An ACC patient covered by ACC for treatment*

Table 125. Total Admission Numbers and Rates per 1,000 by Ethnicity, West Coast DHB Child and Youth 0-24 Years, 1996/97 to 2002/03

Year	West Coast Mäori Total	West Coast Mäori Rate	New Zealand Mäori Rate	West Coast European Total	West Coast European Rate	New Zealand European Rate
1996/97	408	128.3	133.4	3,381	182.8	116.2
1998/99	327	108.6	141.7	2,750	158.2	117.3
2000/01	386	135.7	157.8	2,393	147.1	125.2
2002/03	450	168.2	166.5	2,565	169.3	125.4

Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data

Ambulatory Sensitive and Population Preventable Hospital Discharges

Hospital admissions may be classified as potentially avoidable or unavoidable. This distinction however is a theoretical one, based on a patient's primary diagnosis rather than taking into account individual circumstances (Ministry of Health 2003c) . Avoidable hospitalisations are often further divided into those preventable by appropriate management in primary care and those preventable by population level intervention strategies.

Nationally, population preventable hospitalisations have increased since 1995/96 at a rate of 2.4% per year, with the rate of increase being 3 times higher amongst Mäori and Pacific people. Rates of ambulatory sensitive admissions have also increased at a rate of 2.9% per year since 1988/89, with the greatest increases again being amongst Mäori and Pacific people. The 2001/02 period however saw a tapering off in admission rates for all three ethnic groups (Ministry of Health 2003c).

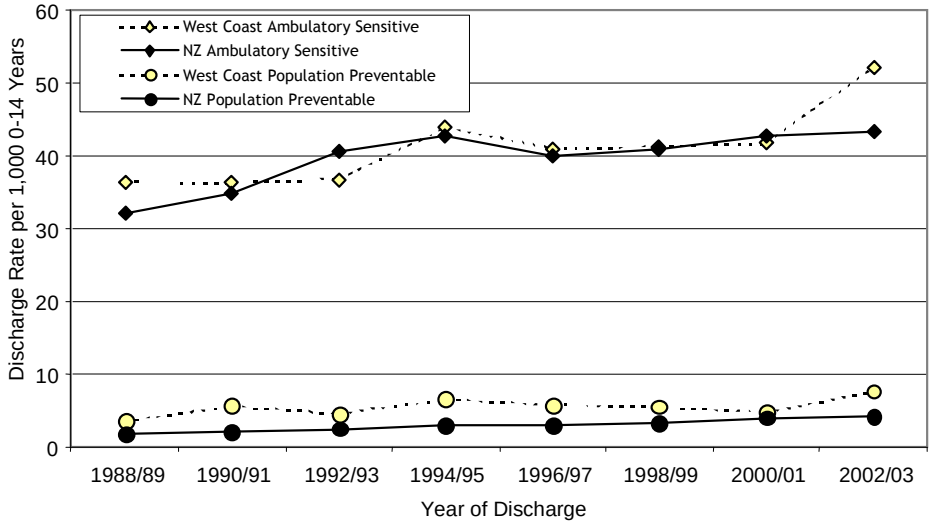
Avoidable Hospital Admissions in the West Coast DHB

The ambulatory sensitive and population preventable discharge rates in this analysis were calculated by dividing the total number of hospital discharges considered ambulatory sensitive or population preventable (using Ministry of Health coding tables for primary diagnosis (Ministry of Health 2004h)), by census denominators for the period 1988-2003. Numerators were drawn from publicly funded hospital discharges (inpatient and day patient) in the 0-14 and 15-24 age categories as recorded in the National Minimum dataset (NZHIS). In line with Ministry of Health guidelines, for some conditions (eg TB) only a proportion of the discharge was considered ambulatory sensitive, with the remaining proportion being considered preventable through public health interventions. Denominators were derived from the usual resident New Zealand and DHB populations (0-14 and 15-24 years) as estimated at the 1986, 1991, 1996 and 2001 censuses, with linear extrapolation being used to estimate population numbers between censuses.

Figure 59 demonstrates ambulatory sensitive and population preventable hospital discharges for West Coast children (0-14 years) for the years 1988-2003, while Figure 60 summarises the same information

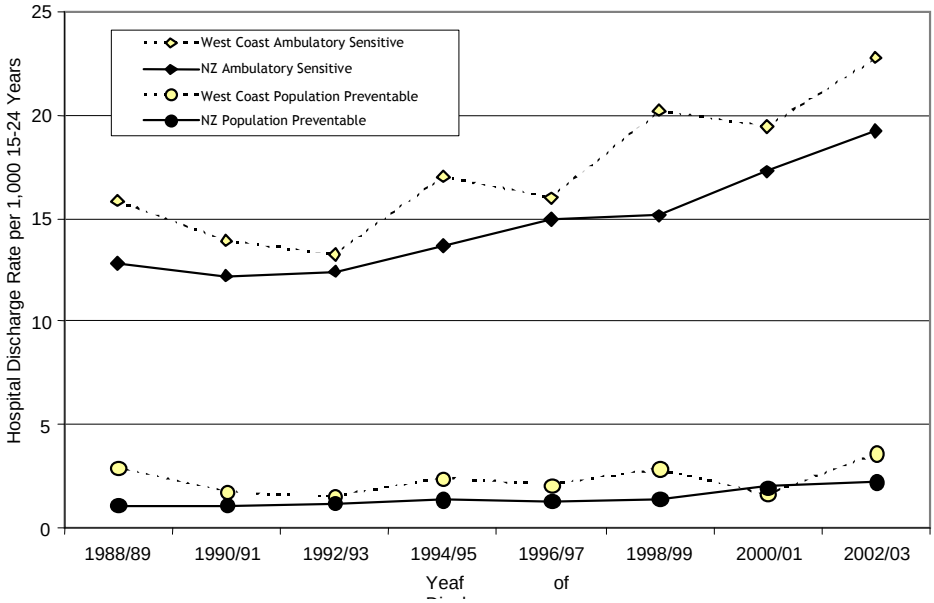
for youth 15-24 years. During this period ambulatory sensitive admission rates for West Coast children (0-14 years) were similar to the New Zealand average and increased at a similar rate, while ambulatory sensitive admissions for West Coast youth (15-24 years) were higher. Population preventable admissions for both age groups were similar to or slightly higher than the New Zealand average.

Figure 59. Ambulatory Sensitive and Population Preventable Hospital Discharge Rates, West Coast DHB vs New Zealand for Children 0-14 Years, 1988/89 to 2002/03



Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data

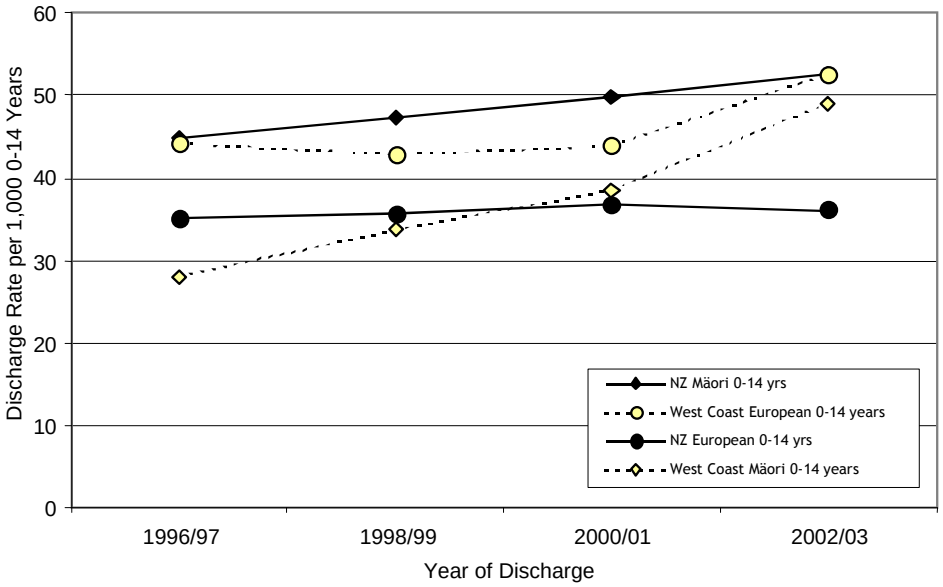
Figure 60. Ambulatory Sensitive and Population Preventable Hospital Discharge Rates, West Coast DHB vs New Zealand for Youth 15-24 Years, 1988/89 to 2002/03



Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data

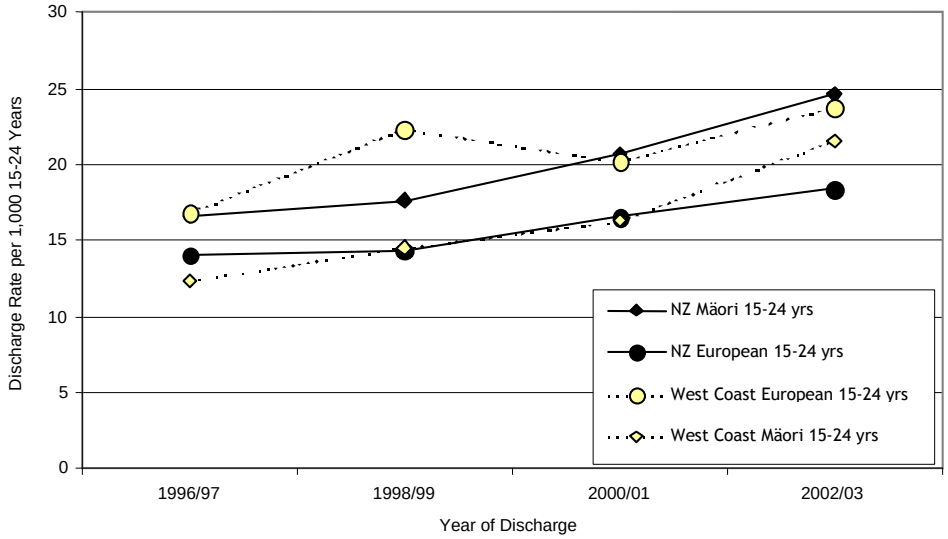
Figure 61 demonstrates ambulatory sensitive hospital discharges for West Coast children (0-14 years) by ethnicity for the years 1996-2003, while Figure 62 summarises the same information for youth 15-24 years. Throughout this period, ambulatory sensitive admission rates for European child and youth were higher than the New Zealand European average, while admission rates for Māori child and youth were lower than the New Zealand Māori average. Of note, ambulatory sensitive admission rates for Māori, particularly those aged 0-14 years, increased rapidly during this period. It is unclear however whether this was due to an alteration in the effectiveness of primary care for Māori, due to an improvement in the identification of Māori in hospital discharge data or due to an increase in the rate at which Māori child and youth accessed hospital care during this period.

Figure 61. Ambulatory Sensitive Hospital Discharge Rates for Children 0-14 Years by Ethnicity, West Coast DHB vs New Zealand 1996/97 to 20020/3



Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data

Figure 62. Ambulatory Sensitive Hospital Discharge Rates for Youth 15-24 Years by Ethnicity, West Coast DHB vs New Zealand 1996/97 to 2002/03



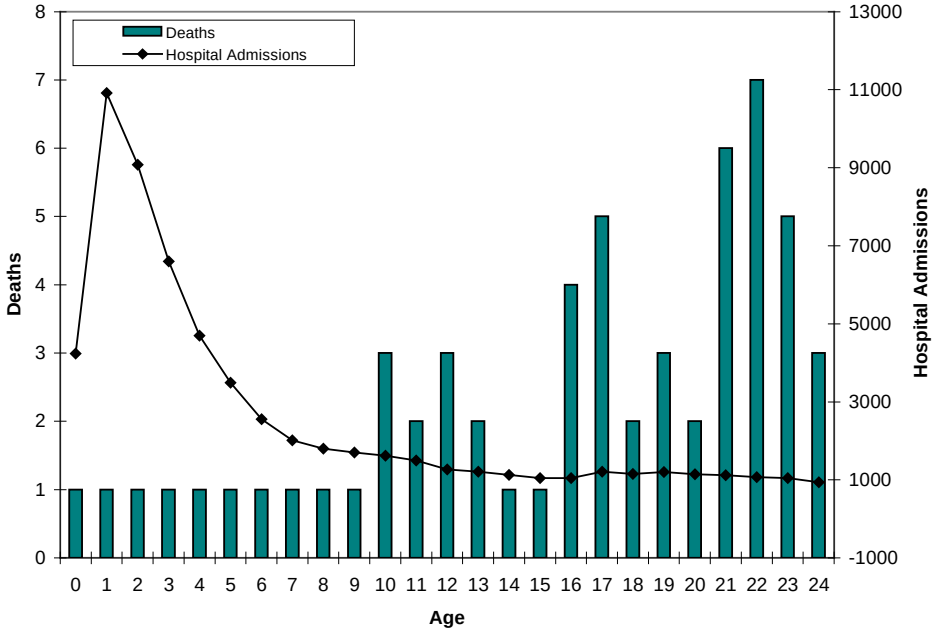
Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data

Asthma Hospital Admissions

Asthma is one of the leading causes of hospital admission for child and youth in New Zealand, with approximately one third of all asthma admissions occurring in children less than 5 years. While asthma admission and mortality rates have declined in the past decade, 3 children and 2 youth still had asthma listed as their primary cause of death in 2001. In addition, while the prevalence of asthma is similar for Mäori and non-Mäori, Mäori child and youth experience higher levels of morbidity and hospital admission than non Mäori (Ellison-Loschmann et al 2004).

Figure 63 compares the number of hospital admissions for asthma with the number of deaths between 1992 and 2001. During this period, asthma admissions were most frequent under the age of 5 years, with the peak number of admissions occurring at 1 year. In contrast, asthma related deaths were most frequent in youth, with deaths peaking amongst those in their early 20s.

Figure 63. Asthma Hospital Admissions vs Deaths by Age, New Zealand Child and Youth 1992 to 2001



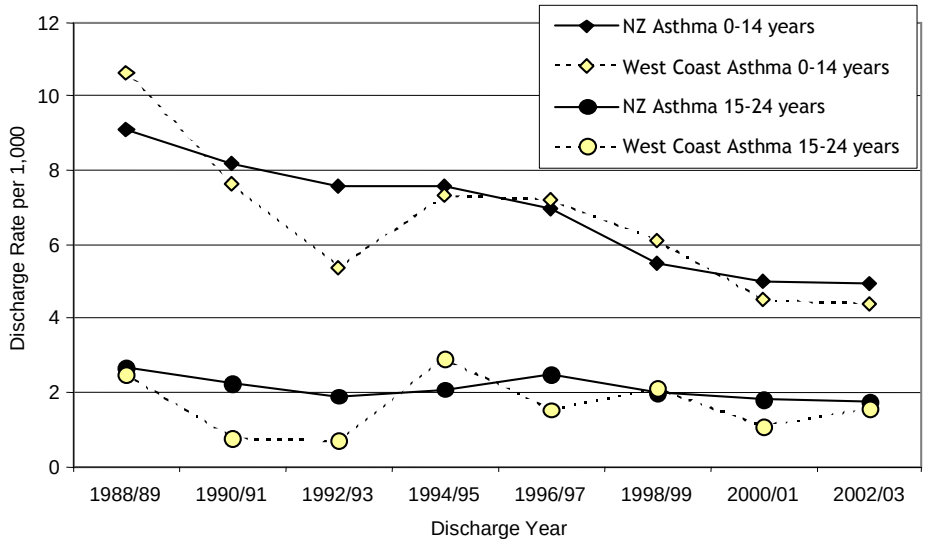
Source: Numerators NZHIS Publicly Funded Hospital Discharges, NZHIS Mortality Dataset; Denominator Statistics New Zealand Census Data

Asthma Admissions for West Coast DHB Child and Youth

Asthma admission rates were calculated by dividing the total number of hospital discharges with a primary diagnosis of asthma (ICD-9 493) by census denominators for the period 1988/89 to 2002/03. Numerators were drawn from publicly funded hospital discharges (inpatient and day patient) in the 0-14 and 15-24 age categories as recorded in the National Minimum dataset (NZHIS), while denominators were derived from the usual resident New Zealand and DHB populations (0-14 and 15-24 years) as estimated at the 1986, 1991, 1996 and 2001 censuses, with linear extrapolation being used to estimate population numbers between censuses.

Figure 64 compares asthma admission rates for West Coast children (0-14 years) and youth (15-24 years) with the New Zealand average for the years 1988 to 2003. During this period, asthma admission rates in the West Coast DHB were similar to the New Zealand average for both age groups. The rate of decline was also similar to that occurring nationally.

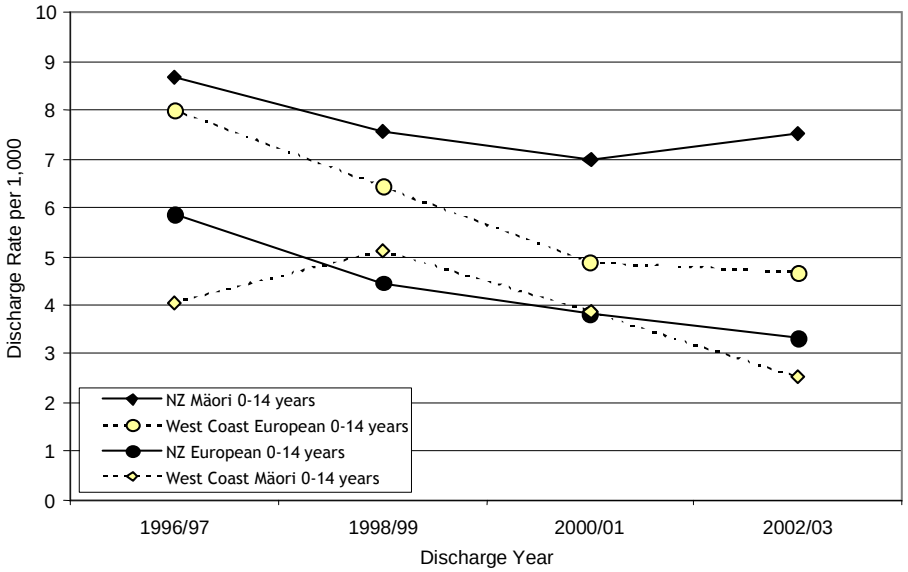
Figure 64. Hospital Discharge Rates for Asthma in Children (0-14 Years) and Youth (15-24 Years), West Coast DHB vs New Zealand 1988/89 to 2002/03



Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data

Figure 65 compares West Coast DHB asthma discharge rates for children 0-14 years by ethnicity, with the New Zealand average during 1996 to 2002. Small numbers prevented analysis by ethnicity for youth (15-24 years). During this period asthma admission rates for West Coast European children were higher than the New Zealand European average, while admissions for West Coast Mäori children were lower than both the New Zealand Mäori average and the West Coast European rate. While a particularly low asthma prevalence amongst West Coast Mäori children, combined with a high prevalence amongst European children may be responsible for these findings, the under-identification of Mäori children in hospital discharge data (compared to Census denominators) could also produce similar results, if those under-identified were systematically assigned to the European ethnic group.

Figure 65. Hospital Discharge Rates for Asthma in Children 0-14 Years by Ethnicity, West Coast DHB vs New Zealand 1996/97 to 2002/03



Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data

Suicide, Injury, Drowning and Poisoning

For further information on Suicide, injury, drowning and poisoning see Section 2: Mental Health and Injury.

Excluding the perinatal period, injury is the leading cause of mortality for child and youth in New Zealand, with deaths due to motor vehicle accidents being the single largest cause of injury related death in this age group. Injury related hospital admissions show a similar pattern for youth 15-24 years, although falls remain the leading cause of injury related hospital admission for children 0-14 years.

During 1988/89 and 2002/03 the leading cause of injury related admission for children was falls, with falls from playground equipment being of particular importance. Motor vehicle accidents followed by drowning were the leading causes of mortality. For youth, motor vehicle accidents were the leading cause of hospital admissions, with falls, sporting injuries, intentional injuries (eg assault) and self-harm also making major contributions. Motor vehicle accidents, followed by suicide were the major causes of mortality. While injury related mortality declined for both age groups during this period, (largely as the result of declining motor vehicle mortality), injury related hospital admissions either remained static or increased slightly. In addition, injury related mortality was much higher for youth (15-24) years than for children (0-14 years). (Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data)

Injury Related Morbidity and Mortality in the West Coast DHB[65]

Hospital admission rates in this analysis were calculated by dividing the total number of injury related hospital admissions by census population denominators for the periods 1988/89 to 2002/03. Numerators included all publicly funded hospital discharges (inpatient and day patient) with a primary diagnosis ICD9 800-999 (excluding ICD9 codes E878-879 relating to complications of surgical and

[65] Source: Numerator NZHIS Publicly Funded Hospital Discharges; Denominator Statistics New Zealand Census Data.

medical procedures) for those 0-14 and 15-24 years, as recorded in the National Minimum dataset (NZHIS). Cause of injury was assigned using the supplementary E code relating to each injury admission. Admissions resulting in death and intentional injuries were also included in the analysis. Back mapping of ICD-10 diagnoses by NZHIS to ICD-9 diagnoses from July 1999 onwards introduced small irregularities in the time series analysis at this point. Denominators were derived from the usual resident New Zealand and DHB populations (0-14 and 15-24 years) as estimated at the 1986, 1991, 1996 and 2001 censuses, with linear extrapolation being used to estimate population numbers between censuses.

Mortality rates were calculated by dividing the total number of injury related deaths by census population denominators for the periods 1988/89 to 2000/01. Numerators included all deaths for children (0-14 years) and youth (15-24 years) with a primary cause of death ICD9 E800-E999 (or ICD10 V01-Y98) as contained in the National Mortality dataset, for the death registration years 1988-2001. Denominators were derived from the usually resident census populations as described above.

Comparing injury admission rates for Nelson Marlborough child and youth with the New Zealand average for the years 1988 to 2003 shows that while injury admission rates for youth 15-24 years were generally higher than the New Zealand average, admission rates for West Coast children 0-14 years were similar.

During 1988/89 and 2000/01, injury mortality rates for West Coast youth were generally higher than the New Zealand average, while mortality rates for children were similar to or lower than the New Zealand average. Small numbers however, resulted in considerable year to year fluctuations.

The small number of deaths from suicide in the West Coast DHB during 1988/89 and 2000/01 makes an accurate comparison with New Zealand figures difficult.

During 1988/89 and 2002/03, West Coast DHB injury related admissions for European child and youth were higher than the New Zealand European average, while West Coast Mäori rates were lower than the New Zealand Mäori average. Small numbers however resulted in considerable year to year fluctuations, making the results, particularly for Mäori difficult to interpret. However, small numbers prevented a similar analysis for injury mortality.

INJURY

Injury is a leading cause of premature death and disability in New Zealand. The social and economic costs at all levels are considerable and are estimated to be $6-7 billion per year, yet most injuries and their consequences are preventable (Minister for ACC June 2003).

The New Zealand Health Strategy identifies collaborative health promotion and disease and injury prevention by all sectors as one of the seven fundamental principles (Ministry of Health December 2000).

The vision for the New Zealand Injury Prevention Strategy (Minister for ACC June 2003) is 'A safe New Zealand, becoming injury free'. This strategy identifies six national injury prevention priority areas: Motor vehicle traffic crashes, suicide and deliberate self-harm, falls, workplace injuries (including occupational diseases), assault; and drowning and near drowning.

Injury prevention can result in significant economic and social benefits. It can reduce the number of new cases of injury, as well as reduce the severity of those injuries that do occur. (Minister for ACC June 2003)

This section covers injury hospitalisation, injury fatalities, sports injury, workplace injury, ACC claims, safety belt wearing, and injury prevention initiatives.[66]

A broad range of interacting factors affect how many injuries occur. Attitudes toward safety and behavioural factors are critical. Reducing speed, not drink driving, and wearing restraints prevent injuries on the road, while balancing and strengthening exercises for older persons can reduce fall injuries. Environmental and engineering factors are also important in reducing all types of injury. Pool fencing has been shown to reduce drowning in children, while ergonomically designed workstations can reduce the likelihood of musculoskeletal injuries. Injury can also result from mental health issues and more complex underlying social factors such as poor living conditions (Minister for ACC June 2003).

Injury Hospitalisation

The top ten causes of injury resulting in hospitalisation are similar for all six South Island DHBs. Falls, followed by motor vehicle traffic crashes are the two most common causes in the South Island DHBs except in Canterbury DHB. The figures for West Coast DHB are shown in Table 126. Ethnicity breakdowns for injury hospitalisations in the South Island were not possible due to small numbers.

Table 126. Top Ten Causes of Injury Hospitalisations for West Coast DHB by Gender, 2000 to 2002

Cause of Injury		Gender			% Total
Major Cause	**Minor Cause**	**Male**	**Female**	**Total**	
Fall		209	193	402	35%
Motor Vehicle Traffic	Occupant	61	39	100	9%
	Motorcyclist	9	2	11	1%
	Pedestrian	1	2	3	0%
	Pedal Cyclist	2	1	3	0%
	All MV Traffic	73	44	117	10%
Struck by or against		73	25	98	9%
Self-inflicted		26	57	83	7%
Cut/Pierce		64	10	74	6%
Overexertion		34	21	55	5%
Other Land Transport		39	13	52	5%
Poisoning		16	22	38	3%
Natural/Environmental		22	14	36	3%
Assault		29	4	33	3%
All Hospitalisations		708	434	1142	100%

Source: IPRU June 2004. The data used in the production of this table is drawn from the morbidity (2000 to 2002) database, sourced from the New Zealand Health Information Service (NZHIS).

[66] For further information relating to **Suicide** see Section 2: Mental Health; **Falls** see Section 2: Health and Independence of Older People; **Assault** see Section 2: Interpersonal Violence; **Injury (Child and Youth)** see Section 2: Child and Youth Health.

Notes: For hospitalisations, the data only includes patients that were discharged from a public hospital and had a primary diagnosis of injury. Readmissions for the same injury event, day patients, and those discharged dead were excluded. Injuries due to complications of medical care (adverse reactions to drugs or misadventures during surgical and medical care), late effects of conditions classified elsewhere, and sequelae that occur after the acute injury were also excluded.

Across the South Island DHBs the top ten causes of injury hospitalisation (Table 127) are very similar to the top ten across the whole of New Zealand (Table 128). However there are some exceptions: assault, injury caused by natural/environmental factors and the category 'pedal cyclist, other'.

Table 127. Top Ten Causes of Injury Hospitalisations for South Island DHBs by Gender, 2000 to 2002

Cause of Injury		Gender			% Total
Major Cause	**Minor Cause**	**Male**	**Female**	**Total**	
Fall		5,382	6,977	12,359	42%
Motor Vehicle Traffic	Occupant	1,003	769	1,772	6%
	Motorcyclist	367	43	410	1%
	Pedestrian	140	116	256	1%
	Pedal Cyclist	114	28	142	0%
	Other & Unspecified	6	9	15	0%
	All MV Traffic	1,630	965	2,595	9%
Self-inflicted		695	1,600	2,295	8%
Cut/Pierce		1,293	376	1,669	6%
Struck by or against		1,246	391	1,637	6%
Overexertion		760	687	1,447	5%
Other Land Transport		805	426	1,231	4%
Assault		704	144	848	3%
Poisoning		360	381	741	3%
Pedal Cyclist, other		530	143	673	2%
All Hospitalisations		15,826	13,258	29,084	100%

Source: IPRU June 2004. The data used in the production of this table is drawn from the morbidity (2000 to 2002) database, sourced from the New Zealand Health Information Service (NZHIS).
Notes: See notes for Table 126.

When broken down into age groups falls are the leading cause of injury hospitalisations for the age groups from 0-14 years and from age 35 upwards in West Coast DHB. In the ages 15-34 the numbers for falls are second to Motor Vehicle Traffic causes (see Appendix 5, Table 227).

Falls are also the most common cause of injury hospitalisations in the South Island DHBs as a whole and across the whole of New Zealand in all age groups. Although in the 15-19 year group there is only 1-2% difference between hospitalisations caused by falls and by motor vehicle traffic (see Appendix 5, Table 228 and Table 229).

Table 128. Top Ten Causes of Injury Hospitalisation for All New Zealand DHBs by Gender, 2000 to 2002

Cause of Injury		Gender				% Total
Major Cause	Minor Cause	Male	Female	Unknown	Total	
Fall		23,659	26,480	1	50,140	40%
Motor Vehicle Traffic	Occupant	4,525	3,638	0	8,163	7%
	Motorcyclist	1,559	216	0	1,775	1%
	Pedestrian	784	577	0	1,361	1%
	Pedal Cyclist	375	94	0	469	0%
	Other & Unspecified	24	22	0	46	0%
	All MV Traffic	7,267	4,547	0	11,814	10%
Cut/Pierce		7,075	2,342	1	9,418	8%
Self-inflicted		2,583	5,250	0	7,833	6%
Struck by or against		5,612	1,866	0	7,478	6%
Assault		3,848	1,100	1	4,949	4%
Other Land Transport		3,068	1,602	0	4,670	4%
Overexertion		2,551	2,013	0	4,564	4%
Poisoning		1,622	1,630	2	3,254	3%
Natural/Environmental		1,748	1,190	0	2,938	2%
All Hospitalisations		70,920	53,000	8	123,928	100%

Source: IPRU June 2004. The data used in the production of this table is drawn from the morbidity (2000 to 2002) database, sourced from the New Zealand Health Information Service (NZHIS).
Notes: See notes for Table 126.

Table 129 shows New Zealand hospital discharge rates by ethnicity in 2002/2003 for the ages up to 24 years and for those aged 65 –74 years.

Table 129. New Zealand Hospital Discharge Rate per 1,000 for Injury Preventable Hospitalisations, 2002/03

Age Group	Mäori	Pacific People	Other	Total
under 5	3.7	2.9	4	3.8
5 to 14	5.3	3.5	5.3	5.2
15 to 24	5.7	3.3	5.7	5.5
25 to 64	-	-	-	-
65 to 74	2.1	1.5	1.5	1.5

Source: National Minimum Data Set 2002/03. Sourced from Canterbury DHB 2004.

Injury Fatalities

The three most common causes of injury fatalities between 1996 and 2000 were falls, motor vehicle traffic, and self-inflicted injury. Self-inflicted injury was most prominent for all South Island DHBs except South Canterbury. Self-inflicted, motor vehicle traffic, and falls represent 72%-90% of injury fatalities in the South Island DHBs individually. These three causes accounted for 77% of injury fatalities in West Coast DHB (Table 130). Males account for 83% of injury fatalities in the West Coast DHB, this is above the South Island figure of 69% for males. Ethnicity breakdowns for injury fatalities in the South Island were not possible due to small numbers.

Table 130. Top Ten Causes of Injury Fatalities for West Coast DHB by Gender, 1996 to 2000

Cause of Injury		Gender			% Total
Major Cause	Minor Cause	Male	Female	Total	
Self-inflicted	Self-inflicted	31	6	37	42%
Motor Vehicle Traffic	Occupant	15	4	19	21%
	Motorcyclist	2	1	3	3%
	Pedestrian	2	0	2	2%
	All MV Traffic	19	5	24	27%
Fall		5	2	7	8%
Drowning		5	0	5	6%
Suffocation		2	1	3	3%
Assault	Assault	3	0	3	3%
Machinery		2	0	2	2%
Fire/Hot object or substance	Fire/Flame	1	1	2	2%
Pedestrian, other		1	0	1	1%
Other Land Transport		1	0	1	1%
All Fatalities		74	15	89	100%

Source: IPRU June 2004. The data used in the production of this table is drawn from the mortality (1996 to 2000) database, sourced from the New Zealand Health Information Service (NZHIS).

Notes: For hospitalisations, the data only includes patients that were discharged from a public hospital and had a primary diagnosis of injury. Readmissions for the same injury event, day patients, and those discharged dead were excluded. Injuries due to complications of medical care (adverse reactions to drugs or misadventures during surgical and medical care), late effects of conditions classified elsewhere, and sequelae that occur after the acute injury were also excluded. Similarly, the fatality data only includes those who died as a result of injury.

The top ten causes of injury fatalities across the South Island DHBs (Table 131) consist of the same causes as the top ten for all New Zealand (Table 132). Self-inflicted made up a higher percentage of all injury in the South Island DHBs as a whole (35%) compared with all New Zealand DHBs (31%). Motor vehicle traffic made up a lower percentage in the South Island DHBs (25%) than across all New Zealand (30%).

Table 131. Top Ten Causes of Injury Fatalities for South Island DHBs, 1996 to 2000

Cause of Injury		Gender			% Total
Major Cause	Minor Cause	Male	Female	Total	
Self-inflicted		567	130	697	35%
Motor Vehicle Traffic	Occupant	252	136	388	20%
	Pedestrian	29	22	51	3%
	Motorcyclist	36	4	40	2%
	Pedal Cyclist	13	1	14	1%
	Other & Unspecified	2	1	3	0%
	All MV Traffic	332	164	496	25%
Fall		132	177	309	16%
Drowning		66	11	77	4%
Assault		33	19	52	3%
Other Transport		42	7	49	2%
Fire/Hot object or substance	Fire/Flame	19	15	34	2%
	Hot object/substance	2	4	6	0%
	All Fire/Hot Sub	21	19	40	2%
Suffocation		20	15	35	2%
Poisoning		21	13	34	2%
Other Land Transport		25	5	30	2%
All Fatalities		1,371	605	1,976	100%

Source: IPRU June 2004. The data used in the production of this table is drawn from the mortality (1996 to 2000) database, sourced from the New Zealand Health Information Service (NZHIS).
Notes: See notes for Table 130.

Table 132. Top Ten Causes of Injury Fatalities for All New Zealand DHBs, 1996 to 2000

Cause of Injury		Gender			% Total
Major Cause	**Minor Cause**	**Male**	**Female**	**Total**	
Self-inflicted		2,058	577	2,635	31%
Motor Vehicle Traffic	Occupant	1,270	652	1,922	23%
	Pedestrian	157	121	278	3%
	Motorcyclist	214	19	233	3%
	Pedal Cyclist	56	9	65	1%
	Other & Unspecified	5	2	7	0%
	All MV Traffic	1,702	803	2,505	30%
Fall		535	647	1,182	14%
Drowning		366	70	436	5%
Assault		188	110	298	4%
Suffocation		109	67	176	2%
Other Transport		132	25	157	2%
Poisoning		96	56	152	2%
Fire/Hot object or substance	Fire/Flame	89	46	135	2%
	Hot object/substance	3	9	12	0%
	All Fire/Hot Sub	92	55	147	2%
Other Land Transport		91	15	106	1%
All Fatalities		5,854	2,608	8,462	100%

Source: IPRU June 2004. The data used in the production of this table is drawn from the mortality (1996 to 2000) database, sourced from the New Zealand Health Information Service (NZHIS).
Notes: See notes for Table 130.

When broken down by age group there are small numbers of injury fatalities for most of the age groups in West Coast DHB. The 25-34 year age group is the largest with 26 injury fatalities of which 58% were self-inflicted (see Appendix 5, Table 230).

In the South Island DHBs as a whole, drowning is the leading cause of injury fatality in the 0-4 years age group. Motor vehicle traffic is the highest cause in the age groups from 5-14 years. In the 65-74 year age group motor vehicle traffic is equal with self-inflicted as the leading cause of injury. Self-inflicted causes are the top causes of injury fatalities for age groups in the range 15–64 years in the South Island as a whole (see Appendix 5, Table 231).

In New Zealand as a whole, suffocation and motor vehicle traffic each with 25% is the leading cause of injury fatalities in the 0-4 year age group. Motor vehicle traffic is the leading cause in the age groups between 5 and 19 years and again the 65-74 age group. Self-inflicted causes are the highest cause of injury fatality in the age groups between 20 and 64 years. The highest cause of injury in those over 75 for all of New Zealand is falls and this is the same for the South Island as a whole (see Appendix 5, Table 232).

Unintentional injury (including road traffic crash) mortality has decreased more or less equally for Mäori, Pacific people and non-Mäori, non-Pacific people ethnic groups during the period 1980-1999 (Ministry of Health July 2003). When ethnic mortality rates for injury during this period are compared using the global burden of disease categories (World Health Organisation 2002), there has been a steady decline for non-Mäori, non-Pacific people and for Pacific people males (Ministry of Health July 2003).

Injury deaths (unintentional, suicide and other intentional) are an important cause for disparity in life expectancy between Mäori and non-Mäori non-Pacific people ethnic groups, but not so for Pacific people compared to non-Mäori non-Pacific people ethnic groups (Ministry of Health July 2003).

Sports Injury

Project results (Chalmers and Stephenson) showed 19% of injury hospitalisations (excluding self-inflicted injuries) in the period 1997 to 2001 were sports cases. Team ball sports accounted for 26% of sport cases. Project limitations included a lack of detail on circumstances of injury. This project did not report sports cases by ethnicity.

Workplace Injury

There were 247,500 claims for work related injury in New Zealand in 2003 (Table 133). Nationally, 74% of claims were made for work-related injury to males and 26% for injury to females. The occupation group with the highest number of claims for work-related injuries was plant and machine operators and assemblers. The highest rate of work-related claims, with 297 claims per 1,000 FTEs was for workers in the elementary occupations group that includes labourers. (Statistics New Zealand 2004[67]) 72% of all claims were made for work-related injuries to European/Pakeha, 13% to Mäori and 5% to Pacific people. Mäori workers had the highest incidence rate with 190 claims per 1,000 FTEs compared with an incidence rate of 134 for European/Pakeha and 157 for Pacific people. The differences in these incidence rates reflect the predominant occupations engaged in by the different ethnic groups. In each occupation group, different ethnic groups show similar incidence rates. (Statistics New Zealand 2004[68]).

The South Island Geographic regions all have a work-related injury incidence rate higher than the national rate (Table 133).

Table 133. Claims for Work-Related Injuries by South Island Geographic Region of Injury Occurrence and Gender for the Year ended 31 December 2003

Geographic Region	No. of Claims by Males (000)	No. of Claims by Females (000)	Total No. of Claims (000)	Percentage of Claims	Full-Time Equivalents (000)	Incidence Rate
Canterbury	27.6	10.4	38.0	15	250	152
Otago/Southland	15.7	5.5	21.2	9	126	168
Tasman/Nelson/Marlborough/ West Coast	8.5	3.1	11.6	5	69	168
New Zealand	**182.5**	**65.0**	**247.5**	**100**	**1,697**	**146**

Source: Statistics New Zealand (September 2004)
Notes:
1) *Reported by 31 March 2004*
2) *Geographic regions are groupings of territorial authorities (TAs). In most cases, regional boundaries follow Territorial Authority boundaries. Where the TAs straddle more than one geographic region, they have been assigned to the region containing the greatest proportion of their population on the basis of the census usually resident population count, 2001 Census.*
3) *The number of full-time equivalent employees (FTEs) as estimated by the Household Labour Force Survey (HLFS).*
4) *Incidence rate = number of claims/1,000 FTEs.*

ACC Claims

The number of new ACC paid entitlement claims in West Coast DHB has reduced from 1,122 in 1994/95 to 1,000 in 2003/04 while the costs have risen from $3.3 million to $4.3 million. Ongoing claims have risen from 493 ($7.3 million) in 1994/95 to 625 ($10.4 million) in 2003/04.

The rate of ongoing paid ACC entitlement claims for West Coast is the highest of all the South Island DHBs (Table 134). The West Coast rate of new sport only claims is similar to all South Island DHBs except Nelson Marlborough (Table 135).

[67] Hot off the Press Injury Statistics – Work related claims 2003 Highlights. Statistics New Zealand July 2004.
[68] Hot off the Press Injury Statistics – Work related claims 2003 Commentary. Statistics New Zealand July 2004.

Table 134. Number and Rate of New and Ongoing Paid Entitlement Claims by South Island DHB of Accident 2003/04

District Health Board	DHB Population 2003	Number of new paid Entitlement Claims 2003/04	Rate of new Claims per 100,000 Population	Number of ongoing paid Entitlement Claims 2003/04	Rate of ongoing Claims per 100,000 Population
Canterbury	454,510	12,057	2,652	5,595	1,231
Nelson Marlborough	130,990	3,517	2,685	1,723	1,315
Otago	179,230	5,358	2,989	2,424	1,352
South Canterbury	53,820	1,919	3,565	740	1,375
Southland	107,245	3,413	3,182	1,647	1,536
West Coast	**30,760**	**1,000**	**3,251**	**625**	**2,032**

Source: *ACC Injury Statistics 2004 (Third Edition). Section 2. All Entitlement Claims, Location.*
Notes: *DHB figures calculated from Regional and Territorial Authority data. Queenstown Lakes District claims split evenly between Otago and Southland DHBs.*
Population data 2003 Projected - Statistics New Zealand.

Table 135. Number and Rate of New and Ongoing Paid Entitlement Sport Claims by DHB of Accident 2003/04

District Health Board	DHB Population 2003	Number of new Sport only Claims 2003/04	Rate of new Sport Claims per 100,000 Population	Number of ongoing Sport only Claims 2003/04	Rate of ongoing Sport only Claims per 100,000 Population
Canterbury	454,510	2,462	542	624	137
Nelson Marlborough	130,990	612	467	177	135
Otago	179,230	956	533	285	159
South Canterbury	53,820	312	579	89	165
Southland	107,245	579	540	188	175
West Coast	**30,760**	**168**	**546**	**68**	**221**

Source: *ACC Injury Statistics 2004 (Third Edition). Section 20. Sport Entitlement Claims, Location.*
Notes: *DHB figures calculated from Regional and Territorial Authority data. Queenstown-Lakes District claims split evenly between Otago and Southland DHBs.*
Rate of Sport claims calculated using whole population.
Population data 2003 Projected - Statistics New Zealand.

Table 136 shows the percentage of claims nationally by each ethnicity during the period 1994/95 to 2003/04.

Table 136. Percentage of New and Ongoing Paid Entitlement Claims for New Zealand by Claimant Ethnicity 1994/95 to 2003/04

Ethnicity	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04
New Zealand Mäori	8	8	9	10	10	9	11	11	12	11
Pacific People	2	2	2	3	3	3	3	3	4	4
Pakeha/European	54	55	59	71	74	75	75	74	73	73
Other	2	3	3	5	4	4	4	4	4	5
Unknown	35	32	27	11	9	10	7	7	7	7
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: *ACC Injury Statistics 2004 (Third Edition). Section 2. All Entitlement Claims. Number and Cost of New and Ongoing Paid Entitlement Claims by Claimant Ethnicity*
Notes: *Ethnicity data is self-identified and optional for the claimant to state. It has been collected for entitlement claims by ACC since 1997.*

Safety Belt Wearing

Wearing a safety belt reduces your chance of death or serious injury in a crash by 40%. New Zealand's safety belt wearing rate is currently 92% for adults in the front seat, and 81% in the rear seat. (LTSA 2003[69]) In the West Coast DHB, only Grey District at 95% has a rate of front seat safety belt wearing above the New Zealand rate (Table 137).

[69] LTSA 20 August 2004 http://www.ltsa.govt.nz/research/belts.html

Table 137. Front Seat Adult Safety Belt Wearing for West Coast Territorial Authorities, 2003

Territorial Authority	Number of Car/Van Occupants Observed	Wearing Rate (%)
Buller	1,253	84
Greymouth	1,304	95
West Coast	967	91

Source: LTSA 29 September 2004[70].
Notes: Definitions for the Territorial Authorities presented in this table are not available from the source.

The 2003 results from the LTSA annual national child restraint survey[71] show that across all sites 86% of children under five were either in an infant seat, child seat, booster seat, or restrained by a child harness. This result is consistent with child restraint use of 86% in 2002 and an increase from 82% in 2001. 47% of the children in the survey were restrained in child seats, 29% in booster seats, 10% in infant seats and 1% in child harnesses. A further 8% were restrained by adult safety belts. The remaining 5% were not restrained, including 1% who were held on the knee of other passengers. (LTSA 2003[72])

Child restraint wearing rates at territorial authority level are presented in Table 138. Wearing rates for child restraints in Grey District of 84% are slightly below the national figure of 86%. Wearing rates for several neighbouring territorial authority areas have been combined to enable estimation of the wearing rate in areas with small samples. While small samples make it difficult to detect small changes in the wearing rate from year to year, these results are useful as an indication of how much improvement is needed. (LTSA 2003[73])

At territorial authority level, sample sizes are relatively small and results should be treated with caution. For example, with a sample size of 100 and a wearing rate of 80% the margin of error (based on a 95% confidence interval for the wearing rate) is approximately 8%. (LTSA 2004)[74]

Table 138. Child Restraint Wearing Rates for West Coast Local Authorities, 2003

Local Authority	Children in Sample	% in Child Restraints
Grey	83	84
Westland/Buller/Grey	139	92
New Zealand	**5794**	**86**

Source: LTSA 29 September 2004[75].
Notes: Definitions for the Territorial Authorities presented in this table are not available from the source.

70 http://www.ltsa.govt.nz/research/documents/front-seat-2003.pdf.
71 LTSA 29 September 2004 http://www.ltsa.govt.nz/research/documents/child-restraints-2003.pdf
72 LTSA 29 September 2004 http://www.ltsa.govt.nz/research/documents/child-restraints-2003.pdf
73 LTSA 29 September 2004 http://www.ltsa.govt.nz/research/documents/child-restraints-2003.pdf
74 LTSA 29 September 2004 http://www.ltsa.govt.nz/research/documents/child-restraints-2003.pdf
75 http://www.ltsa.govt.nz/research/documents/child-restraints-2003.pdf.

SUMMARY OF KEY HEALTH ISSUES FOR MÄORI

Improvements in Mäori health status are critical, given that Mäori, on average, have the poorest health status of any group in New Zealand. The New Zealand Health Strategy, Primary Care Strategy, Mäori Public Health Action Plan and *He Korowai Oranga* acknowledge the importance of prioritising Mäori health gain and development by identifying a need to reduce and eventually eliminate health inequalities that negatively affect Mäori.

He Korowai Oranga – the National Mäori Health Strategy (Nov 2002) - places 'whänau ora' at the centre of public health policy and outlines twelve Mäori Health-gain priority areas that DHBs and the Ministry of Health are expected to progress. The thirteen Population Health objectives from the New Zealand Health Strategy also provide a national framework of priorities that are important in the health needs assessment and prioritisation cycle of DHBs.

The objective of this chapter is to provide a summary of the local population characteristics, disease (health) and disability issues pertinent to Mäori, current services and health priority areas from a local community view. The framework will cross-reference the twelve national Mäori Health Gain Priorities, compare and/or add local needs to those national priorities.

This chapter has identified relevant Mäori health information from both within the West Coast Health Profile and other sources and has combined this information to create the Mäori Health chapter. This has been deliberate to ensure Mäori health information is both integrated through out the document and but also compiled within the Mäori Health chapter for ease of use.

Ethnicity Data Collection

The implementation of the Ministry of Health's ethnicity data protocols is underway. West Coast DHB is undertaking a major project to improve the collection of ethnicity data, to allow an adequate analysis of health status and thus the monitoring of inequalities in health status and service outcomes. The West Coast DHB has developed a research programme on ethnicity data collection on the West Coast. In particular it was viewed as important that the West Coast DHB have clear policies and guidelines on the collection of ethnicity data. A training programme is currently being developed to assist staff with the effective collection of ethnicity data.

Demographic Information

Mäori make up 9% of the West Coast population. Mäori living on the West Coast has increased in number from 2,547 in 2001 to 2,790 in 2004. As a proportion of the population, West Coast has 6% less Mäori than New Zealand as a whole. The distribution is relatively consistent across all West Coast sub-districts, although Westland District has a higher proportion of Mäori residents. The West Coast region has a youthful age structure with 40% being under the age of 15 years and the median age being 20.7 years. The age structure of Mäori on the West Coast reflects that seen nationally.

There were over 3,000 responses to the iwi question for the 2001 Census by Mäori in the West Coast region. Ngai Tahu (900 responses) is the largest identified iwi on the West Coast with Nga Puhi (262 responses) and Ngati Porou (195 responses) iwi identified as the next most likely North Island iwi to which Mäori living on the West Coast affiliated.[76]

Deprivation Profile of Mäori living in the West Coast DHB Region

The previous health needs assessment reports have shown that Mäori often have a higher percentage of its population being most deprived, as well as Pacific people, compared to other ethnic groups. Mäori is one of the recognised areas where efforts need to be particularly focused.

- Mäori are more likely than non-Mäori to earn less than $10,000 and are slightly less likely to earn incomes in the highest categories
- in comparison to overall New Zealand Mäori, West Coast Mäori have a higher concentration earning incomes between $5,000 and $15,000

[76] Census 2001, *Iwi (total responses) by regional council, for the Mäori descent census usual resident population count 2001.*

- Mäori residents are less likely to own their own home than Europeans but have a higher rate of ownership than overall New Zealand Mäori
- Mäori households within each Territorial Authority have a higher proportion without access to motor vehicles than Europeans in the same region
- Mäori households in Grey District have greater access to motor vehicles than total New Zealand Mäori; Buller District have lower access; while Westland District are equivalent to overall Mäori nationwide
- Mäori households have a higher proportion without access to a phone than Europeans in the same regions, but only in Buller District are they worse off than overall Mäori nationwide
- the Mäori labour force participation is similar to total New Zealand Mäori
- West Coast Mäori have a lower unemployment rate than New Zealand Mäori even though Buller District is higher. However, Mäori are twice as likely to be unemployed than non-Mäori within each of the three Territorial Authorities in the West Coast DHB
- the West Coast DHB has the highest number of people with no qualifications in the South Island and Mäori have an even higher proportion with no qualifications than non-Mäori in the area
- Te Reo is an important component of health because as the root of the culture it expresses identity and is vital to rangatiratanga (Ministry of Health March 2002), and the impact of ethnic identity is a social determinant of health[77]. The Mäori Public Health Action Plan (2003-2004) recognises Te Reo Rangatira as an important factor in good health, and in public health
- at the 2001 census there were 8,271 children 0-18 years residing within the West Coast's DHB boundaries. Of these 6,663 were European, 1,224 were Mäori, 72 were Asian/Indian, 39 were Pacific people and 12 were from Other ethnic groups. 261 children had no ethnic affiliation recorded
- at the 2001 census there were 1,641 youth 19-24 years residing within the West Coast's DHB boundaries. Of these 1,329 were European, 177 were Mäori, 15 were Asian/Indian, 12. West Coast DHB had a proportionately larger European population (80%) than the National average, and fewer children of Mäori, Pacific people, Asian or Other ethnic origins
- 38.6% of the West Coast's children lived in NZDep deciles 8-10 as compared to 33.0% of children nationally. When broken down by ethnic group, 37.9% of European/Other children and 43.0% of Mäori children in the West Coast DHB lived in NZDep Index decile 8-10 areas as compared to 21.4% of European/Other children and 54.4% of Mäori children nationally
- the West Coast DHB has a more ethnically homogeneous child and youth population than the New Zealand average, with 80% of those in the 0-24 year old age bracket being of European origin and a further 14% being Mäori
- higher proportions of European/Other children 0-14 years in this region live in NZDep deciles 8-10, although the proportion of Mäori children in deciles 8-10 is slightly lower than the New Zealand average.

Improving Mäori Health Status

This chapter describes the 12 Mäori Health Gains identified in "*He Korowai Oranga*": Immunisation, Injury Prevention, Hearing, Asthma, Smoking, Diabetes, Mental Health, Oral Health, Disability Support Services, Rangatahi Health, Sexual and Reproductive Health and, Alcohol and Drug Use. Two additional priorities, Cardiovascular Disease and Cancer, have been further included because of their very significant affects on the New Zealand and Mäori health profile. Each priority is discussed in term of its importance to Mäori health nationally and from a district approach.

Immunisation

Immunisation is one of the most cost-effective and successful public health interventions however vaccine preventable diseases continue to play an important part in the health of New Zealanders. In particular measles and whooping cough have both occurred in epidemic proportions in New Zealand in recent years whilst hepatitis B contributes to morbidity and mortality in New Zealanders, particularly Mäori (Health Funding Authority 1999-2000a). New Zealand has not achieved its target of 95% of children being fully vaccinated by the age of 2 years and inequalities exist, with coverage rates being lower for Mäori and

[77] Te Kete Hauora – Mäori Health Directorate, Ministry of Health. Inequalities Framework.

Pacific people children. The Health Funding Authority (1999-2000a) concludes that Mäori levels of immunisation are inadequate to prevent morbidity and mortality for a range of vaccine-preventable diseases.

There is not, as yet, readily available regional immunisation coverage data for the West Coast.

Injury Prevention

Injury is the lead cause of death for Mäori between 1 and 34 years of age. Mäori are over-represented with injuries such as assault, pedestrian injuries, spinal injuries and motor vehicle accidents. Injuries account for 18.1% of premature loss of life for Mäori compared to 10.3% for non-Mäori (Canterbury DHB 2004). Injury deaths (unintentional, suicide and other intentional) are an important cause for disparity in life expectancy between Mäori and non-Mäori non-Pacific people ethnic groups (Ministry of Health July 2003).

Is West Coast any different from the rest of New Zealand?

Between the years of 1988-2003 West Coast DHB injury related admissions for European child and youth were higher than the New Zealand European average, while West Coast Mäori rates were lower than the New Zealand Mäori average. Small numbers however resulted in considerable year to year fluctuations, making the results, particularly for Mäori difficult to interpret. Injury preventable hospitalisations for 2000-2003 were similar to non-Mäori.

Hearing

Hearing loss at childhood has a significant effect on speech and language development as well as emotional, social and educational development. The main cause of hearing loss in New Zealand is glue ear (otitis media with effusion or OME) of which Mäori children have higher rates than non-Mäori (Canterbury DHB 2004). Overall coverage for screening at school entry in 2002-2003 was 105% with a failure rate of 8.1%. Screening failure rates at school entry in 2002-2003 for European children were 5.6%, for Mäori children were 12.6% and for Pacific people children were 16.1%. The overall national coverage rate for tympanometry screening in 3-year olds in 2002-2003 was 82.1%, with a failure rate of 6.9%. Screening failure rates for European children were 5.7%, for Mäori children were 11.1% and for Pacific people children were 14.3%.

Is West Coast any different from the rest of New Zealand?

Although fluctuations make it difficult to interpret Mäori hearing failure rates at school entry were generally higher than the New Zealand Mäori rates and those of European and other children living on the West Coast. European and other children rates appear to be similar to the New Zealand average.

Hearing failure rates for Mäori children were generally above both the New Zealand Mäori and the West Coast European and Other rates, suggesting ethnic inequalities in hearing test failure at 5 years. Because no confidence intervals were available however, these findings are of a descriptive nature only and care should be taken when interpreting them in relation to national figures.

Asthma

The prevalence of asthma is increasing world wide and in New Zealand. Tobacco use is likely to be a key factor in the higher rates of respiratory related illnesses such as asthma that is experienced by Mäori. While the prevalence of asthma are similar for Mäori and non- Mäori, Mäori child and youth experience higher levels of morbidity and hospital admission than non-Mäori (Health Funding Authority 1999-2000c).

Is West Coast any different from the rest of New Zealand?

Between 1992-2001 asthma admission rates for West Coast European children were higher than the New Zealand European average, while admissions for West Coast Mäori children were lower than both the New Zealand Mäori average and the West Coast European rate. While a particularly low asthma prevalence amongst West Coast Mäori children, combined with a high prevalence amongst European children may be responsible for these findings, the under-identification of Mäori children in hospital discharge data (compared to Census denominators) could also produce similar results, if those under-identified were systematically assigned to the European ethnic group.

Smoking

Smoking has a serious negative impact on Mäori health. Exposure to smoke has been shown to cause adverse effects such as sudden infant death syndrome, glue ear, respiratory infections, cardiovascular disease and lung cancer. It is well documented that Mäori have disproportionately higher numbers than non-Mäori in all of these key areas. Reducing Mäori smoking prevalence is a key focus of the National Drug Policy. Mäori women had a significantly higher prevalence of smoking than any other ethnic group (Canterbury DHB 2004).

Approximately 50% of Mäori people smoke and Mäori smokers start at a younger age than other ethnic groups. About 31% of Mäori deaths are attributable to tobacco use. It is estimated that 14-15% more Mäori would survive middle age if no Mäori smoked after the age of 35 years (Canterbury DHB 2004).

Is West Coast any different from the rest of New Zealand?

In 1999 Aukati Kai Paipa, a smoking cessation programme, was funded for 2 years by the Ministry of Health through Te Hotu Manawa Mäori to provide appropriate and accessible cessation services for Mäori smokers ready to quit. Hauora Mataraka were contracted to provide the service for West Coast. Evaluation of the pilot programme for Mäori women and their families indicated a quit rate nationally for Aukati Kai Paipa 2000 of 29%, significantly higher than the latent quit rate of 12.5% (Ministry of Health 2003b).

Diabetes

Diabetes has multiple impacts on health and the full impact of individuals and whänau is difficult to determine. Diabetes, in particular Type 2 or Non-Insulin dependent diabetes is a growing health problem nationally and internationally. Key issues contributing to the growing incidence and prevalence are the aging population and changing diets, levels of exercise and increases in weight (Health Funding Authority 1999-2000d).

In 1996 age standardises Mäori mortality from diabetes was over six times that for non-Mäori. Mortality rates were also higher at younger age groups when compared with non-Mäori. In particular, in the ages from 45-60, age-specific Mäori mortality for diabetes ranged between 12-15 times that of non-Mäori in the same age group. Mäori deaths due to diabetes constitute 22% of all diabetes deaths (Health Funding Authority 1999-2000d).

Mental Health

In New Zealand it is estimated that at any one time 20% of the population have a mental illness and 3% have a serious mental illness (Ministry of Health 1997). Historical data from 1993, based on in-patient activity, suggested major differences in the way Mäori used mental health services. Mäori were seen as accessing services later and with greater severity at the point of entry. More recent data from the Mental Health Information National Collection show that in New Zealand Mäori males aged 15–19 and 20–64 are significantly higher-than-average users of mental health services (Canterbury DHB 2004).

In New Zealand Hospital admission rates for mental health or alcohol and drug related disorders are 40% higher for Mäori than for non-Mäori (Ministry of Health 2001h). Mäori have higher rates of presentation to crisis, acute and forensic services; and Mäori are more likely than non-Mäori to suffer from alcohol and drug disorders (Mental Health Commission 1998). A 2001 review of forensic services in New Zealand found that 50% of inpatients in forensic services at that time were Mäori. Overall Mäori represented 15% of all people receiving mental health treatment (Ministry of Health 2001).

Is West Coast any different from the rest of New Zealand?

The exact extent of access needs for Mäori is unknown however until this need is identified, the Mental Health Commission (1998) suggests that the access target for Mäori should be 6%, double that for the general population rate of 3%. West Coast Mäori accessing secondary services has remained constantly the target at about 4.9% for the last three years. In 2003 the average Mäori utilisation achieved for all six South Island DHBs combined was 3.5%.

Oral Health

It is apparent that there are significant inequalities in oral health status for Mäori and other low socioeconomic groups. Mäori are more likely to experience poor oral health in all age groups. Mäori adults

are less likely to have filled teeth than Europeans however they are more likely to have missing teeth. Mäori children have worse oral health than non-Mäori (Health Funding Authority 1999-2000b).

Is West Coast any different from the rest of New Zealand?

When comparing the percentage of West Coast children caries free at 5 years the percentage was consistently lower than both the New Zealand non-fluoridated and fluoridated averages. When comparing the mean missing and filled (MF) teeth scores for Mäori and European disparities are further evident. The mean MF scores of Mäori children were higher than the New Zealand non-fluoridated average.

Comparison of West Coast DHB figures with fluoridated New Zealand averages would suggest that if access to fluoridated drinking water could be secured for West Coast children, both the poor dental health status of the region as a whole, and the prominent ethnic disparities in oral health for West Coast children could be improved.

Disability Support Services (DSS)

Disability is a relatively common situation for both Mäori and non-Mäori, with one in five New Zealanders having a disability of some type (Statistics New Zealand 2002). The highest proportion of Mäori self-rating the severity and impact of their disability is in the 'mild' category (43%), followed by the moderately severe disability category (40%), and lastly the severely limiting disabilities (16%).

Physical disabilities are the most common type for Mäori adults however 'Other' disabilities are the most common for Mäori children. The category 'Other' includes speech, learning and developmental disorders requiring special education. The most common cause of disability for Mäori is disease or illness, followed by accidental injury. The rate of disability increases with age, with 15% of Mäori between 0-14 years having a disability, compared with 60% of Mäori over 65 years.

The South Island has few Kaupapa Mäori Disability Providers yet 23% of Mäori adults with disabilities reported an unmet need in some type of health service (Statistics New Zealand 2002). Compared to non-Mäori there are low numbers of Mäori living in residential care facilities.

There is no West Coast DHB data readily available for this section.

Rangatahi Health

Young Mäori represent almost 20% of New Zealand's total youth population (Statistics New Zealand, Census 2001). With young Mäori continuing to suffer more ill health than their non-Mäori counterparts, the health sector has a responsibility to work with whänau, hapū, iwi and Mäori communities to find solutions. This means involving rangatahi in policy and programme design and delivery, offering training opportunities in health, developing the capacity of Mäori providers, and advocating with colleagues in other sectors for adequate housing and support for youth – as well as making sure that existing health services are responsive and appropriate to the needs of young Mäori (Ministry of Health and Ministry of Youth Affairs 2002).

Rangatahi in West Coast DHB

Child and youth make up a third of the West Coast's DHB population. The following sections summarise information on a number of key indicators, which reflect the health status of Mäori child and youth in this region. The indicators were selected not only because they represent issues of major public health importance, but also because routinely collected data was available with which to monitor trends over time.

Demographics

- At the 2001 census there were 8,271 children 0-18 years residing within the West Coast's DHB boundaries. Of these 6,663 were European, 1,224 were Mäori, 72 were Asian/Indian, 39 were Pacific people and 12 were from Other ethnic groups. 261 children had no ethnic affiliation recorded
- at the 2001 census there were 1,641 youth 19-24 years residing within the West Coast's DHB boundaries. Of these 1,329 were European, 177 were Mäori, 15 were Asian/Indian, 12. West Coast DHB had a proportionately larger European population (80%) than the National average, and fewer children of Mäori, Pacific people, Asian or Other ethnic origins

- 38.6% of the West Coast's children lived in NZDep deciles 8-10 as compared to 33.0% of children nationally. When broken down by ethnic group, 37.9% of European/Other children and 43.0% of Mäori children in the West Coast DHB lived in NZDep Index decile 8-10 areas as compared to 21.4% of European/Other children and 54.4% of Mäori children nationally
- the West Coast DHB has a more ethnically homogeneous child and youth population than the New Zealand average, with 80% of those in the 0-24 year old age bracket being of European origin and a further 14% being Mäori
- higher proportions of European/Other children 0-14 years in this region live in NZDep deciles 8-10, although the proportion of Mäori children in deciles 8-10 is slightly lower than the New Zealand average.

Sexual and Reproductive Health

The Ministry of Health's Sexual and Reproductive Health Strategy from 2001 identifies two keys areas of Government concern with regard to Sexual and Reproductive Health. These key concerns are the increasing number of confirmed cases of STI's in New Zealand and the high level of unintended/unwanted pregnancies. The groups most likely to be at risk situations are youth, Mäori and Pacific people.

The strategy identifies that teenage pregnancy is more common among Mäori women. In 1998 the fertility rate for Mäori females aged 13-17 years was 26.2 per 1,000, more than five times that of non-Mäori (4.9 per 1,000). A study by Fenwick and Purdie (2000) showed that Mäori students were nearly 3 times as likely as European students to be sexually active. The strategy further shoes that, overall, the birth rates for Mäori are slightly higher than those for the total population. In some cases of STI's youth, Mäori and Pacific people were represented in disproportionately high numbers (Turley et al 2000). Mäori females are more likely to have an ectopic pregnancy than non-Mäori.

In 1998-2003 the number of confirmed cases of Chlamydia and gonorrhoea diagnosed at sexual health clinics in New Zealand has increased by 65.5% and 57.0% respectively (ESR 2004). Youth and those of Mäori and Pacific people ethnicity are at high risk. Of the 9,298 cases of sexually-transmitted infections reported in New Zealand in 2002, the majority of were in teenagers and young adults and the rates of chlamydia and gonorrhoea were considerably higher in Mäori and Pacific people populations.

Alcohol and Drug Use

Substance abuse causes significant harm to the health of New Zealanders. The most widely used drugs, alcohol and tobacco (tobacco is discussed under its own heading), account for the majority of that harm. There is evidence of disproportionate harm from alcohol and cannabis use among Mäori compared to non-Mäori. Mäori hospitalisation rates for alcohol-related conditions are about 1.5 times the non-Mäori rate, and for cannabis-related conditions it is over three times the non-Mäori rate[78].

Alcohol and Drug Use in West Coast DHB

As an outcome of the South Island Alcohol and Other Drug Service Review West Coast DHB have identified the following priorities:

- appoint a dedicated Mäori AOD health worker in West Coast DHB Provider Arm outpatient services. Ensure worker is linked to other Mäori personnel (MH/AOD) to avoid isolation and ensure safety
- trial a regional contract for week day/end treatment retreats or wananga.

Cardiovascular Disease

Cardiovascular disease is the leading cause of death in New Zealand, accounting for 41% of all deaths in 1999. The burden of cardiovascular disease is greatest among Mäori and Pacific people. Mortality from all cardiovascular diseases is higher among Mäori than the general population. Coronary heart disease is the leading single cause of death for Mäori. Mäori have the highest rate of hospital admissions for heart failure (nearly three times that of Europeans/Others). The chance of being dependent at 12 months post stroke is

[78] Ministry of Health (2001). *Toolkits,* http://www.newhealth.govt.nz/toolkits/toolkits.htm. Wellington.

three times higher among Mäori and Pacific people than among Europeans who have a stroke. Mäori and Pacific people have the highest discharge rates for both rheumatic fever and rheumatic heart disease[79].

Cardiovascular Disease in West Coast DHB

- Non-Mäori in West Coast have higher heart disease prevalence rates than their New Zealand counterparts. Mäori males have a considerably lower rate than their New Zealand counterparts and Mäori females a similar rate
- Mäori males in West Coast have a lower cardiovascular disease mortality rate than the national average (gender and ethnic groups combined). In contrast, Mäori females have a markedly higher rate
- Mäori males in West Coast have a markedly lower cardiovascular disease hospitalisation rate than the national average (gender and ethnic groups combined). This result is statistically significant
- Mäori in West Coast have lower cardiovascular disease hospitalisation rates than their counterparts in New Zealand. Non-Mäori have higher cardiovascular disease hospitalisation rates than their New Zealand counterparts
- Mäori males in West Coast have a substantially higher rate of stroke hospitalisation than their New Zealand counterparts, and Mäori females a considerably lower rate.

Mortality

- Mäori males in West Coast have a lower cardiovascular disease mortality rate than the national average (gender and ethnic groups combined). In contrast, Mäori females have a markedly higher rate. These differences are not statistically significant
- Mäori males in West Coast have a substantially lower rate of ischaemic heart disease mortality than Mäori males in New Zealand. The reverse holds for Mäori females in West Coast. These results, however, are likely to be due to small numbers
- Mäori females in West Coast have a considerably higher rate of acute myocardial infarction mortality than Mäori females in the South Island and New Zealand. This higher rate, however, is likely to reflect the small size of this population group
- overall, the rate of stroke mortality in West Coast is lower than in the South Island and New Zealand. This is true for both sexes and ethnicities.

Heart Disease

- For Mäori, the heart disease prevalence rates are lower in the West Coast compared to their national counterparts. However the differences are not statistically significant.

Stroke

- The stroke prevalence rates in West Coast are higher than those of the respective population groups in New Zealand, particularly for males. Note, however, that relatively large confidence intervals accompany these numbers.

Cancer

Cancer is a major cause of premature mortality and disability for New Zealanders and particularly so for Mäori. Cancers make the second-largest contribution to health loss in the Mäori population after cardiovascular disease (Ministry of Health 2001i). Mäori cancer patients are more likely to die than other cancer patients. Research suggests that Mäori don't have the same access to health care as other patients, that patients from lower socioeconomic groups have poorer survival from most cancers and that there is a lack of awareness among Mäori about palliative care services and the options when a life-threatening illness is diagnosed (Ministry of Health 2002[80]).

Cancer in West Coast DHB

[79] Ministry of Health (2001). *Toolkits,* http://www.newhealth.govt.nz/toolkits/toolkits.htm. Wellington.
[80] Ministry of Health (2001). *Toolkits,* http://www.newhealth.govt.nz/toolkits/toolkits.htm. Wellington.

- In West Coast, Mäori have a higher rate of cancer mortality than the national average (but this difference is not statistically significant)
- with the exception of Mäori females, the cancer prevalence rates in West Coast are slightly higher than those of the respective population groups in New Zealand
- in West Coast, Mäori females, experience substantially higher breast cancer mortality than their South Island and national counterparts.

Mortality

- Mäori in West Coast have substantially higher cancer mortality rates than the national average (gender and ethnic groups combined)
- Mäori males in West Coast have a markedly higher lung cancer mortality rate than their South Island and national counterparts
- however, in West Coast, Mäori females, experience substantially higher breast cancer mortality than their South Island and national counterparts. Although the actual number of cases is likely to be very small
- Mäori females have a substantially higher cervical cancer mortality rate than Non-Mäori females.

Mäori Health Services

Gary Coghlan is the Kaiwhakahaere General Manager Mäori Health. The Kaiwhakahaere is part of the Executive Management Team and reports directly to the Chief Executive. Having a voice for Mäori in this forum is important in addressing Mäori health issues on the West Coast. The Kaiarahi is responsible for ensuring West Coast DHB responsiveness to Mäori and the implementation of a bicultural framework within the organisation.

Mäori Mental Health team presently within the West Coast DHB, there is a small team of Mäori workers in Mental Health who working mostly with Mäori patients. The Mäori Mental Health teams are formulating a Strategic Plan around issues at work ie improving services for clients, Tangata Whaiora (increasing the Mäori influence at work). This includes promoting the service as culturally appropriate, standardising the referral package, review of entry criteria and a survey of Tangata Whaiora.

Poutama Ora Manawhenua Health Committee is made up of representatives from the Papatipu Runanga of the West Coast. Poutama Ora is charged with advising the West Coast DHB on matters and priorities relative to Mäori health in the region. Relationships with Iwi are positive and the West Coast DHB is committed to an ongoing relationship with Mäori that is not tokenistic, but in keeping with the principles and spirit of the Treaty of Waitangi.

Rata Te Awhina Trust is the only Mäori Health Provider on the West Coast. They provide the following services Whänau Ora (Westport, West Coast), Cervical Screening, Asthma Education, Counselling, Mother and Pepi Service, Tamariki Hauora and Te Waka Hauora (Mobile health checks and Health promotion).

Summary

This Health Needs Assessment for the Mäori population gives a snapshot of Mäori health status in 2004. It demonstrates Mäori health status is generally worse than that of non-Mäori where information is available. The worse health outcomes of Mäori on the West Coast can be explained in part by the poorer socioeconomic status of West Coast Mäori. They may also be related to lower utilisation of health services particularly at the important early stages of an illness or condition (West Coast DHB *2003*). It validates the need to prioritize Mäori health gain and development in order to reduce and eliminate health inequalities that currently exist.

Further work is required in data collection systems for Mäori Health information. This requires urgent attention under the guidance of ethnicity data protocols and targeted to the twelve national Mäori Health gain priorities areas. There is the need to develop a minimum data set of Mäori health clinical indicators for each of the twelve national Mäori Health gain priority areas to provide a consistent code set to measure utilisation, Mäori health gain and the effectiveness of services.

It is acknowledged that the information presented is quantitative only and additional work is required to layer this information with qualitative data. It was beyond the scope of the Health profile but undertaking

this process would potentially provide a robust Health Needs Assessment that would identify prioritisation processes, liaison with key stakeholders validating data, provide evidence to cost-effectiveness measures and integrate local perspectives and experiences.

The District Health Board and other organisations, both within the health sector and related sectors, will be able to use the Health Needs Assessment to assist in establishing an integrated model for health services. By understanding the demographics, health and related needs of the Mäori population in West Coast DHB, planners and funders will be better able to work to ensure these needs are met effectively with appropriate, timely and accessible service (Canterbury DHB 2004).

KEY HEALTH ISSUES FOR PACIFIC PEOPLE

The following sections contain the executive summary of the Ministry of Health and Ministry of Pacific Island Affairs' *Tupu Ola Moui, Pacific Health Chart Book 2004.*

Tupu Ola Moui, Pacific Health Chart Book 2004 provides a national stocktake of the health of the Pacific people in New Zealand. This report shows that, compared to the total New Zealand population, Pacific people have poorer health status, are more exposed to risk factors for poor health, and experience barriers to accessing health services (Ministry of Health and Ministry of Pacific Island Affairs, 2004).

Pacific People in New Zealand

Whole of Life

- Pacific people in New Zealand currently experience an independent life expectancy at birth of approximately 62.5 years, about four years less than the national average
- this health expectancy reflects a life expectancy of approximately 74 years at birth (compared with a national average of 78 years) and a dependent disability prevalence of approximately 12% (compared with 10%)
- the Pacific people population experiences relatively high rates of avoidable mortality and ambulatory sensitive hospitalisation, with excess rates of 50% or more compared with the national average
- the avoidable mortality rate for Pacific people is nearly double that of the total New Zealand population at 604 (compared with 397) per 100,000, and the ambulatory sensitive hospitalisation rate is 4,655 (compared with 2,856) per 100,000
- this suggests that public health strategies and primary care services are not yet fully meeting the needs of Pacific people
- mental health is closely linked to culture, which makes inter-ethnic comparisons challenging. Nevertheless, using SF-36 measures, it appears that Pacific people enjoy much the same level of mental health as the total New Zealand population (SF-36 mental health scale mean scores of 81.9 and 82.9 for Pacific people and the total New Zealand population respectively)
- however, reliable prevalence estimates for mental illness are lacking
- pacific people also experience similar or lower levels of injury to the total New Zealand population.

0-14 Years - Infants and Children

- Pacific people infants have a good birthweight distribution, with a low birthweight rate of 5 per 100 livebirths compared with 6 per 100 livebirths for the total New Zealand population
- infant mortality is still higher than average, at 7 per 1,000 live births in 1997-2001 (compared with 5 per 1,000)
- Pacific people children have an unacceptably high hearing failure rate on audiometry at school entry (18% compared with a national benchmark of 8%). Hearing loss in early childhood impairs school readiness and academic performance
- Pacific people children experience above average risks of infection, including lower respiratory tract infection (hospitalisation rates of 1,523 compared with 590 per 100,000), meningococcal meningitis (notification rates of 21.8 compared with 8.6 per 100,000) and rheumatic fever (notification rates of 7 compared with 1.4 per 100,000)
- Pacific people children are also more likely than others to be admitted to hospital for control of asthma (hospitalisation rate of 748 compared with 491 per 100,000)
- Pacific people children - like older Pacific age groups - have a below average risk of motor vehicle or other unintentional injury. However they are at higher risk for certain types of injury, including pedestrian injuries and burns.

15-24 Years - Youth

- reproductive health is of concern, with Pacific people rates of teen pregnancy and birth approximately twice the national average (65 and 41 versus 37 and 19 per 1,000 girls aged 10-19 years respectively)

- however, the cultural specificity of fertility timing should be acknowledged and negative health consequences of early childbearing not simply assumed
- Pacific people youth have similar or slightly lower rates of completed suicide compared with the total New Zealand population (21 compared with 24 per 100,000)
- Pacific people youth also experience lower risks of serious injury than average, in particular from motor vehicles (road traffic mortality rates of 17 compared with 24 per 100,000)
- youth's health is of particular importance to Pacific people communities, given their youthful age structure.

25+ Years - Adults

- Pacific people adults have higher than average rates of a number of major chronic diseases
- in particular, middle-aged Pacific people men and women have ischaemic heart disease rates approximately twice the national average (middle-age mortality rates of 217 compared with 115 per 100,000), and almost three times the risk of death from stroke (71 compared with 26 per 100,000)
- but most outstanding is the high prevalence of self-reported (type 2) diabetes: over 10% among persons aged 15 years or older compared with fewer than 4% for the general New Zealand population in 2002/03
- almost one-third of older Pacific people self-report diabetes, and the true prevalence (including undiagnosed disease) may be twice this
- cancer rates among Pacific people are mostly similar to or higher than the national average, depending on the type of cancer. This applies to both tobacco-related (eg, lung) and non-tobacco-related cancers
- prominent among the non-tobacco-related cancers are breast and cervical cancer in Pacific people women aged 45-64 years, with mortality rates from these two cancers of 85 (compared with 63) per 100,000 and 14 (compared with 8) per 100,000
- Pacific people men aged 65+ years have a mortality rate for lung cancer 1.5 times the national average (524 compared with 340 per 100,000).

Health Service Utilisation

- Pacific people are familiar with, and connected into, the health care system yet still experience significant barriers to accessing primary care and some secondary care services
- these barriers are often cost related but may also reflect other dimensions of access, including cultural.
- most Pacific people have a regular primary care provider, with over 96% of the Pacific people enrolled in PHOs (primary health organisations) (although there may be some double counting)
- the average number of GP visits per adult in the past year was 3.6 for Pacific people (compared with 3.2 for the total New Zealand population)
- Pacific people are less likely than average to visit the dentist, with the percentage of Pacific people aged 15+ years having visited the dentist in the past year being half that of the total New Zealand population (21% compared with 41%)
- approximately 10% of Pacific people adults are regular users of 'by Pacific people, for Pacific people ' health care providers
- reliable recent national immunisation coverage rates are not available yet. From the data presented (Northern RHA, 1996), Pacific people children are 10% less likely than the national average to be fully immunised at two years, with a coverage rate of only 50%
- uptake of breast and cervical screening programmes is lower for Pacific people women than the national average, with uptake for these two programmes being less than 50% in 2002 (49% and 42% compared with 73% and 63% respectively)
- Pacific people are more likely to have foregone visiting a GP in the past year, despite a perceived need to do so, although this difference was not statistically significant (18% compared with 13%)
- Pacific people were less likely than the national average to have seen a medical specialist in the past year (20% compared with 30%)
- Pacific people rates of medical admissions to public hospital inpatient services are higher than the national average once adjusted for age and NZDep (standardised discharge ratio of 116%). This still may not be fully proportional to need

- Pacific people rates of surgical admissions to public hospital inpatient services are lower than the national average once adjusted for age and NZDep (standardised discharge ratio of 90%). It therefore appears that Pacific people face more barriers to surgical than to medical care
- Pacific people are relatively low users of mental health services, particularly community mental health services and hospital inpatient care (rates of 141 and 20 compared with 290 and 28 per 100,000 adults)
- it appears that reporting of ethnicity on admission to hospital is improving, but that some outpatient and community services remain reluctant to ascertain ethnic affiliation, so Pacific people rates of health service utilisation (especially outpatient and community services) may have been underestimated
- the geographic distribution of the Pacific people population means that the pattern of service utilisation reflects local Auckland issues to a greater extent than does that of the total New Zealand population. Regional variation will be explored further in the next edition of the *Tupu Ola Moui* report (Ministry of Health and Ministry of Pacific Island Affairs 2004).

Health Risks

- Pacific people children (52% compared with 68%) and adults (63% compared with 68%) are less likely than their total population counterparts to be physically active
- Pacific people adults are more likely to consume at least two servings of fruit (67% compared with 41%) and equally or slightly less likely to consume at least three servings of vegetables (54% compared with 56%) per day than their total population counterparts
- Pacific people households with children had low levels of food security, being more than twice as likely to be able to afford to eat properly only sometimes than the national average (48% compared with 20%)
- half of Pacific people infants (50%) were fully breastfed at three months compared with a slightly higher national average of 55%
- Pacific people children, youth and adults have much higher rates of overweight and (especially) obesity than the national average
- using the accepted thresholds, more than one-quarter of Pacific people school-age children were obese (26% and 31% for Pacific people boys and girls compared with 9% and 11% for total New Zealand population boys and girls). Four out of ten Pacific people adults (15+ years) were classified as obese in 2002/03 (43% compared with 20%)
- these high rates of obesity reflect passive overconsumption of calories and low levels of physical activity
- there are relatively high rates of smoking among adult Pacific people males (35% compared with 26% for the total New Zealand population) and increasing rates among Pacific people females, especially adolescents (23% of Pacific people 14-year-old girls smoked at least weekly in 2002)
- Pacific people men aged 25-64 years (but not youth or females of any age) also exhibit a relatively high prevalence of potentially hazardous drinking patterns (over one-third had an AUDIT score more than 8 compared with a national benchmark of approximately one-quarter, although the difference did not reach the conventional threshold for statistical significance).

Sociodemographic Determinants of Health

- at the 2001 Census, 42% of Pacific people lived in the 10% most deprived small areas of the country (NZDep2001 decile 10)
- the participation of Pacific people children and adults in early childhood and tertiary education is half the national average (33% compared with 63% and 15% compared with 32% respectively)
- consistent with this, Pacific people workers earn median wages and salaries only 78% of the national median annual income
- as at March 2004, unemployment among the Pacific people labour force was 8%, or almost twice the national average (4.6%)
- furthermore, the Pacific people labour force participation rate, which dropped dramatically during the economic restructuring of the late 1980s and early 1990s, has never fully recovered
- although Pacific people workers are no longer as occupationally segregated into a narrow range of manufacturing and service industries as during the 1980s, even today 25% of Pacific people males remain factory workers (and 15% are still engaged in elementary occupations)

- half the Pacific people female workforce are clerical or low-skilled sales and service workers
- by contrast, Pacific people are markedly under-represented among legislators, administrators, managers and professionals compared with the national average (13% compared with 28%)
- only 26% of Pacific people families own their own homes (versus 55% nationally) and 21 experience crowding, defined as more than two occupants per bedroom (versus 3% nationally). However, home ownership, extended family living and 'crowding' are to some extent culturally specific, and adverse consequences on health should not simply be assumed.

Pacific People in West Coast

A research team from the Department of Preventive and Social Medicine of the University of Otago (2004) prepared a Health Needs Analysis (HNA) of Pacific people in the South Island for the Public Health Directorate, of the Ministry of Health. It uses information from accessible, routinely collected data to describe the health of Pacific people in the South Island. The Pacific HNA provides sections for each DHB and the information in this chapter is taken from that work. This chapter focuses on the main issues for Otago.

Main Ethnic Groups

The main Pacific people ethnic groups in the South Island are Samoan (over 50%), Tongan, Cook Island Mäori and Niuean. Most South Island Pacific people live in the Canterbury as shown in Table 139.

Table 139. Numbers of Pacific People in the South Island by Region

District Health Board	Number of Pacific People
Canterbury	8,400
Nelson Marlborough	1,115
Otago	2,600
South Canterbury	305
Southland	1,145
West Coast*	135
Total	**13,695**

Source: Sourced from Statistics New Zealand and reproduced by the Ministry of Health, 2004.
Notes: Population numbers are based on 2004 projected population figures.
**West Coast figures are based on 2001 projected population figures.*

Sociodemographic Information

As Table 139 shows, there are very few Pacific people living on the West Coast of the South Island. Until 2021, the numbers of Pacific people are not expected to increase. The majority of Pacific people are Samoan, Cook Island Mäori and Tongan. The next most common group is Fijian, followed by Tokelauan and Niuean.

With such small numbers of Pacific people, care must be taken with interpreting the following general comments. In this area there are proportionately more Pacific people in the younger age groups than non-Pacific people. The age distribution is slightly different from that of Pacific people nationally. For example there are proportionately fewer children aged 0 – 4 years and fewer older people. The age distributions for the main ethnic groups are similar, with the majority of the Pacific people population less than 35 years of age.

There are no NZDep 1 areas (least deprived) on the West Coast. Most Pacific people live in NZDep 8 and 9 areas.

The main source of income for Pacific people is wages and salaries. They are more likely to be on an unemployment benefit than non-Pacific people, but there is no difference when comparing those on other benefits such as sickness or domestic purposes benefits. Pacific people are more likely to have no educational qualification compared to non-Pacific people. There are proportionately fewer Pacific people than non-Pacific people with overseas school qualifications and basic vocational qualifications.

Health Status

Because of small numbers, hospital admissions for the West Coast DHB are not able to be analysed. However it is likely that the pattern on the West Coast is not dissimilar to the rest of the South Island

Mortality

There were significant problems surrounding the recording of ethnicity for mortality statistics prior to 1996. The researchers used data from deaths recorded in New Zealand from 1988 to 12000. Most of the results from standardised mortality ratios showed that Pacific people in the South Island were no more likely than non-Pacific people to die from most of the diseases analysed, except for cancer of the stomach. This high rate is unlikely to be due to chance.

For children aged 0 to 4, the categories of disease which had the highest ratios of mortality when comparing Pacific people to non-Pacific people children were diseases of the digestive system and infectious and parasitic diseases. For those aged 5 to 14, they were external causses of mortality and injury and poisons.

Mental Health

This information on Pacific people mental health comes from a report by the Ministry of Health (O'Hara and Kokaua 2004). The data source was the 2001 Mental Health Information National Collection (MHINC). As shown in Table 140 and Table 141, about 4% of all people who used mental health services in 2001 were Pacific people. Nearly 50% of all Pacific people who accessed services were aged 25 to 44, one-third were 15 to 24. The most common diagnoses for Pacific people were schizophrenia (50%) and mood disorders (28%) (Table 142).

Table 140. Total Number of People who Accessed Mental Health Services in New Zealand in 2001, by Gender and Ethnicity

Gender	Pacific People	Non-Pacific People	Total
Female	1,231	40,438	41,669
Male	1,748	42,661	44,409
Total	**2,979 (3.5%)**	**83,009 (96.5%)**	**85,988**

Source: 2001 Mental Health Information National Collection (MHINC).

Table 141. Total Number of People who Accessed Mental Health Services in New Zealand in 2001, by Age Group and Ethnicity

Age Group (Years)	Pacific People	Pacific People %	Non-Pacific People	Non-Pacific People %
00 – 14	291	10%	11,140	13%
15 – 24	811	27%	14,870	18%
25 – 44	1,416	48%	35,083	42%
45 – 64	372	12%	15,298	18%
65+	90	3%	6,707	8%

Source: 2001 Mental Health Information National Collection (MHINC).

Table 142. Proportion of Diagnoses for People who Accessed Mental Health Services in New Zealand in 2001, by Ethnicity

Diagnosis	Pacific People	Non-Pacific People
Mood Disorders	28%	36%
Neurotic Disorders	8%	17%
Substance Abuse	23%	22%
Schizophrenia	50%	22%
Others	16%	20%

Source: 2001 Mental Health Information National Collection (MHINC).

In the South Island, of all people who accessed mental health services in the 24 months up to December 2002, 2% (509) were Pacific people and of these, 63% (321) accessed a community mental health service. About 5% of Mäori and Pacific people were seen at forensic services compared to 0.2% for non-Mäori, non-Pacific people.

Child and Youth Health

Results of the 2002 National Children's Nutrition Survey (Ministry of Health 2003h) indicate half of Pacific people children had two serves of fruit and 60% had at least three serves of vegetables each day. Almost half of Pacific people children did not usually eat or drink at home before school and about one-third ate or drank on the way to school in the morning. About 25% of children aged 11 to 14 years bought their school lunch from a canteen at school.

Over 20% of children were obese and the prevalence rose with age, so that over one-third of females aged 11 to 14 were classified as obese.

Suicide

The suicide age-standardised rate of Pacific people aged 15 years and over is 17 per 100,000, which is less than half than that of the New Zealand population as a whole. Pacific people females aged 16 to 25 are more likely to attempt suicide than males; however males are more likely to be successful in their attempts.

Smoking

Nationally the prevalence of cigarette smoking for Pacific people in New Zealand aged 15 years and over has remained relatively constant over the last 10 years. According to the Ministry of Health (2003j), in 2002 35% of Pacific people were smokers compared with 49% of Māori and 21% of European/Other.

Of concern is the increasing tendency for young Pacific people women to take up smoking, as shown in Table 143.

Table 143. Prevalence of Cigarette Smoking (%) (15+ Years) among Pacific People, by Age and Gender

Age Group (Years)	Male	Female
15 – 24	38.9	45.4
25 – 34	36.5	32.7
35 – 54	37.2	25.2
55+	30.9	12.7

Source: Ministry of Health 2003j.

Primary Care Services

There are no specific Pacific people services on the West Coast, nor are there any Pacific people nurses.

HEALTH AND INDEPENDENCE OF OLDER PEOPLE

This chapter summarises some of the major pressures on health and disability support services for older people in coming decades, in terms of demographic changes and trends in the prevalence of various health problems. While any analysis of the long-term future demand for services needs to acknowledge the possible major social upheaval that may occur due to climate change or global economic or political instability, it is beyond the scope of the review to explore this.

The review is intended to aid District Health Boards in planning and allocating funding among services for older people. It covers a wide range of complex topics very cursorily and the reader is referred to the source documents for more detail.

The term 'Southern Region' refers to all South Island DHB areas excluding Nelson Marlborough. It is used wherever data has been available only for this geographic area. Where the term 'South Island' is used, it refers to all South Island DHB areas, including Nelson Marlborough

Unless otherwise stated, the term 'older people' refers to people aged 65 years or more.

Key Messages

More but healthier older people - the number of people in the 'young old' 65-74 year age group will grow fastest in the next 20 years, as baby boomers reach retirement age. However this generation is on average fitter and healthier than older people have been in the past. People's need for services is not related so much to their age per se as to chronic illness and disability and to the last year of life.

The impact of the 75+ age group comes later - the biggest impact on health and disability support services will come in 15 years time when the baby boomers reach their mid-70s, an age when people's use of hospital services peaks and their need for disability support services steadily increases.

Finding diverse ways of supporting one another - the vast majority of older people live at home until they die. Smaller and more mobile families mean fewer older people will be able to rely on their children as nearby carers. As the greater diversity of family types and ethnic groups in our society flows into older age groups, they are likely to develop innovative living arrangements for themselves. The challenge for DHBs will be how to support these and ensure that people don't slip through the social net.

A growing group of chronically ill/disabled - although most 'young-old' people are healthy, a minority have chronic illnesses or disability and use health services more than average. This group has often experienced social and economic hardship from middle age (eg job loss and/or separation). They may develop illness and disability in late middle age and enter older age with fewer supports, such as a mortgage-free home or nearby family. Mäori and Pacific people are disproportionately represented in this low-income group.

Access to effective primary care is critical – the increasing life expectancy of older people, particularly men in higher income groups, shows what can be done with lifestyle changes (eg stop smoking) and effective primary care(eg hypertension medication, flu vaccination, diabetic eye checks). The challenge for DHBs will be to ensure that these are taken up by other groups, particularly low income people, Mäori and Pacific people. This could enable DHBs to reverse the rise in avoidable hospital admissions which has occurred since the late 1980s.

Keeping physically and socially active is critical – keeping physically fit and active can reduce the likelihood or slow the progression of a number of illnesses common to older people, such as diabetes, osteoarthritis, cardiovascular and respiratory disease and hip fractures or other falls-related injuries. Keeping socially active is protective of people's mental as well as physical health.

Helping older people stay independent – a wide range of community services enable older people to stay active and independent. These range from active rehabilitation programmes to help people regain health and functioning after illness or injury, to long-term home-based disability support services such as home help, special equipment or meals on wheels, to joint initiatives with local councils and other agencies for supportive housing, transport and befriending schemes. Putting DHB resources into such services would pay off in terms of fewer admissions to hospital or residential care.

Growing need for disability support services – nearly half of all people aged 75 years or over need some help to remain independent, with arthritis being the most common cause of disability. A very small minority need residential care in the last years of their life. The ageing of the population will mean be a rising need for disability support services, as the actual number of people with arthritis, impaired vision, stroke and dementia increases over coming decades.

Extending the holistic palliative care approach to all those dying – over 80% of deaths in any year are of people aged 65+ years. The holistic palliative care approach to dying that has been pioneered by the hospice movement mostly for cancer patients could be taken up more in other settings, such as general hospitals and residential care facilities.

Important service areas include:

- **Falls prevention and exercise programmes** – these are effective in reducing hospital admissions, surgery, disability and deaths from hip fracture and other injury
- **Specialist geriatric services** – these are effective in assessing, treating and rehabilitating older people with complex health problems, so as to reduce their need for hospital or long-term residential care. Specialist services also play a crucial role in providing support and advice for primary care, general hospital wards, community agencies and residential facilities
- **'One-Stop-Shop' needs assessment and service coordination** – older people should be able to get all the health and disability support service they need easily, with good communication among all the health workers involved, including GPs, needs assessors, district nurses, home care agencies, hospital staff etc.
- **Community-based support services** – such as home support, carer support and respite care district nursing, community allied health and special equipment,, are important in reducing the need for acute hospital admission or longterm residential care. These services need to be well coordinated and have a strong rehabilitation focus.
- **Stroke rehabilitation services** – these are effective in restoring functioning as fully as possible and reducing the need for ongoing disability support services
- **Dementia services** – these specialist services will be increasingly needed as the population ages

The Ageing Population

Size of the Older Population

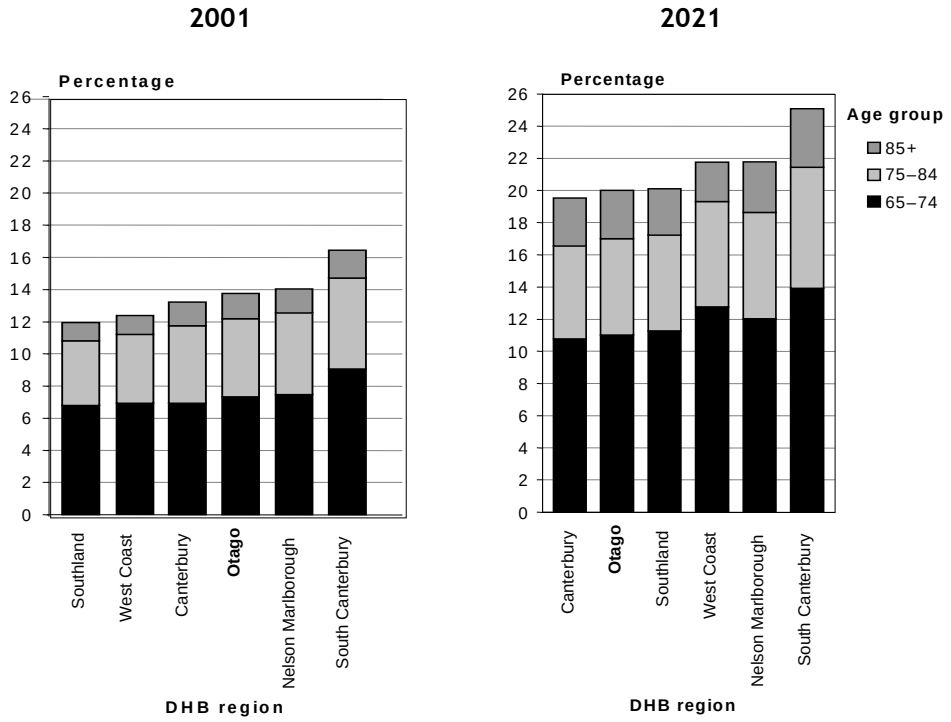
In 2001 the 4,077 people aged over 65 years made up 13.5% of the total resident West Coast population. The 363 people aged 85 years or more made up 1.2% of the population. The West Coast, particularly Buller District) has a relatively higher proportion of older people in its population compared to the national average (12%) (Table 144). People in the 'young-old' group of 65-74 years make up the largest component of the older population, reflecting the post-war baby boom generation.

Table 144. Number and Percentage of People in Older Age Groups in the Usually Resident Population, 2001

District Health Board & Territorial Authority	65-74 Years		75-84 Years		85+ Years		Total 65+ Years	
	No.	%	No.	%	No.	%	No.	%
Buller District	843	8.8%	477	5.0%	117	1.2%	1,437	14.9%
Grey District	939	7.3%	576	4.5%	156	1.2%	1,671	13.0%
Westland District	528	6.8%	348	4.5%	90	1.2%	966	12.4%
West Coast DHB	**2,310**	**7.6%**	**1,404**	**4.6%**	**363**	**1.2%**	**4,077**	**13.5%**
Canterbury DHB	30,261	7.1%	20,640	4.8%	6,321	1.5%	57,222	17.2%
Nelson Marlborough DHB	9,354	7.6%	6,270	5.1%	1,854	1.5%	17,478	14.3%
Otago DHB	13,182	7.7%	8,571	5.0%	2,808	1.6%	24,561	14.4%
South Canterbury DHB	4,920	9.3%	3,150	6.0%	1,008	1.9%	9,078	14.4%
Southland DHB	7,245	7.0%	4,374	4.2%	1,314	1.3%	12,933	12.5%
South Island Total	**67,272**	**7.4%**	**44,409**	**4.9%**	**13,668**	**1.5%**	**125,349**	**13.8%**
New Zealand Total	**246,171**	**6.6%**	**155,616**	**4.2%**	**48,639**	**1.3%**	**450,426**	**12.1%**

Source: Statistics New Zealand - New Zealand Population Census 2001.

Figure 66. Older Age Groups as a Percentage of the Total Population, by DHB, 2001 and 2021



Source: Statistics New Zealand, Population Projections (base 1999) (Ministry of Health 2002a).

In the medium term (2010 to 2035) the biggest growth will be in the 'young-old' 65-74 year age group, as the baby boom generation reaches retirement. However after that the most rapid growth to 2051 will be of the 85-year age group (Ministry of Health 2002a) (Table 145 & Figure 66).

Table 145. Projected Number of People in Older Age Groups, 2021

District Health Board & Territorial Authority	Age Group							
	65-74 Years		75-84 Years		85+ Years		Total 65+ Years	
	No.	%	No.	%	No.	%	No.	%
Buller District	*Statistics New Zealand do not project to Territorial Authority level within age groups because the numbers are too small. A rough estimate of numbers in each age group could be made by assuming the age groups within each TA's 65+ population are distributed in the same % as for the DHB as a whole*						2,200	25.9%
Grey District							2,600	22.2%
Westland District							1,800	25.0%
West Coast DHB	**3,755**	**13.8%**	**2,030**	**7.5%**	**710**	**2.6%**	**6,495**	**23.8%**
Canterbury DHB	53,400	10.6%	28,940	5.7%	13,910	2.8%	96,250	20.5%
Nelson Marlborough DHB	18,055	12.2%	10,210	6.9%	4,580	3.1%	32,845	22.2%
Otago DHB	20,220	11.2%	20.5%	6.2%	5,440	3.0%	36,910	20.5%
South Canterbury DHB	6,850	13.7%	3,970	7.9%	1,960	3.9%	12,780	25.6%
Southland DHB	11,440	11.3%	6,525	6.5%	2,880	2.9%	20,845	20.7%
South Island Total	**113,720**	**11.3%**	**62,925**	**6.2%**	**29,480**	**2.9%**	**206,125**	**20.4%**
New Zealand Total	**447,760**	**9.9%**	**244,980**	**5.4%**	**106,485**	**2.3%**	**799,225**	**17.6%**

Source: Statistics New Zealand - New Zealand Population Census 2001.

Older People in Rural Areas

Most older people on the West Coast (like the general population) live in the main urban areas (ie areas with 30,000 or more residents). However West Coast's older residents are more likely than other older New Zealanders to live in rural areas.

Some rural centres have relatively high proportions of 'young-old' 65-74 year-old retirees. As people get older and in more need of health services, they tend to move to larger urban centres if they are able to do so (Statistics New Zealand 2004a).

People living in country areas remote from metropolitan health services can have difficulty getting the health care they need, particularly if they are on low incomes or without effective means of transport.

Ethnicity

Most (97%) older West Coast residents in 2001 were of European origin. People of Mäori descent made up 2.4% of older people, those of Pacific origin 0.1% and of Asian origin 0.3% (Table 146).

Younger age groups are more ethnically varied and this will pass on to older age groups as the population ages, making for more diversity among older people in the future.

When planning for health services for people with chronic illness, it is important to consider the number of Mäori, Pacific people and low income people in the 50 plus age group, since these groups have a higher rate of chronic illness at an earlier age than the overall population.

Mäori and Pacific people have lower life expectancy and higher rates of deaths and hospital admissions than the overall population, even when socioeconomic factors are taken into account (Public Health Intelligence 2001).

Table 146. Number of Usually Resident Population Aged 65+ Years by Ethnicity, South Island DHBs, 2001

District Health Board	Mäori	Pacific People	Asian	Other	Total
Canterbury	744	198	675	55,608	57,222
Nelson Marlborough	273	27	48	17,130	17,478
Otago	267	51	201	24,054	24,561
South Canterbury	96	3	36	8,940	9,078
Southland	348	39	42	12,507	12,349
West Coast	**96**	**3**	**12**	**3,966**	**4,077**
South Island: % all 65+	**1.5%**	**0.3%**	**0.8%**	**97.5%**	**100.0%**
New Zealand: % all 65+	**3.9%**	**1.7%**	**2.1%**	**92.3%**	**100.0%**

Source: Statistics New Zealand. Population Census 2001.

Gender Differences

The greater numbers of women than men in the oldest age groups reflects women's higher life expectancy. This disparity has been reducing, since men's and women's death rates for some common illnesses (eg lung cancer) have been converging, and life expectancy of older men has been rising faster than that of women (Statistics New Zealand 2004a).

Living Arrangements and Social Networks

A sense of belonging and contributing to a group and community is crucial for a person's health at any age, and maintaining strong warm social relationships helps people stay fit and healthy for as long as possible. As people grow older, some experience loosening social and family ties, as they retire from work, as partners and friends die, and as younger family members shift to other places (Ministry of Health 1997, Alcohol & Public Health Research Unit 1999).

Some older people also experience a gradual or sudden loss of independence and isolation from others as deteriorating vision, hearing and mobility means they cannot drive or get about or socialise as easily as before. This can be especially difficult for people on low incomes and those living in rural areas and small towns with little or no public transport (Ministry of Health 1997).

Living Alone

Nearly half of people aged 75-84 years and two-thirds of those aged 85+ years live alone. This trend has been rising and is expected to continue, reflecting longer life expectancy, smaller family sizes, higher rates of separation and divorce, and a greater likelihood that adult children will move to find work elsewhere (Ministry of Health 2002a, Statistics New Zealand 2004a).

Table 147 shows that 31% of West Coast's population aged 65-74 years, 48% of those aged 75-84 years and 59% of those over 85 years lived alone in 2001, higher than the national average for each age group, particularly in Buller District (Table 147).

Table 147. Percentage of Older People Living Alone, West Coast DHB and Territorial Authorities vs South Island and New Zealand, 2001

District Health Board & Territorial Authority	Age Group		
	65-74 Years	75-84 Years	85+ Years
Buller District	31.6%	48.2%	72.0%
Grey District	28.5%	48.4%	46.9%
Westland District	33.3%	47.3%	60.9%
West Coast DHB	**30.9%**	**48.1%**	**59.0%**
Canterbury DHB	25.5%	42.9%	59.9%
Nelson Marlborough DHB	23.5%	40.4%	58.9%
Otago DHB	26.8%	44.3%	62.2%
South Canterbury DHB	24.6%	45.4%	62.7%
Southland DHB	27.2%	46.0%	62.6%
South Island Total	**25.8%**	**43.5%**	**60.7%**
New Zealand Total	**24.3%**	**41.1%**	**57.0%**

Source: Statistics New Zealand - New Zealand Population Census 2001.

Older women live alone more commonly than men, largely because they survive their older partners to reach older ages. Death rates for older men have been dropping – this suggests that more couples may grow old together, in a counter-trend to the rising number of people living on their own (Ministry of Health 2002a).

Older Mäori and Pacific people are more likely to live with family than other ethnic groups; 60% of those over 75 years lived with family members (Ministry of Health 2002a).

The availability of adult children as carers is likely to reduce in coming decades. This is due to the smaller family sizes of people now moving into older age, as well as greater mobility of younger people (Davey 2003).

Older people in the coming decades are likely to seek and develop innovative living arrangements that find a balance between independence and the need and desire for companionship and practical support. The challenge for DHBs will be how to support these arrangements fairly and effectively.

Care-Giving and Voluntary Work

An increasing number of older people do unpaid work looking after a child or someone who is ill or disabled, or helping/voluntary work outside the home. Nearly half those aged 65-75 years, a quarter of those aged 75-84 years and nearly 10% of those over 85 years look after children, sick or disabled people or do voluntary work. Women are more likely to look after children, while men are more often caregivers for their sick or disabled spouses. Older Mäori and Pacific people are more likely than others to do these forms of unpaid work (Ministry of Health 2002a).

In West Coast, 40% of people aged 65 – 74 years and 22% of those 75-84 years did this type of unpaid work, a little lower than the national average (Table 148).

The distinction between carers and cared-for may become more blurred in coming decades, presenting DHBs with the challenge of finding more flexible ways of funding the support needed by a household of older people.

Table 148. Percentage of Older People Doing Unpaid Childcare, Caring for Sick or Disabled People or Helping/Voluntary Work Outside the Home, by Age Group and DHB, 2001

District Health Board	65-74 Years			75-84 Years			85 Years and Over		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Canterbury	41%	54%	48%	26%	25%	25%	12%	6%	8%
Nelson Marlborough	38%	54%	46%	28%	26%	27%	10%	7%	8%
Otago	39%	51%	45%	26%	22%	23%	10%	6%	7%
South Canterbury	38%	56%	47%	25%	24%	25%	11%	8%	8%
Southland	34%	49%	41%	21%	21%	21%	7%	6%	5%
West Coast	**34%**	**47%**	**40%**	**22%**	**21%**	**22%**	**13%**	**5%**	**8%**
Total NZ	**39%**	**53%**	**46%**	**26%**	**26%**	**26%**	**12%**	**7%**	**8%**

Source: Statistics New Zealand - New Zealand Population Census 2001.

Residential Care

The vast majority of older people live at home until they die, with only a small minority going to live permanently in residential care facilities (ie rest homes or long-stay hospitals) towards the end of their lives.

Data from the New Zealand Disability Surveys suggest that approximately 5.8% of all New Zealanders aged 65+ years lived in residential care in 2001, about the same percentage as in 1996/97. It was estimated that around 4.2% of older New Zealanders live in rest homes and 1.5% in long-stay hospitals. These percentages were also much the same as in 1996/97 (Statistics New Zealand 2002, HFA/Ministry of Health 1998).

The national samples used in the New Zealand Disability Surveys are too small to give estimates of the numbers living in residential care at DHB or even regional level. It is difficult to get an accurate estimate of the number of people in long-term residential care, because some beds are always taken up with people staying temporarily, for respite, convalescence or palliative care.

A more accurate measure of the number of older people in residential care in West Coast is the number of people receiving subsidies for long-term care. Around 320 West Coast older people received a residential subsidy in 2002/03, or 7.5% of the older population. This percentage was higher than the

Southern Region average of 6.2% (Table 149). As noted, this does not include those people who live in rest homes but are not eligible for a subsidy.

Table 149. Number of Older People Living in Residential Care as a Percentage of the Total Older Population 65+ Years, by DHB and Type of Residential Care*

District Health Board	Rest Home**		Long-Stay Hospital		Dementia Unit (Rest Home Level)		Dementia Unit (Hospital-Level)		Total Residential Care	
	Number	%	Number	%	Number	%	Number	%	Number	%
Canterbury	2,057	3.39%	1,702	2.81%	543	0.90%	185	0.30%	4,487	7.40%
Nelson Marlborough*	448	2.36%	425	2.24%	130	0.68%	48	0.25%	1,051	5.53%
Otago	1,015	3.96%	643	2.51%	226	0.88%	109	0.43%	1,993	7.78%
South Canterbury	262	2.79%	184	1.96%	62	0.66%	24	0.26%	532	5.67%
Southland	426	3.09%	325	2.36%	116	0.84%	37	0.27%	904	6.55%
West Coast	**174**	**4.07%**	**125**	**2.93%**	**-**	**-**	**23**	**0.54%**	**322**	**7.54%**
Southern Region Total***	**3,934**	**2.96**	**2,979**	**2.24**	**947**	**0.71**	**378**	**0.28**	**8,238**	**6.21**

Source: *HealthPAC Data*

Notes:
* *Comparable data are not available for Nelson Marlborough as for the other DHBs, so the total has been calculated for the Southern Region (ie excluding Nelson Marlborough). The Nelson Marlborough data covers 9 months from 1 October 2003 to 30 June 2004, while data for the other DHBs covers the year ending 31 June 2003. Nelson Marlborough data has not been annualised, as the rate of entry to the services is not known.*

** *The number of rest home residents refers to people receiving a subsidy rest home care - this is less than the total number of people living in rest homes, as some people are not eligible for the subsidy. All people in hospital or dementia care receive a subsidy, so these numbers reflect the actual number of people in these types of facilities.*

*** *Excluding Nelson Marlborough.*

The percentage of people receiving residential subsidies in West Coast, and the South Island generally, is higher than the percentage of people in residential care as estimated by the New Zealand Disability Surveys 2001. This difference may reflect the considerable differences in the data on which the New Zealand and DHB estimates were based, as well as the higher proportion of older people in the south, the somewhat higher rate of disability in the southern older population (see later in this section under Disability). It may also reflect differences in how older people are assessed as eligible for residential care.

Retirement Villages and Supportive Housing

A national sample survey found that 6%-7% of New Zealanders aged 65-84 lived in retirement villages, rising to 12.5% of those aged 85 or more years. (Fergusson et al 2001) Based on these rates, we would expect that around 285 older people live in retirement villages in West Coast.

There is increasing interest among DHBs, local councils and voluntary organisations (eg Abbeyfields) in developing a variety of different forms of supportive housing, to provide affordable alternatives for older people.

Financial Security

A person's level and security of income directly affects their health and independence. People on low incomes are less likely to live in warm dry houses of their own, to be able to afford the taxi needed to get to the clinic, or to go to the doctor for a screening test or at an early stage of an illness, to pick up all the medicines they are prescribed or to use a private specialist or physiotherapist when public health services are unavailable or have long waiting times (Statistics New Zealand 2004a, Public Health Intelligence 2001).

A national study of older people's living standards found that most older people report they are not experiencing particular material hardship. A minority (5%-10%) did experience some hardship and a further 5% experienced marked hardship. Poor living standards in old age are associated with a mixture of adverse events from earlier in life, including high accommodation costs, having had a low paying occupation, marital separation or poor health (Fergusson et al 2001).

Overall figures on income and home ownership for DHB populations mask the marked differences that exist within these populations between high and low income groups (Southern Regional Health Authority 1998, Public Health Intelligence 2001).

Poverty among older people is expected to become a greater problem in the next decade as the middle-aged people on low incomes who lost their jobs in the economic changes of the 1980s reach old age. Many in this cohort were not able to get back into the workforce and have not built up housing or other assets in the same way as earlier generations. This will be a particular issue for Mäori and Pacific people, who moreover tend to develop chronic and disabling illnesses at an earlier age than the general population. The higher rate of marital separation in recent decades will also contribute to fewer assets held by older people in the future (Davey 2003, Public Health Intelligence 2004).

Poverty and problems in getting access to health services may become a particular issue for some poorer people in small rural towns if they are trapped by rising house prices from being able to shift to the bigger city as they age and need specialist health and disability support services.

Paid Work and Income Levels

Income is related to paid employment and older people on average have lower incomes than the working age population. The real income of older New Zealanders dropped by 7% between 1986 and 1991 and while it has not dropped further since then, by 2001 it was still below the 1986 level (Statistics New Zealand 2004a).

Although paid employment drops markedly in later years, the number of people still in paid employment at older ages increased considerably after 1991, when the entitlement age for National Superannuation was raised from 60 to 65 years. In 2001 24% of New Zealand men and 11% of women aged 65-74 years, as well as 5% of men and 3% of women aged 75-84 years, were still in paid employment (Statistics New Zealand 2004a).

Home ownership

Around 82% of older New Zealanders own their own home and another 3% live in a home owned by a family trust. Not having to pay rent or a mortgage makes a big difference to older people's material wellbeing. In 2001 the proportion of people aged 60-74 years who owned their home mortgage-free ranged from 20% among Pacific people, to 48% of Mäori and 72% of New Zealand European/Other ethnic groups (Davey 2003).

In West Coast 79% of people aged 65 years or more owned or part-owned their own home in 2001, a little lower than the New Zealand average (Table 150).

As described above, the proportion of older people owning their own homes may decline in coming decades, due to the long-term effects of the recession of the 1980s and 1990s (Davey 2003).

Table 150. Percentage of People Aged 65 Years or Over who Own or Partly Own Their Own Home, 2001

DHB & Territorial Authority	Percentage
Buller District	78.4%
Grey District	79.4%
Westland District	78.5%
West Coast DHB	**78.8%**
Canterbury DHB	83.5%
Nelson Marlborough DHB	85.1%
Otago DHB	81.4%
South Canterbury DHB	83.6%
Southland DHB	83.0%
South Island DHBs	**83.1%**
New Zealand	**81.5%**

Source: Statistics New Zealand - New Zealand Population Census 2001.

Deaths and Life Expectancy

Life Expectancy

The number of additional years that a 65-year-old can expect to live has steadily increased since the 1970s, particularly for men. The major causes of this rise in life expectancy have been the decline in

smoking, as well as earlier and more effective treatments for cardiac and other diseases (Statistics New Zealand 2004a, Statistics New Zealand 2004a, Ministry of Health 1997).

This change is less evident for people on low incomes or Mäori or Pacific people. The higher death rates of Mäori in middle and older age groups account for three-quarters of the overall difference in life expectancy between Mäori and non-Mäori. Among men in their 50s and women in their 50s and 60s, Mäori are roughly three times more likely to die than non-Mäori. The differences are due in part to higher rates of diabetes and smoking as well as socioeconomic disparities (Statistics New Zealand 2004a, Ministry of Health 2002a).

West Coast people aged 65 years in 1995-1997 could expect to live an additional 16.1 years, more for women (17.8 years) and less for men (14.3) years. This is the lowest life expectancy for a 65 year old of any South Island DHB population and lower than the national average (15.6 years for men, 19.2 for women and 17.5 overall) (Statistics New Zealand 2004).

Expected Years Of Independent Life

Women live longer than men, but on average live for more years with disability. National (but not regional figures) are available on the number of years a person aged 65 could expect to live without some form of disability needing assistance (Ministry of Health 2002a) (Table 151).

Table 151. Life Expectancy and Independent Life Expectancy at Older Ages, New Zealand Population

New Zealand Population	Life Expectancy at Age 65	Independent Life Expectancy at Age 65
All New Zealand	17.8	10.9
All Male	16.1	9.9
All Female	19.5	11.9
Mäori Male	12.6	7.4
Mäori Female	15	7.5
Pacific People Male	13.4	NA
Pacific People Female	16.6	NA

Source: Ministry of Health 2002a.

Overall Death Rates

Overall death rates for all older age groups dropped between 1980 and 1998, with the biggest reduction being in the 65-74 year age group. Death rates for New Zealanders in this age group dropped by about a third in this 18-year period. DHB comparisons cannot easily be made because of the small size of DHB populations and lack of easily available data over time for DHB populations (Ministry of Health 2002a).

Death rates increase with age, but tend to slow down at the very oldest ages. This trend is becoming more marked and has been seen as possibly reflecting the survival of the fittest people into very old age (Ministry of Health 2002a).

Terminal and Palliative Care Services

The care of older people cannot easily be separated from the care of people as they die. Most (79%) of the 221 deaths in West Coast in 2001 were of people aged 65 or more, and a quarter (69) were of people aged 85 years or more (Table 152). The West Coast has a higher proportion of deaths in the under 65 year group than other South Island areas, reflecting the Coast's lower than average life expectancy at most ages.

Table 152. Number and Percentage of People by Age at Death, West Coast, 2001

Age at Death	Number of Deaths in 2001	Percentage of Deaths in 2001
Under 65 Years	60	21%
65-84 Years	152	54%
85+ Years	69	25%
All Ages	**281**	**100%**

Source: NZHIS.

The most common causes of death among older people are ischaemic and other forms of heart disease (31%), cancer (25%), stroke (12%) and respiratory disease (8%). Most older people die at home, in general hospitals or in residential facilities (Statistics New Zealand 2004a) (Table 153).

Hospice and specialist palliative care services in New Zealand have tended to be directed towards people dying from cancer and at somewhat younger ages. There is scope for extending the palliative care approach that the hospice movement has developed to older people who more commonly die from other causes and in a range of other places (Gibbs 1998).

Table 153. Major Causes of Death Among Older New Zealanders Compared to Those Under 65 Years

Cause of Death	% Dying from this Cause	
	People Aged 65+ Years	People Aged Under 65 Years
Heart Disease, All Types	31%	15%
Cancer, All Types	25%	35%
Stroke/Cerebrovascular Disease	12%	Less than 1%
Respiratory Disease	8%	4%
Injury/Suicide	Less than 1%	13%

Source: Statistics New Zealand 2004a.

Avoidable Deaths

In terms of older people, death rates per se are a less useful indicator of health than the rate of avoidable deaths before the age of 75 years, since at some point everyone dies from some cause.

Deaths that have been identified as theoretically preventable or reducible in the 'young-old' 65-74 year age group include various cancers (eg colorectal, lung, oral and breast), alcohol related disease, chronic respiratory disease and respiratory infection, stroke, road traffic deaths, diabetes, hypertensive disease and renal failure (Ministry of Health 1999, Ministry of Health 2002a).

A Ministry of Health review identifies the following activities that could be undertaken at different stages of an illness or injury to prevent it happening or worsening (Ministry of Health 1999, Ministry of Health 2002a):

- 'primary prevention' to prevent an illness or injury occurring (eg not smoking, wearing seat-belts)
- 'secondary prevention' to catch illness at an early stage (eg managing diabetes or hypertension)
- 'tertiary prevention' to stop it getting worse (eg early surgery for cancer).

The lowest death rates for an illness/injury in a population show the level that could be reached for all people if optimum prevention was achieved. Table 154 shows some conditions where the number of deaths could theoretically be reduced to the lowest level that exists.

Table 154 shows that West Coast has a higher death rate per head of older population in both the 65-74 and 75+ age groups for many of these causes compared to the national average. Some of the smaller differences may be due to chance and small numbers but some differences are large enough that it is unlikely that they are due to chance eg heart disease, and lung and prostate cancer in the 75+ year group.

Table 154. Deaths of Older People, Numbers and Rate per 10,000 Age-Specific Population, for Selected Causes, West Coast and New Zealand, 1999 to 2001

Selected Causes of Death	West Coast		New Zealand	
	Number of Deaths	Deaths per 10,000 People	Number of Deaths	Deaths per 10,000 People
65 - 74 Years				
Ischaemic Heart Disease	47	69	3,708	49
Other Heart Disease	7	10	418	5
Stroke/Cerebrovascular Diseases	10	15	1,129	15
Cancer of Lung & Trachea	12	18	1,478	20
Colorectal Cancer	15	22	1,033	14
Prostate Cancer	8	12	483	6
Breast Cancer	<5	N/A	387	5
All Other Forms Of Cancer	24	35	3,032	40
Chronic Respiratory Disease	18	27	1,335	18
Influenza and Pneumonia	-	-	95	1
Diabetes Mellitus	6	9	580	8
Injury from Fall	-	-	77	1
Intentional Self-Harm	<5	N/A	84	1
All Causes - 65-74 years	**187**	**275**	**16,237**	**215**
75 Years And Over				
Ischaemic Heart Disease	104	206	12,478	205
Other Heart Disease	37	73	2,805	46
Stroke/Cerebrovascular Diseases	42	83	6,395	105
Cancer Of Lung & Trachea	25	50	1,596	26
Colorectal Cancer	13	26	1,527	25
Prostate Cancer	16	32	1,120	18
Breast Cancer	<5	N/A	598	9
All Other Forms Of Cancer	43	85	5,013	82
Chronic Respiratory Disease	44	87	3,355	55
Influenza and Pneumonia	8	16	1,219	20
Diabetes Mellitus	16	32	1,199	20
Injury from Fall	<5	N/A	609	10
Intentional Self-Harm	-	-	78	1
All Causes - 75 Years and Over	**432**	**856**	**47,527**	**782**
All Causes - 65 Years and Over	**619**	**523**	**63,764**	**468**

Source: NZHIS.

Health and Illness

Keeping Fit and Healthy

The falling death rates for heart disease, stroke, some cancers and other conditions show the importance for older people of maintaining a fit and healthy lifestyle. Exercising regularly, eating well, not smoking and maintaining a good weight are protective habits that, the evidence suggests, people are never too old to adopt. The following information on older people's habits comes from the New Zealand Health Survey 2002/03 (Public Health Intelligence 2004) (Table 155):

- **vegetable and fruit intake** rises with age and is consistently higher for women and people in higher income groups
- **high cholesterol** rises to 75 years then drops, with little difference between men or women or among income groups
- **physical activity** drops with age, and is consistently higher for men than women, with little difference among income groups. Being sedentary (ie having less than half an hour's activity per week) rises sharply after 75 years, especially among women

- **being overweight or obese** is more common for men than women, with men aged 65-74 years being the most overweight of any age/gender group in the population. Being overweight does not vary by income group, although obesity is more common among low income groups
- **tobacco smoking and potentially hazardous drinking** both drop sharply with age for both sexes. Smoking rates are similar for older men and women but hazardous alcohol drinking is mostly done by men. Smoking rates are higher in lower income groups.

Table 155. Percentage of New Zealanders and Estimated Number of West Coast Residents Aged 65 Years or Over with Specific Risk Factors for Ill Health, 2001

Reducing the Risk of Illness	% of New Zealanders		Estimated No. of West Coast Residents**	
	65-74 Years*	75+ Years*	65 - 74 Years	75+ Years
High Cholesterol	35 – 43% m-f	24 – 25% f-m	900	430
Three+ Vegetable Servings a Day	75 - 80% m-f	80% m+f	1,790	1,410
Two+ Fruit Eaten A Day	50 - 70% m-f	60 – 75% m-f	1,390	1,190
Physically Active	65 – 75% f-m	43 – 53% f-m	1,620	850
Sedentary	12 – 17% m-f	33 – 40% m-f	340	650
Over-Weight	38 – 51% f-m	36 – 45% f-m	1,030	720
Tobacco Smoking	12% m+f	4 - 6% f-m	280	90
Potentially Hazardous Drinking Habit	12% m	3% m	150	20

Source: *Public Health Intelligence (2004)*
Notes: *Physically Active = At Least 2.5 Hours moderate activity In the last week.*
Sedentary = Less than 30 minutes physical activity a week.
* *The range shows the male/female difference.*
** *Estimated numbers in West Coast are based on New Zealand rates.*

Avoidable Hospital Admissions

Admissions that could be prevented by lifestyle changes

While many hospital admissions for illness or injury are unavoidable, admissions from some causes have reduced or remained steady over recent decades. Admission rates for conditions such as lung cancer, alcohol-related disease, myocardial infarction, some strokes, some chronic respiratory conditions, falls and other injury have remained stable since the 1980s. This reflects healthier lifestyle changes (eg reduction in smoking among men) and more effective investigation and treatment (eg for hypertension) (Ministry of Health 2002a).

Admissions that could be prevented by better primary care

Some hospital admissions are for conditions that could have been treated through effective primary care and support services - these have been called 'ambulatory sensitive admissions'. Admissions from these causes have been rising since the late 1980s, among older people as well as the overall population. Examples include breast cancer, hepatitis, angina, congestive heart failure, respiratory infections, asthma and cellulitis (Ministry of Health 1999, Ministry of Health 2002, Aish et al 2003).

Table 156 compares West Coast's and New Zealand's rates of hospital admission and average length of stay for some common conditions and procedures for older people in 2003. Hospital admission rates are markedly higher than the national average for nearly all conditions in both older age groups. Reasons for this higher rate probably include greater ill-health, fewer options for community-based care in a small, highly dispersed rural population, and also the double-counting of people admitted to Grey Hospital, referred to Christchurch for treatment then readmitted to Grey Hospital.

Table 156. Public Hospital Admissions and Average Length of Stay of Older People, Numbers and Rates per 10,000, by Age, West Coast and New Zealand, 2003

Selected Causes of Hospital Admission	West Coast				New Zealand			
	All Discharges	Day-Cases	Average Days Stay	Discharges per 10,000	All Discharges	Day-Cases	Average Days Stay	Discharges per 10,000
65 - 74 Years								
Ischaemic Heart Disease	70	4	4.4	389	7,366	1,193	5.2	288
Other Heart Disease	69	8	3.7	383	4,638	850	5.1	181
Bypass Surgery	8	0	13.5	44	1,466	-	13.8	57
Stroke/Cerebrovascular Diseases	31	0	6.5	172	1,880	62	9.3	73
Colorectal Cancer	7	2	9	39	1,117	213	10.5	44
Prostate Cancer	11	2	4.9	61	579	186	4.8	23
Cancer of Lung & Trachea	19	3	9.8	106	880	229	7.5	34
Breast Cancer	2	0	3.5	11	424	54	5.5	17
All Other Forms of Cancer	45	12	7.8	250	7,576	3,734	7.5	296
Chronic Respiratory Disease	65	0	6	361	3,814	238	5.8	149
Influenza and Pneumonia	10	0	3.9	56	1,614	51	6.8	63
Arthritis	74	22	6.3	411	2,905	502	6.5	113
Hip Replacement	26	0	7.3	144	1,045	-	7.8	41
Knee Replacement	21	0	6.7	117	739	-	7.7	29
Injury from Fall	27	1	4.1	150	3,222	373	8.8	126
Hip Fracture	2	0	1	11	478	4	9.0	19
Diabetes Mellitus	22	5	7.9	122	1,660	598	8.9	65
Cataract Operations	18	17	2	100	1,879	1,737	2.2	73
All Causes - 65-74 Years	**1,097**	**242**	**9**	**6,094**	**93,395**	**31,403**	**7.4**	**3,649**
75+ Years								
Ischaemic Heart Disease	88	7	5	489	9,321	574	7.6	423
Other Heart Disease	114	8	26.1	633	8,124	663	12.3	368
Bypass Surgery	10	0	13	56	608	-	15.7	28
Stroke/Cerebrovascular Diseases	56	0	15.7	311	3,964	54	33.8	180
Colorectal Cancer	17	1	62.1	94	1,417	179	13.0	64
Prostate Cancer	10	2	3.1	56	756	191	10.0	34
Cancer of Lung & Trachea	4	0	9	22	700	159	12.2	32
Breast Cancer	5	0	4.4	28	407	29	21.4	18
All Other Forms of Cancer	93	27	5.7	517	9,772	5,117	8.6	443
Chronic Respiratory Disease	73	0	4.7	406	4,624	210	9.9	210
Influenza and Pneumonia	25	1	11.9	139	3,687	42	18.2	167
Arthritis	48	9	6.7	267	2,841	358	16.0	129
Hip Replacement	15	0	8.4	83	1,001	-	10.1	45
Knee Replacement	11	0	9.5	61	676	-	9.1	31
Injury from Fall	100	1	10.4	556	13,883	882	11.6	629
Hip Fracture	31	0	9.2	172	3,313	18	10.7	150
Diabetes Mellitus	10	3	362.3	56	1,767	642	22.5	80
Cataract Operations	25	21	1.3	139	4,125	3,824	2.2	187
All Causes - 75 Years And Over	1,574	238	34.8	8,744	**135,182**	**29,762**	**16.1**	**6,129**
All Causes - 65 Years And Over	**2,671**	**480**	**24.7**	**14,839**	**228,577**	**61,165**	**12.9**	**10,364**

Source: NZHIS.
*Notes: * 'All Discharges' includes inpatients and day patients. Average days stay is calculated on inpatients only.*

A recent research study looked at some specific conditions that should not have resulted in hospital admission if the person had been getting adequate primary care. Although this study covered all ages, conditions that affect older people included pneumonia, cellulitis and abscess, congestive heart failure, malignant hypertension, perforated/bleeding ulcer, kidney infections, gangrene, diabetic

ketoacidosis and diabetic coma. The study showed that rates of hospital admissions for these conditions rose for all DHBs between 1980 and 1997. West Coast DHB was above the national average in all time periods except the last (Table 157). The study estimated that 8.3% of all West Coast hospitalisations in 1995-1997 could have been avoided if these conditions had been managed adequately in primary care, less than the national average (10%). Admission rates were strongly related to socioeconomic status (Dharmalingam et al 2004).

Table 157. Age-Standardised Avoidable Hospitalisation Rates per 10,000 Population (All Ages), New Zealand, South Island DHBs and the Highest and Lowest Scoring DHBs, for the Three-Year Periods 1980 to 1982, 1985 to 1987, 1990 to 1992 and 1995 to 1997

Region	Rates of Avoidable Hospital Admission per 10,000 Population			
	1980-1982	1985-1987	1990-1992	1995-1997
Tairawhiti (Highest Score 1995-1997)	109	135	143	171
West Coast	114	120	91	95
Christchurch City	66	81	76	95
Southland	70	74	75	81
Rural Canterbury	62	69	64	74
Otago	66	78	66	83
South Canterbury	66	76	70	73
Nelson Marlborough	**55**	**57**	**47**	**61**
Rodney (lowest score 1995-1997)	35	42	42	56
New Zealand Average	**73**	**83**	**75**	**96**

Source: Dharmalingam et al 2004.

Chronic and Disabling Diseases

Prevalence

The figures below come from the New Zealand Health Survey 2002/03 and show how many people answered yes to the question: "Have you been told by a doctor that you have …?". The figures for the younger 55-64 year age group have been included because chronic diseases tend to develop at this earlier age among Mäori, Pacific people and low income groups.

Table 158 shows the expected number of older West Coast residents with these chronic conditions, based on the rates for New Zealand.

Table 158. Prevalence of Some Chronic Diseases in the Older Population, New Zealand and West Coast, 2001

Chronic Disease	New Zealand Percentage of Total Population*			West Coast Estimated Number of People**		
	55-64 Years	65-74 Years	75+ Years	55-64 Years	65-74 Years	75+ Years
Heart Disease	13 – 19%	26 – 33%	37 – 44%	520	680	720
Stroke	2 - 4%	4 – 8%	9 – 14%	100	140	200
Chronic Respiratory Disease	3 – 6%	5 – 10%	6 – 11%	150	170	150
Arthritis	26 – 32%	42 – 50%	48 – 56%	950	1,060	920
Osteoporosis	3 – 5%	6 – 10%	9 – 14%	130	190	200
Cancer	6 – 9%	11 – 16%	14 – 21%	250	310	310
Diabetes	7 – 11%	10 – 16%	7 – 13%	290	300	180

Source: Public Health Intelligence 2004.
Notes: * *Percentages show upper and lower confidence levels, numbers are calculated from mid way between these and rounded to nearest 10).*
** *New Zealand Percentages Applied to West Coast Population.*

Socioeconomic Differences

There is considerable evidence that the prevalence of most chronic diseases is significantly higher in lower income groups than in the population as a whole. Rates of illness in the total population of older people may mask the existence of socioeconomic differences. This is most obvious in large cities, where socioeconomic and health disparities are most marked (Southern Regional Health Authority 1998).

Mäori and Pacific People

The prevalence of many forms of chronic illness is significantly higher in Mäori and Pacific people than in the population as a whole, especially for people in the middle and older age groups. Some of this is due to the fact that these groups are also in the lowest income groups. However the poorer health is evident even when socioeconomic status is taken into account (Public Health Intelligence 2001).

Potential for Improving the Health and Fitness of Older People

The marked differences in the prevalence of different illnesses and disabilities in people of different social and ethnic groups is an indicator of the potential that exists for improving older people's health to meet the level of the most fortunate. The following section looks at some common health problems for older people and identifies some of the things that could be done to reduce the illness and disability burden of each type of condition.

Heart Disease and High Blood Pressure

For further information on heart disease and high blood pressure refer to Section 2: Cardiovascular Diseases.

Coronary heart disease can cause angina and heart attacks and lead to heart failure. Modifiable risk factors include high blood cholesterol, high blood pressure, smoking, being overweight, physical inactivity, diabetes, high salt intake and inadequate fruit and vegetable intake. The likelihood of having heart disease rises with age, to reach around 40% of those aged 75+ years, slightly more men than women (Statistics New Zealand 2004a).

West Coast's death rates from ischaemic heart disease for older people in the three-year period 1999 to 2001 were higher for the 65-74 year group and much the same for the 75+ year group. Rates of hospitalisation for all forms of heart disease were markedly higher for both older age groups, and rates of bypass operations were higher than the national average for the 65-74 year group but lower for the 75+ year group (Table 154 & Table 156).

The prevalence of heart disease has been dropping, reflecting the effectiveness of lifestyle changes and medical interventions (Public Health Intelligence 2004).

High blood pressure is a risk factor for heart disease, as well as stroke. The National Nutrition Survey 1997 found that around two thirds of New Zealanders aged 65+ years had high blood pressure. Less than half of these were on medication, and in only about half of these cases was the medication effective in controlling the high blood pressure (Statistics New Zealand 2004a).

Men are significantly more likely than women to receive treatment for heart disease, such as aspirin, medication, angioplasty and bypass surgery (Public Health Intelligence 2004).

Stroke

Stroke is a major cause of death and disability among older people and accounts for 7% of all cases of severe disability. The likelihood of experiencing stroke rises with age, peaking in the 70s. Having a first or subsequent stroke is likely to affect 3.4% of people aged 65-74 years, 6.2% of those aged 75-84 years and 9% of those aged 85 years or more. Men at all ages are more likely than women to have strokes. Mäori and Pacific people have higher than average rates, and the average age of first stroke in these groups is 10 years younger than for Europeans (New Zealand Guidelines Group 2003a, Public Health Intelligence 2002b).

About 20% of stroke survivors are left with disabilities severe enough to need help with daily activities, and 20% of stroke patients are discharged from acute hospital into residential care (New Zealand Guidelines Group 2003a, Public Health Intelligence 2002b).

A Ministry of Health study of the likely burden of stroke in the future found no particular trend in the incidence of stroke during past decades. There may have been an increase in less severe strokes and a reduction in death rates but this may partly be due to changes in diagnosis. However, even at current rates, the actual number of people having a stroke will increase as the population ages unless risk factors are addressed (Public Health Intelligence 2002b).

Modifiable risk factors for stroke are similar to those for heart disease, and the rate of deaths and hospital admissions could be reduced. Even modifying one factor (eg reducing the salt content of manufactured foods) would have a significant impact on the incidence of strokes (Public Health Intelligence 2002b). In 1997 the Ministry of Health identified a target for the New Zealand health service of 11.0 hospital admissions per 1,000 men aged 65+ years, and 8 admissions for women by 2010 (Ministry of Health 1997).

The West Coast had the same death rate from stroke for 65-74 year olds as the New Zealand average, but a higher rate for those aged 75+ years. Hospital admissions were markedly higher than the national average for both older age groups, with a shorter than average length of hospital stay (Table 154 & Table 156).

Organised stroke services are effective in reducing deaths, hospital admissions and long-term disability due to stroke. The New Zealand Guidelines Group guideline for the management of stroke gives a detailed analysis of the impact of stroke on health and disability support costs, and the most cost-effective mix of services (New Zealand Guidelines Group 2003a, Public Health Intelligence 2002b).

Diabetes

Type 2 diabetes is a health condition with potentially serious complications if not adequately controlled, including coronary heart disease, stroke, blindness, renal failure and circulatory problems leading to limb amputation. Diabetes typically develops in people around 40-50 years of age, so most people with diabetes are faced with many years of managing their condition. (Ministry of Health 2003a)

The prevalence of diabetes in New Zealand is rising (as are some of the risk factors, such as obesity) – this represents a major potential burden to the health system. (Ministry of Health 2003a)

The New Zealand Health Survey (Ministry of Health 2003a) found that 10-15% older men and women had been diagnosed with diabetes. Diabetes may develop some years before symptoms are noticed and it has been estimated that only about half of those with diabetes have been diagnosed. Diabetes is twice as common among Mäori and Pacific people than those of European origin, and is also strongly associated with socioeconomic deprivation.

Diabetes is a substantially preventable and controllable condition, linked to obesity, physical inactivity and smoking. The complications of diabetes can be avoided by good primary care and early intervention, including retinal screening and management of high blood pressure. The Ministry of Health has developed several indicators for good diabetes management (Ministry of Health 2003a).

Deaths from diabetes in West Coast were above the national rate. West Coast hospital admissions for diabetes were higher than average for the 65-74 year group, but lower for the 75+ group. The oldest group had a markedly longer than average length of stay in hospital (Table 154 & Table 156).

Arthritis and Hip and Knee Replacement

Osteoarthritis and rheumatoid arthritis are the major cause of long-term disability among older people, limiting their mobility, independence and enjoyment of life. Around half of people aged 65+ years have some form of arthritis and most of these people need some help with everyday activities as a result. Prevalence rises with age and is more common among women (Public Health Intelligence 2004).

It is not clear whether the incidence of osteoarthritis and rheumatoid arthritis in the population has been changing over time, and there are very few New Zealand data on this condition. However it is clear that if current rates of arthritis remain steady, there will be a considerable increase in the actual number of people disabled by this condition as the population ages. A Canadian study predicted large increases in the number of people with arthritis over the next 20 years (Badley & Wang 1998).

There are no well-established modifiable risk factors for rheumatoid arthritis, which has a strong genetic component. Risk factors for osteoarthritis include joint injury, obesity, repetitive occupational joint use, and physical inactivity (Australia Bureau of Statistics 2004). A US study noted that physical activity decreases joint pain, improves function and delays disability, and that maintaining healthy weight and avoiding joint injuries reduces the risk of developing arthritis and slows down its progression (Centre for Disease Control 2002).

When arthritis, hip and knee replacements are combined, they made up the most common reason for hospital admission (in the list of selected conditions shown in Table 156) for people aged 65-74 years in West Coast in 2003, with a rate of 672 admissions per 10,000 people. The West Coast's admission rates for arthritis and hip and knee replacement were markedly higher than the national average, especially for the 65-74 year group. The average length of stay in West Coast hospitals was similar to or lower than national rates for both older age groups (Table 154 & Table 156).

Falls and Hip Fracture

Women over 80 years and men over 85 years are at high risk of hip fracture. Living in residential care doubles the risk of hip fracture compared to living at home even when other factors are taken into account, and women from 70 years and men from 75 years living in residential care should be

considered as being at high risk. Significant cognitive impairment also doubles the risk of hip fracture in women over 70 and men over 75 years (New Zealand Guidelines Group 2003b).

Hip fracture in the very old can precipitate disability and entry into residential care among the 80% who survive the year following the fracture (New Zealand Guidelines Group 2003b). A New Zealand study found that regional variations in the death rate following hip fracture could be reduced by reducing delay in time to surgery (Ministry of Health/New Zealand Health Information Service 2002).

The risk of hip fracture or other injury from falling is related to poor muscular strength and balance, poor mobility, poor eye-sight, osteoporosis and low body-weight, certain medications (eg sedatives, hypnotics), incontinence (particularly night-time), a hazardous housing situation (steps, lack of handholds etc), a history of smoking and a history of previous falls. Rates are higher for people of European origin than Mäori or Pacific people (New Zealand Guidelines Group 2003b).

It is not clear if the incidence of falls and hip fractures is increasing within the older population. However it is clear that the growth in the number of older people in itself will inevitably result in an increase in deaths and hospital admissions for hip fracture and other injury unless active interventions are made (New Zealand Guidelines Group 2003b).

Older people living in the community can reduce their risk of falls and hip fractures by exercise programmes for muscle strengthening and balance training, as well as general physical activity, getting help to change the household environment, getting their eyesight checked, and maintaining a healthy weight. Multi-disciplinary assessment and intervention is important, and individual exercise programmes are effective for high-risk people. For people in residential care and those who have already had a fracture, Vitamin D, calcium supplements and hip protectors are also effective (New Zealand Guidelines Group 2003b).

The West Coast's low numbers for deaths and hospital admissions due to hip fracture make it difficult to compare to national rates. Admissions for injury due to falls were higher than the national average for the 65-74 group but lower for the 75+ group. (Table 154 & Table 156).

Chronic Respiratory Diseases, Pneumonia and Influenza

Chronic respiratory diseases, such as bronchitis and emphysema, are the fourth major cause of death among people aged 65+ years, and acute bouts of flu and pneumonia are a major cause of hospital admission (Table 156). A small but significant number of people become disabled by the disease to the point of needing residential care.

Smoking is the major preventable risk factor for chronic respiratory disease. It is expected that more women will develop respiratory illness in future decades, reflecting women's higher uptake of smoking in recent decades.

Deaths and hospital admissions for flu could be reduced by yearly flu vaccination of older people and their carers. Pneumonia is seen as a condition that could be managed more often at home without admission to hospital if the older person has access to good primary care (Dharmalingam et al 2004).

West Coast death rates for both older age groups from chronic respiratory diseases were higher than the national average. Numbers for flu and pneumonia deaths are too small to compare. In both age groups hospital admissions for chronic respiratory disease were markedly higher on the West Coast, but admissions for flu and pneumonia were a little lower than the national average. The length of hospital stay for all respiratory diseases was fairly similar to the national average (Table 154 & Table 156).

Cancer

For further information on cancer see Section 2: Cancer.

Around 20% of men and 15% of women aged 75+ years have had a diagnosis of cancer, (Public Health Intelligence 2004) and around 25% of all deaths in the 65+ year age group are due to cancer (Table 153). Lung cancer, colorectal, prostate and breast cancer are the most common forms of cancer in older people.

Public Health Intelligence (2002c) has produced a detailed analysis of the projected changes in New Zealand death rates and incidence of cancers of different types by age group. The incidence of new cases of cancer is likely to increase slowly, while the actual number of new cases will increase at a faster rate than this due to the population getting older. The overall death rate from cancer has been dropping since the early 1980s, probably due to earlier detection and treatment at least for some cancers. Among men in the 65-74 year age group, prostate cancer is likely to take a greater share of cancer cases, while lung and colorectal cancers are expected to reduce their share. Among women,

breast cancer cases are expected to increase (but death rates to drop), while lung cancer deaths are expected to rise. Colorectal cancer is expected to reduce. The cancer burden among the 75+ year age group for men is dominated by prostate cancer, and this is likely to continue. Lung cancer is likely to drop as a proportion of deaths and new cases, although for women lung cancer is likely to increase its share of the cancer burden.

West Coast's death rates for cancer compared to the national averages were mixed, and numbers of deaths are too small to allow for comparison. West Coast hospital admission rates showed a similarly mixed picture for specific cancers (Table 154 & Table 156).

Dementia and Memory Loss

There is wide variation in worldwide estimates of the prevalence and incidence of dementia, due to differences in how the condition is defined. A New Zealand study found that 8% of New Zealanders aged 65 and over have dementia, with the prevalence roughly doubling with every five years of life. (New Zealand Guidelines Group 2004) This is very similar to Australian and Canadian prevalence estimates for moderate or severe cases of dementia that 'cannot be ignored by the health care system' (Giles et al 2003, Hopkins et al 2004) (Table 159).

Table 159. Prevalence of Dementia in New Zealand, with Estimated and Projected Numbers for West Coast for 2001 and 2021

Age Group	% of Older New Zealanders With Dementia	Estimated Number in West Coast**, 2001	Projected Number in West Coast**, 2021
60 – 64 Years	1.0%	20	20
65 – 74 Years	3.8%	90	140
75 – 79 Years	6.4%	60	80
80 – 84 Years	11.0%	60	90
85+ Years*	32.0%	130	230
Total 65+ Years	**7.7%**	340	540

Source: NZGG 2004.

Notes: * *New Zealand prevalence is 23.6% for 85-89 years and 40.4% for 90-94 years, but as population numbers were not obtained for breakdowns over 85 years, prevalence in the 85+ year group was calculated as 32% (midway between 23.6% and 40.4%). The exponential increase in prevalence with age appears not to continue after 95 years (NZGG 2004). Numbers rounded to nearest 10.*

** *Based on New Zealand rates.*

Alzheimer's Disease accounts for 50-70% of all cases of dementia, while vascular dementia (similar to stroke but may occur in absence of stroke) accounts for another 10-20%. The prevalence of dementia is similar for men and women (New Zealand Guidelines Group 2004).

It is not clear whether the incidence of dementia is increasing. However it is clear that at current rates of occurrence, the actual number of people with dementia will rise in the coming decades with the increasing older population (New Zealand Guidelines Group 2004).

Dementia ranges from mild to severe, and around 70% of those with dementia are cared for at home, usually by an elderly spouse or adult child, at least in the early stages of the disease. (New Zealand Guidelines Group 2004) An Australian study of the prevalence of disability in older people found that of the 8% of older people with dementia, about 40% could be categorised as severe or profound, with moderate or mild cases making up the remainder (Giles et al 2003).

The New Zealand Disability Surveys estimated that in 2001 about a third (34%) of all disabled older people in residential care had psychological/psychiatric disability (mostly dementia), a rise from 27% in 1996/97. However this was the main form of disability in only 10% of all older people living in residential care. The percentage increases with age (Statistics New Zealand 2002).

Good screening is important to distinguish dementia from acute confusion and depression, and to see if any other potentially reversible conditions exist so that appropriate treatments are given. Good management can delay the progression of the disease and support the carers (New Zealand Guidelines Group 2004).

Based on the New Zealand prevalence rates, it is expected that currently around 340 West Coast older residents suffer from dementia to a significant degree. In 2002/03 there were 23 West Coast older people living in specialist dementia hospitals (Table 149). The West Coast rate of entry to specialist

residential dementia care cannot be compared with a national rate because of limitations in the national data collection. (See also later in this section on Service Use.)

Blindness and Impaired Vision

The Royal New Zealand Foundation for the Blind has approximately 75 registered members aged over 65 years in West Coast, or 1.8% of the 65+ population. These RNZFB members were younger than those elsewhere in the South Island - 31% were aged 65 to 79 years, compared to the South Island average of 22%. The number of people aged 65+ years registered as blind or visually impaired is a little higher than the average for New Zealand (1.7%) (Royal New Zealand Foundation for the Blind 2004).

The New Zealand Disability Survey estimated that 8% of the Southern Region population aged 65+ years had impaired vision[81] in 2001, slightly higher than the national rate (7%). People aged 75+ years were twice as likely to have impaired vision than those aged 65-74 years (Statistics New Zealand 2002).

Having poor vision can limit older people's ability to drive, socialise, read or manage everyday activities, leading to isolation and depression and a higher risk of falls, as well as a greater need for disability support services. Some forms of impaired vision may be preventable or controllable by effective screening and early intervention for high-risk people, including diabetic retinopathy and some forms of glaucoma. Impaired vision due to cataract formation can usually be improved by cataract surgery.

Active investigation of impaired vision in older people is important for identifying those cases where it can be prevented, managed and/or treated. A UK study of people aged 75+ years living in the community found that about 12% were visually impaired. For nearly a third of these people, impairment could be reduced by corrective lenses and for another quarter it could be reduced by cataract surgery. Another third (3.7% of the 75+ year old population) had age-related macular degeneration, for which little preventive or curative intervention is possible (Evans et al 2004).

Estimates of the total need for cataract surgery vary markedly depending on the threshold levels that are used for lens opacity, visual acuity/ability to see and patients' concern (McCarty et al 1990).

The small number of admissions for cataract surgery make it difficult to compare the West Coast rate with the national average (Table 156).

Continence

While mostly a symptom of other diseases, the prevalence of incontinence rises with age. A New Zealand study found that 12% of people aged 65+ years had significant urinary incontinence, rising to 22% among people aged 80+ years. About 3% of people aged 65+ years had faecal incontinence (Campbell et al 1985). Similar rates were found in an international review of the prevalence of severe/significant incontinence: 10% of women and 4-7% of men aged 65+ years (Hunskaar et al 2000).

Incontinence in older people is strongly linked to frailty, physical disability, cognitive impairment, stroke and heart failure (Fonda et al 1999). About a third of rest home residents and two-thirds of long-stay hospital patients have urinary incontinence, with an estimated 10-30% having faecal incontinence. (Dept of Health 2000) The onset of incontinence has been identified as one of the triggers for people entering longterm residential care, along with dementia and mobility problems (Thom et al 1997, Australia Department of Health & Ageing 2003).

Some incontinence may be transient and due to delirium, infection, medication, restricted mobility or other causes (Fonda et al 1999). Active investigation and treatment/management of incontinence, even in the very old, can help to reduce the likelihood of entry to residential care and the need for continence products, as well as improve quality of life and reduce stress on carers. An Australian study found that most older people living in residential care who were incontinent had never sought or received a detailed continence assessment (Australia Department of Health & Ageing 2003, Thom et al 1997).

Based on the New Zealand prevalence rates, it is estimated that around 490 West Coast residents aged 65+ years have significant urinary continence problems, including 80 people aged 85+ years. Around 15 older people are estimated to have faecal incontinence.

No national, regional or DHB-level data is routinely available on the number of people receiving continence services in New Zealand.

[81] Impaired vision is defined as having difficulty seeing newsprint and/or the face of someone across a room despite corrective lenses.

Disability

Statistics New Zealand have undertaken two major sample surveys of New Zealanders with disability, in 1996/97 and 2001, and used these to estimate the number of people with disabilities in the overall population. These surveys are too small to provide DHB-level data, but some regional level data is available (based on the former Transitional Health Authority areas). In this section estimates of the number of disabled older people in West Coast have been based on regional and national data from these surveys wherever possible.[82] Please note that these are rough estimates only.

Prevalence of Disability

Just over half (54%) of all New Zealanders aged 65+ years in 2001 reported some form of long-term disability that limited their activity.[83] Just over a quarter (27%) of people aged 65+ years had a moderate disability, while a further 12% had a severe disability that needed dally assistance with personal care (Table 160).

Table 160. New Zealanders Aged 65+ Years with Disabilities as a Percentage of the Total Older Population (Disabled and Non-Disabled), by Residence and Level of Severity, 1996/97 and 2001

Level of Disability	1996/97			2001		
	Living in Private Households	Living in Residential Care	Total	Living in Private Households	Living in Residential Care	Total
Mild	24.5%	0.8%	25.3%	14.9%	Nil	14.9%
Moderate*	15.9%	1.3%	17.3%	25.9%	0.9%	26.8%
Severe**	6.1%	3.6%	9.7%	7.5%	4.7%	12.2%
All Disability Levels	**46.6%**	**5.7%**	**52.3%**	**48.3%**	**5.6%**	**53.9%**

Source: *Statistics New Zealand*
Notes: * *Moderate = Need Special Aid or Equipment*
** *Severe = Need Daily Help with Bathing, Meals Etc*

The severity of disability rises with age: in the Southern Region 27% of people aged 65-74 years who lived in their own home had moderate or severe disability in 2001, rising to 497% of people aged 75 or more years (Table 161).

Table 161. Percentage of People Aged 65+ Years Living at Home by Disability and Level of Severity, Southern Region and New Zealand, 2001

Level of Disability	Southern Region			New Zealand		
	65-74 Years	75+ Years	Total 65+ Years	65-74 Years	75+ Years	Total 65+ Years
Mild	14.9%	11.8%	13.5%	17.2%	13.8%	14.9%
Moderate*	21.0%	39.4%	29.3%	18.8%	39.0%	25.9%
Severe**	5.7%	10.0%	7.7%	6.0%	10.5%	7.5%
All Disability Levels	**58.4%**	**38.8%**	**49.6%**	**57.9%**	**36.5%**	**48.3%**

Source: *Statistics New Zealand*
Notes: * *Moderate = Need Special Aid or Equipment*
** *Severe = Need Daily Help with Bathing, Meals Etc*

Most (90%) of all older New Zealanders with disabilities lived in private households in 2001; even 60% of those with severe disabilities lived in a private household. In 2001 about 6% of older New Zealanders lived in residential care due to disability – much the same proportion as in 1996/97. However it is noticeable that the severity level of people in residential care increased in that period: severely disabled people made up 84% of all disabled people in care in 2001, compared to 63% in 1996/97 (Table 160).

Data at a regional level from the New Zealand Disability Surveys are available only for people living in private households, not for those in residential care. In 2001 the Southern Region had a slightly higher rate of disability in people aged 65+ years living at home than the national average: 49.6% compared to

[82] Data from 1996/97 and 2001 surveys are mostly from the Reference Report publications on Stats NZ website (www.stats.govt.nz) plus some specific data analyses done by Stats NZ.

[83] The New Zealand Disability Surveys define 'disability' as any self-perceived limitation in activity resulting from a long-term condition or health problem, lasting or expected to last six months or more and not completely eliminated by an assistive device (eg hearing aid)

48.3%. In both older age groups the Southern Region had slightly higher rates of moderate disability, lower rates of mild disability and much the same rates of severe disability as the New Zealand average (Table 161).

Estimates of the number of older West Coast residents who have disabilities have been based on Southern Region rates for people living in private homes and on New Zealand rates for those in residential care (Table 162).

Table 162. Estimated Number of Disabled People Aged 65+ Years, by Residence and Level of Severity, Southern Region, New Zealand and West Coast, 2001

Level of Disability	Disability Rate (Percentage)		Estimated Number with Disability in West Coast		
	Living In Private Households (Southern Region)	Living In Residential Care (New Zealand)	Living In Private Households	Living In Residential Care	Total
Mild	13.5%	Nil	580	-	580
Moderate*	29.3%	0.9%	1,270	40	1,300
Severe**	7.7%	4.7%	330	190	530
All Disability Levels	**49.6%**	**5.6%**	**2,190**	**230**	**2,410**

Source: *Statistics New Zealand.*
Notes: *Numbers rounded to the nearest 10.*
Figures are based on the percentage of disabled people in the Southern Region and New Zealand Populations Aged 65+ Years.
** Moderate = Need Special Aid or Equipment*
*** Severe = Need Daily Help with Bathing, Meals Etc*

The New Zealand Disability Survey estimated that 97% of people living in residential care in 2001 had some form of disability. Based on estimates from the New Zealand Disability Survey, we would expect about 240 people in residential care in West Coast (230 + 3%). However actual numbers of West Coast people receiving subsidies for all forms of long-term residential care in 2001 are higher, around 320 (see Table 149).

This may be explained in part by West Coast's higher proportion of older people. It is also likely that if the Southern Region has a higher percentage of older people living at home with disability than the New Zealand average, there will also be a higher rate of disability among West Coast people in residential care, so that applying the national residential care rate is likely to under-estimate numbers for South Island DHB areas.

It is impossible to draw any conclusions from these data as to whether West Coast has an *appropriate* level of provision of residential care for its older population, without more information on the assessed level of need of these residents relative to those in other parts of New Zealand.

Type of Disability

Nearly all New Zealanders in residential care and 70% of people living at home in 2001 had more than one disability. Around 30-40% of people aged 65+ years living at home in the Southern Region have problems with mobility and agility, 22% have hearing impairment, 8% have vision impairment and 7% have problems with memory.

Table 163 estimates the number of older West Coast residents living at home and in residential care who may be experiencing various types of disability, based on regional and national rates from the New Zealand Disability Surveys 2001.

Table 163. Percentage and Number of Type of Disability among People Aged 65+ Years, by Residential Status, Southern Region, New Zealand and West Coast, 2001

Type of Disability[1]	Disability Rate (Percentage)			Estimated Number in West Coast		
	Living in Private Households (Southern Region)	Living in Residential Care (New Zealand)	Total 65+ Years	Living in Private Households	Living in Residential Care	Total 65+ Years
Mobility[3]	38.2	91.4	41.3	840	210	1,050
Agility[4]	29.5	88.7	32.9	650	200	850
Partially Sighted/Blind[2]	7.7	45.2	9.9	170	100	270
Hearing Impaired/Deaf[2]	22.1	40.4	23.1	480	90	570
Speaking	2.8	27.2	4.2	60	60	120
Remembering	6.8	53.3	9.5	150	120	270
Learning Disability	2.9	48.0	5.5	60	110	170
Psychiatric/Psychological	2.5	32.7	4.2	50	80	130
Intellectual	0.9	10.6	1.5	20	20	40
Disability Type Not Elsewhere Classified	8.0	15.4	8.4	180	40	220

Source: Statistics New Zealand
Notes: Estimated numbers in Nelson Marlborough are based on rates for the Southern Region (Households) and New Zealand (Residential Care)
1 One person may be counted several times, for different disabilities. Numbers rounded to nearest 10.
2 Defined as having difficulty hearing what is said in a conversation despite hearing devices, and as having difficulty seeing newsprint and/or the face of someone across a room despite corrective lenses.
3 Mobility = Walking, Carrying Weight, Climbing Stairs.
4 Bending, Dressing, Grasping, Getting into Bed.

Need for Services

The 2001 New Zealand Disability Survey gives some indicators of need for services. The mostly higher rates in the Southern Region may reflect the region's higher rates of disability. Looking just at people living in private homes, the survey found:

- **living alone** – 33% of the 65-74 year age group and 46% of the 75+ group live alone in the Southern Region – higher than the national averages of 24% and 41%
- **use of special equipment**[84] – 46% of the 65-74 year group and 67% of the 75+ year group in the Southern Region use special equipment, a little higher than the national rate of 42% and 65% respectively
- **unmet need for equipment** – 12% of the 65-74 year and 17% of the 75+ year group in the south reported an unmet need for special equipment, compared to 13% and 14% respectively nationally
- **receiving help with everyday activities** - 48% of the 65-74 year and 67% of the 75+ year group in the south received help with everyday activities, compared to 44% and 67% nationally
- **type of help received** – 7% of the 65-74 year and 11% of the 75+ year group in the south received personal cares (7% and 12% nationally).

Trends in the Rate of Disability

National figures show a shift towards greater severity of disability in older people, among both those living at home and those in residential care. In the 1996/97 survey 22% of all older people living at home reported moderate or severe disability – by 2001 this had risen to 33%. Similarly the proportion of residential care residents with severe disability rose from 63% in 1996/97 to 84% in 2001 (Table 160).

Although rates of moderate and severe disability have risen, the percentage of older people reporting mild disability has dropped, from 25% to 15% of home-dwellers. This means that the overall disability rate has risen only slowly over the five-year period, from 52% to 54% of all people aged 65+ years (Table 160).

[84] A definition of 'special equipment' can be found in the survey questionnaires in Statistics NZ (2002) Disability Counts 2001. Wellington:Stats NZ

Overseas studies give conflicting evidence on trends over time in the rate of disability among older people. United States data shows an increase in the average length of disability-free life while Australian data suggest a rise in disability among older people (Giles et al 2003).

However even if the rates remain the same as in 2001, the simple fact of an increasing older population means a substantial increase in the actual number of people with disabilities at all levels over coming decades.

An Australian study has estimated the future number of disabled older people, based on the prevalence of the major disabling conditions (Table 164)(Giles et al 2003). These percentages were applied to West Coast's projected 65+ population to estimate the likely numbers of disabled people by 2021. (Table 164 & Table 165). These figures are necessarily rough, but illustrate the impact that an ageing population will have on disability support services.

Table 164. Estimates of the Percentage of Older People Disabled by Specific Conditions by Age Group and Severity of Disability, Australia 2001

Disabling Conditions	Profound/Severe Disability			Moderate/Mild Disability		
	65-74 Years	75-84 Years	85+ Years	65-74 Years	75-84 Years	85+ Years
Musculoskeletal	4.05%	8.22%	19.93%	12.05%	11.99%	8.87%
Nervous System	1.23%	4.64%	15.87%	0.47%	0.31%	0.04%
Respiratory	0.95%	1.31%	2.39%	2.43%	2.69%	0.56%
Circulatory	0.88%	2.62%	6.69%	3.66%	3.65%	2.07%
Stroke	0.87%	2.03%	5.44%	0.09%	0.64%	0.46%
Vision	0.51%	1.44%	3.50%	0.53%	1.95%	0.80%
Psychiatric	0.49%	0.91%	1.58%	0.48%	0.38%	0.03%
Cancer	0.26%	0.33%	0.80%	0.58%	0.64%	0.41%
Hearing	0.22%	0.20%	1.93%	3.04%	4.39%	3.06%

Source: Giles et al 2003.

Table 165. Estimated Number of West Coast Residents Likely to be Disabled by Specific Conditions by Age Group, 2001 and 2021

Disabling Conditions	2001						2021					
	Profound/Severe Disability			Moderate/Mild Disability			Profound/Severe Disability			Moderate/Mild Disability		
	65-74 Years	75-84 Years	85+ Years	65-74 Years	75-84 Years	85+ Years	65-74 Years	75-84 Years	85+ Years	65-74 Years	75-84 Years	85+ Years
Musculoskeletal	90	150	120	170	120	140	280	450	170	240	30	60
Nervous System	30	50	70	90	70	110	10	20	-	10	-	-
Respiratory	20	40	20	30	20	20	60	90	40	60	-	-
Circulatory	20	30	40	50	40	50	90	140	50	70	10	20
Stroke	20	30	30	40	30	40	-	-	10	10	-	-
Vision	10	20	20	30	20	30	10	20	30	40	-	10
Psychiatric	10	20	10	20	10	10	10	20	10	10	-	-
Cancer	10	10	10	10	10	10	10	20	10	10	-	-
Hearing	10	10	-	-	-	10	70	110	60	90	10	20

Source: Based on Australian rates in Table 164 and rounded to nearest 10.

Service Use

Overall Expenditure on Health and Disability Support Services

It is difficult to get reliable, comprehensive or nationally consistent data at DHB-level on expenditure by age of client or patient for most services, so the analysis is mostly based on national data except where noted.

Total expenditure per head on health and disability support services rises with age. The level of expenditure is roughly equal for men and women, but men use more personal health services and use

them at younger ages, while women use more disability support services and at older ages (Ministry of Health 2002a).

There is growing evidence that acute care costs do not rise with age so much as with proximity to death. Around a quarter to a third of health expenditure costs are incurred by people in their last year of life. The rise in life expectancy in the 'young-old' 65-74 year age group has pushed this last year of life out to older ages (Ministry of Health 2002a).

Acute health care costs per person tend to peak around 75-79 years and then taper off. The cost of disability support and residential care however tends to increase with older age. This suggests that as the population ages relatively greater expenditure increases will be needed in long-term disability support than in acute health care (Ministry of Health 2002a).

A Ministry of Health study modelling the likely future impact of the ageing population on health costs found that:

- population ageing will put inevitable pressure on health spending, making it likely to increase as a percentage of GDP for this reason alone
- the evidence is unclear as to whether the cost per older person will rise, especially since until 2035 the main population increase will be of the relatively healthy 65-74 year age group. Changes in relative per capita health costs for older people do not make much difference to the projections
- a more significant pressure on costs comes from the growth in health spending that is independent of population aging – ie new technology and wage costs. This contributes more to GDP growth than population ageing per se (Johnston and Teasdale 1999).

The pressure that an ageing population will put on health and disability support services in coming decades makes it imperative that DHBs find the most cost-effective ways of organising and delivering these services within their resources, so that older people's needs are met as effectively, fairly and efficiently as possible.

There is a considerable literature on ways of managing the demand for both specialist hospital care and long-term residential care, and on the most cost-effective mix of primary, home-based, hospital and residential services. This literature is too extensive to be able to summarise here. It includes the Canadian multi-site National Study of the Cost-Effectiveness of Homecare, (Hollander and Chappell 2002) the Manitoba Centre for Health Policy's analyses of routine health datasets,[85] and the Personal Social Service Research Unit's UK work on the most cost-effective mix of long-term community care for older people[86] (Wainwright 2003).

Primary Care Use

Data on the use of primary care services (such as GP visits, pharmaceuticals and laboratory tests) are not routinely available by age breakdown. The following is based on national New Zealand Health Survey data (Ministry of Health 2002a). Regional and possibly DHB-level data by age is available from this survey, but has not been received in time for inclusion.

Use of general practice services rises with age. In 2000/01 both men and women aged 85+ years visited a GP around nine times a year, compared to 6-7 visits for people aged 65-74 years.

Most (71%) people aged 65+ years hold Community Services Cards, entitling them to a subsidy on GP visits. Another 5% have High Use Health Cards, since they visit a GP more than 12 times a year.

The pattern for pharmaceutical and laboratory test usage is similar to that for GP visits.

[85] Publications of the Manitoba Centre for Health Policy (www.umanitoba.ca/centres/mchp/reports.htm)

[86] The Bulletin and reports of the Personal Social Services Research Unit (www.pssru.ac.uk)

Hospital Specialist Services[87]

Inpatient and Daypatient Services

A third of all New Zealand publicly funded medical and surgical hospital admissions[88] in 2000/01 were for people aged 65 years or more. Men in every older age group were more likely to be admitted than women. (See also Table 156.)

Admission rates have been rising faster for older New Zealanders than for people under 65 years in recent decades. Admission rates for older people rose by around 3.1% per year between 1988 and 1997, and at 4.2% per year between 1997 and 2001.

There is some evidence that the rate of re-admissions for older people also rose in the 12-year period 1988-2001, since the ratio of hospital admissions to number of patients rose by 1% per year.

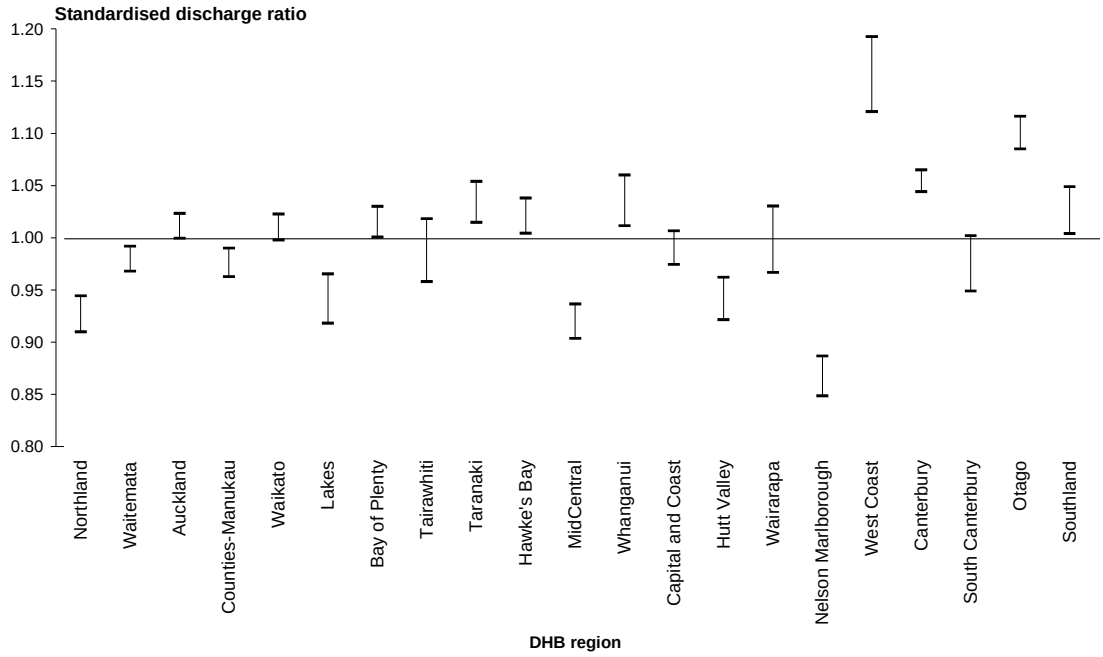
The per capita cost of hospital admissions increased in that period. There has been a shift away from less complex or costly forms of surgery towards more costly and complex forms of treatment, and an increase in cardiac and orthopaedic surgery.

Older people are spending less time in hospital after treatment than in the past, though this trend, which started around 1988, was starting to tail off by 2001. Some of this reflects the rapid increase in day surgery through the 1990s.

There has been little reported analysis as to the impact that this drop in hospital stay may have had on re-admission rates or on the need for post-discharge community services, such as district nursing, allied health and home support.

Figure 67 shows how West Coast DHB compared to other DHBs and the national average in its hospital admission rates for older people in the three-year 1998/99 to 2000/01 period, after differences in case complexity, age, ethnic and socioeconomic structure of the DHBs' population were taken into account. West Coast had a markedly higher than average number of hospital discharges for older people compared to the national average (the 1.00 line).

Figure 67. Standardised Case-Weighted Discharge Ratios For People Aged 65 and Over, by DHB: 1998/99 to 2000/01 Combined (99% Confidence Intervals)



Source: Ministry of Health 2002.

87 Nationally consistent data on inpatient and daypatient usage are available by age group at DHB level, but lack of time prevented detailed analyses for this review, so the data presented is almost all at a national level. The following figures are taken from the Ministry of Health's statistical report on older people's health: Ministry of Health (2002). Health of Older People in New Zealand – A Statistical Reference. Welington: Ministry of Health

88 Including day-patients but excluding outpatients and maternity admissions.

Outpatient and Emergency Department Services

Older people use outpatient services considerably more than young people, accounting for 25% of medical/surgical outpatient attendances and expenditure. However older people use Emergency Departments less frequently than younger people.

The lack of a national data collection for hospital outpatient services precludes any DHB or even regional comparisons.

Specialist Assessment, Treatment and Rehabilitation (AT&R) Services for Older People

Specialist AT&R services for older people have developed differently around New Zealand over the past 15 years, making it difficult to compare DHB or regional expenditure and utilisation rates. Some AT&R services are strongly community based, while others (such as West Coast) have focussed more on providing specialist consultation services within the general hospital. Some AT&R units have provided services for younger people with disabilities as well as for people over 65 years, while some (including West Coast) have specialised in services for older people.

A major problem in comparing expenditure on specialist AT&R services per head of older population to a national average is that DHBs in the former Southern and Central Regions include mental health services for older people within their specialist AT&R service, while those in Northern and Midland Regions include these services as part of the mental health services.

Specialist services for older people provide comprehensive multi-disciplinary assessment, treatment and rehabilitation for the minority of older people who have a complex mixture of health problems. Specialist services play a crucial role in advising and supporting the primary, community health and disability support sector in the best practice management of health conditions in older people (Ministry of Health 2004a).

The earlier discussion of specific illnesses has highlighted the importance and cost-effectiveness of early and comprehensive diagnosis and intervention, even for people in the oldest age groups and those in residential care, to prevent conditions worsening and to reduce the need for more complex and costly services.

West Coast spent $1,702,570 on AT&R services in 2003/04, or $399 per head of older population. This includes AT&R services for psycho-geriatric conditions. This was a little higher than the South Island average ($384). However expenditure comparisons among DHBs need to be treated with caution as services are not comparable, especially between large and small DHBs (Table 166 & Table 167).

Table 166. Estimated Expenditure on Services for Older People in 2003, by South Island DHB*

Service	Canterbury $	Nelson Marlborough $	Otago $	South Canterbury $	Southland $	West Coast $
AT&R	25,976,220	5,159,440	10,657,470	3,235,160	4,269,380	**1,702,570**
NASC	2,367,480	594,000	822,360	296,880	363,340	**110,470**
Home Help	8,612,120	2,613,780	4,419,960	1,376,390	2,005,540	**1,106,560**
Personal Care	4,371,410	1,929,740	2,432,260	1,235,110	1,130,100	**403,540**
Carer Support	2,006,840	**	1,165,340	380,150	700,470	**176,150**
Respite Care	1,038,890	**	416,050	133,310	252,960	**53,340**
Equipment	628,710	333,480	473,650	61,490	223,440	**104,710**
Day Programmes	338,870	**	64,190	27,220	41,540	**3,950**
Residential – Rest Home	28,695,220	6,156,620	12,841,960	3,469,480	5,693,070	**2,163,320**
Residential – Long-Stay Hospital	30,330,420	8,693,820	11,071,200	3,530,410	5,758,060	**2,645,450**
Dementia Unit - Rest Home	7,420,390	1,360,010	2,507,450	796,150	1,248,010	**0**
Dementia Unit – Hospital	4,644,730	1,672,800	2,362,980	643,620	844,390	**582,120**
Other***	1,086,350	18,520	282,080	143,870	100,940	**298,180**
TOTAL	**117,517,650**	**28,532,210**	**49,516,950**	**15,329,240**	**22,631,240**	**9,350,360**

Source: *HealthPAC and Ministry of Health*

Notes: * *Figures for Home Support, Carer Support, Respite Care, Residential Care and Dementia Units (which have uncapped/(open-ended budgets) have been based on actual expenditure for the year ending 31 October 2004 (from HealthPAC CCPS database). Figures for the remaining services (which mostly have set yearly budgets) have been based on the devolved annualised budget as sent to DHBs from Ministry of Health in September 2003. Figures for Equipment may be underestimated as this funding is held by Ministry of Health and not all is allocated to specific DHBs. Numbers have been rounded to the nearest 10.*

** *Nelson Marlborough data for carer support, respite care and day programmes are collected on a different basis from other South Island DHBs, so have not been included here.*

*** *Includes Disability Information & Advisory Services and other unspecified community services (eg DSS-funded district nursing).*

Table 167. Estimated Expenditure on Services for Older People Per Head of Population Aged 65 and Over by South Island DHB, 2003

Service	Canterbury $	Nelson Marlborough $	Otago $	South Canterbury $	Southland $	West Coast $	South Island $
AT&R	428	272	416	345	309	**399**	**384**
NASC	39	31	32	32	26	**26**	**34**
Home Help	142	138	173	147	145	**259**	**152**
Personal Care	72	102	95	132	82	**95**	**87**
Carer Support	33	NA	46	40	51	**41**	***39****
Respite Care	17	NA	16	14	18	**12**	***17****
Equipment	10	18	18	7	16	**25**	**14**
Day Programmes	6	NA	3	3	3	**1**	***4****
Residential – Rest Home	473	324	501	369	413	**507**	**445**
Residential – Long-Stay Hospital	500	458	432	376	417	**620**	**467**
Dementia Unit - Rest Home	122	72	98	85	90	-	**100**
Dementia Unit – Hospital	77	88	92	69	61	**136**	**81**
Other	18	1	11	15	7	**70**	**15**
TOTAL	**1,937**	**1,502**	**1,934**	**1,633**	**1,640**	**2,190**	**1,830**

Source: Based on Table 166.

Specialist Mental Health Services

As described above, the different organisation of specialist mental health services for older people around New Zealand makes it difficult to compare expenditure on or utilisation of these services among DHBs, or even to estimate total expenditure for the whole country.

Comparable data exists for Southern Region DHBs on expenditure on specialist dementia services at both rest home and long-stay hospital level. However comparisons among these DHBs are limited by the differences in their size and population.

It must be noted that a sizeable number of people with less severe dementia live in 'ordinary' rest homes and long-stay hospitals, as well as at home (see earlier section on Dementia).

In West Coast 23 people lived in specialist dementia hospital facilities in 2002/03; (there are no rest-home level specialist dementia facilities on the West Coast). These patients comprised 0.5% of the population aged 65+ years, around half of the South Island average of 1.0%. (Table 149) It is difficult to compare DHB areas as people with profound disability may shift from smaller DHBs to the specialist facilities that are only sustainable in larger cities: this needs further investigation. West Coast DHB spent around $582,120 on specialist dementia services in 2003/04 or $136 per head of older people, less than the South Island average of $180 per head. (Table 166 & Table 167)

Community-Based Nursing, Rehabilitation and Home Support

The combination of rising admissions and re-admissions and a declining length of hospital stay has meant a growth in community-based district nursing, physiotherapy and other allied health services and short-term home support, to enable people to leave hospital earlier and recover at home. Older people make up over 75% of district nursing and short-term home support patients.[89]

Specialisations have developed in continence treatment, stomal care, home oxygen services, chronic/complex wound care, IV therapy, enteral and parenteral feeding and palliative care, as well as in rehabilitation and equipment.

Many DHBs have also developed various forms of short-term non-acute (step-up/step-down, convalescence, transitional) inpatient services in general hospitals, rural hospitals or private residential

[89] Based on analysis of Christchurch data.

care facilities. It is very difficult to get accurate or comparable data on the expenditure or usage of these services, which have developed over recent years in an ad hoc manner.

The lack of a national client-level data collection for community services and non-acute inpatient services makes it very difficult for DHBs to assess their relative expenditure on or usage of these services. It also makes it difficult to assess the impact of any planned changes that DHBs might make to the ratio of inpatient, outpatient and community-based services.

A 2001 national joint DHB/Ministry of Health costing study estimated that the actual cost to DHBs of delivering short-term community services was around 20% more than was formally allocated to those services. (Ding 2001, Wainwright 2002)

Long-Term Disability Support Services

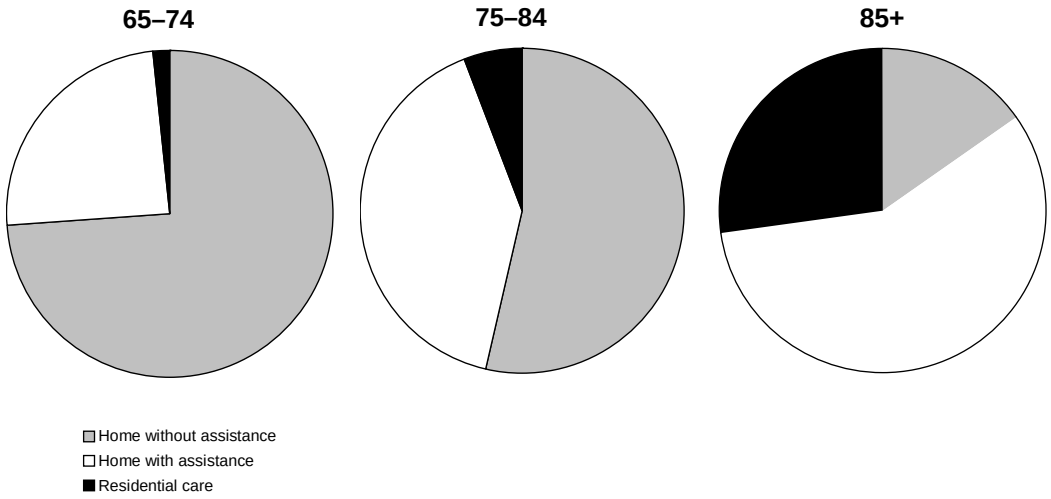
Although a national client-level data collection exists, it has been managed primarily as a payment system and so far is able to provide only limited data that is nationally consistent or historically reliable, particularly for non-residential services. This limits the information available to DHBs on their expenditure on and usage of these long-term services. Table 166 and Table 167 show the estimated expenditure on services for older people for the year ending October 2004. Please note that these are estimates only.

Although lack of reliable data has limited analysis of the use of long-term support service by older people in New Zealand, considerable policy work on this has been done overseas (Wainwright 2003). Canadian (Hollander & Chappell 2002) and UK (Davies 1997) work on the most cost-effective mix of long-term support services for older people suggest, for example, that:

- it is difficult for a DHB to know if they have the right 'mix' of home-care and residential care services, or to change the relative allocation of funding, unless the needs of people using these services have been assessed using the same standard needs assessment tool
- transitions (eg from home to general hospital, from hospital to rest home and vice versa) are costly: it pays to help people maintain their health and independence as much as possible, through good primary care, home support, active rehabilitation etc
- the main cost to the health and welfare system of an older person living at home comes not from their home-care services but their greater likelihood of acute hospital admission – primary and community-based services aimed at reducing admissions and re-admissions are worth developing
- it is cost-effective, in terms of reducing admission to hospital and residential care, to provide the low level home support services that many older people need to enable them to maintain their independence
- for a small group of people, intensive home care is less costly and more acceptable than residential care
- it is worth developing clinical pathways/optimum packages of care for specific conditions (eg stroke and dementia). As well as being good clinical practice, this helps the funder build up a more accurate picture from the bottom-up of the resources needed for a population
- it is cost-effective to concentrate case management on the minority of older people with high and/or complex needs, and to develop standard packages of home-care with minimal assessment and universal entitlement for the majority who have low needs
- the burden on carers has probably increased over recent decades and it is important to put adequate resources into carer support to help people stay healthy and independent
- it is important to have a strong rehabilitation focus in long-term home-based and residential services and to ensure these settings have adequate rehabilitation resources.

Disability increases with age and people often need increasing support to remain at home as they grow older. The New Zealand Disability Survey 2001 found that nationally 74% of people aged 65-74 years lived at home without assistance. This dropped to 54% among 75-84 year olds and to only 15% of those aged 85 or more. However most (57%) of those aged 85+ years lived at home with assistance – only 27% had gone into residential care. (Figure 68)

Figure 68. Residential Distribution of New Zealanders Aged 65 and over, by Age and Level of Disability, 2001



Source: Ministry of Health 2002a.
Notes: 'Home with assistance' includes people needing assistance or specialist equipment either daily or less frequently

Needs Assessment and Service Coordination (NASC) Services

These services have developed differently around New Zealand over the past 15 years, to provide an entry point to disability support services for older people. In Southern Region areas (including West Coast) NASC services are provided separately for older and younger people, while in other parts of New Zealand they have been combined. Southern Region NASC services (including West Coast) tend to be based in the general hospital near the AT&R service, while in other areas they are often based in the community.

DHBs are currently exploring methods of streamlining the ways that older people receive needs assessments and have their services coordinated, to ensure better communication and linkage among the variety of health and disability support workers that an older person sees. Evidence suggests that needs assessment and service coordination services need to be primary/community based, and include both health and disability support workers. A 'one-stop-shop', bringing together district nursing, community physio and other rehabilitation and allied health services as well as long-term home support and carer support, would help older people and their GPs to ensure they get the services they need. (Wainwright 2003, Davies 1997)

In 2003/04 West Coast DHB spent $110,470 on NASC services or $26 per head of 65+ population, less than the South Island average ($34). (Table 166 & Table 167)

Long-Term Home Support

Long-term home support (home help and personal care) is organised and funded somewhat differently around New Zealand. Although the data is limited, there is some evidence that expenditure on long-term home support rose during the late 1990s in the Southern and Central Regions at around 3% a year. This was been accompanied by a drop in the number of clients and a higher spend per client, suggesting that services were increasingly directed towards people with higher needs. However these regional figures may mask differences among DHBs (Chan et al 2001, Wainwright 2003).

In 2003/04 over 4,000 (16%) of older West Coast residents received subsidised home help services, and 1,600 (6.3%) received personal care – this was slightly higher than the South Island average (14.9% and 5.7% respectively) (Table 168).

In the year ending 31 October 2004 West Coast DHB spent $1,106,560 on home help ($259 per head) and $403,540 on personal care ($95 per head). This expenditure was higher than the South Island average ($152 and $87 per head respectively) (Table 166 & Table 167).

Table 168. Number and Percentage of Older People Receiving Long-Term Home Help, Personal Care, Carer Support & Respite Care, by South Island DHB, 2002/03*

District Health Board	Home Help		Personal Care		Carer Support & Respite Care	
	Number	%	Number	%	Number	%
Canterbury	8,821	14.8%	3,390	5.7%	2,599	4.3%
Nelson Marlborough	2,332	12.2%	882	4.6%	Not available	Not available
Otago	4,070	16.0%	1,591	6.3%	1,322	5.2%
South Canterbury	1,121	12.1%	517	5.6%	492	5.3%
Southland	1,827	13.5%	678	5.0%	557	4.1%
West Coast	**830**	**19.8%**	**246**	**5.9%**	**135**	**3.2%**
Southern Region Total*	**16,669**	**14.9%**	**6,422**	**5.7%**	**5,105**	**4.6%**

Source: HealthPAC Data.

*Notes: * Comparable data are not available for all DHBs so the total has been calculated for the Southern region (excluding Nelson Marlborough). The Nelson Marlborough data covers 9 months from 1 October 2003 to 30 June 2004, while data for the other DHBs covers the year ending 31 June 2003. Nelson Marlborough data has not been annualised, as the rate of entry to the services is not known. Data on carer support and respite care are defined and collected so differently for Nelson Marlborough that no comparison is meaningful.*

Carer Support and Respite Care

These services are funded and organised even more differently around the country than home support. In the Southern Region there is evidence that expenditure and numbers of clients per head of older population remained fairly stable during the late 1990s (Chan et al 2001).

In 2003/04 over 135 older West Coast residents received carer support or respite care.[90] (Table 168) West Coast DHB spent approximately $229,490 on carer support and respite care combined in 2003/04, or $53 per head of population 65+ years. This was just under the Southern Region average of $56 (Table 166 & Table 167).

Equipment and Housing Modifications

This includes wheelchairs and seating appliances, walking equipment, hearing and vision equipment, housing and vehicle modifications and grants for vehicle purchase. A 2001 regional analysis of the data suggested little change occurred during the 1990s in per capita expenditure for older people for the Southern Region (Chan et al 2001).

The funding for older persons services that was devolved by the Ministry of Health to DHBs in October 2003 shows an equipment budget of $104,710 allocated to the West Coast. At $25 per head of population this is higher than the South Island average of 14% (Table 166 & Table 167). However, this budget is managed nationally by the Ministry of Health through contracts with regional providers and it is not clear whether this allocation represents the full amount of expenditure on equipment for older residents of the DHB. The 2001 Ministry of Health analysis of DSS services showed the Southern Region's total expenditure on 'Environmental support' for older people to be around $3,450,000 in 1999/2000, which is higher than the sum of 'Equipment' funding for Southern Region DHBs shown in the October 2003 devolved budget (Chan et al 2001). Client-level data are not easily available.

Residential Care

Some recent measures of expenditure on residential care for older people,[91] suggest that West Coast, along with other southern DHBs, spends more on residential care for older people than the national average. However this may well be partly because the budget for northern DHBs does not include psycho-geriatric services, which are part of older persons services in the South and Central Regions but part of mental health services in the north. The 2001 analysis of Disability Support Services (DSS) expenditure found that when mental health expenditure was combined with all other DSS services (ie older persons, intellectual, physical and sensory), the regional allocation was fairly equitable according to population (Chan et al 2001)

[90] 'Carer support' is only available for people living with a carer, while 'respite care' is mostly residential and only available for people assessed as disabled.

[91] Such as the most recent 'Risk Pool' budget for older persons services released by the Ministry of Health.

Southern Region figures suggest that there was a slow rise of around 4% per year during the late 1990s in both expenditure and occupied beddays in long-term residential care. This rate was slowing down (Chan et al 2001).

In 2002/03 there were 174 older people on the West Coast living in rest homes, 125 living in long-stay hospitals and 23 in specialist dementia facilities. At 4.1% of the older population, West Coast's use of rest homes was slightly higher than the South Island as a whole (3.0%). The percentage of people in long-stay hospitals (2.9%) was slightly higher than the South Island average (2.2%) (Table 149).

West Coast DHB spent around $2,163,320 on rest homes and around $2,645,450 on long-stay hospitals (as well as $582,120 on specialist dementia care – see earlier section). Spending per head was higher than the South Island average for both rest home level care ($507 compared to $445) and hospital level care ($620 compared to $467 (Table 166 & Table 167).

Other Community-Based Services

Additional services for older people that are funded by DHBs include Day Programmes and DSS-funded district nursing. West Coast DHB spent $298,180 on these additional services or $70 per head of the older population (Table 166 & Table 167).

SECTION 3: SERVICE PROVISION AND ACCESS TO SERVICES

THE HEALTH WORKFORCE

The Health Practitioners Competence Assurance Act (HPCA) (2003)

The Health Practitioners Competence Assurance Act (HPCA) (2003) came into force in September 2004. The principle purpose of the legislation is to protect the health and safety of the public through the inclusion of mechanisms to ensure practitioners are competent and fit to practice. Scopes of practice will be defined and certain activities restricted to specific professions. Maintenance of a current practising certificate or annual license to practice is likely to involve demonstration of competence (Ministry of Health 2004k).

The health professions regulated under the Health Practitioners Competence Assurance Act (HPCA) (2003) include: Chiropractors, Dentists and Dental Technicians, Dietitians, Medical Practitioners, Medical Laboratory Technologists, Medical Radiation Technologists, Midwives, Nurses, Occupational Therapists, Optometrists and Dispensing Opticians, Osteopaths, Pharmacists, Physiotherapists, Podiatrists and Psychologists.

The flow on effect of this legislation may well be a reduction in the number of existing health professionals holing current practising certificates if they no longer work in direct clinical practice and may not be able to demonstrate current competence.

Stocktake of Health Care Professionals

The following section provides a benchmark of pre-HPCA data available on some health practitioners who hold practising certificates or licenses to practise. Where possible, this section presents information and data on the total full time equivalent (FTE) workforce of these health practitioners, rather than just focusing on numbers of practitioners in the employed workforce.

Allied Health Workforce

Whilst two thirds of the health workforce consist of nurses and doctors (Health Workforce Advisory Committee (Health Workforce Advisory Committee 2002), another significant portion consist of allied health professionals. In 2003, the New Zealand Health Information Service (NZHIS) published a document analysing 'Selected Health Professionals' (Ministry of Health 2003l), which provided an overview of a number of professional groups representing allied health professionals. Table 169 presents the findings of this analysis as they relate to the West Coast region based on Annual Practising Certificate (APC) data.

The West Coast was the least populated region in this survey. The generally low rates of health professionals in the region may be accounted for by the difficulty in generating sufficient income as a practitioner, as a large proportion of the professions reviewed in this survey were either self-employed or employed by private health providers/organisations.

Chiropractors

Chiropractors work predominantly in private practice (84.3%), and most are self-employed (74.6%). In 2002, the West Coast Region, Otago and Manawatu-Wanganui had the lowest rate of Chiropractors per 100,000 population in the country. Most South Island Regions were lower than the New Zealand rate of 4.4. chiropractors per 100,000 population (Ministry of Health 2003l).

Dietitians

Dietitians work within the hospital setting as clinical dietitians (40.1%) and in the community (21.2%) (Health Workforce Advisory Committee 2002). They are available to patients who self refer, or are referred to by other health professionals. In 2002, the West Coast Region had only 2.0 FTEs dietitians (Ministry of Health 2003l).

Table 169. Selected Health Professionals in the West Coast Geographic Region and National Distribution, 2002*

Allied Health Profession	New Zealand FTE	West Coast FTE	Rate per 100,000 Population in West Coast*	Rate per 100,000 Population in New Zealand
Optometrists	386	2.1	6.7	9.8
Dispensing Opticians	63.1	0.0	0.0	1.6
Chiropractors	173.1	0.9	2.8	4.4
Dietitians	237.1	2.0	6.5	6.0
Medical Laboratory Technologists	739.2	2.1	6.9	18.8
Medical Radiation Technologists	777.6	1.4	4.5	19.7
Occupational Therapists	846.9	3.6	11.8	21.5
Podiatrists	114.4	0.0	0.0	2.9
Physiotherapists	1,151.9	8.5	27.7	29.2
Registered Psychologists	752.9	1.0	3.1	19.1

Source: NZHIS. Selected Health Professional Workforce New Zealand 2002. Population used for the calculation of rates is the estimated resident population for 30 June 2002 (Statistics New Zealand).

*Notes: *The geographic regions used for this survey, were those once known as Area Health Board Districts. The West Coast geographic region for this table included Territorial Authorities of Buller, Greymouth and Westland.*

Medical Laboratory Technologists

Medical Laboratory Technologists work mainly within either DHB laboratories (62%) or in private practices (26%) (New Zealand Health Information Service 2003b). In 2002, the West Coast had a rate of Medical Laboratory Technologists that was over 2.5 times lower than the national rate per 100,000 population.

Medical Radiation Technologists

The main work types for Medical Radiation Technologists include, diagnostic imaging (51.3%) radiation therapy (10.8%) diagnostic ultrasound (11.7%) and computerised tomography (5.8%) (Ministry of Health 2003l). In 2002, the rate of Medical Radiation Technologists per 100,000 population in the West Coast was 4.4 times less the national rate. South Island regions with no tertiary services all had lower rates than the national rate for this profession.

Occupational Therapists

The main work types for occupational therapists include, rehabilitation (19%), paediatrics (10.5%) mental health (13.4%) and within community/domiciliary settings (13.9%). In 2002, the West Coast had the lowest rate of occupational therapy FTEs per 100,000 population in the country. Other than Canterbury and Otago, the other South Island Regions a had lower than average rate.

Dispensing Opticians

Dispensing opticians predominantly work in private practice and most work in general dispensing (57.7%). The 2002 survey did not report any dispensing opticians in the West Coast. However, with the registration of the profession under the HPCA (2003) from 30 September 2004 onwards, a clearer picture of this workforce should become available.

Optometrists

The majority of optometrists work in general optometry (87.7%) and were predominantly self-employed in private practice (62.5%). In 2002, the West Coast had 82.5 hours of service available in 2002, which translated to about two thirds of the national rate per 100,000 population.

Physiotherapists

Most physiotherapists work in private practice (50%) and 27% work for DHBs. The majority work in either musculoskeletal outpatients (22.5%) or sports physiotherapy (14.5%). In 2002, the West Coast had a slightly lower rate of physiotherapists compared to the rest of the country as a whole.

Podiatrists

The majority of podiatrists work in general podiatry (66.5%) or in sports medicine (16.3%). Most work in private practice (85.7%)(Ministry of Health 2003l). The 2002 survey did not report any podiatrists in

the West Coast. However, with the registration of the profession under the HPCA (2003) from 30 September 2004 onwards, a clearer picture of this workforce should become available.

Registered Psychologists

The majority of registered psychologists work either in clinical psychology (32.6%) or in educational psychology or teaching (16.6%). Their main places of work are identified as either in DHBs (26.9%) or in private practice (28.4%). In 2002, the West Coast rate of registered psychologists per 100,000 population was six times less than the national rate, and the lowest in the country.

Dentists

Dentists were not analysed in the Selected Health Professional Workforce Survey (Ministry of Health 2003l), but the NZHIS does publish information collected from dentists APC, which represent practitioners who are working in their profession at the time (New Zealand Health Information Service 2004b).

Table 170. Dentists with APC for the West Coast Region and Nationally, 2003*

Geographical Region*	Number of Dentists**	Rate per 100,000 Population (Aged over 14 Years)
West Coast	6	25.6
National Total	1,582	54.8

Source: NZHIS Workforce Statistics, 2004.
*Notes: **These figures represent the actual numbers, not FTEs.*

Most dentists (80%) work in general dentistry and 14% identify as specialists. Most work in private practice (85.5%), predominantly in self-employment (90%). Only 5.9% nationally work for DHBs. The number of Dentists in West Coast (Table 170) was significantly lower than the rest of the country. The national rate was twice the West Coast rate in 2003.

Dental Therapists

Dental therapists will be governed under the new Dental Council. These practitioners did not require registration until September 2004, therefore, there is no centrally held data on the numbers of practitioners likely to register.

Dental Hygienists

This profession will also be governed by the Dental Council from September 2004. Previously they were not formally recognised as a health profession and workforce data is unavailable.

Osteopaths

The Osteopathic Council will also be functioning from 30 September 2004, so workforce figures are not yet available.

Audiologists

These practitioners do not appear on the list of Health Professionals or those about to register on 30 September. These practitioners are largely in self-employment, or partly for DHBs, mainly in aged care or paediatrics/neonatology.

Orthotists

These practitioners are not registered as health professionals, and do not appear to be included in future registration. Information on this practitioner workforce should be made through Orthotics Departments (often attached to Orthopaedic or Rehabilitation Departments) at the main hospitals within the various DHBs.

Pharmacists

Table 171 shows the number of Pharmacists for the South Island DHBs grouped by specific categories.

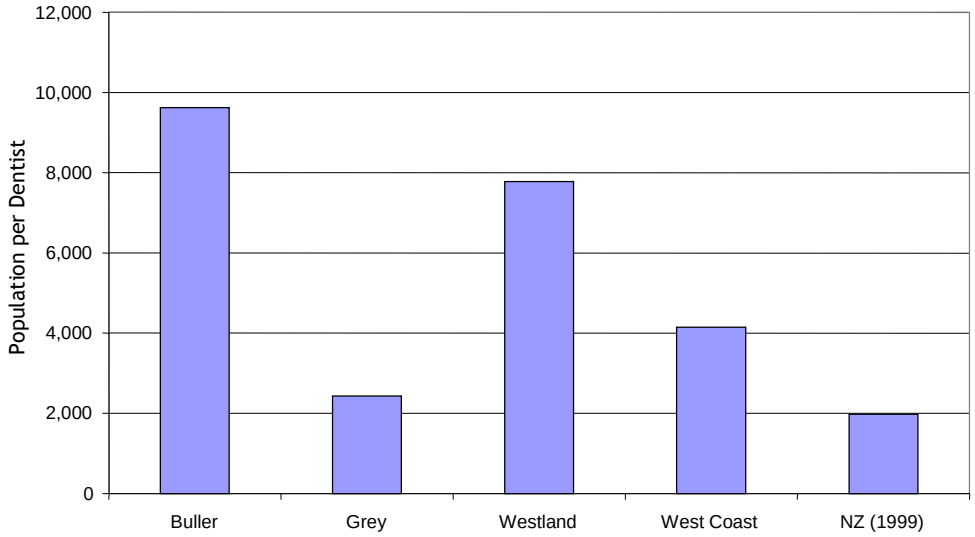
Table 171. Pharmacy Workforce by Category and District Health Board, 2004

District Health Board	Category 1 Full-Time or Proprietor		Category 2 Part-Time		Category 3 Registered over 44 Years, Still Practicing	
	No.	Rate per 100,000	No.	Rate per 100,000	No.	Rate per 100,000
Canterbury	285	67	74	17	5	1
Nelson Marlborough	72	59	20	16	1	1
Otago	138	83	46	28	5	3
South Canterbury	28	53	8	15		
Southland	40	44	6	7		
West Coast	**17**	**56**			**1**	**3**

Source: Pharmaceutical Society August 2004.

Figure 69 shows population per Dentist in West Coast DHB.

Figure 69. Population per Dentist, West Coast DHB



Medical Practitioners

A medical workforce paper published by the Medical Council in 2002 outlined the findings of a survey of medical practitioners holding APCs (New Zealand Medical Council 2003).

Main findings included:

- a steady number of doctors in active employment over the previous two years
- the proportion of female (32.6%) to male doctors remained unchanged
- the proportion of Mäori doctors had increased by 2.6% in over the previous year, but they still remained under represented in the profession compared to the general population
- since 1999 there had been a decrease in the larger work groups of anaesthetics, diagnostic radiology, general practice and primary care
- a decrease in FTE general practitioner rates.

The most recent data on the medical workforce was provided by the NZHIS based on data collected through the (APC) application process. In 2002, there were 8,403 medical practitioners in New Zealand, representing a 20% increase in the workforce over the previous 10 years. West Coast DHB had a total of 29 registered medical practitioners (Table 172). Of the West Coast total, one third were classified as specialists, similar to the proportion nationally. The proportion of general practitioners, 55%, was higher than the national rate of 34% (New Zealand Information Service 2003b).

Table 172. Proportion of Medical Specialists and General Practitioners within the West Coast DHB Region vs Workforce Volumes Nationally, 2002*

DHB Region *	General Practitioners	Specialists	Total of all Registered Medical Practitioners
West Coast	16 (55%)	10 (33%)	29
National Total	2,917(34%)	2,729 (32%)	8,403

Source: NZHIS Workforce Statistics, 2004.
*Notes: *This data has been aggregated into DHB Regions, not geographic regions.*
***Contains all those people registered as medical practitioners. This includes general practitioners, specialists and those with NZMC registration that may not be working in either of these two areas.*

The Health Workforce Advisory Committee's Health Workforce Stocktake (2002), noted that there had been limited growth in the number of GPs and a rapid growth in the number of registrars across all specialities between 1995 and 2000.

According to the Advice Notice to general practitioners concerning patient benefits and other subsidies, the population per FTE general practitioner in the local area should be greater than 1,400 (Health Funding Authority 1 May 2000). For the purpose of comparison, the New Zealand Medical Association (2004) regards this population ratio of 1:1,400 as equivalent to 71.4 FTE general practitioner per 100,000 population.

The Clinical Training Agency (2001) states that although New Zealand appears to have an adequate number of general practitioners, the distribution throughout New Zealand is problematic. There is an oversupply of general practitioners in some urban centres causing a reduction in the volume of work and the income levels for city doctors. On the other hand, a rural shortage can lead to overwork and therefore intensify shortages in affected areas.

In 2002, the rate of general practitioners per 100,000 population seemed to be higher in South Island DHBs than in North Island DHBs overall, with only West Coast and Southland having a lower rate than the national total (Table 173).

Table 173 also indicates that the total number of general practitioners does not equate to the full time equivalent (FTE) capacity of the workforce. While there was a rate of 52.8 GPs per 100,000 of the population, there was an FTE rate of 60 per 100,000 indicating that many GPs must have reported doing more than 40 hours per week.

Table 173. General Practitioners in the West Coast vs other South Island DHB Regions and New Zealand Total, 2002

DHB Region	Number of GPs	Rate per 100,000 Population	FTE** per 100,000 Population
Canterbury	382	89.4	94
Nelson Marlborough	112	91.4	75
Otago	142	83.2	97
South Canterbury	49	92.8	87
Southland	75	72.6	80
West Coast	**16**	**52.8**	**60**
National Total	**2,917**	**78.1**	**83**

Source: NZHIS Workforce Statistics, 2004.
*Notes: *This data has been aggregated into DHB Regions.*
*** Based on the concept of 40hours=1FTE. Some GPs reported doing over 40hours/week.*

Medical Specialists

The rate of medical specialists in the West Coast DHB Region was the lowest of all DHBs regions in the country. The national rate was more than twice the West Coast rate.

Table 174. Medical Specialists in the West Coast vs other South Island DHB Regions and New Zealand Total, 2002

DHB Region *	Number of Specialists	Rate per 100,000 Population

Canterbury	342	80.1
Nelson Marlborough	63	51.4
Otago	161	94.3
South Canterbury	33	62.5
Southland	38	36.8
West Coast	**10**	**33.0**
National Total	**2,723**	**72.9**

Source: *NZHIS Workforce Statistics, 2004.*
Notes: **This data has been aggregated into DHB Regions, not geographic regions.*

Nurses and Midwives

Information on the nursing and midwifery workforce was also provided by the NZHIS, based on data collected through the APC application process[92].

In 2002, there were 37,097 active registered nurses, enrolled nurses and midwives in New Zealand (Table 175). This represents a 10% growth in the workforce over the previous 10 years, compared with the 20% growth in the medical workforce over the same period (New Zealand Information Service 2004a).

Table 175. Active Registered Nurses and Midwives in the West Coast vs other South Island DHB Regions and New Zealand Total, 2002

DHB Region*	Number of Active Nurses and Midwives		
	Registered Nurses**	Enrolled Nurses	Registered Midwives***
Canterbury	4,175	455	458
Nelson Marlborough	1,083	217	120
Otago	1,728	338	183
South Canterbury	623	148	55
Southland	802	177	81
West Coast	**303**	**91**	**27**
National Total	**33,124**	**3,973**	**3,609**

Source: *NZHIS Workforce Statistics, 2004.*
Notes: ***This group also includes registered nurses with midwifery qualifications and registered midwives.*
****This group represent those who have a midwifery qualification (this volume comes from within the "registered nurse" category)*

In 2002 (Table 175), the South Island, with 24% of New Zealand's population, contained 26.3% of the registered nurse workforce, 25.6% of the midwifery workforce and just under one third of the enrolled nurse workforce. The rate of registered nurses and enrolled nurses per 100,000 was consistently high in most regions in the South Island (Table 176), with the West Coast geographic region having the highest rate. The West Coast region had a slightly lower rate of registered midwives than the national rate.

Table 176. Active Registered Nurses, enrolled Nurses and Midwives in the West Coast vs other South Island Geographic Regions* and New Zealand Total, 2002

Geographic Region*	Rate of Active Nurses and Midwives per 100,000 Population

[92] In 2002, both midwives and nurses applied to the Nursing Council of New Zealand for their APCs. Therefore, data produced for nurses also includes those nurses with midwifery qualifications, whether they work in midwifery or not. In September 2004, the Midwifery Council of New Zealand takes over the function of renewing midwives APCs. From 2004 onwards, nursing and midwifery data will be produced and analysed separately. It is likely that many nurses who are qualified as midwives, but choose to work in nursing will cease to meet the requirements for midwifery APCs. This would have an impact on the numbers of "active midwives" reported from 2005 onwards.

	Registered Nurses**	Enrolled Nurses	Registered Midwives***
Canterbury including South Canterbury	955.5	120.1	102.2
Nelson Marlborough	845.4	169.4	93.7
Otago	928.7	179.0	99.9
Southland	798.1	183.2	77.1
West Coast	**983.8**	**295.5**	**87.8**
National Total	**841.0**	**100.9**	**91.6**

Source: NZHIS Workforce Statistics, 2004.
*Notes: **This group also include registered nurses with midwifery qualifications and registered midwives.*
****This group represent those who have a midwifery qualification.*

Enrolled nurses have a restricted scope of practice, which requires them to work under the supervision of a registered nurse or medical practitioner. Training programmes for these nurses ceased in 1993, hence the decrease in the size of the workforce from 6,626 in 1993 to 3,973 in 2002, representing a 40% reduction over this time. In 2002, training recommenced on a trial basis at limited sites.

In 2002, from the total 3,609 nurses with midwifery qualifications, only 60% (2,169) worked in the related areas of midwifery, maternity and obstetrics. Of these midwives only 39% worked as case load (lead maternity carer (LMC) midwives). This is significant given the increasing proportion of women having midwives as LMCs (73.5% of pregnant women in 2001) (New Zealand Information Service 2004a).

The proportion of midwife Lead Maternity Carers (LMCs) in West Coast DHB Region in 2002 (Table 177) was higher than the national percentage, and up significantly from the rate of 61% in 1999. Midwife LMCs in the West Coast DHB Region, increased by 15% from 2001 to 2002. The percentage of Obstetricians and General Practitioners as LMC in the West Coast DHB Region has fallen steadily from 1999, when the rates were 29.9% and 9.1% respectively to below the national percentage by 2002. (Ministry of Health 2002g)

Table 177. Percentage of Original Lead Maternity Carer in the West Coast vs South Island and National Total, 2002

DHB Region*	Lead Maternity Carer at Registration		
	Midwife %	GP %	Obstetrician %
West Coast	**86.3**	**8.2**	**4.1**
South Island	74.5	6	19
National Total	**73.1**	**9.6**	**11.2****

Source: Ministry of Health 2004f.
*Notes: **Some were not reported.*

PRIMARY HEALTH CARE SERVICES

Primary Health Care Services are usually the first point of contact people have with a health system. They include services provided by general practitioners, nurses, midwives, community workers, pharmacists, dentists and other health providers in the community. The benefits of good access to primary care include early identification and treatment of illness, timely and appropriate referral, continuity of care, promotion of healthy lifestyles and behaviours, fewer hospitalisations and lower health care costs.

Primary Health Care Strategy

The Primary Health Care Strategy (Ministry of Health 2001b) was introduced in 2001 to recognise that primary health care plays a central role in improving the health of all New Zealanders. While Community Services and High User Health Cards reduce the cost of accessing primary care for some people, cost along with other non-financial reasons remain barriers to New Zealanders accessing primary care. The Primary Health Care Strategy supports a five to ten year vision for making primary health care affordable and accessible to all.

Six key directions for primary care in the strategy are to:

- work with local communities and enrolled populations
- identify and remove health inequalities
- offer access to comprehensive services to improve, maintain and restore peoples health
- coordinate care across service areas
- develop the primary care workforce
- continuously improve quality using good information.

Initially additional funding for primary health care has been targeted at reducing the cost of visiting a General Practitioner and improving the appropriateness of these services in areas where there are high levels of social deprivation or high populations of Mäori or Pacific people.

Primary Health Organisations are the main vehicle for the delivery of the Primary Health Care Strategy and are discussed below.

Primary Health Organisations

Primary Health Organisations (PHOs) are local groups of health care providers responsible for organising and delivering primary health care services to meet the needs of their enrolled population. They are required to consult with and be responsive to the health needs of the community they serve. PHOs receive government funding based on the numbers and characteristics of their enrolled population, to subsidise a range of health services that include; providing care and treatment when people are unwell, promoting health, preventing illness and outreach services for those groups of people who do not access primary care.

Aligned to key directions in the Primary Care Strategy, the aims of PHOs are to[93]:

- improve, maintain and restore health in local communities
- work with local communities and groups with poor health to address needs
- coordinate care with other providers
- enrol their population so that cheaper fees can be attained
- involve communities, iwi and consumers in governing processes
- enable all providers/practitioners to influence decision making
- operate as not-for-profit organisations with full and open accountability.

The first PHOs in New Zealand were established in July 2002. There are currently 3.57million New Zealanders enrolled in 77 PHOs nationwide[94].

PHO funding for first level services (the usual care received in general practice) is determined by the demographic profile of their enrolled population. Currently, if more than 50% of the enrolled

[93] PHO Minimum Requirements, Ministry of Health.

[94] Ministry of Health website last updated 27th September 2004.

population live in areas of high social deprivation or are Mäori or Pacific people, the PHO is funded at a higher level under the "Access" funding formula. All other PHOs are funded at a lower "Interim" funding level. The vision of the Primary Care Strategy is that over the next 10 years all PHOs will be funded under the higher funding formula, enabling reduced fees and greater access for all New Zealanders.

Of the 60 North Island PHOs, 42 are "Access" funded, while in the South Island there are 17 PHOs with only one under the "Access" funding formula. Community Services and High User Health Card rates still apply for "Interim" PHOs. In addition, further subsidisies have been introduced for some population groups (people under 18 and over 65 year of age).

In addition to first level services PHOs can apply to the DHB for funding for the following;

- services to improve access. These services are targeted at reducing health inequalities, breaking down barriers to access and targeting those most in need
- health promotion services. These services are also aimed at reducing inequalities and addressing wider determinants of health
- care plus services. These services are targeted to people who need to visit their family doctor or nurse often because of chronic illnesses such as diabetes or heart disease, acute medical or mental health needs or a terminal illness.

In the near future PHOs will receive further funding based on their performance against clinical and referred service (prescribing and laboratory testing) performance indicators.

The West Coast has one PHO which was established 1 October 2004. It has an estimated enrolled population of 25,396 which represents 82% of the projected population for the region in 2001 (31,035). The West Coast PHO is funded under the "Interim" funding formula, with reduced access fees for under 18 year olds and over 65 year olds.

Access to and Use of Primary Care Services

The number of General Practitioners (GPs) in a region provides an indication of the availability of primary health care services. In 2002 there were 16 General Practitioners practicing in the West Coast district. Nationally, the ratio of GPs to the population in 2002 was 1 GP for every 1,400 people. On the West Coast the ratio is significantly lower at 0.7 GPs for every 1,400 people.

For further information on the primary care workforce refer to Section 3: The Health Workforce.

The West Coast has the lowest ratio of GPs per 10,000 population in New Zealand. A previous survey of primary health care providers (Public Health Consultancy 2001b) indicated that there are not enough GPs in the West Coast leading to a lack of continuity for patients and long waiting lists for appointments. Key issue for rural health include: the distribution and availability of health care services, recruitment and retention of health professionals, the role of nurse practitioners and emergency services. Other issues identified include a shortage of volunteer rural health workers, a lack of support for rural GPs and the need for more services to outlying districts.

Ambulatory sensitive hospitalisations are also considered a measure of primary care access as these hospitalisations result from diseases and conditions, which are sensitive to interventions delivered in primary care (Ministry of Health 2003c). Nationally rates have risen annually since 1995 from 25 per 1,000 people to 28 per 1,000 people in 2001 remaining relatively stable from 1998. On the West Coast however, rates have continued to increase after 1998.

For further information, refer to Section 3: The Provision of Secondary and Tertiary Services (Ambulatory Sensitive Hospitalisations).

Utilisation of Primary Health Care Services

In the New Zealand Health Survey (Ministry of Health 2004g), the use of health services was determined by asking adults if they had seen certain health care providers or workers in the last 12 months. If they had, they were asked additional questions such as the number of times they had visited, the reasons for their last visit, why they had selected a particular type of provider, their satisfaction with the consultation and reasons for any dissatisfaction, and whether they felt they needed to see a health practitioner for some reason but did not (unmet health need) and the reasons for this:

- nine out of 10 adults have a health practitioner or service they usually first go to see when they are feeling unwell or are injured

- Asian people were significantly less likely than European/Other, Mäori and Pacific people to have a usual health practitioner
- one in seven Mäori adults had visited a Mäori health provider in the last 12 months
- one in 11 Pacific people adults had visited a Pacific people health provider in the last 12 months
- right out of 10 adults had visited a general practitioner (GP) in the last 12 months
- the most common reasons for visiting a GP were a short-term condition, routine check-up or a chronic condition or disability
- seven out of 10 adults were given a prescription by their GP on their last visit
- the most common cost of a GP visit was $31–40
- the average number of visits to a GP in the last 12 months was four
- one in eight adults needed to see a GP in the last 12 months, but did not see one
- the most commons reasons for not seeing a GP when needed were high cost and inconvenience
- three out of 10 adults had seen a medical specialist in the last 12 months
- four out of 10 adults had seen a practice nurse in the last 12 months
- seven out of 10 adults had received a prescription for themselves in the last 12 months
- one in six adults who received a prescription did not collect one or more of their prescription items from the chemist
- one in four adults had seen a complementary or alternative health care worker in the last 12 months
- the most common types of complementary or alternative health care workers were massage therapists, chiropractors and osteopaths
- four out of 10 adults had seen a dentist or dental therapist in the last 12 months
- one in five adults had seen an optician or optometrist in the last 12 months
- one in seven adults had seen a physiotherapist in the last 12 months
- one in five adults had used a service at, or been admitted to, a public hospital in the last 12 months
- one in 16 adults had used a service at, or been admitted to, a private hospital in the last 12 months.

Utilisation of Primary Health Care Services by the West Coast Population

DHB snapshot datacubes from the New Zealand Health Survey are used to obtain information about the utilisation of primary health services by the West Coast population. The analysis is done by comparing the patterns of use for West Coast to that of New Zealand.

As numbers for the Pacific and Asian population are too small to provide statistically meaningful results, the following analysis is carried out by prioritised ethnicity (Mäori and non-Mäori). This chapter also focuses on people aged 15 years and older.

The indicators presented here identify the prevalence of accessing primary health care in the past 12 months and include the following categories:

- Usual Health Provider
- GP/Family Doctor
- Mäori Health Provider
- Complementary or Alternative Health Provider
- Obtaining Prescriptions or Accessing a Pharmacy

Key Findings

- Generally, the prevalence of accessing primary health care in West Coast is similar to that of New Zealand
- Maori males in West Coast are slightly more likely to have a usual health provider than are their national counterparts
- The prevalence of Maori accessing Maori health providers in West Coast is higher for males and lower for females compared to that of their counterparts in New Zealand
- Overall, the prevalence of accessing complementary or alternative health providers in West Coast is lower than for New Zealand

Table 178 to Table 182 compare age-standardised rates for the prevalence of the utilisation of a range of primary health care services (as identified above).

Usual Health Provider

Table 178 shows that overall, the prevalence of having a usual health provider in West Coast is similar to that of New Zealand.

Table 178. Age-Standardised Rates (including 95% CIs) of Prevalence of People having a Usual Health Provider, by Ethnicity and Gender, West Coast and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	New Zealand
Mäori	Male	92.9% (88.4%, 97.4%)	89.6% (86.1%, 93.1%)
	Female	93.9% (89.5%, 98.3%)	95.0% (93.2%, 96.8%)
Non-Mäori	Male	89.2% (84.6%, 93.8%)	89.7% (88.0%, 91.4%)
	Female	97.8% (96.8%, 98.8%)	96.2% (95.4%, 97.0%)
Total	**Male**	**89.4% (85.0%, 93.8%)**	**89.7% (88.1%, 91.3%)**
	Female	**97.5% (96.5%, 98.5%)**	**96.0% (95.3%, 96.7%)**

Source: Ministry of Health 2004b.

GP/Family Doctor

As Table 179 shows overall, the prevalence of accessing a GP/family doctor in West Coast DHB is similar to that of New Zealand, with four out of five adults having visited their GP in the past year. Females access a GP/family doctor significantly more than males in West Coast DHB and nationally.

Table 179. Age-Standardised Rates (including 95% CIs) of Prevalence of People Accessing a GP/Family Doctor, by Ethnicity and Gender, West Coast and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	New Zealand
Mäori	Male	68.4% (60.4%, 76.4%)	67.8% (63.1%, 72.5%)
	Female	80.5% (75.3%, 85.7%)	82.5% (79.3%, 85.7%)
Non-Mäori	Male	78.5% (72.9%, 84.1%)	76.6% (74.7%, 78.5%)
	Female	87.2% (84.2%, 90.2%)	85.9% (84.5%, 87.3%)
Total	**Male**	**77.9% (72.6%, 83.2%)**	**75.7% (73.9%, 77.5%)**
	Female	**86.8% (84.0%, 89.6%)**	**85.5% (84.2%, 86.8%)**

Source: Ministry of Health 2004b.

Maori Health Provider

Table 180 shows that the prevalence of Maori accessing Maori health providers in West Coast is higher for males and lower for females compared to that of their counterparts in New Zealand. Note large confidence intervals accompany these results.

Table 180. Crude Rates (including 95% CIs) of Prevalence of Mäori Accessing Mäori Health Providers, by Gender, West Coast and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	New Zealand
Mäori	Male	13.7% (7.8%, 19.6%)	10.9% (8.0%, 13.8%)
	Female	15.4% (10.7%, 20.1%)	16.1% (12.6%, 19.6%)
	All	14.5% (11.0%, 18.0%)	13.7% (11.3%, 16.1%)

Source: Ministry of Health 2004b.
Notes: Large confidence intervals accompany these results.
The statistics presented here are of crude rates. Crude rates alone were calculated for this section as ethnic groups are not compared.

Complementary or Alternative Health Providers

Table 181 shows that with the exception of Maori males, the prevalence of accessing complementary or alternative health providers in West Coast is lower than for New Zealand.

Table 181. Age-Standardised Rates (including 95% CIs) of Prevalence of People Accessing Complementary or Alternative Health Providers, by Ethnicity and Gender, West Coast and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	New Zealand
Mäori	Male	22.6% (14.1%, 31.1%)	18.1% (14.1%, 22.1%)
	Female	23.9% (18.1%, 29.7%)	26.8% (23.1%, 30.5%)
Non-Mäori	Male	12.7% (9.6%, 15.8%)	18.4% (16.5%, 20.3%)
	Female	24.8% (20.6%, 29.0%)	29.5% (27.6%, 31.4%)
Total	**Male**	**13.3% (10.3%, 16.3%)**	**18.4% (16.7%, 20.1%)**
	Female	**24.8% (20.8%, 28.8%)**	**29.2% (27.4%, 31.0%)**

Source: Ministry of Health 2004b
Notes: Large confidence intervals accompany these results.

Obtaining Prescriptions and Accessing Pharmacies

Table 182 shows that overall, the prevalence of people obtaining prescriptions and accessing pharmacies in West Coast is lower than for New Zealand. Note large confidence intervals accompany these results.

Table 182. Age-Standardised Rates (including 95% CIs) of Prevalence of People Obtaining Prescriptions and Accessing Pharmacies, by Ethnicity and Gender, West Coast and New Zealand, 2002 to 2003

Ethnicity	Gender	West Coast	New Zealand
Mäori	Male	71.3% (59.1%, 83.5%)	73.2% (68.3%, 78.1%)
	Female	84.8% (79.2%, 90.4%)	87.6% (84.7%, 90.5%)
Non-Mäori	Male	81.0% (73.9%, 88.1%)	79.8% (77.7%, 81.9%)
	Female	91.7% (88.9%, 94.5%)	92.4% (91.3%, 93.5%)
Total	**Male**	**80.4% (73.7%, 87.1%)**	**79.1% (77.2%, 81.0%)**
	Female	**91.3% (88.7%, 93.9%)**	**91.8% (90.7%, 92.9%)**

Source: Ministry of Health 2004b.
Notes: Large confidence intervals accompany these results.

Screening

For further information on Breast Cancer and Cervical Cancer Screening refer to Section 2: Cancer.

Breast Cancer Screening

Breast cancer is the most common cause of cancer death among females, with 29 deaths per 100,000 women (Commonwealth Fund 2004). International evidence has shown that breast screening delivered through a properly organised programme is effective in reducing mortality from breast cancer for women aged 50-69 by 30-35% (International Agency for Research on Cancer 2001).

At least 70% of eligible women need to be screened for a breast screening programme to make significant impact upon breast cancer mortality. Breast Screening Aotearoa (BSA)'s programme target is

to screen 70% of all eligible women (aged 50-64), over a two year screening period, to achieve a mortality reduction of 30% in the eligible population (Ministry of Health 2003c).

In the 24 months to December 2003, the BSA programme screened 62% of eligible women nationally.

There are about 2,785 women aged between 50-64 in the West Coast DHB area, and 76% of these have been screen. However, the BSA screening rate for eligible Mäori women is 70%.

Table 183. BSA Screens (Unadjusted) West Coast Territorial Authorities by Age Group, 1 January 2002 to 31 December 2003

Territorial Authority	Screens				Eligible Population (2003)				Coverage			
	50-54	55-59	60-64	Total	50-54	55-59	60-64	Total	50-54	55-59	60-64	Total
Buller District	243	256	205	704	350	325	250	925	69%	79%	82%	76%
Grey District	322	330	262	914	455	385	300	1,140	71%	86%	87%	80%
Westland District	173	165	152	490	270	245	205	720	64%	67%	74%	68%
Total	**738**	**751**	**619**	**2,108**	**1,075**	**955**	**755**	**2,785**	**69%**	**79%**	**82%**	**76%**

Source: BSA Database as at February 3rd, 2004.

Table 184. BSA Screens (Unadjusted) West Coast Territorial Authorities by Ethnicity, 1 January 2002 to 31 December 2003

Territorial Authority	Screens					Eligible Population (2003)				Coverage			
	Mäori	Not Stated	Other	Pacific People	Total	Mäori	Other	Pacific People	Total	Mäori	Other	Pacific People	Total
Buller District	32	6	662	4	704	45	880	0	925	71%	75%		76%
Grey District	33	5	874	2	914	45	1,090	5	1,140	73%	80%	40%	80%
Westland District	40	5	445	0	490	60	660	0	720	67%	67%		68%
Total	**105**	**16**	**1,981**	**6**	**2,108**	**150**	**2,630**	**5**	**2,785**	**70%**	**75%**	**120%**	**76%**

Source: BSA Database as at February 3rd, 2004.

Cervical Screening

Compared with other OECD countries, New Zealand has the fifth highest rate of cervical cancer (New Zealand Health Information Service 2001), with Mäori women having higher registration rates than non-Mäori. Following the introduction of the cervical screening programme the mortality rate per 100,000 women dropped from 5.8 in 1990 to 3.6 in 1999 (International Agency for Research on Cancer 2001).

The free National Cervical Screening Programme (NCSP) was established in New Zealand in 1990 and is targeted at women between the ages of 20-69 years and recommends that they have a cervical smear test every three years. The National Cervical Screening Programme is delivered throughout the country by DHB's, community laboratories, primary care services and independent service providers targeting Mäori and Pacific people women. Based upon the 2001 census data there are 9,465 women with in the target group in the West Coast DHB.

National Data from the National Cervical Screening Programme indicates that:

- at the 31 December 2001, 1,004,092 women aged between 20-69 were actively enrolled on the NCSP register (Ministry of Health 2003c)
- for each ethnic group, enrolment was highest for the 30-34 year age group and lowest for the 65-69 year old women
- coverage for Mäori and Pacific people women was at least 20% lower than the coverage for women of other ethnic groups
- approximately 414,000 cervical smears are taken annually
- of the 414,000 smears taken, 8.4% were reported as being abnormal which is within the target of not more than 10%
- for the year 2001, the seven day cytology turn around time target of 90% was met (92.5%).

The following tables outline the participation and coverage rates for each DHB by age group and ethnicity.

Table 185. The Proportion (%) of Women Aged 20-69 Years Enrolled in each South Island DHB at 31 December 2001

District Health Board	Age Groups (Years)										Total 20 -69	
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	Unadj	Hyst adj
Canterbury	70.5%	89.0%	96.3%	94.1%	86.5%	76.7%	67.2%	62.1%	54.0%	47.9%	77.9%	88.8%
Nelson Marlborough	71.2%	91.5%	91.7%	92.7%	88.4%	79.4%	72.4%	65.5%	59.9%	55.8%	79.4%	91.5%
Otago	73.0%	89.1%	95.1%	90.7%	87.3%	80.3%	71.6%	69.9%	62.8%	59.8%	79.9%	90.8%
South Canterbury	69.5%	90.9%	94.5%	87.2%	88.7%	76.6%	71.4%	63.9%	59.9%	52.5%	77.0%	89.5%
Southland	66.1%	95.7%	95.4%	89.4%	89.3%	79.2%	71.8%	69.6%	66.0%	57.2%	80.7%	91.9%
West Coast	**59.3%**	**76.3%**	**81.3%**	**83.5%**	**81.1%**	**75.3%**	**65.1%**	**59.7%**	**62.6%**	**51.3%**	**71.9%**	**82.5%**

Source: Annual Monitoring Report 2001, National Cervical Screening Programme.
Notes: 1 Participation is the proportion of enrolled women who have had a cervical smear recorded on the NCSP - Register within the 6 years prior to the end of the reporting period.
2 The targets for participation are 90% for the hysterectomy-adjusted population (80% for unadjusted population). Following a recommendation by the IMG-NCSP, the target for participation for the unadjusted population was lowered from 85% in December 2001. The target for the adjusted population is unchanged.

Table 186. The Proportion (%) of Women Aged 20-69 Years Screened in the 36 Months to 31 December 2001 for each South Island DHB

District Health Board	Age Groups (Years)										Total 20-69	
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	Unadj	Hyst adj
Canterbury	62.0%	67.4%	76.7%	76.4%	70.3%	62.9%	56.0%	51.4%	44.3%	38.5%	63.4%	72.2%
Nelson Marlborough	60.9%	70.1%	71.8%	76.2%	72.5%	66.2%	60.8%	55.7%	51.4%	47.0%	65.2%	75.1%
Otago	66.1%	65.5%	77.5%	75.7%	73.7%	69.0%	62.3%	60.5%	54.9%	51.0%	67.1%	76.3%
South Canterbury	61.0%	71.0%	74.0%	71.5%	73.8%	62.3%	59.0%	53.1%	49.1%	42.5%	63.0%	73.2%
Southland	57.8%	74.4%	73.8%	71.9%	71.9%	64.9%	58.5%	57.2%	53.9%	46.4%	65.1%	74.1%
West Coast	**50.7%**	**57.4%**	**63.9%**	**65.0%**	**63.7%**	**59.2%**	**51.9%**	**47.6%**	**52.1%**	**39.3%**	**56.8%**	**65.2%**

Source: Annual Monitoring Report 2001, National Cervical Screening Programme.
Notes: 1 Coverage is the proportion of enrolled women who have had a cervical smear recorded on the NCSP - Register in the 36 months prior to the end of the reporting period.
2 The targets for coverage are 85% for the hysterectomy-adjusted population (80% for the unadjusted population).

In the West Coast DHB, (700 + 8,740 + 25) women are between 20-69 years of age and are within the target group for the free NCSP. Of these, 700 women are Mäori, 25 are Pacific people and 8,740 are women of other ethnic groups.

Table 187. The Proportion (%) of Women Aged 20-69 Years Enrolled by Ethnicity for each South Island DHB at 31 December 2001

District Health Board	Ethnic Group			Total 20 -69 Years
	Mäori	Other	Pacific People	Unadj
Canterbury	47.2%	80.2%	63.8%	77.9%
Nelson Marlborough	50.5%	81.9%	66.0%	79.4%
Otago	51.3%	81.6%	73.2%	79.9%
South Canterbury	44.7%	78.7%	85.7%	77.0%
Southland	51.1%	83.7%	75.9%	80.7%
West Coast	**48.3%**	**74.3%**	**34.5%**	**71.9%**

Source: Annual Monitoring Report 2001, National Cervical Screening Programme.
Notes:
1 Participation is the proportion of enrolled women who have had a cervical smear recorded on the NCSP - Register within the 6 years prior to the end of the reporting period.
2 The targets for participation are 90% for the hysterectomy-adjusted population (80% for unadjusted population). Following a recommendation by the IMG-NCSP, the target for participation for the unadjusted population was lowered from 85% in December 2001. The target for the adjusted population is unchanged.

Table 188. The Proportion (%) of Women Aged 20-69 Years Screened in the 36 Months to 31 December 2001 by Ethnicity for each South Island DHB

District Health Board	Ethnic Group			Total 20 -69 Years
	Mäori	Other	Pacific People	Unadj
Canterbury	35.1%	65.5%	43.4%	63.4%
Nelson Marlborough	37.1%	67.6%	44.8%	65.2%
Otago	38.9%	68.9%	52.9%	67.1%
South Canterbury	34.1%	64.5%	61.4%	63.0%
Southland	35.5%	68.2%	47.7%	65.1%
West Coast	**34.7%**	**59.0%**	**25.5%**	**56.8%**

Source: Annual Monitoring Report 2001, National Cervical Screening Programme.
Notes:
1 Coverage is the proportion of enrolled women who have had a cervical smear recorded on the NCSP - Register in the 36 months prior to the end of the reporting period.
2 The targets for coverage are 85% for the hysterectomy-adjusted population (80% for the unadjusted population).

Pharmacy Prescriptions

The use of drugs in each DHB can be seen as one proxy for utilisation in primary care. From drug usage, inferences can be made about the extent to which need is being met and /or may prompt questions about diseases and their management in the DHB.

Notes on the Data provided in this Chapter

All expenditure figures shown are the drug cost only. The value shown excludes other expenditure such as dispensing fees and patient co-payments.

Costs and volumes are allocated to District Health Boards on dispensing from Pharmacies located in their areas, not on where the people who received the drugs lived.

All expenditure excludes GST.

Only drugs that were at least partially subsided by the Government have been included.

Drugs used in hospitals have been excluded from the figures shown.

Costs and volumes have been excluded for two pharmacy providers (Diabetes New Zealand Ltd and Zuelig Pharmacy). These two Providers dispense pharmeuticals to consumers across the country. Including these volumes and costs will distort any comparison between Boards.

Changes to the pharmacy contract has meant the number of prescription items has not been counted consistently through the period 2001 to 2004. For this analysis a more reliable measure of number of prescriptions has been used.

Population figures shown in the following tables are based on the 2001 census, usually resident population published by Statistics New Zealand.

Table 189. Number of Prescriptions for the Year Ending June 2004, South Island DHBs and New Zealand Total

District Health Board	No. of Prescriptions	District Health Board Population 2004	No. Per Capita
Canterbury	3,015,054	460,680	6.5
Nelson Marlborough	735,742	133,225	5.5
Otago	1,242,048	180,220	6.9
South Canterbury	391,684	53,825	7.3
Southland	577,403	107,735	5.4
West Coast	**192,380**	**30,630**	**6.3**
New Zealand Total	**24,353,854**	**4,067,725**	**6.0**

Source: NZHIS Data Warehouse October 2004.

Table 189 shows that West Coast is one higher than the median per capita number of prescriptions dispensed, 0.3 prescriptions per capita above the New Zealand average.

Table 190. Trend of Number of Prescriptions per Capita Since 2001, West Coast DHB, South Island and New Zealand Total

District Health Board	Years			
	2001	2002	2003	2004
West Coast	5.8	5.9	6.0	6.3
South Island Total	5.9	5.9	5.9	6.4
New Zealand Total	**5.7**	**5.6**	**5.6**	**6.0**

Source: NZHIS Data Warehouse October 2004.

In all years since 2001 (see Table 190), the South Island average per capita number of prescriptions has been above the New Zealand average. During this period the trend for West Coast is consistent with the New Zealand and South Island trend. The West Coast per capita number of prescriptions over this period is very close to the South Island values.

Table 191. Expenditure on Drugs for the Year Ending June 2004, South Island DHBs

District Health Board	Drug Cost $$	DHB Population 2004	No. per Capita
Canterbury	$73,870,939	460,680	$160.4
Nelson Marlborough	$18,142,710	133,225	$136.2
Otago	$30,044,958	180,220	$166.7
South Canterbury	$9,886,450	53,825	$183.7
Southland	$14,762,260	107,735	$137.0
West Coast	**$4,777,068**	**30,630**	**$156.0**
New Zealand Total	**$600,020,899**	**4,067,725**	**$147.5**

Source: NZHIS Data Warehouse October 2004.

Table 191 shows that, as expected, drug expenditure mirrors the per capita number of prescriptions. West Coast has the ninth highest pharmaceutical expenditure per head of population, $8 per capita above the New Zealand average. This possibly reflects the proportion of elderly within the DHB. With the exception of Auckland, Canterbury and Nelson Marlborough there appear to be a link between the proportion of elderly and the per capita expenditure dispensed.

Table 192. Trend of Drug Costs per Capita since 2001, West Coast DHB, South Island and New Zealand Total

District Health Board	Years			
	2001	2002	2003	2004
West Coast	$142.8	$140.3	$150.9	$156.0
South Island Total	$148.3	$145.1	$150.9	$156.6
New Zealand Total	**$137.5**	**$135.0**	**$140.2**	**$147.5**

Source: NZHIS Data Warehouse October 2004.

In all years since 2001 (see Table 192) the South Island pharmaceutical expenditure per head of population has been above the New Zealand average. During this period the trend for West Coast is consistent with the New Zealand and South Island trend.

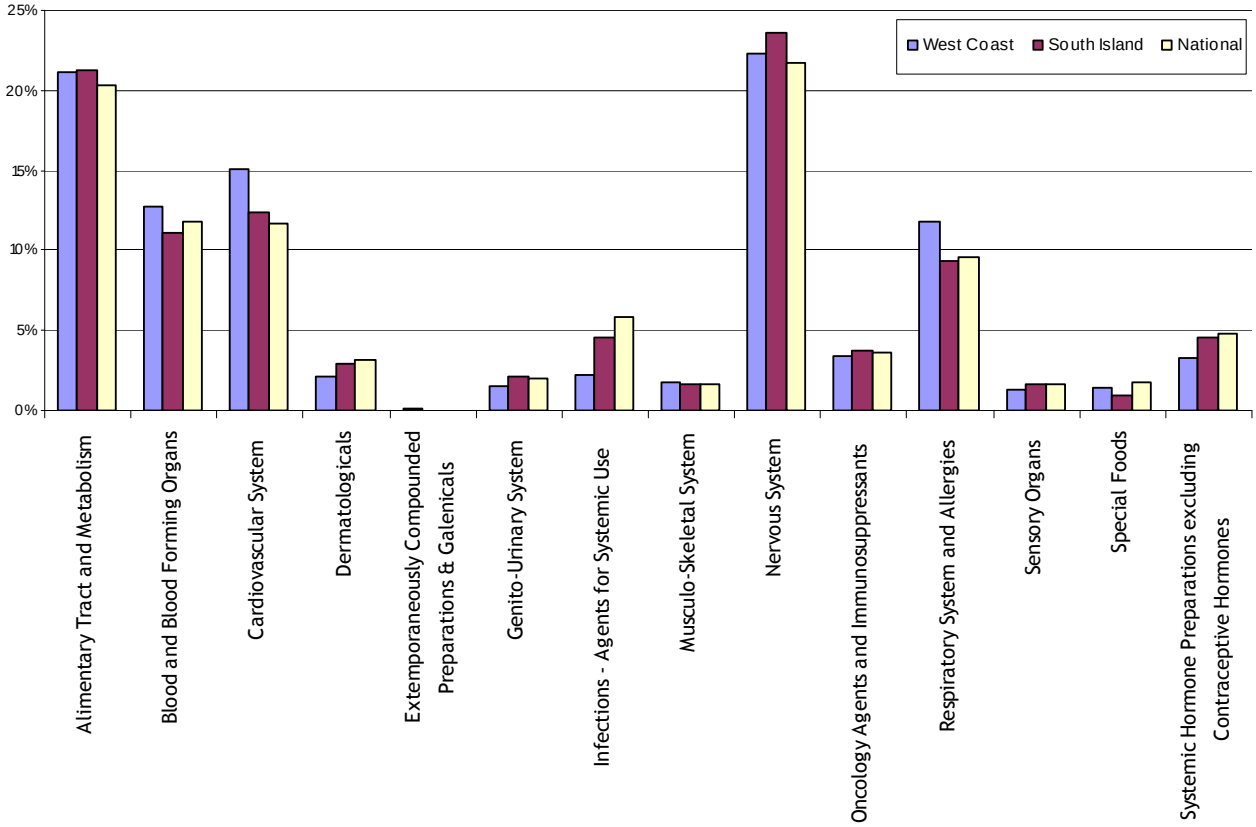
Table 193. Expenditure per Capita by TG Level 1, 12 Month Total to June 2004*

Category	West Coast Drug Cost per Capita	South Island Total Drug Cost per Capita	New Zealand Drug Cost per Capita
Alimentary Tract and Metabolism	$33.1	$33.3	$29.9
Blood and Blood Forming Organs	$19.9	$17.3	$17.4
Cardiovascular System	$23.5	$19.5	$17.2
Dermatologicals	$3.2	$4.6	$4.7
Extemporaneously Compounded Preparations & Galenicals	$0.2	$0.1	$0.1
Genito-Urinary System	$2.3	$3.2	$3.0
Infections - Agents for Systemic Use	$3.5	$7.1	$8.5
Musculo-Skeletal System	$2.7	$2.6	$2.5
Nervous System	$34.7	$37.0	$32.1
Oncology Agents and Immunosuppressants	$5.2	$5.8	$5.4
Respiratory System and Allergies	$18.4	$14.6	$14.2
Sensory Organs	$2.0	$2.6	$2.5
Special Foods	$2.1	$1.5	$2.5
Systemic Hormone Preparations excluding Contraceptive Hormones	$5.2	$7.2	$7.1

Source: NZHIS Data Warehouse October 2004.
*Notes: *TG (Therapeutic Group) Level 1 refers to the summary level of all Therapeutic Groups. This level can be further broken down into Level 2 (Therapeutic Main Groups) and Level 3 (Therapeutic and Pharmacological Group).*

Table 193 shows that for all major expenditure categories, therapeutic groups for West Coast are above the New Zealand average. Major categories, cardiovascular, blood and blood form organ and respiratory system and allergy medications are above the South Island average.

Figure 70. Percentage of Expenditure by TG Level 1 (Drug Cost Only), Year Ending June 2004



Source: NZHIS Data Warehouse October 2004.

Community-Based Laboratory Use

Table 194 and Table 195 show community referred utilisation laboratory data extracted from the NZHIS data warehouse. They are for GP referrals only and based on the DHB of referrer. Ministry of Health funded C10 tests[95] are included.

Notes on the Data

Nelson Marlborough DHB volumes exclude hospital referred community tests that are not loaded into the NZHIS laboratory data warehouse. As a result, the claims and per capita expenditure is under valued and not comparable with other DHBs.

South Canterbury 2003/04 data is incomplete so the 2003 calendar year has been used.

Table 194. 2003/04 GP Laboratory Claims by District Health Board of Referral

District Health Board	Number of Tests	Value of Claims $$	Expenditure per Capita $$
Auckland DHB	2,496,810	22,519,308.93	52.69
Bay of Plenty DHB	707,940	6,637,623.02	33.73
Canterbury DHB	1,573,835	14,910,147.87	32.37
Capital and Coast DHB	1,067,752	10,018,671.38	37.39
Counties Manakau DHB	1,763,891	15,915,111.24	37.23
Hawkes Bay DHB	655,367	5,878,225.31	39.30
Hutt DHB	515,426	4,654,390.34	33.76
Lakes DHB	361,486	3,486,363.08	34.13
Midcentral DHB	576,889	5,178,208.47	31.45
Nelson Marlborough DHB	350,050	3,430,256.77	25.75
Northland DHB	577,651	5,184,419.19	35.11
Otago DHB	822,581	7,826,133.48	43.43
Southland DHB	421,461	3,948,468.71	36.65
Sth Canterbury DHB	218,019	2,061,891.40	38.31
Tairawhiti DHB	143,080	1,349,082.39	29.89
Taranaki DHB	485,898	4,083,418.61	38.65
Waikato DHB	1,635,616	15,095,998.06	44.76
Wairarapa DHB	120,934	1,141,495.15	29.03
Waitemata DHB	1,995,192	18,129,636.40	37.18
West Coast DHB	**110,550**	**919,895.15**	**30.03**
Whanganui DHB	304,391	2,662,908.61	41.05
unknown DHB	683,918	6,498,844.03	
New Zealand Total	**17,588,737**	**161,530,497.59**	**39.71**

Source: NZHIS Data Warehouse October 2004

West Coast has a lower per capita cost than New Zealand as a whole. This may be partly caused by some West Coast patients being seen outside of their District Health Board.

[95] C10 tests = Cytology and Morbid Histology

Table 195. 2003/04 GP Laboratory Test Type Claims, West Coast DHB

West Coast DHB	Number of Tests	Value of Claims	District Health Board Claims per Capita $$	New Zealand Claims per Capita $$
BIOCHEMISTRY, ADRENAL TESTS	49	817.83	0.03	0.05
BIOCHEMISTRY, BLOOD GAS ASSAYS	5	100.60	0.00	0.00
BIOCHEMISTRY, ELECTROLYTE TESTS	10,918	58,190.83	1.90	1.75
BIOCHEMISTRY, ENZYME TESTS	1,446	5,097.99	0.17	0.20
BIOCHEMISTRY, FAECES TESTS	535	3,284.59	0.11	0.16
BIOCHEMISTRY, GLUCOSE TESTS	8,378	40,499.62	1.32	1.64
BIOCHEMISTRY, HAEMOPOITEIC TESTS	13,843	73,589.33	2.40	2.57
BIOCHEMISTRY, LIPID TESTS	5,997	46,362.36	1.51	1.71
BIOCHEMISTRY, LIVER TESTS	5,909	115,552.88	3.77	4.73
BIOCHEMISTRY, MONITORING TESTS FOR DRUGS	487	4,168.83	0.14	0.13
BIOCHEMISTRY, PROTEIN TESTS	1,841	17,448.94	0.57	0.79
BIOCHEMISTRY, RENAL TESTS	13,980	45,143.80	1.47	1.32
BIOCHEMISTRY, REPRODUCTIVE SYSTEM TESTS	1,021	10,417.41	0.34	0.67
BIOCHEMISTRY, THYROID TESTS	8,007	44,472.03	1.45	1.80
BIOCHEMISTRY, UNCATEGORISED TESTS	160	2,004.06	0.07	0.16
CYTOLOGY AND MORBID HISTOLOGY	729	31,859.81	1.04	2.25
DIAGNOSTIC IMMUNOLOGICAL & SEROLOGICAL TESTS	12,062	121,031.41	3.95	5.27
HAEMATOLOGY TESTS	6,751	56,588.57	1.85	2.89
MICROBIOLOGY TESTS	9,164	136,363.96	4.45	6.17
OTHER GROUP TESTS	8,759	95,254.11	3.11	4.27
Other	509	11,646.19	0.38	1.05
Total	**110,550**	**919,895.15**	**30.03**	**39.58**

Source: NZHIS Data Warehouse October 2004

THE PROVISION OF SECONDARY AND TERTIARY SERVICES

Hospitals provide a venue for the delivery of a wide range of health services for people who need specialist care, as either inpatients who require overnight care, day cases for same day care, outpatients for brief interventions (Ministry of Health 2003c).

Hospital Discharges

The Health and Independence Report (Ministry of Health 2003c) noted a national increase in hospital discharges from 1988/99 to 2001/02, particularly acute medical and elective surgical discharges. This is due to changing population demographics, the complexity of treatments, the availability of new treatments and the development of services. Discharges for the West Coast DHB region show a similar trend (Table 183).

Total hospital discharges for the West Coast DHB region increased by 11% over the five years, with acute discharges consistently more than twice the volume of elective discharges (Table 183). As expected, the volume of acute medical discharges was consistently higher than the volume for elective medical discharges. In 2002/03, the volume was 25 times greater. Elective surgical discharges outnumbered acute surgical discharges consistently each year, occurring at about twice the rate.

Table 196. Hospital Discharge Volumes for West Coast DHB Region 1998/99 to 2002/03

West Coast DHB		1998/99	1999/2000	2000/01	2001/02	2002/03
Acute	Medical	2,896	2,986	3,106	3,290	3,341
	Surgical	440	529	447	409	424
	Other	97	112	113	102	135
	Total	**3,433**	**3,627**	**3,666**	**3,801**	**3,900**
Elective	Medical	146	168	140	144	131
	Surgical	1,220	1,262	1,196	1,340	1,323
	Other	123	121	128	168	143
	Total	**1,489**	**1,551**	**1,464**	**1,652**	**1,597**
Total Medical		3,042	3,154	3,246	3,434	3,472
Total Surgical		1,660	1,791	1,643	1,749	1,747
Total Other		220	233	241	270	278
Total		**4,922**	**5,178**	**5,130**	**5,453**	**5,497**

Source: NMDS public hospital data, maintained by NZHIS.
Notes: 1 Time period covered - 12 months to 30 June of each year.
2 Data is filtered to include only medical/surgical/maternity, inpatient and daypatient cases.
3 Discharges are for people from each DHB region of domicile.
4 Other eg maternity.

The standardised discharge ratio (SDR) is the ratio of observed to expected discharge rates calculated on the age, ethnic and socioeconomic deprivation structure of each DHB, with socioeconomic deprivation based on the NZDep 2001.

Standardised discharge ratios for all elective services (Table 184) in the West Coast for 2002/03, particularly in surgery, demonstrated that there was greater use of these services than would have been expected. Conversely, acute surgical services appeared under-utilised with SDRs consistently below 1.00. When comparing West Coast DHB rates with rates for other DHBs, it may be that the low rates of acute discharges enables a higher rate of elective inpatient services to be accessed. Most non-tertiary providers had lower discharge ratios for acute surgery. However, because of the low overall volumes of some categories of patients in the West Coast DHB data, these rates should be used as an indication of trends only.

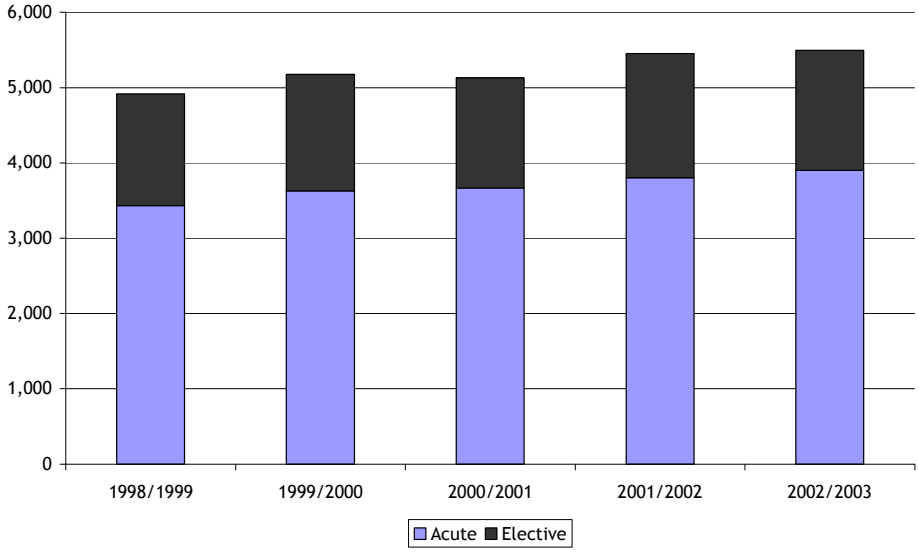
Table 197. Standardised Discharge Ratios (SDRs) for Hospital Discharges in the West Coast DHB Region 1998/99 to 2002/03

West Coast DHB		1998/99	1999/2000	2000/01	2001/02	2002/03
Acute	Medical	1.119	1.142	1.122	1.182	1.236
	Other	0.777	0.920	0.895	0.825	1.124
	Surgical	0.865	1.035	0.881	0.818	0.853
Elective	Medical	1.175	1.343	1.103	1.206	1.169
	Other	1.462	1.317	1.219	1.644	1.344
	Surgical	1.344	1.335	1.266	1.490	1.520

Source: NMDS public hospital data, maintained by NZHIS.
Notes: 1 Time period covered - 12 months to 30 June of each year.
2 Data is filtered to include only medical/surgical/maternity, inpatient and daypatient cases.
3 Discharges are for people from each DHB region of domicile.

Throughout the five years, the proportion of elective and acute discharges has remained similar in the West Coast DHB region (Figure 71). The actual discharge numbers for 2002/03 are included in Table 183.

Figure 71. Acute and Elective Discharge Volumes for the West Coast DHB Region 1998/99 to 2002/03



Source: NMDS public hospital data, maintained by NZHIS.
Notes: 1 Time period covered - 12 months to 30 June of each year.
2 Data is filtered to include only medical/surgical/maternity, inpatient and daypatient cases.
3 Discharges are for people from each DHB region of domicile.

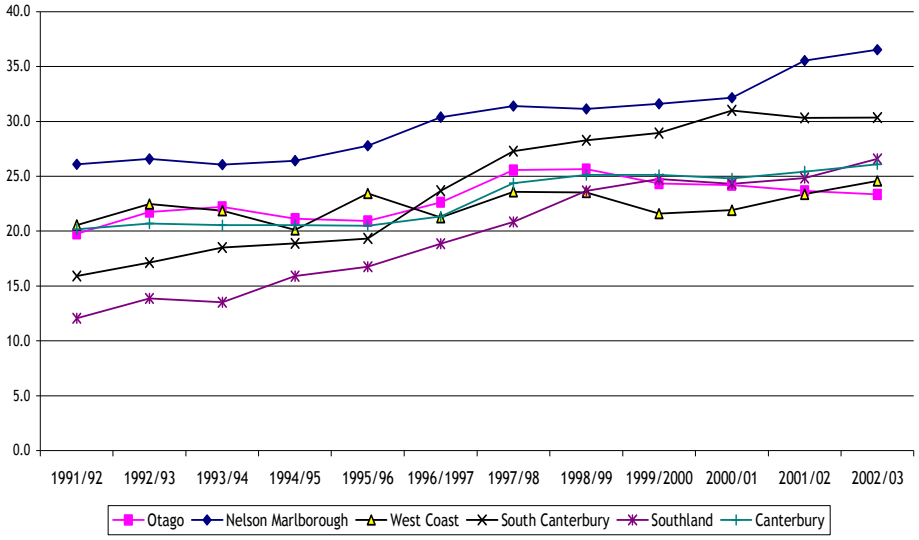
Day Cases

As Figure 72 illustrates, there has been a slight increase in the overall day case percentage over the last three years but it has consistently been between 20%-25% during the time period shown. The percentage does not vary significantly from other DHBs in the South Island.

The General Surgery day case percentage was the highest in the South Island until 1995/96 before it almost halved over the next four years (Figure 73). The percentage has increased over the last three years and is currently similar to that of the South Island overall.

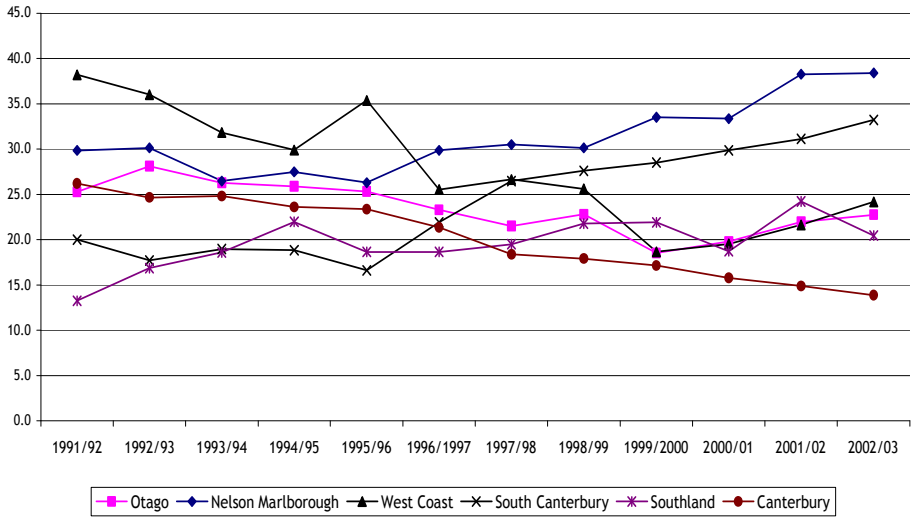
The day case percentage for General Surgery has been far more variable than the total day case percentage – possibly due to the low number of actual General Surgery discharges – but has a very similar percentage and trend over the four most recent years.

Figure 72. Total Day Cases as a Percentage of all Discharges for the South Island DHBs, 1991/92 to 2002/03



Source: NMDS public hospital data, maintained by NZHIS.
Notes: 1 Time period covered - 12 months to 30 June of each year.
2 Data is filtered to include only medical/surgical/maternity, inpatient and daypatient cases.
3 Discharges are for people from each DHB region of domicile.

Figure 73. General Surgery Day Cases as a Percentage of all General Surgery Discharges for the South Island DHBs, 1991/92 to 2002/03



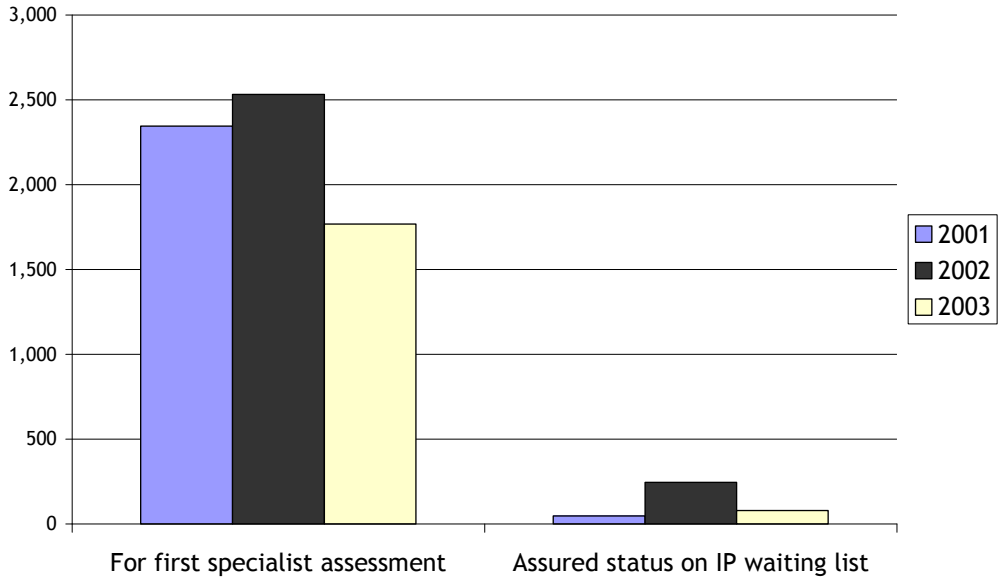
Source: NMDS public hospital data, maintained by NZHIS.
Notes: see notes 1-3 Figure 72.

Access to Services

Efforts have been made in recent years to improve access to elective services using nationally consistent referral and assessment tools. These tools provide a framework to access each patient's relative priority based on a range of medical, social and complicating factors (Ministry of Health 2003c).

Figure 74 indicates that the number of people waiting longer than six months for first specialist assessments reduced in 2003. The volume of patients with assured status on the inpatient waiting list longer than six months was also reduced in 2003. However, there was inconsistent reporting on this, often with huge variation from month to month. The data should only be used to increase awareness of the need to monitor these trends (New Zealand Health Information Service 2004c).

Figure 74. Number of Patients in the West Coast DHB Region who have been waiting for >6 Months and Number of Patients on Inpatient Lists who have been Waiting with Assured Status for >6 Months, 2000/03



Source: NMDS public hospital data, maintained by NZHIS.
Notes: Time period covered - 12 months to 30 June of each year.

Surgical Discharges

Table 198 indicates that the standardised discharge ratio for surgery of West Coast residents is statistically significantly(*) higher than would be expected, given the make-up of the population.

Table 198. Standardised Discharge Ratios (SDRs) for Total Surgery by DHB for 1998/99 to 2002/03

DHB Region	1998/99	1999/00	2000/01	2001/02	2002/03
Nelson Marlborough	*1.096	*1.143	*1.095	*1.172	*1.193
West Coast	***1.172**	***1.230**	***1.131**	***1.250**	***1.278**
Canterbury	0.985	*1.043	0.983	**0.888	**0.906
South Canterbury	*1.315	*1.101	*1.173	*1.150	*1.162
Otago	*1.220	*1.148	*1.154	*1.190	*1.111
Southland	*1.218	*1.059	1.006	1.035	1.029
New Zealand	1.000	1.000	1.000	1.000	1.000

Source: NMDS public hospital data, maintained by NZHIS. Time period covered - 12 months to 30 June of each year. Data for 2002/03 was extracted from the NMDS on 6 January 2004.

Notes:

1 *The standardised discharge ratio is the ratio of observed to expected discharge rates. Expected rates are calculated on the age, ethnicity and socioeconomic deprivation structure of each DHB region, with socioeconomic deprivation determined using NZDEP scores from the 2001 census.*
2 ***Ratios indicate that the standardised DHB region and ethnic rate is significantly less than the overall national rate (99% confidence interval).*
3 **Indicates that the standardised DHB region and ethnic rate is significantly greater than the overall national rate (99% confidence interval).*
4 *Data has been filtered to exclude non-medical/surgical/maternity and non-inpatient/ daypatient events.*
5 *Data excludes cases directly purchased by ACC, and Maternity AR-DRGs. Surgical procedures defined using ICD10 codes.*

Table 199 presents standardised discharge ratios for coronary artery bypass grafts for patients in the South Island DHB regions. Those in the West Coast DHB had a lower level of access in the two most recent years than would be expected for the population. However, this rate has fluctuated over the last five years most likely due to the low number of coronary artery bypass grafts admissions.

Table 199. Standardised Discharge Ratios (SDRs) for Coronary Artery Bypass Grafts by DHB for 1998/99 to 2002/03

DHB Region	1998/99	1999/00	2000/01	2001/02	2002/03
Nelson Marlborough	0.838	1.323	0.957	0.735	0.843
West Coast	**1.266**	**0.736**	**1.057**	**0.664**	**0.821**
Canterbury	1.129	0.988	0.917	0.956	1.006
South Canterbury	1.028	1.031	1.046	0.952	0.802
Otago	*1.414	*1.323	*1.450	*1.578	*1.565
Southland	1.253	*1.425	1.012	1.185	1.158
New Zealand	1.000	1.000	1.000	1.000	1.000

Source: NMDS public hospital data, maintained by NZHIS.
Notes:
1 Time period covered - 12 months to 30 June of each year. Data for 2002/03 was extracted from the NMDS on 6 January 2004.
2 See notes 1, 3-5 from Table 198.
3 DHB Region based on domicile of patient.

Access to Services for Mäori

The report Implementing the New Zealand Health Strategy (Ministry of Health 2003g) uses standardised discharge ratios, adjusted for age and deprivation, to enable a comparison of access to elective services between Mäori and non-Mäori. The report identifies a steady improvement since 1997/98 in access to elective services for Mäori compared with non-Mäori. The increase in the ratio for coronary artery bypass operations since 1998/98 nationally is encouraging; although there has also been additional effort to ensure ethnicity is correctly captured during this time period and this may account for some of the increase. The ratios for access to all surgery and coronary artery bypass operation rise as the use of services by Mäori increases relative to non-Mäori.

Using the same method to analyse the discharge ratios for Mäori for total surgery (Table 200) supported this increase in access over the past five years. However, they had not achieved the same level of access as the total population. Although Mäori in the South Island tend to have a lower rate of access than Mäori nationally, access for Mäori in the West Coast DHB region improved rapidly over the last two years. Access rates were higher than the national rate over the last two years (Table 200). However, caution should be used in interpreting these results because of the low numbers of Mäori in the South Island population compared to the North Island and the low numbers of discharges following surgery by those identifying as Mäori.

Table 200. Standardised Discharge Ratios (SDRs) for Total Surgery for Mäori by DHB for 1998/99 to 2002/03

DHB Region	1998/99	1999/00	2000/01	2001/02	2002/03
Nelson Marlborough	**0.669	**0.747	**0.730	**0.733	0.895
West Coast	****0.735**	**1.024**	**0.888**	**1.090**	**1.192**
Canterbury	**0.709	**0.780	**0.862	**0.826	**0.857
South Canterbury	**0.730	**0.736	**0.690	0.814	1.111
Otago	**0.670	**0.786	**0.820	0.979	0.902
Southland	**0.679	**0.736	**0.746	0.926	0.959
New Zealand	0.893	0.921	0.944	0.972	0.988

Source: NMDS public hospital data, maintained by NZHIS. Time period covered - 12 months to 30 June of each year. Data for 2002/03 was extracted from the NMDS on 6 January 2004.
Notes: See notes 1, 2, 4, 5 from Table 198.

Birth Type

The West Coast has small birth volumes and does not provide a tertiary maternity service. Women requiring high level secondary and tertiary maternity care, birth in Christchurch under the Canterbury DHB.

The rate of normal vaginal birth (requiring no operative intervention to birth the baby) for the West Coast DHB region was similar to the national average, however, a higher rate might have been expected because women requiring complex interventions birth in the Canterbury DHB region. The

intervention rates overall were higher than would have been expected and overall they are higher than the national rate (see Table 201).

The national operative intervention rates should not be used as a guide to good practice. The caesarean section rate for New Zealand increased from 20.4% in 1999 to 22.7% in 2002 with a static birthing population and no obvious demographic changes. The average age of the birthing women increased from 29 to 29.7 years over this time (Ministry of Health 2004f).

*Table 201. Type of Birth (Percentage), by District Health Board, 2002**

DHB Region**	Normal Birth	Vaginal Breech Birth	Forceps Birth	Vacuum Extraction	Caesarean Section		
					Acute	Elective	Total
Nelson Marlborough	68.1	0.7	7.4	1.9	14.0	7.9	21.8
West Coast	**67.9**	**0.7**	**3.1**	**0.3**	**18.1**	**9.9**	**28.0**
Canterbury	58.3	0.5	5.1	7.2	16.0	12.8	28.8
South Canterbury	72.7	0.2	4.9	2.1	13.8	6.4	20.2
Otago	66.1	0.3	2.7	4.7	16.2	10.0	26.2
Southland	66.2	0.8	4.0	0.3	17.5	11.3	28.7
National Total	67.7	0.6	3.8	5.1	14.3	8.4	22.7

Source: National Minimum Data Set
*Notes: *The 42 births nationally not classified to a DHB have not been included in this table.*
***This data has been aggregated into DHB regions.*

Birth Procedures

The induction rate in the West Coast DHB region was the highest of all South Island DHBs (Table 202) and 32% higher than the national rate. The epidural rate was extremely low (3.4 per 100 births) compared with the national rate (25.3 per 100 births). These West Coast DHB statistics will be influenced by the low birth volumes and should service only as a guide to trends.

*Table 202. Birth Procedure (Rate per 100 Births), by District Health Board, 2002**

DHB Region**	Induction	Epidural	Episiotomy	Manual Removal of Placenta	Post-Partum Haemorrhage
Nelson Marlborough	22.6	37.0	14.3	2.4	4.1
West Coast	**29.7**	**3.4**	**8.9**	**0.3**	**5.5**
Canterbury	23.3	29.2	14.2	1.6	9.9
South Canterbury	22.2	19.1	7.5	2.6	6.2
Otago	22.9	25.9	5.3	1.3	10.8
Southland	25.7	9.7	10.5	1.5	6.1
National Total	20.1	25.3	10.5	1.6	8.8

Source: National Minimum Data Set
*Notes: *The 28 births nationally not classified to a DHB have not been included in this table.*
***This data has been aggregated into DHB.*

When viewed over a four year period (Table 203), in the West Coast there has been a steady increase in the induction of labour rate against national trends and a consistently low epidural rate. This low epidural rate may be a reflection of the limited obstetric service provided in West Coast DHB.

*Table 203. Birth Procedures (Rate per 100 Births) in West Coast DHB Region from 1999 to 2002 compared with the National Average**

Region		Induction	Epidural	Episiotomy	Manual Removal of Placenta
1999	West Coast	23.3	5.3	9.3	1.4
	New Zealand	27.2	22.8	12.1	2.3
2000	West Coast	21.0	2.6	10.2	1.1
	New Zealand	20.7	25.3	11.6	1.9
2001	West Coast	25.3	6.1	16.9	0.6
	New Zealand	20.9	25.4	11.0	1.7
2002	West Coast	29.7	3.4	8.9	0.3
	New Zealand	20.1	25.3	10.5	1.6

Source: *National Minimum Data Set: Ministry of Health (2002g), Ministry of Health 2003i, Ministry of Health 2004f.*
Notes: **This data has been aggregated into DHB regions.*

Abortion Services

The Abortion Supervisory Committee Report (2003) indicated that there seemed to be a correlation between the number of abortions performed and the number of young women in the population as a whole. In a survey of contraception used by women having an abortion (Abortion Supervisory Committee 2003), the majority of women (52%) have not used contraception and of those that did, most (28.3%) used condoms.

In 2002, 3,456 abortions were performed in the South Island. Abortions services are available at Wairau, Nelson, Ashburton, Christchurch Women's Hospital, Lyndhurst and Dunedin. The majority of abortions were carried out in Christchurch at Lyndhurst (Abortion Supervisory Committee, 2003).

Avoidable Hospitalisations

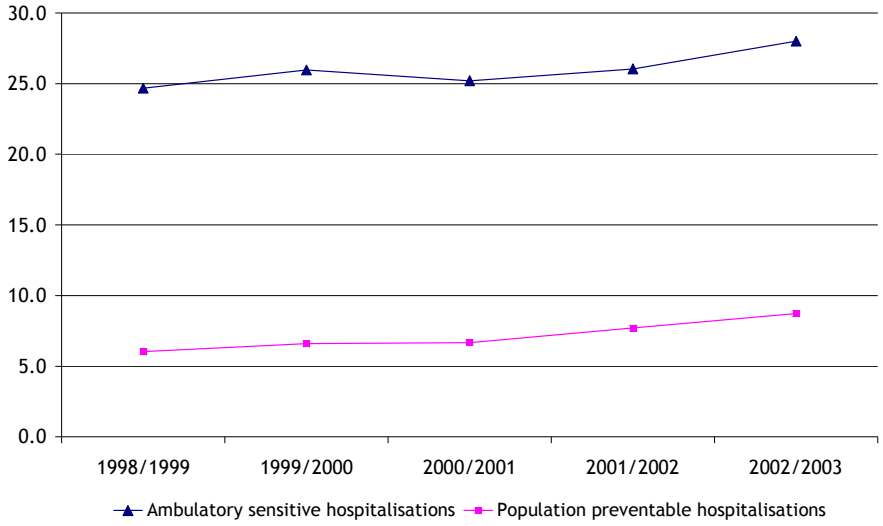
In the West Coast DHB region the discharge rates for ambulatory sensitive hospitalisations were consistently higher than the rates for population preventable hospitalisations (Figure 75), in line with the national trend over the same period (Ministry of Health 2003g).

Ambulatory Sensitive Hospitalisations

The national trend for ambulatory sensitive hospitalisations from 1988/89 to 1998/99 has increased at a rate of approximately 3% per year (Ministry of Health 2003c). However, since 1998/99, the years shown in Figure 75, the rate has remained relatively stable. Ambulatory sensitive hospitalisations for West Coast DHB appear as though they are continuing to increase over the period (Figure 75).

The most likely reasons stated for this rise were changes in incentives to refer patients for admission, a rise in the prevalence in chronic conditions and barriers to accessing primary health care.

Figure 75. Standardised Discharge Rates (per 1,000) for Ambulatory Sensitive Hospitalisations, compared with Population Preventable Hospitalisations in the West Coast DHB Region 1998/99 to 2002/03



Source: NMDS public hospital data, maintained by NZHIS. Time period covered - 12 months to 30 June of each year. Data for 2002/03 was extracted from the NMDS on 6 January 2004.

Notes:
1 *The standardised discharge rate is the standardised discharge ratio multiplied by the overall rate for all New Zealand.*
3 *Data has been filtered to exclude non-medical/surgical/maternity and non-inpatient/daypatient events.*
4 *Data excludes cases directly purchased by ACC, and Maternity AR-DRGs. Surgical procedures defined using ICD10 codes.*
5 *Discharges are for people from each DHB region of domicile.*

Differences by Gender and Deprivation

The Health and Independence Report (Ministry of Health 2003c, p131) noted that the national rate of ambulatory sensitive hospitalisations for those living in the most deprived quintiles, was generally twice that of those living in the least deprived quintile when measured for the years 1998 to 2000.

In the West Coast DHB region, ambulatory sensitive hospitalisations pattern altered from the national trend in that those in quintile 1 had a higher rate of hospitalisation than those in quintile 2. This pattern was seen in all non-tertiary DHB regions in the South Island other than Southland. Ambulatory sensitive hospitalisations were generally shown to increase with higher levels of area deprivation (Table 204). The standardised discharge rates for West Coast DHB were among the highest in the South Island, which may be explained by reduced access to primary health services in the region. The rates for both genders increased sharply from the highest two quintiles to the next two and again between quintiles 4 and 5. Males had consistently higher rates than females in all but the third quintile (Table 204).

Table 204. Ambulatory Sensitive Hospitalisations for West Coast DHB Region by NZDep Quintile and Gender for 2000/01 to 2002/03

NZDep Quintile	Standardised Discharge Rates per 1,000	
	Female	Male
1	20.8	31.0
2	17.8	20.9
3	31.4	30.2
4	22.9	27.2
5	41.0	45.2

Source: NMDS public hospital data, maintained by NZHIS.
Notes:
1 *Time period covered - 12 months to 30 June of each year.*
2 *Data is filtered to include only medical/ surgical/maternity, inpatient and daypatient cases.*
3 *Discharges are for people from each DHB region of domicile.*
4 *Standardised discharge rate is the standardised discharge ratio multiplied by the overall rate for all New Zealand.*

Differences by Ethnicity

Table 205 shows that the rate of ambulatory sensitive hospitalisations for Mäori increased in the final year to be similar with the total ethnicities' rate.

Table 205. Ambulatory Sensitive Hospitalisations for West Coast DHB Region by Ethnicity for 2000/01 to 2002/03

Ethnicity	Standardised Discharge Rates per 1,000				
	1998/99	1999/00	2000/01	2001/02	2002/03
Mäori	24.9	21.0	24.3	21.6	28.6
Other	24.6	26.6	25.4	26.5	28.0
Pacific People	33.4	-	-	-	-
Total	**24.7**	**26.0**	**25.2**	**26.0**	**28.0**

Source: NMDS public hospital data, maintained by NZHIS.
Notes:
1 *Time period covered - 12 months to 30 June of each year.*
2 *Data is filtered to include only medical/surgical/maternity, inpatient and daypatient cases.*
3 *Discharges are for people from each DHB region of domicile.*
4 *Standardised discharge rate is the standardised discharge ratio multiplied by the overall rate for all New Zealand.*

Population Preventable Hospitalisations

The national trend for population preventable hospitalisations have increased steadily since 1995/96 at a rate of between 2% and 3% per year (Ministry of Health 2003c). Standardised discharge rates for West Coast DHB showed a similar trend to that nationally, but at an even greater rate of increase (Figure 75). However, it must be remembered that the actual number of discharges for the West Coast DHB are low and the rates are therefore easily affected.

Overall, the rate of population preventable hospitalisations nationally had been noted as lower than for ambulatory sensitive hospitalisations (Ministry of Health 2003c, p129). The same pattern was observed in the West Coast population preventable hospitalisation standardised discharge rates (Table 206).

Differences by Gender and Deprivation

The population preventable hospitalisation rates for the West Coast DHB demonstrate a similar disparity between highest and lowest deprivation level (Table 206) as for ambulatory sensitive hospitalisations (Table 204) rates by deprivation and gender. Males in the most deprived quintile had more than twice likelihood of population preventable hospitalisations than those in the least deprived quintile. Women in the most deprived quintile had a 30% greater risk. Men in the most deprived quintile had almost twice the risk of population preventable hospitalisation as women in the most deprived quintile.

Table 206. Population Preventable Hospitalisations for West Coast DHB Region by NZDep Quintile and Gender for 1998/99 to 2002/03

NZDep Quintile	Standardised discharge rates per 1,000	
	Female	Male
1	6.4	6.8
2	4.2	5.8
3	7.2	9.2
4	7.9	9.3
5	8.3	15.1

Source: NMDS public hospital data, maintained by NZHIS.
Notes:
1 *Time period covered - 12 months to 30 June of each year.*
2 *Data is filtered to include only medical/surgical/maternity, inpatient and daypatient cases.*
3 *Discharges are for people from each DHB region of domicile.*
4 *Standardised discharge rate is the standardised discharge ratio multiplied by the overall rate for all New Zealand.*

Differences by Ethnicity

Table 207 shows that the rate of population preventable hospitalisations increased more markedly for Mäori compared with other ethnic groups. The rate more than doubled for Mäori over the five years, compared with an overall increase of 45% for the total West Coast DHB rates. However, Mäori have relatively low admission numbers.

Table 207. Population Preventable Hospitalisations for West Coast DHB Region by Ethnicity for 2000/01 to 2002/03

Ethnicity	Standardised discharge rates per 1,000				
	1998/99	1999/00	2000/01	2001/02	2002/03
Mäori	4.9	6.5	7.9	12.1	11.5
Other	6.1	6.6	6.6	7.4	8.6
Pacific People	-	-	-	-	-
Total	**6.0**	**6.6**	**6.7**	**7.7**	**8.7**

Source: NMDS public hospital data, maintained by NZHIS.
Notes:
1 Time period covered - 12 months to 30 June of each year.
2 Data is filtered to include only medical/surgical/maternity, inpatient and daypatient cases.
3 Discharges are for people from each DHB region of domicile.
4 Standardised discharge rate is the standardised discharge ratio multiplied by the overall rate for all New Zealand.

SECTION 4: ENVIRONMENT AND HEALTH

PUBLIC HEALTH

The following chapter contains information from Vern Newcombe (Health Protection Officer) and Cheryl Brunton (Medical Officer of Health), Community and Public Health, Greymouth (20 July 2004).

Natural Hazards

The West Coast is affected by all types of natural hazard, except active volcanoes. Natural hazards in the region are not mutually exclusive, and often more than one hazard occurs during significant events. Flooding is the most common hazard as all the main settlements are on river flood plains. Rainfall induced landslides are also a major and frequent event resulting in damage and disruption to the transport network. Earthquakes have the potential to cause the most serious damage during a single event. Flooding, landslides, earthquakes, snow avalanches, lightening strikes and hailstorms have all been recorded as causing loss of life on the West Coast. Most of these deaths were associated with flooding and landslides. The West Coast Regional Council Natural Hazards Review identifies natural hazards on the West Coast in more detail.

Health Protection staff from Community and Public Health's (CPH) Greymouth office have been part of the response teams to control the aftermath of such events. Staff have response capabilities and are part of emergency management with a relationship with local authorities. The Medical Officer of Health (West Coast) is a member of the Co-ordinating Executive Group for emergency planning and management on the west Coast. CPH staff are also aware of the local authority response plans and have contributed to the draft West Coast Civil Defence Emergency Plan.

* Contact Vijay Narayan, Senior Resource Planner/CDEMO at West Coast Regional Council (WCRC) for a copy of the draft Civil Defence Emergency Plan if needed. The Natural Hazards Review is available at www.wcrc.govt.nz.

Food Safety

Food safety issues are responded to by public health staff as they arise. There are few large food manufacturing companies on the West Coast and no significant issues have arisen in the recent past.

Drinking Water

The quality of drinking water supplies on the West Coast is highly variable and there are some unsatisfactory and unsafe supplies in each of the three TLA districts.

There are a number of small communities on the West Coast that have no local authority provided community water supply:

- there are many small private community-owned supplies that are untreated and uncontrolled. Most have no person responsible for them and are classed as risky supplies. One was recently brought to our notice through a water-borne disease outbreak. On investigation it was found to be open to contamination from stock effluent, and this is likely to be the case in many other locations as well
- there are also some local authority-owned supplies that are not of a satisfactory standard. Many of them either show evidence of faecal contamination, or are open to such contamination
- some rural stock water supplies are being used by farmers for drinking water. These supplies are unfit for human consumption
- there are no fluoridated water supplies on the West Coast.

By the end of 2005 all territorial local authorities on the West Coast will be required (by the new Local Government Act) to have completed assessments of water and sanitary services (AWSS) their districts. This includes documentation of all drinking water supplies, whether or not they are Council-owned. This information should be available in time for the next iteration of the West Coast District Health Board's health needs assessment.

More information on specific water supplies (by TLA area, or individual supply) can be obtained from ESR's Water Information New Zealand database. This includes the results of water testing and the

classifications for each registered supply (source and reticulation). The Buller, Grey and Westland District 2004 Long Term Council Community Plans also contain more detail about water supply issues within each district.

Shellfish Water

There are a number of mussel beds along the West Coast that are open to contamination. Sampling done in the past have shown that this tends to happen where shellfish beds are close to river mouths where both sewage and stock effluent can gain access to the waterway. Peak contamination levels occur after heavy rainfall.

The Arahura mussel beds have been polluted for a number of years due to dairy farm waste gaining access to the river. These beds are at the river mouth. This problem was identified when members of the local iwi complained of gastroenteritis symptoms whenever they ate shellfish from the beds. CPH carried out an investigation along with the West Coast Regional Council and found the shellfish beds were consistently contaminated and the source of the pollution was stock effluent, not human waste.

* More detail about the Arahura mussel bed contamination is contained in a May 2002 report from the WCRC, "Impact Investigation into Faecal Contamination of the Arahura Mussel Beds: A Surface Water Quality Investigation of Waterways from the Arahura to Hokitika Rivers".

The shellfish beds between Greymouth and Karamea have consistently shown high levels of biotoxin over the last four years. These high levels have necessitated the closure of the beds and a warning to the public not to consume them. The previous closure lasted 12 months and covered the coast from Greymouth to Karamea. The present closure affects only the coastal area from Westport to Karamea and has been in force for 18 months and shows no sign of improving. The particular biotoxin involved, yessotoxin, is classified under the diarrhetic shellfish poisoning (DSP) group. While consumption of affected shellfish may cause diarrhoea, the main toxic effects of yessotoxin are thought to be longer term effects on the heart and liver.

Hazardous Substances and Facilities

Controlled Pesticides/Poisons

There are seven premises on the West Coast licensed for the sale of poisons. 1080 is the deadly poison most often used on the West Coast, though cyanide-based compounds are also in use for pest control. The West Coast Regional Council and Department of Conservation use 1080 for possum control and between them carry out almost all the use of controlled pesticides on the West Coast. Aerial drops of 1080 cause some anger amongst some local people who are strongly opposed to its use. This has been highlighted in the last two years by some incidents where the protesters have ripped down warning signs and sabotaged airstrips. The Medical Officer of Health and Health Protection staff of CPH are involved in the process for granting consent to use controlled vertebrate poisons like 1080 and cyanide on the West Coast, in order to minimise any risks to public health from poisoning operations. They also have a role in investigating incidents during poisoning operations and responding to public complaints about possible health risks.

Poisonings

CPH Greymouth operates a local surveillance system for poisonings. The Grey Hospital Accident and Emergency Department provides monthly data returns on cases of poisoning (deliberate and accidental) to CPH. This data is forwarded (in anonymised form) to ESR as part of the national Chemical Injury Surveillance Programme. Where necessary, cases of poisoning may be followed up by health protection staff or public health nurses. In 2003, the highest age-specific rates for accidental poisonings on the West Coast were among 0-4 year olds, and almost all poisonings in this age group were due to ingestion of therapeutic substances. ESR also collates data extracted from the National Poisons Centre and New Zealand Health Information Service data on hospitalisations for poisonings. In 2003, the West Coast had the highest rates nationally for poisonings in both NZHIS (333.7 per 100,000 population) and NPC (760 per 100,00 population) datasets. Data from the Coronial Services Office for the years 2001-2003 on deaths from poisoning showed that the West Coast had the highest mortality rates in New Zealand (13.2/100,000 in 2001 and 19.8 in 2002, 2003 data is incomplete as yet). Of the 11 deaths from poisoning on the West Coast between 2001-2003, four were due to deliberate cyanide ingestion (during the same time period there were only four other deaths from cyanide ingestion in the whole of New Zealand). The remaining deaths were due to ethanol (4), or inhalation of carbon monoxide/hydrocarbon (3).

* Further details can be obtained from ESR's annual report on National Chemical Injury Surveillance, 2003. CPH has only recently had access (via ESR) to coronial data on deaths from poisoning and we are still in the process of looking at it.

Contaminated Sites

There are numerous old sawmill sites around the West Coast where timber treatment chemicals (mainly copper, chrome and arsenic, and at some sites pentachlorophenols) have contaminated the soils. The Regional Council has a responsibility for these sites and maintains a register. Most of them are in isolated areas and pose no immediate risk to people.

There are two old gasworks sites where housing has been built and there has been a need for some remedial work to safeguard the health of residents. One is in Westport and the Buller District Council are in the process of carrying out site remediation. Community and Public Health have been involved in this and the Medical Officer of Health has issued guidelines for monitoring blood lead levels in children living in the affected properties. The other site is the former Hokitika gas works, and at this stage, the Westland District Council is still investigating the nature and extent of contamination.

Chemical Incidents

These are dealt with by public health staff has they happen. In the last two years there have been three incidents, all involving chemical spillage from trucks. CPH has a chemical incident response plan and is a member of the local Hazardous Substances Transport Liaison Committee. All three recent incidents were the result of carelessness and could have been avoided. There were no chemical injuries involved in any of these incidents though there was a potential for this.

Waste Management

The disposal of hazardous waste on the West Coast is a long-standing problem as there is designated facility or location for this. All three district councils and the Regional Council have indicated their intention to develop a regional waste management strategy (including hazardous waste). Even this deadline is met met, there will still be significant issues in implementing such a strategy and it is likely to be some time before a safe designated facility to deal with hazardous waste is operational.

As with water supplies, the adequacy of sewage treatment and disposal on the Coast is highly variable. District councils are now required (see above) to carry out a comprehensive assessment of these issues as part of their AWSS. With the Ministry of Health Sanitary Works Subsidy Scheme now in operation there is an incentive for district councils to look at improving their sewage treatment or installing treatment plants where these don't currently exist. As at mid-2004, Greymouth and Reefton have both been granted subsidies to upgrade their sewage treatment. Blackball and Westport are in the process of applying for subsidy and the intention to upgrade other community sewage schemes has been signalled in all three district councils' LTCCPs.

* For more detail about specific waste management issues in each of the three districts see the Buller, Grey and Westland District Council LTCCPs.

Air Quality

Monitoring of air quality is the responsibility of the Regional Council. Monitoring has been carried out at Westport, Reefton, Runanga, Greymouth and Hokitika over the period 2001-2003. Air pollution in West Coast towns in winter results mainly from domestic solid fuel burning. Westport and Reefton have similar concentrations of PM_{10} and both towns have had levels of contaminants at times that exceed national guidelines. However, the maximum measured concentrations in West Coast towns are still only about a quarter of the maximum 24-hour concentrations measured in Christchurch. Exposure to elevated PM_{10} concentrations constitutes the largest health risk for West Coast residents compared to other pollutants. It has recently been estimated that in the five towns where air quality is monitored by the Regional Council, between five and eight deaths per year may be attributable to PM_{10} exposure.

* See State of the Environment Report: West Coast Ambient Air Quality, May 2004, West Coast Regional Council, for more details if needed. The mortality estimates in the report are subject to high levels of uncertainty.

Noise Pollution

There are no major new noise problems on the West Coast. There are still some on-going problems with environmental noise from the milk powder factory in Hokitika but this is gradually being addressed.

Radiation

No current problems.

Communicable Diseases

The West Coast region continues to experience high rates of notified enteric diseases, in particular, cryptosporidiosis, giardiasis and yersiniosis. There were 182 cases of all notifiable infectious diseases in 2003 and 264 in 2002. During 2002, there was a Coast-wide outbreak of pertussis (whooping cough) that contributed to the higher number of notifiable diseases in that year. There was also an outbreak of meningococcal meningitis (Type C) at Dobson School which necessitated vaccination of all pupils. In 2003, there were 12 documented outbreaks in the region. Five of these were outbreaks of campylobacteriosis, three of giardiasis and two of acute gastroenteritis. In December 2003 and January 2004 there was an outbreak of a highly infectious measles-like disease in Karamea affecting at least 26 children. Laboratory testing ruled out measles as a cause, but no other virus was identified.

* Although national notifiable disease data is available from ESR by region, CPH can also provide this data for the West Coast region (by TLA district if required) as either raw data or in tabular or graphical formats if that would be helpful.

Immunisation

There is not, as yet, readily available regional immunisation coverage data for the West Coast. The pertussis outbreak in 2003 revealed not only that vaccination coverage was suboptimal but also that school and early childhood centre immunisation registers (required under the Immunisation Regulations, 1995) were not sufficiently complete or accurate to use as the basis for health protection action. As a result, in 2003 CPH commissioned an evaluation of these registers. This evaluation covered all primary schools and early childhood centres in the region. All but one school maintained a register, but the register was fully inclusive of all enrolled pupils in only about half. All schools did some kind of follow up of parents when immunisation information was not provided when first requested. Only 16/19 Early childhood centres maintained a register and only nine were inclusive of all enrolled children. Details of immunisation status were frequently missing or incomplete. The evaluation report made a number of recommendations to improve the accuracy and completeness of these registers.

* A copy of this report (Jessica Brady. An Evaluation of Immunisation Registers at Schools and Early Childhood Centres on the West Coast, July 2003, Community and Public Health, Greymouth) is available from CPH Greymouth if more detail required.

Geomapping

CPH has the capacity to geomap most of its routinely collected public health data and can also produce NZDep maps for the West Coast region, its three districts and larger settlements.

* If this would be helpful, please let us know. Chris Ambrose is our information systems analyst and he is based in our Christchurch office.

APPENDICES

APPENDIX 1: SOCIAL DISADVANTAGE AND DEPRIVATION

Socioeconomic deprivation as an important determinant of health provides one approach to conceptualising and measuring the broader construct of socioeconomic position. It is used as a measure of economic hardship on a scale of 1 to 10 (1 being the least deprived and 10 being the most deprived). Socioeconomic deprivation refers to a state of social and economic disadvantage relative to the society in which an individual or group belongs (Health Research Council 2004). By examining what percentage of people fall into each of the deciles, we are able to see how they differ from the general population.

NZDep is one measure of deprivation. It is a relative measure, and refers to the **average** level of deprivation of people living in an area at a particular point in time, **relative** to the whole of New Zealand. However, it cannot be assumed that an individual residing in that area has that level of deprivation. Areas are often not homogenous in terms of the socioeconomic status of the inhabitants. The more areas are aggregated, the more detail is lost in terms of variation in deprivation. This is particularly so in areas of less economic segregation, and smaller populations.

NZDep2001 is an updated version of the NZDep91 and NZDep96 indexes of deprivation for small areas. The index combines nine census variables for the 2001 census, which reflect aspects of material and social deprivation. NZDep2001 provides a deprivation score for each meshblock in New Zealand. Meshblocks are geographical units defined by Statistics New Zealand, containing a median of approximately 90 people in 2001 (Department of Public Health 2002).

A value of 10 indicates that the meshblock is in the most deprived 10% of areas in New Zealand, according to the NZDep 2001 scores. NZDep2001 deprivation scores apply to areas rather than individual people.

Table 208 provides an overview of the census data combined in NZDep2001 (calculated as proportions for each small area).

Table 208. Dimensions assessed and the Variables used in NZDep2001

Dimension of Deprivation	Variable*
Income Benefit	People aged 18-59 receiving a means tested benefit
Employment	People aged 18-59 unemployed
Income	People living in equivalised** households with income below an income threshold
Communication	People with no access to a telephone
Transport	People with no access to a car
Support	People aged <60 living in a single parent family
Qualifications	People aged 18-59 without any qualifications
Living Space	People living in equivalised* households below a bedroom occupancy threshold
Owned Home	People not living in own home

** proportions in small areas, in order of decreasing weight in the index*
*** equivalisation refers to methods used to control for household composition*

APPENDIX 2: CANCER AND CARDIOVASCULAR DISEASES - METHODOLOGY

Information from the 2002/2003 New Zealand Health Survey

The data in this report is derived from the DHB snapshot datacubes, from the 2002/03 New Zealand Health Survey (NZHS) and stratified by gender and ethnicity. The 2002/03 NZHS is part of the New Zealand Health Monitor (Ministry of Health 2002), a programme of population health surveys used by the Ministry of Health to monitor the health of New Zealanders. The results include the prevalence of major chronic diseases and risk factors, the use of a range of health services, and self-reported health status (SF-36).

Following the format set in the DHB snapshot datacubes, age-standardised rates (using the WHO world population as the standard population) have been presented in all tables.

Analyses are presented by prioritised ethnicity (Mäori and non-Mäori), for people aged 15 years and older. 95% confidence intervals (CIs) are presented alongside the rates.

The burden of cardiovascular disease (CVD) in the Otago population is analysed by comparing the prevalences of two main subcategories of cardiovascular disease, heart disease and stroke, to that of New Zealand. Heart disease includes heart attack, angina, abnormal heart rhythm and heart failure.

The burden of all cancer in the Otago population is analysed by comparing the prevalence of all cancer to that of New Zealand.

Cancer

Direct age standardised rates are calculated for gender, ethnicity and deprivation groups, using the WHO world population as the standard population. The following life cycle stages are applied:

- Infants and children 0 – 14 years
- Youth 15 – 24 years
- Young adults 25 – 44 years
- Middle age adults 45 – 64 years
- Older adults 65 + years

Rates by life cycle stages and gender are also included in Appendix 3 and Appendix 4.

The Mortality, Hospitalisation and Registration data are drawn from the relevant NZHIS data sets. Hospitals submit discharge files to NZHIS on a regular basis. Data for cancer hospitalisation reports the principal diagnosis, ie the principal condition for which the patient was admitted to hospital. Cancer registration data are sourced from the national cancer register of malignant disease cases that have been diagnosed in New Zealand. In addition, screening data are sourced from the National Screening Unit.

Cardiovascular Diseases

Age standardised mortality and hospitalisation rates are calculated for the most recent 2-year periods (calendar year) for which data are available (2000 to 2001 for mortality, 2002 to 2003 for hospitalisation). Mortality and hospitalisation data are drawn from the relevant NZHIS datasets. Hospitals submit discharge files to NZHIS on a regular basis. Data for cardiovascular hospitalisation reports the principal diagnosis, ie the principal condition for which the patient was admitted to hospital. 95% confidence intervals (CIs) are presented within the charts of ethnic and gender specific rates. Confidence intervals or limits are used to give a range of values within which there is a degree of certainty that the true value lies.

Cancer and Cardiovascular Diseases

95% confidence intervals (CIs) are presented within the charts of ethnic and gender specific rates. Confidence intervals or limits are used to give a range of values within which there is a degree of certainty that the true value lies. The most common confidence interval that is used is the 95% confidence interval. The 95% confidence interval gives a range of values within which there is a 95% chance that the true value lies.

Variation by socioeconomic status is ascertained through the NZDep2001 census-based area index of deprivation. The NZDep2001 score measures the level of deprivation in the area in which a person lives. Results of the NZDep2001 analysis are presented by quintiles: quintile 1 represents the least deprived, and quintile 5 the most deprived.

APPENDIX 3: CANCER

Mortality

Table 209. Age-Standardised All Cancer Mortality Rates (per 100,000) by Life Cycle Stage and Gender, West Coast, South Island and New Zealand, 20000 to 2001

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	0	3	4
	Female	32	3	4
15-24 Years	Male	0	8	8
	Female	0	1	6
25-44 Years	Male	9	17	21
	Female	9	25	29
45-64 Years	Male	273	241	233
	Female	235	226	225
65+ Years	Male	1718	1480	1505
	Female	742	852	852

Source: New Zealand Health Information Service.

Table 210. Age-Standardised Lung Cancer Mortality Rates (per 100,000) by Life Cycle Stage and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	0	0	0
	Female	0	0	0
15-24 Years	Male	0	0	0
	Female	0	0	0
25-44 Years	Male	0	1	2
	Female	0	0	2
45-64 Years	Male	39	53	51
	Female	26	29	41
65+ Years	Male	391	332	315
	Female	195	145	149

Source: New Zealand Health Information Service.

Hospitalisations

Table 211. Age-Standardised All Cancer Hospitalisation Rates (per 100,000) by Life Cycle Stage and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	308	174	147
	Female	342	180	141
15-24 Years	Male	213	133	133
	Female	436	114	98
25-44 Years	Male	628	230	210
	Female	258	277	271
45-64 Years	Male	1,387	1,265	1,151
	Female	1,153	1,246	1,249
65+ Years	Male	5,723	5,034	5,213
	Female	3,428	2,876	3,068

Source: New Zealand Health Information Service.

Table 212. Age-Standardised Lung Cancer Hospitalisation Rates (per 100,000) by Life Cycle Stage and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	0	0	1
	Female	0	1	1
15-24 Years	Male	0	0	0
	Female	0	2	1
25-44 Years	Male	9	4	4
	Female	0	6	6
45-64 Years	Male	214	92	85
	Female	154	72	79
65+ Years	Male	718	398	352
	Female	285	183	189

Source: New Zealand Health Information Service.

Table 213. Age-Standardised Female Breast Cancer Hospitalisation Rates (per 100,000) by Life Cycle Stage, West Coast, South Island and New Zealand, 2002 to 2003

Age Group	West Coast	South Island	New Zealand
0-14 Years	0	0	0
15-24 Years	0	1	2
25-44 Years	37	53	59
45-64 Years	278	235	238
65+ Years	289	267	289

Source: New Zealand Health Information Service.

Table 214. Age-Standardised Cervical Cancer Hospitalisation Rates (per 100,000) by Life Cycle Stage, West Coast, South Island and New Zealand, 2002 to 2003

Age Group	West Coast	South Island	New Zealand
0-14 Years	0	0	0
15-24 Years	0	1	2
25-44 Years	0	21	19
45-64 Years	0	25	32
65+ Years	24	24	27

Source: New Zealand Health Information Service.

Table 215. Age-Standardised Melanoma Hospitalisation Rates (per 100,000) by Life Cycle Stage and Gender, West Coast, South Island and New Zealand, 2002 to 2003

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	0	0	0
	Female	0	0	0
15-24 Years	Male	0	4	5
	Female	0	5	6
25-44 Years	Male	23	16	17
	Female	10	16	14
45-64 Years	Male	15	27	38
	Female	26	29	41
65+ Years	Male	47	61	91
	Female	236	113	157

Source: New Zealand Health Information Service.

Registrations

Table 216. Age-Standardised All Cancer Registration Rates (per 100,000) by Life Cycle Stage and Gender, West Coast, South Island and New Zealand, 2000

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	27	21	23
	Female	126	18	16
15-24 Years	Male	138	37	29
	Female	0	16	32
25-44 Years	Male	103	87	93
	Female	252	158	166
45-64 Years	Male	767	715	709
	Female	778	767	752
65+ Years	Male	2,806	3,141	3,093
	Female	1,421	1,695	1,626

Source: New Zealand Health Information Service.

Table 217. Age-Standardised Lung Cancer Registration Rates (per 100,000) by Life Cycle Stage and Gender, West Coast, South Island and New Zealand, 2000

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	0	0	0
	Female	0	0	0
15-24 Years	Male	0	0	0
	Female	0	0	1
25-44 Years	Male	0	2	2
	Female	0	2	3
45-64 Years	Male	0	72	66
	Female	26	40	51
65+ Years	Male	362	376	353
	Female	164	182	174

Source: New Zealand Health Information Service.

Table 218. Age-Standardised Female Breast Cancer Registration Rates (per 100,000) by Life Cycle Stage, West Coast, South Island and New Zealand, 2000 to 2001

Age Group	West Coast	South Island	New Zealand
0-14 Years	0	0	0
15-24 Years	0	2	2
25-44 Years	42	47	56
45-64 Years	294	301	298
65+ Years	203	296	332

Source: New Zealand Health Information Service.

Table 219. Age-Standardised Cervical Cancer Registration Rates (per 100,000) by Life Cycle Stage, West Coast, South Island and New Zealand, 2000 to 2001

Age Group	West Coast	South Island	New Zealand
0-14 Years	0	0	0
15-24 Years	0	2	1
25-44 Years	0	15	17
45-64 Years	15	12	14
65+ Years	48	18	18

Source: New Zealand Health Information Service.

Table 220. Age-Standardised Melanoma Registration Rates (per 100,000) by Life Cycle Stage, West Coast, South Island and New Zealand, 2000 to 2001

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	0	0	0
	Female	0	0	0
15-24 Years	Male	36	5	4
	Female	0	8	8
25-44 Years	Male	45	24	26
	Female	68	39	33
45-64 Years	Male	66	76	86
	Female	73	76	84
65+ Years	Male	108	189	212
	Female	134	114	133

Source: New Zealand Health Information Service.

Summary of Indicators for Cancer

Data presented here are a summary of indicator at DHB level, which have been sourced from *An Indication of New Zealanders' Health* (Ministry of Health publication).

Table 221. Rates: Lung Cancer, Melanoma, Breast Cancer and Cervical Cancer, 2000

Age Group	Category	All New Zealand	Canterbury	Nelson Marlborough	Otago	South Canterbury	Southland	West Coast
Adults (25-64 years)	Lung cancer (incidence)	24.6	18.1	20.9	38.5	27.2	26	-
	Lung cancer (mortality)	19.2	14.1	18.1	24.8	18.1	13.6	-
	Melanoma (incidence)	47.6	44.7	65.3	46.8	49.5	13.8	77.8
	Melanoma (mortality)	5.5	6.1	-	-	-	-	-
	Breast cancer (incidence)	148.6	170.3	135.4	135.3	117.6	116.4	148.1
	Breast cancer (mortality)	29.2	31.9	28.3	31.4	-	29	-
	Cervical cancer (incidence)	16.3	11	-	11	-	-	-
	Cervical cancer (mortality)	3.9	5.1	-	-	-	-	-
Adults (65+ years)	Lung cancer (incidence)	237.2	267.4	161.3	274.4	234.9	257.8	259.1
	Lung cancer (mortality)	222.6	244.4	170.8	182.7	215.1	257.9	282
	Melanoma (incidence)	143.7	128.2	126.3	137.4	235	51.5	-
	Melanoma (mortality)	29.5	30.3	-	28.1	-	-	-
	Breast cancer (incidence)	310	321.3	349.6	202.4	243.8	283.7	250.6
	Breast cancer (mortality)	117.1	117.6	181.7	84.1	-	110.1	-
	Cervical cancer (incidence)	18.1	23.1	-	-	-	-	-
	Cervical cancer (mortality)	9.6	-	-	-	-	-	-

Source: New Zealand Health Information Service.
*Notes: *Rates not calculated if less than 5.*

Table 222. Standardised Mortality Ratios (SMR)/Standardised Incidence Ratios (SIR): Lung Cancer, Melanoma, Breast Cancer and Cervical Cancer, 2000

Outcomes	Indicator	Canterbury				
		Ratio	95% CI		99% CI	
Adults (25–64 years)	Lung cancer (incidence), 2000	73.9	53.3	99.9	47.8	108.7
	Lung cancer (mortality), 2000	74.0	50.9	103.9	45.0	114.2
	Melanoma (incidence), 2000	93.7	76.4	113.7	71.5	120.4
	Melanoma (mortality), 2000	110.0	60.1	184.6	48.8	211.1
	Breast cancer (incidence), 2000	114.0	98.7	130.9	94.3	136.4
	Breast cancer (mortality), 2000	110.2	78.0	151.2	69.5	165.2
	Cervical cancer (incidence), 2000	65.4	33.8	114.3	26.8	131.7
	Cervical cancer (mortality), 2000	128.9	47.1	280.5	32.4	337.0
Adults (65+ years)	Lung cancer (incidence), 2000	116.0	98.5	135.6	93.5	142.0
	Lung cancer (mortality), 2000	113.4	95.8	133.2	90.7	139.7
	Melanoma (incidence), 2000	92.6	73.0	115.7	67.6	123.4
	Melanoma (mortality), 2000	106.7	64.2	166.7	54.1	187.6
	Breast cancer (incidence), 2000	108.6	89.3	130.7	83.9	138.1
	Breast cancer (mortality), 2000	111.1	81.7	147.8	73.8	160.2
	Cervical cancer (incidence), 2000	148.3	63.9	292.2	47.2	344.9
	Cervical cancer (mortality), 2000	92.3	18.6	269.7	9.4	338.9

Source: New Zealand Health Information Service.

Outcomes	Indicator	Nelson Marlborough				
		Ratio	95% CI		99% CI	
Adults (25–64 years)	Lung cancer (incidence), 2000	84.8	47.4	139.9	38.9	159.4
	Lung cancer (mortality), 2000	93.7	49.9	160.3	40.1	184.0
	Melanoma (incidence), 2000	135.2	98.2	181.5	88.4	197.2
	Melanoma (mortality), 2000	102.7	27.6	262.8	16.4	324.1
	Breast cancer (incidence), 2000	92.6	68.5	122.4	62.1	132.5
	Breast cancer (mortality), 2000	96.3	46.1	177.2	35.6	206.3
	Cervical cancer (incidence), 2000	57.2	11.5	167.2	5.8	210.0
	Cervical cancer (mortality), 2000	0.0	0.0	0.0	0.0	0.0
Adults (65+ years)	Lung cancer (incidence), 2000	**62.4**	40.8	91.5	35.4	101.5
	Lung cancer (mortality), 2000	72.7	48.7	104.5	42.6	115.4
	Melanoma (incidence), 2000	86.6	54.3	131.2	46.4	146.6
	Melanoma (mortality), 2000	73.2	19.7	187.3	11.7	231.0
	Breast cancer (incidence), 2000	110.9	76.4	155.8	67.5	171.1
	Breast cancer (mortality), 2000	155.6	93.7	243.1	78.8	273.6
	Cervical cancer (incidence), 2000	126.5	14.2	456.9	4.9	589.2
	Cervical cancer (mortality), 2000	0.0	0.0	0.0	0.0	0.0

Source: New Zealand Health Information Service.

Outcomes	Indicator	Otago				
		Ratio	95% CI		99% CI	
Adults (25–64 years)	Lung cancer (incidence), 2000	**157.2**	110.7	216.7	98.5	236.9
	Lung cancer (mortality), 2000	130.0	83.2	193.4	71.7	215.3
	Melanoma (incidence), 2000	97.0	69.9	131.1	62.7	142.7
	Melanoma (mortality), 2000	38.7	4.3	139.6	1.5	180.0
	Breast cancer (incidence), 2000	92.2	71.1	117.5	65.4	125.9
	Breast cancer (mortality), 2000	108.6	60.8	179.2	49.8	204.1
	Cervical cancer (incidence), 2000	71.2	22.9	166.1	14.9	201.9
	Cervical cancer (mortality), 2000	108.0	12.1	389.9	4.1	502.7
Adults (65+ years)	Lung cancer (incidence), 2000	118.3	92.0	149.7	84.8	160.2
	Lung cancer (mortality), 2000	85.7	63.2	113.7	57.2	123.1
	Melanoma (incidence), 2000	97.3	67.7	135.3	60.1	148.2
	Melanoma (mortality), 2000	90.7	36.3	186.8	26.0	222.3
	Breast cancer (incidence), 2000	67.6	45.6	96.5	40.0	106.5
	Breast cancer (mortality), 2000	92.1	53.6	147.5	44.6	167.0
	Cervical cancer (incidence), 2000	85.3	9.6	307.8	3.3	396.9
	Cervical cancer (mortality), 2000	141.0	15.8	509.0	5.4	656.4

Source: New Zealand Health Information Service.

Outcomes	Indicator	South Canterbury				
		Ratio	95% CI		99% CI	
Adults (25–64 years)	Lung cancer (incidence), 2000	111.6	50.9	211.9	38.5	248.3
	Lung cancer (mortality), 2000	94.6	34.5	205.8	23.8	247.2
	Melanoma (incidence), 2000	112.3	64.1	182.3	52.9	207.0
	Melanoma (mortality), 2000	57.5	0.8	319.7	0.0	429.2
	Breast cancer (incidence), 2000	80.4	48.4	125.6	40.7	141.3
	Breast cancer (mortality), 2000	43.5	4.9	156.9	1.7	202.4
	Cervical cancer (incidence), 2000	0.0	0.0	0.0	0.0	0.0
	Cervical cancer (mortality), 2000	163.5	2.1	909.8	0.0	1221.5
Adults (65+ years)	Lung cancer (incidence), 2000	97.2	60.1	148.5	51.1	166.4
	Lung cancer (mortality), 2000	96.5	58.9	149.1	49.9	167.4
	Melanoma (incidence), 2000	158.0	97.8	241.6	83.2	270.6
	Melanoma (mortality), 2000	35.0	0.5	194.6	0.0	261.3
	Breast cancer (incidence), 2000	87.3	47.7	146.5	38.7	167.5
	Breast cancer (mortality), 2000	15.1	0.2	84.1	0.0	112.9
	Cervical cancer (incidence), 2000	0.0	0.0	0.0	0.0	0.0
	Cervical cancer (mortality), 2000	196.3	2.6	1091.9	0.0	1466.1

Source: New Zealand Health Information Service.

Outcomes	Indicator	Southland				
		Ratio	95% CI		99% CI	
Adults (25–64 years)	Lung cancer (incidence), 2000	105.4	58.9	173.9	48.3	198.0
	Lung cancer (mortality), 2000	71.5	30.8	140.8	22.7	166.2
	Melanoma (incidence), 2000	**29.7**	12.8	58.5	9.4	69.0
	Melanoma (mortality), 2000	0.0	0.0	0.0	0.0	0.0
	Breast cancer (incidence), 2000	78.2	53.8	109.8	47.6	120.6
	Breast cancer (mortality), 2000	96.6	41.6	190.3	30.7	224.6
	Cervical cancer (incidence), 2000	89.9	24.2	230.2	14.4	283.8
	Cervical cancer (mortality), 2000	179.4	20.1	647.7	6.9	835.2
Adults (65+ years)	Lung cancer (incidence), 2000	107.9	74.3	151.6	65.6	166.5
	Lung cancer (mortality), 2000	113.3	78.0	159.1	68.9	174.8
	Melanoma (incidence), 2000	**37.5**	15.0	77.2	10.7	91.8
	Melanoma (mortality), 2000	50.6	5.7	182.7	1.9	235.6
	Breast cancer (incidence), 2000	97.5	61.1	147.7	52.2	165.1
	Breast cancer (mortality), 2000	97.6	44.6	185.4	33.7	217.2
	Cervical cancer (incidence), 2000	165.4	18.6	597.0	6.3	769.8
	Cervical cancer (mortality), 2000	418.7	84.2	1223.5	42.7	1537.1

Source: New Zealand Health Information Service.

Outcomes	Indicator	West Coast				
		Ratio	95% CI		99% CI	
Adults (25–64 years)	Lung cancer (incidence), 2000	22.2	0.3	123.5	0.0	165.8
	Lung cancer (mortality), 2000	84.4	17.0	246.5	8.6	309.7
	Melanoma (incidence), 2000	145.7	75.2	254.6	59.7	293.5
	Melanoma (mortality), 2000	100.4	1.3	558.4	0.0	749.7
	Breast cancer (incidence), 2000	100.3	53.4	171.5	42.9	196.9
	Breast cancer (mortality), 2000	39.4	0.5	219.4	0.0	294.6
	Cervical cancer (incidence), 2000	0.0	0.0	0.0	0.0	0.0
	Cervical cancer (mortality), 2000	0.0	0.0	0.0	0.0	0.0
Adults (65+ years)	Lung cancer (incidence), 2000	112.2	56.0	200.8	43.8	232.7
	Lung cancer (mortality), 2000	128.6	66.4	224.6	52.7	259.0
	Melanoma (incidence), 2000	50.4	10.1	147.4	5.1	185.2
	Melanoma (mortality), 2000	158.9	17.8	573.7	6.1	739.7
	Breast cancer (incidence), 2000	74.2	23.9	173.1	15.5	210.4
	Breast cancer (mortality), 2000	109.2	21.9	319.0	11.1	400.8
	Cervical cancer (incidence), 2000	0.0	0.0	0.0	0.0	0.0
	Cervical cancer (mortality), 2000	0.0	0.0	0.0	0.0	0.0

Source: New Zealand Health Information Service.
Notes:

1. *Standardised Mortality Ratios (SMR) and Standardised Incidence Ratios (SIR) are calculated by comparing actual numbers of deaths or events to expected numbers, adjusting for age and gender. The expected number of deaths or events is taken from the number of deaths or events in the New Zealand population (the reference population). The SMR/SIR of the reference population is always 100, a value of lower than 100 means that fewer deaths than expected occurred in the local population after adjusting for differences in age and gender; more than 100 means that there have been more deaths than expected.*
2. *Confidence intervals or limits are used to give a range of values within which there is a degree of certainly that the true value lies. The most common confidence interval that is used is the 95% confidence interval. The 95% confidence interval gives a range of values within which there is a 95% chance that the true value lies.*
3. *Rates in bold indicate that the DHB is significantly different from the overall national rate at the 95% CI (blue bold - above the national level, orange bold - below the national level).*
4. *Shaded cells indicate that the DHB region is significantly different from the overall national rate at the 99% CI (blue shading - above the national level, orange shading - below the national level).*

APPENDIX 4: CARDIOVASCULAR DISEASES

Mortality

Table 223. Age-Standardised Cardiovascular Disease Mortality Rates (per 100,000), by Life Cycle and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Age Group	Gender	West Coast	South Island	New Zealand
0-14 Years	Male	0	1	2
	Female	0	1	1
15-24 Years	Male	27	4	4
	Female	0	2	2
25-44 Years	Male	0	22	25
	Female	10	8	12
45-64 Years	Male	274	189	210
	Female	56	76	92
65+ Years	Male	2,497	2,187	2,163
	Female	1,536	1,523	1,500

Source: New Zealand Health Information Service.

Table 224. Age-Standardised Ischaemic Heart Disease, Acute Myocardial Infarction and Stroke Mortality Rates (per 100,000), by Age and Gender, West Coast, South Island and New Zealand, 2000 to 2001

Age Group	Gender	West Coast	South Island	New Zealand
Ischaemic Heart Disease				
0-14 Years	Male	0	0	0
	Female	0	0	0
15-24 Years	Male	0	0	0
	Female	0	0	0
25-44 Years	Male	0	12	13
	Female	0	1	3
45-64 Years	Male	197	127	144
	Female	56	43	47
65+ Years	Male	1,541	1,329	1,306
	Female	764	770	758
Acute Myocardial Infarction				
0-14 Years	Male	0	0	0
	Female	0	0	0
15-24 Years	Male	0	0	0
	Female	0	0	0
25-44 Years	Male	0	7	6
	Female	0	1	1
45-64 Years	Male	143	74	73
	Female	41	26	27
65+ Years	Male	763	747	684
	Female	421	415	395
Stroke				
0-14 Years	Male	0	0	0
	Female	0	0	0
15-24 Years	Male	0	0	0
	Female	0	1	0
25-44 Years	Male	0	3	4
	Female	10	4	4

Age Group	Gender	West Coast	South Island	New Zealand
45-64 Years	Male	38	29	27
	Female	0	22	24
65+ Years	Male	309	433	447
	Female	364	440	430

Source: New Zealand Health Information Service.

Summary of Indicators Cardiovascular Disease

Data presented here are a summary of indicator at DHB level, which have been sourced from *An Indication of New Zealanders' Health* (Ministry of Health publication).

Table 225. Rates: Ischaemic Heart Disease and Stroke, 2000

Age Group	Category	All New Zealand	Canterbury	Nelson Marlborough	Otago	South Canterbury	Southland	West Coast
Adults (25-64 years)	Ischaemic heart disease (mortality)	44.8	30.5	48.9	32.7	21.3	61.9	49.3
Adults (65+ years)	Ischaemic heart disease (mortality)	979.9	928	1143.9	1114.8	911.5	1289.9	778.3
	Stroke (mortality)	453.2	462	481.3	536	348	504.6	322.8

Source: New Zealand Health Information Service.
*Notes: *Rates not calculated if less than 5.*

Table 226. Standardised Mortality Ratios (SMR)/Standardised Incidence Ratios (SIR): Ischaemic Heart Disease and Stroke, 2000

Outcomes	Indicator	Canterbury				
		Ratio	95% CI		99% CI	
Adults (25-64 years)	Ischaemic heart disease (mortality), 2000	**68.3**	53.3	86.2	49.2	92.1
Adults (65+ years)	Ischaemic heart disease (mortality), 2000	95.5	88.1	103.3	85.9	105.8
	Stroke (mortality), 2000	102.3	91.4	114.1	88.2	118.0

Source: New Zealand Health Information Service.

Outcomes	Indicator	Nelson Marlborough				
		Ratio	95% CI		99% CI	
Adults (25-64 years)	Ischaemic heart disease (mortality), 2000	108.1	75.3	150.3	66.8	164.7
Adults (65+ years)	Ischaemic heart disease (mortality), 2000	**118.9**	104.1	135.2	99.7	140.5
	Stroke (mortality), 2000	108.6	88.4	131.9	82.7	139.6

Source: New Zealand Health Information Service.

Outcomes	Indicator	Otago				
		Ratio	95% CI		99% CI	
Adults (25-64 years)	Ischaemic heart disease (mortality), 2000	72.0	48.9	102.2	43.0	112.5
Adults (65+ years)	Ischaemic heart disease (mortality), 2000	**113.6**	101.5	126.7	98.0	131.0
	Stroke (mortality), 2000	**118.6**	101.2	138.2	96.1	144.6

Source: New Zealand Health Information Service.

Outcomes	Indicator	South Canterbury				
		Ratio	95% CI		99% CI	
Adults (25-64 years)	Ischaemic heart disease (mortality), 2000	**47.7**	19.1	98.3	13.7	117.0
Adults (65+ years)	Ischaemic heart disease (mortality), 2000	93.5	75.7	114.1	70.7	121.0
	Stroke (mortality), 2000	76.7	54.3	105.3	48.4	115.0

Source: New Zealand Health Information Service.

Outcomes	Indicator	Southland				
		Ratio	95% CI		99% CI	
Adults (25–64 years)	Ischaemic heart disease (mortality), 2000	135.9	95.2	188.2	84.6	206.0
Adults (65+ years)	Ischaemic heart disease (mortality), 2000	**131.5**	113.2	152.0	107.9	158.6
	Stroke (mortality), 2000	109.0	85.4	137.0	78.9	146.3

Source: New Zealand Health Information Service.

Outcomes	Indicator	West Coast				
		Ratio	95% CI		99% CI	
Adults (25–64 years)	Ischaemic heart disease (mortality), 2000	107.5	49.0	204.0	37.1	239.1
Adults (65+ years)	Ischaemic heart disease (mortality), 2000	79.9	55.7	111.2	49.4	121.8
	Stroke (mortality), 2000	73.0	40.8	120.4	33.4	137.2

Source: New Zealand Health Information Service.
Notes:

1. *Standardised Mortality Ratios (SMR) and Standardised Incidence Ratios (SIR) are calculated by comparing actual numbers of deaths or events to expected numbers, adjusting for age and gender. The expected number of deaths or events is taken from the number of deaths or events in the New Zealand population (the reference population). The SMR/SIR of the reference population is always 100, a value of lower than 100 means that fewer deaths than expected occurred in the local population after adjusting for differences in age and gender; more than 100 means that there have been more deaths than expected.*
2. *Confidence intervals or limits are used to give a range of values within which there is a degree of certainly that the true value lies. The most common confidence interval that is used is the 95% confidence interval. The 95% confidence interval gives a range of values within which there is a 95% chance that the true value lies.*
3. *Rates in bold indicate that the DHB is significantly different from the overall national rate at the 95% CI (blue bold - above the national level, orange bold - below the national level).*
4. *Shaded cells indicate that the DHB region is significantly different from the overall national rate at the 99% CI (blue shading - above the national level, orange shading - below the national level).*

APPENDIX 5: INJURY

Table 227. Top Ten Causes of Injury Hospitalisations in West Coast DHB by Age Group, 2000 to 2002

Rank	Age Groups (Years)												
	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Overall
1	Fall 49%	Fall 55%	Fall 48%	Motor Vehicle Traffic 22%	Motor Vehicle Traffic 21%	Motor Vehicle Traffic 17%	Fall 20%	Fall 20%	Fall 32%	Fall 46%	Fall 68%	Fall 92%	Fall 35%
2	Poisoning 14%	Struck by or against 11%	Struck by or against 11%	Fall 20%	Fall 17%	Fall 13%	Self-inflicted 17%	Self-inflicted 15%	Over exertion 14%	Over exertion 17%	Struck by or against 9%	Struck by or against 3%	Motor Vehicle Traffic 10%
3	Fire/Hot object or substance 13%	Other Land Transport 9%	Natural/ Environmental 10%	Self-inflicted 14%	Cut/Pierce 13%	Cut/Pierce 11%	Struck by or against 10%	Motor Vehicle Traffic 10%	Motor Vehicle Traffic 12%	Motor Vehicle Traffic 10%	Self-inflicted 3%	Motor Vehicle Traffic 0%	Struck by or against 9%
4	Struck by or against 6%	Motor Vehicle Traffic 7%	Pedal Cyclist, other 8%	Cut/Pierce 8%	Struck by or against 12%	Struck by or against 9%	Motor Vehicle Traffic 9%	Cut/Pierce 10%	Cut/Pierce 11%	Struck by or against 7%	Other Land Transport 3%	Self-inflicted 0%	Self-inflicted 7%
5	Cut/Pierce 3%	Poisoning 5%	Other Land Transport 7%	Assault 8%	Assault 12%	Self-inflicted 6%	Cut/Pierce 6%	Struck by or against 9%	Struck by or against 7%	Other Land Transport 4%	Cut/Pierce 2%	Cut/Pierce 0%	Cut/Pierce 6%
6	Other Land Transport 2%	Pedal Cyclist, other 4%	Motor Vehicle Traffic 4%	Other Land Transport 7%	Self-inflicted 7%	Other Land Transport 6%	Over exertion 5%	Machinery 6%	Self-inflicted 3%	Natural/ Environmental 4%	Poisoning 2%	Over exertion 0%	Over exertion 5%
7	Drowning 2%	Fire/Hot object or substance 4%	Cut/Pierce 3%	Struck by or against 7%	Other Land Transport 6%	Assault 6%	Other Land Transport 5%	Natural/ Environmental 6%	Other Land Transport 3%	Cut/Pierce 2%	Motor Vehicle Traffic 2%	Other Land Transport 0%	Other Land Transport 5%
8	Pedestrian, other 2%	Over exertion 2%	Over exertion 2%	Over exertion 3%	Natural/ Environmental 4%	Over exertion 6%	Poisoning 4%	Poisoning 4%	Natural/ Environmental 3%	Poisoning 2%	Fire/Hot object or substance 2%	Poisoning 0%	Poisoning 3%
9	Self-inflicted 0%	Natural/ Environmental 2%	Poisoning 2%	Natural/ Environmental 2%	Over exertion 1%	Poisoning 3%	Assault 4%	Over exertion 3%	Machinery 3%	Self-inflicted 1%	Natural/ Environmental 1%	Natural/ Environmental 0%	Natural/ Environmental 3%
10	Over exertion 0%	Assault 0%	Self-inflicted 1%	Drowning 2%	Poisoning 1%	Fire/Hot object or substance 3%	Machinery 4%	Other Land Transport 2%	Poisoning 2%	Pedal Cyclist, other 1%	Machinery 1%	Assault 0%	Assault 3%
Injury causes outside top 10	0%	0%	1%	3%	2%	8%	7%	4%	5%	0%	0%	0%	7%
Other injury causes	8%	0%	0%	1%	1%	9%	7%	5%	3%	4%	2%	2%	4%
Unspecified	2%	2%	1%	2%	1%	4%	3%	5%	2%	2%	3%	3%	3%
Total	**63**	**56**	**89**	**88**	**82**	**141**	**168**	**124**	**95**	**84**	**91**	**61**	**1,142**

Source: IPRU June 2004. The data used in the production of this table is drawn from the morbidity (2000 to 2002) database, sourced from the New Zealand Health Information Service (NZHIS).

Notes: See notes for Table 126.

Table 228. Top Ten Causes of Injury Hospitalisations for South Island DHBs by Age Group, 2000 to 2002

Rank	Age Groups (Years)												
	0-4	**5-9**	**10-14**	**15-19**	**20-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65-74**	**75-84**	**85+**	**Overall**
1	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall
	42%	62%	44%	20%	20%	18%	20%	28%	41%	60%	77%	88%	42%
2	Poisoning	Struck by or against	Struck by or against	Motor Vehicle Traffic	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Over exertion	Over exertion	Over exertion	Over exertion	Motor Vehicle Traffic
	12%	7%	9%	18%	15%	15%	16%	12%	10%	9%	5%	3%	9%
3	Fire/Hot object or substance	Pedal Cyclist, other	Other Land Transport	Self-inflicted	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Self-inflicted
	8%	6%	9%	14%	15%	12%	10%	10%	9%	8%	5%	2%	8%
4	Struck by or against	Cut/Pierce	Pedal Cyclist, other	Cut/Pierce	Cut/Pierce	Cut/Pierce	Cut/Pierce	Cut/Pierce	Cut/Pierce	Cut/Pierce	Struck by or against	Struck by or against	Cut/Pierce
	5%	4%	8%	8%	9%	9%	9%	8%	5%	3%	2%	2%	6%
5	Cut/Pierce	Other Land Transport	Motor Vehicle Traffic	Struck by or against	Struck by or against	Struck by or against	Over exertion	Over exertion	Self-inflicted	Struck by or against	Natural/Environmental	Natural/Environmental	Struck by or against
	4%	4%	6%	8%	9%	8%	8%	7%	5%	3%	1%	0%	6%
6	Natural/ Environmental	Motor Vehicle Traffic	Cut/ Pierce	Other Land Transport	Assault	Over exertion	Other Land Transport	Other Land Transport	Struck by or against	Self-inflicted	Cut/Pierce	Poisoning	Over exertion
	4%	4%	6%	7%	8%	6%	6%	5%	5%	2%	1%	0%	5%
7	Motor Vehicle Traffic	Natural/ Environmental	Self-inflicted	Assault	Other Land Transport	Other Land Transport	Struck by or against	Struck by or against	Other Land Transport	Natural/Environmental	Poisoning	Fire/Hot object or substance	Other Land Transport
	3%	2%	4%	6%	6%	6%	6%	5%	4%	2%	1%	0%	4%
8	Suffocation	Fire/Hot object or substance	Natural/ Environmental	Pedal Cyclist, other	Over exertion	Assault	Assault	Machinery	Natural/Environmental	Other Land Transport	Self-inflicted	Suffocation	Assault
	2%	1%	2%	4%	3%	6%	5%	4%	4%	2%	1%	0%	3%
9	Assault	Poisoning	Overexertion	Poisoning	Poisoning	Machinery	Machinery	Natural/Environmental	Machinery	Poisoning	Other Land Transport	Cut/Pierce	Poisoning
	2%	1%	2%	3%	2%	3%	3%	4%	4%	2%	1%	0%	3%
10	Pedestrian, other	Pedestrian, other	Poisoning	Machinery	Pedal Cyclist, other	Natural/ Environmental	Natural/ Environmental	Assault	Poisoning	Machinery	Pedestrian, other	Other Land Transport	Pedal Cyclist, other
	2%	1%	2%	2%	2%	3%	3%	3%	2%	1%	0%	0%	2%
Injury causes outside top 10	4%	1%	5%	5%	7%	9%	8%	8%	5%	3%	2%	0%	7%
Other injury causes	10%	4%	2%	3%	2%	3%	4%	4%	4%	4%	2%	1%	3%
Unspecified	2%	1%	2%	2%	2%	2%	2%	1%	3%	2%	2%	2%	2%
Total	**1,568**	**1,769**	**1,736**	**2,553**	**2,275**	**3,566**	**3,188**	**2,525**	**1,854**	**2,085**	**3,496**	**2,469**	**29,084**

Source: IPRU June 2004. The data used in the production of this table is drawn from the morbidity (2000 to 2002) database, sourced from the New Zealand Health Information Service (NZHIS).

Notes: See notes for Table 126.

Table 229. Top Ten Causes of Injury Hospitalisation for All New Zealand DHBs by Age Group, 2000 to 2002

Rank	Age Groups (Years)												
	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Overall
1	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall
	39%	62%	45%	19%	19%	18%	20%	28%	41%	59%	77%	87%	40%
2	Poisoning	Cut/Pierce	Struck by or against	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Self-inflicted	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic
	10%	6%	9%	18%	15%	13%	13%	12%	11%	9%	5%	2%	10%
3	Fire/Hot object or substance	Struck by or against	Cut/Pierce	Self-inflicted	Self-inflicted	Self-inflicted	Motor Vehicle Traffic	Cut/Pierce	Cut/Pierce	Over exertion	Overexertion	Struck by or against	Cut/Pierce
	8%	6%	8%	11%	11%	12%	12%	10%	8%	7%	4%	2%	8%
4	Struck by or against	Pedal Cyclist, other	Pedal Cyclist, other	Cut/Pierce	Cut/Pierce	Cut/Pierce	Cut/Pierce	Self-inflicted	Over exertion	Cut/Pierce	Struck by or against	Over exertion	Self-inflicted
	6%	5%	8%	10%	11%	11%	11%	9%	7%	4%	2%	2%	6%
5	Cut/Pierce	Motor Vehicle Traffic	Other Land Transport	Struck by or against	Assault	Struck by or against	Assault	Over exertion	Struck by or against	Struck by or against	Poisoning	Poisoning	Struck by or against
	4%	4%	7%	8%	10%	8%	7%	5%	5%	3%	1%	1%	6%
6	Motor Vehicle Traffic	Other Land Transport	Motor Vehicle Traffic	Assault	Struck by or against	Assault	Struck by or against	Other Land Transport	Self-inflicted	Natural/ Environmental	Cut/Pierce	Natural/ Environmental	Assault
	4%	3%	6%	8%	8%	8%	6%	5%	4%	2%	1%	1%	4%
7	Natural/ Environmental	Natural/ Environmental	Self-inflicted	Other Land Transport	Other Land Transport	Other Land Transport	Over exertion	Struck by or against	Machinery	Self-inflicted	Natural/ Environmental	Cut/Pierce	Other Land Transport
	3%	2%	2%	6%	5%	5%	6%	5%	4%	2%	1%	0%	4%
8	Assault	Fire/Hot object or substance	Over exertion	Poisoning	Over exertion	Over exertion	Other Land Transport	Machinery	Natural/ Environmental	Poisoning	Self-inflicted	Fire/Hot object or substance	Overexertion
	2%	1%	2%	3%	3%	5%	5%	4%	4%	2%	1%	0%	4%
9	Pedal Cyclist, other	Poisoning	Assault	Pedal Cyclist, other	Poisoning	Machinery	Machinery	Natural/ Environmental	Other Land Transport	Other Land Transport	Other Land Transport	Other Land Transport	Poisoning
	2%	1%	2%	3%	3%	3%	4%	4%	3%	2%	1%	0%	3%
10	Pedestrian, other	Pedestrian, other	Natural/ Environmental	Over exertion	Machinery	Natural/ Environmental	Natural/ Environmental	Assault	Poisoning	Machinery	Fire/Hot object or substance	Self-inflicted	Natural/ Environmental
	2%	1%	2%	3%	2%	3%	3%	3%	3%	1%	1%	0%	2%
Injury causes outside top 10	5%	2%	4%	6%	7%	8%	8%	7%	6%	3%	2%	1%	7%
Other injury causes	12%	5%	3%	3%	3%	4%	4%	5%	5%	3%	2%	1%	4%
Unspecified	3%	1%	2%	2%	3%	2%	2%	2%	2%	3%	2%	2%	2%
Total	**8,961**	**10,609**	**9,847**	**10,928**	**9,838**	**16,402**	**14,345**	**10,348**	**7,615**	**7,752**	**11,588**	**8,591**	**126,824**

Source: IPRU June 2004. The data used in the production of this table is drawn from the morbidity (2000 to 2002) database, sourced from the New Zealand Health Information Service (NZHIS).

Notes: See notes for Table 126.

Table 230. Top Ten Causes of Injury Fatalities for West Coast DHB by Age Group, 1996 to 2000

Rank	Age Groups (Years)										
	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Overall
1	Suffocation	Motor Vehicle Traffic	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Fall	Fall	Self-inflicted
	100%	73%	50%	58%	38%	57%	44%	56%	67%	60%	42%
2	Motor Vehicle Traffic	Self-inflicted	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic
	0%	9%	10%	15%	38%	14%	33%	22%	33%	20%	27%
3	Fall	Fire/Hot object or substance	Drowning	Drowning	Fall	Other Land Transport	Machinery	Fall	Self-inflicted	Suffocation	Fall
	0%	9%	10%	15%	13%	14%	11%	11%	0%	20%	8%
4	Drowning	Pedestrian, other	Suffocation	Assault	Drowning	Pedal Cyclist, other	Fire/Hot object or substance	Assault	Drowning	Drowning	Drowning
	0%	9%	10%	4%	0%	14%	11%	11%	0%	0%	6%
5	Self-inflicted	Fall	Assault	Suffocation	Suffocation	Suffocation	Fall	Drowning	Suffocation	Self-inflicted	Suffocation
	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	3%
6	Assault	Drowning	Fall	Fall	Assault	Assault	Drowning	Suffocation	Assault	Assault	Assault
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
7	Machinery	Suffocation	Machinery	Machinery	Machinery	Machinery	Suffocation	Machinery	Machinery	Machinery	Machinery
	0%	0%	0%	0%	13%	0%	0%	0%	0%	0%	2%
8	Fire/Hot object or substance	Assault	Fire/Hot object or substance	Fire/Hot object or substance	Fire/Hot object or substance	Fire/Hot object or substance	Assault	Fire/Hot object or substance	Fire/Hot object or substance	Fire/Hot object or substance	Fire/Hot object or substance
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
9	Pedestrian, other	Machinery	Pedestrian, other	Pedestrian, other	Pedestrian, other	Pedestrian, other	Pedestrian, other	Pedestrian, other	Pedestrian, other	Pedestrian, other	Pedestrian, other
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
10	Other Land Transport	Other Land Transport	Other Land Transport	Other Land Transport	Other Land Transport	Struck by or against	Other Land Transport	Other Land Transport	Other Land Transport	Other Land Transport	Other Land Transport
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Injury causes outside top 10	0%	0%	0%	8%	0%	0%	0%	0%	0%	0%	3%
Other injury causes	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Unspecified	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	1%
Total	**1**	**11**	**10**	**26**	**8**	**7**	**9**	**9**	**3**	**5**	**89**

Source: IPRU June 2004. The data used in the production of this table is drawn from the mortality (1996 to 2000) database, sourced from the New Zealand Health Information Service (NZHIS).

Notes: See notes for Table 130.

Table 231. Top Ten Causes of Injury Fatalities for South Island DHBs by Age Group, 1996 to 2000

Rank	Age Groups (Years)												
	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Overall
1	Drowning	Motor Vehicle Traffic	Motor Vehicle Traffic	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Fall	Fall	Self-inflicted
	27%	47%	25%	40%	47%	50%	52%	38%	42%	31%	49%	72%	35%
2	Suffocation	Fire/Hot object or substance	Self-inflicted	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic
	22%	20%	22%	38%	32%	26%	24%	23%	26%	31%	22%	6%	25%
3	Assault	Assault	Drowning	Drowning	Drowning	Other Transport	Fall	Drowning	Fall	Fall	Self-inflicted	Fire/Hot object or substance	Fall
	17%	17%	13%	4%	6%	4%	3%	6%	7%	20%	12%	3%	16%
4	Motor Vehicle Traffic	Other Land Transport	Suffocation	Assault	Assault	Drowning	Drowning	Other Transport	Other Transport	Struck by or against	Suffocation	Self-inflicted	Drowning
	15%	7%	13%	4%	2%	4%	3%	5%	6%	2%	3%	3%	4%
5	Fire/Hot object or substance	Other Transport	Natural/ Environmental	Other Land Transport	Poisoning	Assault	Assault	Other Land Transport	Drowning	Drowning	Fire/Hot object or substance	Suffocation	Assault
	7%	3%	6%	3%	2%	3%	3%	4%	4%	1%	3%	1%	3%
6	Other Land Transport	Pedestrian, other	Firearm	Poisoning	Machinery	Fall	Other Transport	Poisoning	Poisoning	Assault	Drowning	Poisoning	Other Transport
	5%	3%	6%	2%	2%	2%	2%	3%	3%	1%	1%	1%	2%
7	Struck by or against	Drowning	Other Transport	Other Transport	Fall	Poisoning	Fire/Hot object or substance	Fall	Assault	Other Transport	Assault	Pedestrian, other	Fire/Hot object or substance
	2%	0%	3%	1%	2%	2%	2%	3%	2%	1%	1%	1%	2%
8	Pedestrian, other	Suffocation	Fire/Hot object or substance	Pedestrian, other	Other Transport	Machinery	Poisoning	Assault	Fire/Hot object or substance	Fire/Hot object or substance	Poisoning	Cut/Pierce	Suffocation
	2%	0%	3%	2%	1%	2%	2%	2%	1%	1%	1%	1%	2%
9	Other Transport	Poisoning	Cut/Pierce	Fall	Suffocation	Fire/Hot object or substance	Suffocation	Suffocation	Other Land Transport	Suffocation	Other Land Transport	Natural/ Environmental	Poisoning
	0%	0%	3%	2%	1%	1%	1%	2%	1%	1%	1%	0%	2%
10	Poisoning	Fall	Pedal Cyclist, other	Fire/Hot object or substance	Pedestrian, other	Other Land Transport	Other Land Transport	Machinery	Natural/ Environmental	Other Land Transport	Struck by or against	Struck by or against	Other Land Transport
	0%	0%	0%	1%	1%	1%	1%	2%	1%	1%	1%	0%	2%
Injury causes outside top 10	1%	0%	3%	3%	3%	2%	3%	5%	3%	2%	2%	0%	4%
Other injury causes	0%	3%	3%	1%	1%	2%	0%	3%	2%	4%	2%	2%	2%
Unspecified	2%	0%	0%	0%	2%	1%	3%	3%	2%	1%	2%	7%	2%
Total	**41**	**30**	**32**	**179**	**190**	**359**	**269**	**176**	**158**	**153**	**188**	**201**	**100%**

Source: IPRU June 2004. The data used in the production of this table is drawn from the mortality (1996 to 2000) database, sourced from the New Zealand Health Information Service (NZHIS).

Notes: See notes for Table 130.

Table 232. Top Ten Causes of Injury Fatalities for All New Zealand DHBs by Age Group, 1996 to 2000

Rank	Age Groups (Years)												
	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Overall
1	Suffocation	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Self-inflicted	Motor Vehicle Traffic	Fall	Fall	Self-inflicted
	25%	54%	40%	47%	40%	42%	42%	39%	35%	32%	48%	73%	31%
2	Motor Vehicle Traffic	Fire/Hot object or substance	Self-inflicted	Self-inflicted	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic	Self-inflicted	Motor Vehicle Traffic	Motor Vehicle Traffic	Motor Vehicle Traffic
	25%	10%	21%	34%	36%	31%	28%	26%	29%	27%	22%	6%	30%
3	Drowning	Drowning	Drowning	Drowning	Drowning	Assault	Drowning	Drowning	Drowning	Fall	Self-inflicted	Self-inflicted	Fall
	18%	9%	9%	4%	6%	5%	5%	7%	7%	20%	13%	3%	14%
4	Assault	Assault	Suffocation	Assault	Assault	Drowning	Assault	Fall	Fall	Drowning	Fire/Hot object or substance	Fire/Hot object or substance	Drowning
	12%	9%	6%	3%	3%	5%	4%	5%	6%	3%	2%	2%	5%
5	Fire/Hot object or substance	Other Land Transport	Assault	Fall	Fall	Other Transport	Fall	Assault	Assault	Assault	Suffocation	Suffocation	Assault
	9%	5%	3%	2%	3%	3%	3%	3%	3%	2%	2%	2%	4%
6	Pedestrian, other	Pedestrian, other	Fire/Hot object or substance	Other Land Transport	Other Transport	Fall	Poisoning	Other Transport	Other Transport	Suffocation	Drowning	Assault	Suffocation
	3%	4%	3%	2%	2%	2%	3%	3%	3%	2%	1%	1%	2%
7	Struck by or against	Pedal Cyclist, other	Fall	Poisoning	Poisoning	Poisoning	Other Transport	Poisoning	Fire/Hot object or substance	Poisoning	Natural/ Environmental	Struck by or against	Other Transport
	2%	2%	3%	2%	1%	2%	3%	3%	2%	2%	1%	1%	2%
8	Other Land Transport	Suffocation	Other Land Transport	Pedestrian, other	Pedestrian, other	Fire/Hot object or substance	Other Land Transport	Other Land Transport	Poisoning	Fire/Hot object or substance	Pedestrian, other	Cut/Pierce	Poisoning
	1%	2%	2%	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%
9	Poisoning	Other Transport	Poisoning	Other Transport	Fire/Hot object or substance	Other Land Transport	Fire/Hot object or substance	Machinery	Natural/ Environmental	Other Transport	Struck by or against	Poisoning	Fire/Hot object or substance
	1%	2%	2%	1%	1%	1%	1%	1%	2%	1%	1%	1%	2%
10	Fall	Struck by or against	Pedestrian, other	Fire/Hot object or substance	Struck by or against	Machinery	Suffocation	Suffocation	Suffocation	Other Land Transport	Assault	Natural/ Environmental	Other Land Transport
	1%	1%	2%	1%	1%	1%	1%	1%	2%	1%	1%	1%	1%
Injury causes outside top 10	0%	1%	6%	2%	3%	3%	4%	5%	4%	3%	2%	1%	4%
Other injury causes	1%	1%	3%	1%	2%	2%	2%	2%	3%	4%	3%	4%	2%
Unspecified	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	7%	2%
Total	**298**	**111**	**177**	**829**	**877**	**1,604**	**1,139**	**807**	**592**	**601**	**719**	**708**	**8,462**

Source: IPRU June 2004. The data used in the production of this table is drawn from the mortality (1996 to 2000) database, sourced from the New Zealand Health Information Service (NZHIS).

Notes: See notes for Table 130.

GLOSSARY

Abuse of the Elderly	A single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person, including physical psychological pr sexual abuse, and neglect (Krug et al 2002)
Adult child[96]	A 'child in a family nucleus' who is aged less than 18 years and is employed full-time, or a 'child in a family nuclues' who is aged 18 years or over.
Ambulatory sensitive hospital admissions	Those potentially preventable by appropriate primary care (including outpatient services) and are often used as an indicator of access to and effectiveness of primary services (Ministry of Health 2004h). Ambulatory sensitive admissions of particular importance to children and young people include asthma, gastroenteritis, immunisation preventable diseases, ENT infections, rheumatic fever, dental conditions, ruptured appendix, cellulitis and failure to thrive
Assault[98]	Injury purposely inflicted by other persons, includes homicide
Avoidable hospitalisations	Those hospitalisations, which could be avoided by preventing the illness or accident that led to the admission, by better managing patients in the community and/or by increasing access to primary health care services. There are two recognised measures for identifying the probable cause of avoidable hospitalisations, which point to strategies that could be implemented to reduce the rates. Population preventable hospitalisations and ambulatory sensitive hospitalisations. Avoidable hospitalisation measures give an indication of the benefits currently being gained from the two service sectors (preventable primary/ambulatory services and the capacity of the population to benefit from an intervention). Those in lower socioeconomic groups tend to have higher avoidable hospitalisation rates than those in higher socioeconomic groups (Public Health Consultancy 2001a).
Body Mass Index (BMI)	Obesity is most commonly measured by Body Mass Index (BMI), defined as weight kg/height m2. The normal BMI range for adults is 18.5-24.9. Adults with a BMI of 25.0-29.9 are considered overweight, and those with a BMI of 30 or greater are considered obese. In the NNS 97 the BMI cutoff points for overweight and obesity for Maori and Pacific people were increased. A BMI of 32 or more was used to define obesity for Maori and Pacific people ((Ministry of Health 2003d). Measurement of BMI for children are based on the Cole et al's recommendations and are designed for population groups and not recommended for use with individuals. They are predicators of adult weight and correspond to BMI at age 18. Limitations of these measurements are noted in the National Children's Nutrition Survey 2002 (Parnell et al 2003)
Breastfeeding	Ministry of Health breastfeeding targets refer to the following breastfeeding definitions adopted by the Ministry of Health in 1999(Ministry of Health 2002c). **Exclusive** The infant has never had, to the mother's knowledge, any water, formula or other liquid or solid food. Only breast milk, from the breast or expressed, and prescribed medicines have been given from birth. **Fully** The infant has taken breast milk only and no other liquids or solids except a minimal amount of water or prescribed medicines, in the past 48 hours (matches WHO exclusive rate indicator) **Partial** The infant has taken some breast milk and some infant formula or other solid food in the past 48 hours.

[96] Statistics New Zealand (2001)

	Artificial — The infant has had no breast milk but has had alternative liquid such as infant formula, with or without solid food in the past 48 hours
Caught by/between	Unintentional injuries from being caught in or between objects
Child Abuse and Neglect	All forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power.
Child in a family nucleus	To be a 'child in a family nucleus' a person must have usual residence with at least one parent, and have no partner or child(ren) of their own living in the same household. Note that 'child(ren) in a family nucleus' can be a person of any age. Child(ren) in a family nucleus are divided into two subgroups: 'dependent child(ren)' and 'adult child(ren)'.
Chiropractors	Chiropractors are health workers who diagnose and treat patients whose health problems are associated with the body's muscular, nervous and skeletal systems, especially the spine (HWAC 2002)
Confidence Interval	Ninety-five percent confidence intervals were used to represent sampling error in the New Zealand Health Survey. There is a 95 percent probability that the confidence interval will enclose the 'true' value for New Zealand Adults. Ninety-five percent confidence intervals are presented for all descriptive New Zealand Health Survey results, either following the estimate in the text or as error bars in graphs. For example Health survey results in the text e.g.(88%; 87.3-89.6) should be read as follows: 88% is the Prevalence value (the percentage of the total adult population at a given time with the disease) and 87.3-89.6 is the 95% confidence interval of prevalence, an indication of the margin of error. (Public Health Intelligence 2004)
Couple	Two people who usually reside together and are legally married, or two people who are in a consensual union. (Statistics New Zealand 2001)
Crowding	The Canadian National Crowding Measure is used in this document. Crowded: Required number of bedrooms more than existing. Non Crowded: At least as many existing bedrooms as required. Not Available: Existing number of bedrooms is not known. (Statistics New Zealand)
Cut/Pierce	Unintentional injuries caused by cutting and piercing instruments or objects
Dental Hygienists	Those with formal qualifications in dental hygiene can apply for registration in one or more of the following additional scopes of dental hygiene practice (The scopes of practice will be posted on www.regboards.co.nz from 30 September 2004): • Orthodontic Procedures in Dental Hygiene Practice • Extra Oral Radiography • Intra Oral Radiography • Local Anaesthetics
Dental Therapists	Further information is available on www.regboards.co.nz. For dental therapy the following scopes of practice have been defined: • General Dental Therapy Practice • Radiography in Dental Therapy Practice

- Diagnostic Radiography in Dental Therapy Practice
- Stainless Steel Crowns in Dental Therapy Practice
- Pulpotomies in Dental Therapy Practice

Dependent child	A 'child in a family nucleus' who is aged less than 18 years and who is not employed full time. (Statistics New Zealand 2001)
Dietitians	Dietitians work with people to improve their health through nutrition
Dispensing Opticians	Dispensing opticians interpret prescriptions from ophthalmologists and optometrists for optical appliances
Drowning	Unintentional injury from submersion while engaged in sports or recreational activities, while swimming, in bathtub, or following water transport crash
Ethnicity	Ethnicity groupings in this report vary slightly depending on how they were reported in the original source data. This should be taken into account when comparing breakdowns by ethnicity in this report. Ethnicity (Ministry of Health 2004b) The classification of ethnic group was based on respondents indicating with which ethnic group or groups they identified. When only one ethnic group was given, that group was assigned. When two or more ethnic groups were given, a single ethnic group was assigned using the following priority rules: • If Mäori was one of the groups reported, the respondent was assigned to `Mäori'. • If any Pacific ethnic group was reported, the respondent was assigned to `Pacific'. • If any Asian ethnic group was reported, the respondent was assigned to `Asian'. • All other respondents were assigned to 'European/Other'. When possible, ethnic-specific estimates were calculated for Mäori, Pacific, Asian and European/Other ethnic groups. When Pacific and Asian ethnic groups were not represented in adequate numbers for reliable estimates they were combined with European/Other to give a non-Mäori ethnic group or suppressed. All ethnic-specific estimates included in the body of this report are age-standardised. Ethnicity[97] European Peoples: People who identify with a European ethnicity (eg New Zealand European, English, Dutch) with or without other ethnicities. Mäori: Mäori people are the tangata whenua (indigenous people) of New Zealand. A Mäori is a person who identifies with or feels they belong to the Mäori ethnic group. Pacific Peoples: Pacific peoples are the New Zealanders who identify with or feel they belong to one or more Pacific ethnicities. The seven largest ethnicities among Pacific peoples are Cook Island Mäori, Fijian, Niuean, Samoan, Tokolauan, Tongan and Tuvaluan peoples. Asian Peoples: People who identify with an Asian ethnicity (eg Chinese, Indian, Korean) with or without other ethnicities
Fall	Unintentional injury resulting from fall, e.g., from stairs, tripping, slipping, or from playground equipment
Fire/Hot Object or Substance	Unintentional injury caused by fire and flames, e.g., conflagration in private dwelling, ignition of clothing, or caused by hot substances or objects, caustic or corrosive material, or steam

[97] Statistics New Zealand website 17 November 2004.

Intimate Partners Violence	Behaviour within an intimate relationship that causes physical, sexual or psychological harm, including acts of physical aggression, sexual coercion, psychological abuse and controlling behaviours. The term covers violence by both current and former spouses and partners. Though women can be violent toward men in relationships, and violence exists in same-sex partnerships, the largest burden of intimate violence in inflicted by men against their female partners (Krug et al 2002)
Machinery	Unintentional injury caused by machinery
Mean DMFT Score at Year 8 (Form 2)	Numerator data are derived from the total number of permanent teeth of Year 8 children (12-13 years) that are decayed, missing (due to caries), or filled at the last dental examination before leaving the School Dental Service. Denominator data are derived from the total number of children examined in Year 8
Medical Laboratory Technologists	Medical Laboratory Technologists perform laboratory tests, interpret the results and in conjunction with specialist pathologists, offer clinical information to medical practitioners
Medical Radiation Technologists	Medical Radiation Technologists use radiation, magnetic fields and sound waves to diagnose and treat a range of clinical problems
Motor Vehicle – Traffic	Driver or passenger of a motorised transport vehicle involved in an incident on a public road. Divided into the subcategories Occupant, Motorcyclist, Pedestrian, Pedal Cyclist, and Other and Unspecified
Natural/Environmental	Unintentional injuries from natural and environmental factors, e.g., excessive heat, excessive cold, hunger, neglect, lightening, cataclysmic storms, floods, earth movements
New Zealand Social Capital Index (SoCIND)	A census area unit based measure of social capital and looks at associations between income, income inequalities and health. The SoCIND is scaled from –2 (deficit of social capital) to +2 (surplus of social capital), with 0 representing the mean
Occupational Therapists	Occupational Therapists help identify which activities are difficult for people because of factors affecting physical and mental abilities
Optometrists	Optometrists examine eyes and manufacture and supply glasses and other protective eyewear
Other Land Transport	Driver or passenger of land transport vehicles involved in incidents not occurring on public roads, e.g., farm vehicles, railway trains
Other Transport	Driver or passenger of non-land based vehicles, e.g., boats, aeroplanes
Overexertion	Unintentional injury from overexertion and strenuous movements e.g., lifting, pulling, pushing, excessive physical exercise
Parent	The mother, father (natural, step, adopted or foster) or 'person in a parent role' of a child in a family nucleus' (Statistics New Zealand 2001)
Pedal Cyclist, other[98]	Rider of cycle involved in an incident on or off public roads in which no motorised vehicles were involved, e.g., falling off bike due to overbalancing or cycle malfunction
Pedestrian, other	Any person involved in a crash on or off a public road who was not at the time of the incident riding in or on a motor vehicle, railway train, streetcar, animal-drawn or other vehicle, or on a pedal cycle or animal

Percentage of Children Caries Free at 5 Years	Numerator data are derived from the total number of children aged 5 years, whose deciduous teeth are caries free at commencement of School Dental Service care. Denominator data are derived from the total number of 5 year olds examined
Physiotherapists	Physiotherapists work to restore function and independence to those who have disabilities or problems caused by physical, psychological or other disorders
Podiatrists	Podiatrists prevent, diagnose and treat ailments, diseases, defects or disabilities of the lower limbs
Poisoning	Unintentional poisonings by drugs, medicinal substances, biologicals, gases or vapours
Population Preventable Hospitalisations	Used to measure the effectiveness of public health approaches to disease prevention (excluding accident prevention). They cover a range of conditions of particular relevance to adult health (e.g. oral, skin, lung and colorectal cancer, alcohol related conditions, ischaemic heart disease), although a limited number of these conditions (e.g. TB, HIV/AIDS, nutrition, dental) are also of relevance to children and young people. (Ministry of Health 2004h) Population preventable hospitalisations are potentially preventable through the provision of health promotion or disease prevention (eg prevention of lung cancer through smoking education or cessation programmes, but exclude hospitalisations preventable through injury prevention strategies (Ministry of Health 2003g).
Registered Psychologists	Registered psychologists, assess, diagnose and treat those with behavioural and mental health problems. They develop and implement individual and group therapy treatment plans
Registered Psychologists	Registered psychologists, assess, diagnose and treat those with behavioural and mental health problems. They develop and implement individual and group therapy treatment plans
Self-Inflicted	Injury resulting from intentional self-harm
Sexual Violence	Any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts top traffic, or otherwise directed, against a persons sexuality using coercion, by any person regardless of their relationship to the victim. This definition includes, rape, defined as physically forced or otherwise coerced penetration of the vulva or anus, using a penis, other body parts or an object (Krug et al 2002)
Standardised Mortality Rates and Ratios (SMRs)	To enable comparison of rates between ethnic groups with different age structures, mortality rates have been directly age standardised using the WHO world population as the reference population (WHO 2002). This direct standardisation adjusts for age variation between ethnic groups by multiplying the ethnic-specific five-year mortality rates into the WHO standard age distribution. Both standardised rates (per 100,000) and standardised rate ratios (SRRs) are presented in this report. The SRRs are a relative risk measure, and are calculated for Mäori and Pacific people compared to non-Mäori non-Pacific people. 95% confidence intervals for both rates and rate ratios are presented in the figures and tables. They are calculated as per Rothman and Greenland (1998) using the adjusted numbers of deaths by ethnic group. This calculation may slightly underestimate the 95% confidence intervals among Mäori and Pacific people. (Ajwani et al)

Struck By/Against[98]	Unintentional injury from being struck by falling object, or striking against, or being struck by objects or persons
Usual Health Provider	Usual health provider means having a usual health practitioner or service that the person usually first goes to see when unwell or injured
Workplace Violence	Violence committed in a place of employment (Krug et al 2002)
Youth Violence	Violence committed by or against individuals between the ages of 10 and 29 (Krug et al 2002)

[98] This category is based on the ICD-9 and ICD-10 Revised Frameworks of E-code Groupings provided by the National Centre for Injury Prevention and Control. Minor modifications have been made by the IPRU to enable the ICD-9 and ICD-10 frameworks to be comparable.

REFERENCES

Abbot M., Volberg R. (2000). Taking the Pulse on Gambling and Problem Gambling in New Zealand: A Report on Phase One of the 1999 National Prevalence Survey. Wellington: Department of Internal Affairs.

Abortion Supervisory Committee (2003). Report of the Abortion Supervisory Committee for 2003. Auckland: Abortion Supervisory Committee.

Adair VA. Dixon, RS. Moore, W. & Sutherland, CM. (2000). Ask Your Mother not to Make Yummy Sandwiches: Bullying in New Zealand Secondary Schools. New Zealand Journal of Educational Studies. 35(2).

Adamson S. (April 2003). Naturalistic Treatment Outcome Project (NTOP). Final Report to the Alcohol Advisory Council. Produced by the National Addiction Centre.

Adamson S.J. and Sellman J.D. (1998). The Pattern of Intravenous Drug Use and Associated Criminal Activity in Patients on a Methadone Treatment Waiting List. Drug and Alcohol Review 17:159-166.

Adolescent Health Research Group (2003a). A Profile of Student Health and Wellbeing. Auckland: The University of Auckland.

Adolescent Health Research Group (2003b). Canterbury Report: A Profile of Student Health and Wellbeing. Auckland, New Zealand: University of Auckland.

Adolescent Health Research Group (2003c). New Zealand Youth: A Profile of their Health and Wellbeing. Auckland, New Zealand: University of Auckland.

Adolescent Health Research Group (2003d). Otago Report: A Profile of Student Health and Wellbeing. Auckland, New Zealand: University of Auckland.

Adolescent Health Research Group (2003e). Southland Report: A Profile of Student Health and Wellbeing. Auckland, New Zealand. University of Auckland.

Adolescent Health Research Group (2003f). Tasman Report: A Profile of Student Health and Wellbeing. Auckland, New Zealand. University of Auckland.

Age Concern (2002). Age Concern Elder Abuse and Neglect Services: An Analysis of Referrals. Wellington, New Zealand Limited. Age Concern New Zealand Incorporated.

Aish H., Didsbury P., Creesey P., Grigor J., Gribben B. (2003). Primary Options for Acute Care: General Practitioners Using Their Skills to Manage 'Avoidable Admission' Patients in the Community. New Zealand Medical Journal. Vol 116 No 1169.

Ajwani S., Blakely T., Robson., Tobias M., Bonne M. (2003) Decades of Disparity: Ethnic Mortality Trends in New Zealand 1980-1999. Wellington: Ministry of Health.

Alcohol & Public Health Research Unit (1999). Advice for Purchasing Strategy on Public Health Issues – Health of Older Adults. Auckland: Alcohol and Public Health Research Unit

Alcohol Advisory Council of New Zealand, Ministry of Health (2001). The National Alcohol Strategy 2000-2003. Wellington: Alcohol Advisory Council of New Zealand, Ministry of Health.

Alcohol Drug Association New Zealand (May 2004). Treatment Works Week: Treatment Works Updated Statistics. Christchurch: Alcohol Drug Association.

American Academy of Paediatrics (1997). Breastfeeding and the Use of Human Milk. Pediatrics, 100.

American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders. (4th ed). Washington, DC: American Psychiatric Association.

Andrews G. (1991). The Tolkein Report: A Description of a Model Mental Health Service.

Atkin B. (1998). The Domestic Violence Act. New Zealand Law Journal. January.

Australia Department of Health & Ageing (2003). Incidence of Incontinence as a Factor in Admission to Aged Care Homes – executive summary electronically available from www.health.org.au

Australian Bureau of Statistics (2004) Musculoskeletal Conditions in Australia: a Snapshot. Available electronically at www.abs.gov.au/Ausstats

Backlund E., Sorlie P.D., Johnson N.J. (1996). The Shape of the Relationship between Income and Mortality in the United States: Evidence from the National Longitudinal Mortality Study. Ann Epidemiol;6(1).

Backlund E., Sorlie P.D., Johnson N.J. (1999). A Comparison of the Relationship of Education and Income with Mortality: The National Longitudinal Mortality Study. Soc Sci Med.

Badley E.M. and Wang P.P. (1998) Arthritis and the Ageing Population: Projections of Arthritis Prevalence in Canada 1991 to 2031. Journal of Rheumatology 25(1)

Balzar, R. Haimona, D. Henare, M. and Matchit, V. (1997). Maori Family Violence in Aotearoa. Wellington: Te Puni Kokiri.

Bathgate D., Birmingham B., Curates D., Romans S. (2001). The Views of Otago Urban and Rural General Practitioners on Mental Health Services. New Zealand Medical Journal 22 June.

Blakely T., Woodward A. (2000). Counterfactual Challenges to Social Epidemiology. Australasian Epidemiologist.

Bradshaw J. (1972). In G McLaghlan (ed) Problems and Progress in Medical Care. Oxford: Oxford University Press.

Breen H., Zimmerman, M. (2002). Rapid Onset of Pathological Gambling in Machine Gamblers. Journal of Gambling Studies 18(1).

Budd S. (2002). Screening may Help Reveal Child Abuse. New Zealand GP. 2 October 2002.

Campbell A.J., Reinken J., McCosh L. (1985). Incontinence in the Elderly: Prevalence and Prognosis. Age & Ageing; 14(2)

Canterbury DHB (2004). Health Needs Assessment for Canterbury DHB. Christchurch: Canterbury DHB.

Centre for Disease Control (2002). Prevalence of Self-Reported Arthritis or Chronic Joint Symptoms Among Adults – United States, 2001. Morbidity & Mortality Weekly Report, 51(42), available electronically.

Chalmers D. and Stephenson S. *(citation needed)* Sport and recreational Injury in New Zealand: Development of a method for monitoring incidence from hospital discharge data by David Chalmers and Shaun Stephenson, Injury Prevention Research Unit, Department of Preventive and Social Medicine, Dunedin School of Medicine, University of Otago, Dunedin.

Chan R., Dickson J., Malhotra S. (2001). DSS Expenditure Trends and Service Utilisation. Wellington: Ministry of Health.

Child, Youth & Family (2001). An Inter Agency Guide to Breaking the Cycle; Let's Stop Child Abuse Together. Revised from 1998 Version. Wellington: Child, Youth and Family.

Clark F. (2003). Partner Abuse: Recognition and Management in General Practice. New Zealand Family Physician. 30(4).

Clarkson J. and Kenny G. (2001). Child Abuse in New Zealand. New Ethicals Journal. March.

Clinical Training Agency (2001). The Health Workforce: A Training Programme Analysis. Wellington: Ministry of Health.

Coleman V.E. (1994). Lesbian Battering: The Relationship between Personality and the Perpetration of Violence. Violence and Victims. 9 (2): 139-151.

Commonwealth Fund (2004). First Report and Recommendations of the Commonwealth Fund's International Working Group on Quality Indicators.

Cresswell J. (1998). Domestic Violence Special Report: The Extent of the Problem. Community Nurse. 4 (10).

Crews G. (September 2004). AMP Home Affordability Report Quarterly Survey, Department of Finance, Banking and Property, Massey University: September 2004 Volume 14, Number 3.

Cutress T.W. and Hunter P.B.V. (1991). Past, Present and Future Trends in Dental Health and the Dental System in New Zealand. New Zealand Dental Journal 88.

da Silva A., et al (2003). Young Maternal Age and Preterm Birth. Paediatric and Perinatal Epidemiology Vol 17.

Davey J.A. (2003). The Context and Implications of Population Ageing in New Zealand - A Background Paper for the Periodic Report Group 2003. (available electronically from www.treasury.govt.nz). Wellington: NZ Treasury

Davies B. (1997). Equity and Efficiency in Community Care: from Muddle to Model and Model to ?. Canterbury UK: Personal Social Services Research Unit

Davis P., McLeod K., Ransom M., Ongley P. (1997). The New Zealand Socioeconomic Index of Occupational Status (NZSEI). Wellington: Statistics New Zealand.

Department of Child, Youth and Family Services (2003). Department of Child, Youth and Family Services Annual Report: for the Year Ended 30 June 2003. Wellington, New Zealand.

Department of Health (2000). Good Practice in Continence Services. London:DoH

Department of Human Nutrition (2004). Annual Food Cost Survey. Downloaded from www.nutrition.otago.ac.nz on 15/09/04.

Department of Labour (1995). A Guide for Employers and Employees on Dealing with VIOLENCE at work: Information for Employers and Other People Who May be Exposed to Physical Assault, Verbal Abuse, Threats or Intimidation. Wellington, New Zealand. Department of Labour.

Department of Labour (2002). Aftermath: How the lives of fifteen ordinary New Zealanders Have Been Affected by Workplace Injury and Illness. Wellington, New Zealand: Department of labour.

Department of Preventive and Social Medicine, University of Otago (2004). Health Needs Analysis: Pacific People South Island. Dunedin: School of Medicine.

Department of Public Health (August 2002). NZDep2001 Index of Deprivation User's Manual. Wellington: School of Medicine and Health Sciences.

Department Of Social Welfare (1996). New Zealand Government Statement Policy on Family Violence. Wellington: Department of Social Welfare.

Desol C. and Margolin G. (2004). The Role of Family of Origin Violence in Mens' Marital Violence Perpetration. Clinical Psychology Review. 24(1).

Dharmalingam A., Pool I., Baxendine S., Sceats J. (2004). Trends and Patterns of Avoidable Hospitalisations in New Zealand: 1980-1997. New Zealand Medical Journal, Vol 117 No 1198.

Dickson N., Sporle A., RImene C., Paul C. (2000). Pregnancies among New Zealand Teenagers: Trends, current Status and International Comparisons. New Zealand Medical Journal 113.

Ding W. (2001). Pricing Analysis for Community Services. Unpublished. Wellington: MoH

Dixon G.S., Thomson W.M. and Kruger E.(1999). The West Coast Study 1: Self-Reported Dental Health and the Use of Dental Services. New Zealand Dental Journal 95.

Ecob R. and Davey Smith G. (1999). Income and Health: What is the Nature of the Relationship? Soc Sci Med;48.

Elden L. and Potsic W. (2002). Screening and Prevention of Hearing Loss in Children. Current Opinion in Paediatrics, 14.

Ellison-Loschmann L., King R., Pearce N. (2004). Regional Variation in Asthma Hospitalisations amongst Mäori and Non-Mäori. New Zealand Medical Journal, 117.

Evans J.R., Fletcher R.P., Wormald R.P.L. (2004). Causes of Visual Impairment in People Aged 75 Years and Older in Britain: an Add-on Study to the MRC Trial of Assessment and Management of Older People in the Community. British Journal of Ophthalmology; 88: 365-370

Everingham W. (2000). Dealing with Domestic Violence. Kai Tiaki: Nursing New Zealand. 6 (2).

Feldman J., Makuc D., Kleinman J., Cornoni-Huntley J. (1989). National Trends in Educational Differentials in Mortality. Am J Epidemiol.

Fenwick and Purdie (2000). The Sexual Activity of 654 Hawkes Bay Students. New Zealand Medical Journal, 460-463.

Fergusson D., Hong B., Horwood J., Jenson J., Travers P. (2001). Living Standards of Older New Zealanders: a Technical Account. Wellington: Ministry for Social Development.

Fergusson D.M. and Horwood L.J. (1998). Exposure to Interparental Violence in Childhood and Psychosocial Adjustments in Young Adulthood. Child Abuse and Neglect. 22(5).

Filakti H. and Fox J. (1995). Differences in Mortality by Housing Tenure and by Car Access from the OPCS Longitudinal Study. Population Trends, 81.

Fonda D., Benvenuti F., Castleden M. Cottenden A., O'Donnell P., Resnick N., Colling J., Trogi Rocha F. (1999). Management of Incontinence in Older People. In Abrams P, Khoury S, Wein AJ (eds) Incontinence – Proceedings of first WHO-sponsored Consultation on Incontinence, Monaco 1998: Health Publication Ltd.

Fox A. and Goldblatt P. (1982). Longitudinal Study 1971-1975: Sociodemographic Mortality Differences. London: Her Majesty's Stationary Office: Office of Population Censuses and Surveys.

Fuchs V. (1979). Economics, Health, and Ppost-industrial Society. Milbank Memorial Fund Quarterly;57.

Gerstein D.R., Volberg R.A., Harwood R. et al (1999). Gambling Impact and Behaviour Study: Report to the National Gambling Impact Study Commission. Chicago, IL: National Opinion Research Center.

Gibbs L.M.E. (1998). Dying from Heart Failure: Lessons from Palliative Care. British Medical Journal 317:961-962

Giles L.C., Cameron I.D., Crotty M. (2003). Disability in Older Australians: Projections for 2006 – 2031. Medical Journal of Australia; 179:130-133

Hamburger L.K. (1996). Intervention in Gay Male Intimate Violence requires Coordinated Efforts on Multiple Levels. In Renzetti C.M. and Miley C.H (Eds). Violence in Gay and Lesbian Domestic Partnerships. Harrington Park Press, Binghampton, New York.

Health Funding Authority (1998). The Health of the People in the South.

Health Funding Authority/Ministry of Health (?1998). Disability in New Zealand – Overview of the 1996/97 Surveys. Wellington: Health Funding Authority/ Ministry of Health.

Health Funding Authority (1999-2000a). Mäori Health Operating Group. Health Funding Authority Eight Health Gain Priority Areas for Mäori. Report Four: Immunisation.

Health Funding Authority (1999-2000b). Mäori Health Operating Group. Health Funding Authority Eight Health Gain Priority Areas for Mäori. Report Seven: Oral Health.

Health Funding Authority (1999-2000c). Mäori Health Operating Group. Health Funding Authority Eight Health Gain Priority Areas for Mäori. Report Three: Asthma.

Health Funding Authority (1999-2000d). Mäori Health Operating Group. Health Funding Authority Eight Health Gain Priority Areas for Mäori. Report Two: Diabetes.

Health Research Council (2002). Health Research Council of New Zealand Research Tender (MHRDS02). Evaluation of Mental Health/Primary Care Shared Services in New Zealand. Auckland: Health Research Council of New Zealand.

Health Research Council (2004). Research Portfolio Strategy: Determinants of Health. http://www.hrc.govt.nz (Accessed: June 2004).

Health Workforce Advisory Committee (2002). The New Zealand Health Workforce: A Stocktake of Issues and Capacity. Wellington: Health Workforce Advisory Committee.

Hollander M. and Chappell N. (2002). Synthesis Report – Final Report of the National Evaluation of the Cost-Effectiveness of Home Care. Victoria BC: Nat Eval Cost-Effec Home-Care (www.homecare study.com/reports).

Hopkins R.W, Kilik L., Day D.J.A., Rows C., Tseng H. (2004). Driving and Dementia in Ontario: A Quantitative Assessment of the Problem. Canadian Journal of Psychiatry, 49:7.

Housing New Zealand Corporation (2004). The New Zealand Housing Strategy - Building the Future: Towards a New Zealand Housing Strategy (A Discussion Document).

Howden-Chapman P. and Tobias M. (eds). (2000). Social Inequalities in Health: New Zealand, 1999. Wellington: Ministry of Health.

Howden-Chapman P., Green R., Martin J., O'Dea D., Fougere G., Kawachi I. (2002). Occasional Paper: Social Capital, Income and Health.

Hunskaar S., Arnold E.P., Burgio K., Duiokno A.C., Herzog A.R., Mallett V.T. (2000) Epidemiology and Natural History of Urinary Incontinence. International Urogynaecology Journal.

Injury Prevention Research Unit (2004). Injury Statistics Provided by IPRU for South Island DHB's.

International Agency for Research on Cancer (2001). Prevention Series.

Jamieson L.M. and Thomson W.M. (2002). Dental Health, Dental Neglect and Use of Services in an Adult Dunedin Population Sample. New Zealand Dental Journal 98: 4-8.

Jamieson L.M. and Thomson W.M. (2003). Dental Health of Chatham Islanders: An Investigation of the Oral Health of Chatham Island Residents. New Zealand Dental Journal 99, No.4.

Johnston G. and Teasdale A. (1999) Population Ageing and Health Spending: 50-year Projections. Occasional Paper No. 2. Wellington: MoH

Jones S. et al (1995). The Economic Costs of Alcohol-related Absenteeism and Reduced Productivity amongst the Working Population of New Zealand. Addiction, vol 90.

Kawachi I., Kennedy B.P., Lochner K., Prothrow-Stith D. (1997). Social Capital, Income Inequality, and Mortality. American Journal of Public Health; 87.

Kazantzuis N., Flett R.A., Long N.R., MacDonald C. and Millar M. (2000). Domestic Violence, Psychological Distress and Physical Illness among New Zealand Women: Results from a Community–Based Study. New Zealand Journal of Psychology. 29(2).

Kelly (2002). Childhood Gonorrhoea in Auckland. New Zealand Medical Journal. 115(1163).

Kelly M., Anderson J. and Dawson K. (1992). Working with Children Affected by Violence. In McMaster, K & Wells, A. (Eds). Innovative Approaches to Stopping Family Violence. Wellington, New Zealand. Steele Roberts Ltd.

Kerase (2004). Abuse of Elderly Takes Many Forms. New Zealand Doctor. 7 April, 2004.

Kitagawa E., Hauser P. (1973). Differential Mortality in the United States: A Study in Socioeconomic Epidemiology. Cambridge, MA: Harvard University Press.

Kramer M. (2003). The Epidemiology of Adverse Pregnancy Outcomes: An Overview. Journal of Nutrition 133.

Kriechbaum A.J. and Simons B. (1996). Elder Abuse in New Zealand: a Manawatu study. New Zealand Family Physician. 23(2).

Kuh D., Power C., Blane D., Bartley M. (1997). Social Pathways between Childhood and Adult Health. In: Kuh D., Ben-Shlomo Y., editors. A Life Course Approach to Chronic Disease Epidemiology. Oxford: Oxford University Press.

Land Transport Safety Authority (2001). Crash Facts: Alcohol December 2001. Wellington: Land Transport Safety Authority.

Lantz P., House J., Lepkowski J., Williams D., Mero R., Chen J. (1998). Socioeconomic Factors, Health Behaviours, and Mortality. JAMA;279.

Liberatos P., Link B., Kelsey J. (1988). The Measurement of Social Class in Epidemiology. Epidemiol Rev;10.

Lynch J., Davey Smith G., Kaplan G. (2000). Income Inequality and Mortality: Importance to Health of Individual Income, Psychosocial Environment, or Material Conditions. BMJ;320.

Lynch J., Kaplan G. (2000). Socioeconomic Position. In: Berkman L., Kawachi I., editors. Social Epidemiology. New York: Oxford University Press.

Mackenbach J., Kunst A., Groenhof F., Borgan J.-K., Costa G., Faggiano F., et al. (1999). Socioeconomic Inequalities in Mortality among Women and among Men: An International Study. Am J Public Health;89.

Martikainen P., Valkonen T. (1996). Mortality after Death of Spouse by Cause of Death. American Journal of Public Health;86.

McCarty C.A., Keeffe J.E., Taylor H.R. (1999). The Need for Cataract Surgery: Projections Based on Lens Opacity, Visual Acuity and Personal Concern. British Journal Ophthalmology; 83.

McDonough P., Duncan G., Williams D., House J. (1997). Income Dynamics and Adult Mortality in the United States, 1972 through 1989. Am J Public Health; 87.

McGeorge J. (2000). Abused Women want GP's to ask Questions. New Zealand Doctor. 7 June.

McNeil C. (1994). Doctors Fail to Deal with Domestic Violence. New Zealand Doctor. 1 September.

Mental Health Commission (1998). Blueprint for Mental Health. Wellington: Ministry of Health.

Mental Health Commission (2004). Our Physical Health … Who Cares? Occasional Paper No. 5, April 2004. Mental Health Commission: Wellington.

Minister for ACC (June 2003). New Zealand Injury Prevention Strategy. Wellington: Minister for ACC.

Ministry of Education (2004). Report on Stand-downs, Suspensions, Exclusions and Expulsions for 2003. Wellington, New Zealand. Ministry of Education.

Ministry of Health (1996). Child Abuse Prevention: The Health Sector's Contribution to the 'Strengthening Families' Initiative. Wellington, New Zealand. Ministry of Health.

Ministry of Health (1997). The Health and Well-being of Older People and Kaumatua – The Public Health Issues. Wellington: MoH

Ministry of Health (1998). Family Violence: Guidelines for Health Sector Providers to Develop Practice Protocols. Wellington: New Zealand Ministry of Health.

Ministry of Health (1999). Our Health, Our Future – The Health of New Zealanders 1999. Wellington: Ministry of Health.

Ministry of Health (2000a). Health Needs Assessment for New Zealand: An Overview and Guide. Wellington: Ministry of Health.

Ministry of Health (2000b). New Zealand Health Strategy. Wellington: Ministry of Health.

Ministry of Health (2000c). Health Needs Assessment for New Zealand. Background Paper and Literature Review. Wellington: Ministry of Health.

Ministry of Health (December 2000). The New Zealand Health Strategy. Wellington: Ministry of Health.

Ministry of Health (2001a). DHB Toolkit: Obesity (Edition 1) Wellington: Ministry of Health

Ministry of Health (2001b). Primary Health Care Strategy. Wellington: Ministry of Health.

Ministry of Health (2001c). DHB Toolkit: Interpersonal Violence. To Reduce Violence in Interpersonal Relationships, Families, Schools and Communities. Wellington: Ministry of Health.

Ministry of Health (2001d). DHB Toolkit: Suicide Prevention Edition 1. Wellington: Ministry of Health.

Ministry of Health (2001e). DHB Toolkit: Tobacco Control – To Reduce Smoking (and Harm from Second Hand Smoke). Edition 1. Wellington : Ministry of Health.

Ministry of Health (2001f). National Strategic Framework for Alcohol and Drug Services. Wellington: Ministry of Health.

Ministry of Health (2001g). New Zealand Health Strategy DHB Toolkit: Obesity Edition 1. Wellington: Ministry of Health.

Ministry of Health (2001h). New Zealand Health Strategy: DHB Toolkit: Mental Health: Edition 1. Wellington: Ministry of Health.

Ministry of Health (2001i). Priorities for Mäori and Pacific Health. Evidence from Epidemiology. Wellington: Ministry of Health.

Ministry of Health (June 2001). National Strategic Framework for Alcohol and Drug Service: Background Paper. Wellington: Ministry of Health.

Ministry of Health (2002a). Health of Older People in New Zealand – A Statistical Reference. Wellington: MoH

Ministry of Health (2002b). Action on Hepatitis C Prevention: A Discussion Document. Wellington: Ministry of Health.

Ministry of Health (2002c). Breastfeeding: A Guide to Action. Wellington: Ministry of Health.

Ministry of Health (2002d). Health of Older People Strategy. Health Sector Action to 2010 to Support Positive Ageing. Wellington: Ministry of Health.

Ministry of Health (2002e). Primary Mental Health. A Review of Opportunities. Wellington: Ministry of Health.

Ministry of Health (2002f). Reducing Inequalities in Health. Wellington: Ministry of Health.

Ministry of Health (2002g). Report on Maternity 1999. Wellington: Ministry of Health.

Ministry of Health (2002h). Section 6 Hearing and Vision, In Well Child - Tamariki Ora National Schedule Handbook, M.o. Health, Editor. Wellington: Ministry of Health.

Ministry of Health (2002i). Youth Health. A Guide to Action. Wellington: Ministry of Health.

Ministry of Health (March 2002). Health for all People – He Oranga mö the Katoa.

Ministry of Health and Ministry of Youth Affiars (September 2002). Youth Health. A Guide to Action. Wellington: Ministry of Health.

Ministry of Health (2003a). DHB Toolkit – Diabetes. Wellington : Ministry of Health. Available electronically.

Ministry of Health (2003b). Evaluation of Culturally Appropriate Smoking Cessation Programme for Mäori Women and Their Whanau: Aukati Kai Paipa 2000. Wellington: Ministry of Health.

Ministry of Health (2003c). Health and Independence Report: Director-General's Annual Report on the State of Public Health. Wellington: Ministry of Health.

Ministry of Health (2003d). Healthy Eating Healthy Action. Oranga Kai-Oranga Pumau. A Background 2003. Wellington: Ministry of Health.

Ministry of Health (2003e). HIV/AIDS Action Plan: Sexual and Reproduction Health Strategy. Wellington: Ministry of Health.

Ministry of Health (2003f). Immunisation in New Zealand. Strategic Directions 2003-2006. Wellington: Ministry of Health.

Ministry of Health (2003g). Implementing the New Zealand Health Strategy 2003. The Minister of Health's Third Report on Progress on the New Zealand Health Strategy. Wellington: Ministry of Health.

Ministry of Health (2003h). New Zealand Food, New Zealand Children: Key Results of the 2002 National Children's Nutrition Survey. Wellington: Ministry of Health.

Ministry of Health (2003i). Report on Maternity 2000 & 2001. Wellington: Ministry of Health.

Ministry of Health (2003j). Tobacco Facts 2003. Public Health Intelligence Occasional Report No. 20. Wellington: Ministry of Health.

Ministry of Health (2003k). DHB Toolkit: Cancer Control. Wellington: Ministry of Health.

Ministry of Health (2003l). Selected Health Professional Workforce in New Zealand 2002. Wellington: Ministry of Health.

Ministry of Health (2003m). DHB Toolkit: Cardiovascular Disease. Wellington: Ministry of Health.

Ministry of Health (July 2003). Decades of Disparity: Ethnic Mortality Trends in New Zealand 1980-1999. Wellington: Ministry of Health.

Ministry of Health (December 2003). A Snapshot of Health: Provisional results of the 2002/03 New Zealand Health Survey. Wellington: Ministry of Health.

Ministry of Health (2004a). Guidelines for Specialist Health Services for Older People. Wellington: MoH

Ministry of Health (2004b). A Portrait of Health: Key Results of the 2002/03 New Zealand Health Survey. Wellington: Ministry of Health.

Ministry of Health (2004c). DHB Toolkit (Edition 2) To Improve Oral Health. Wellington: Ministry of Health.

Ministry of Health (2004d). Preventing and Minimising Gambling Harm: Strategic Plan 2004-2010. Needs Assessment, Proposed Three-Year Funding Plan, Proposed Problem Gambling Levy Rates. Draft Document for Consultation. Wellington: Ministry of Health.

Ministry of Health (2004e). Primary Health Organisations – Service Development Toolkit for Mental Health Services in Primary Health Care, May 2004. Wellington: Ministry of Health.

Ministry of Health (2004f). Report on Maternity. Maternal and Newborn Information 2002. Wellington: Ministry of Health.

Ministry of Health (2004g). A Portrait of Health Key Results of the 2002/03 New Zealand Health Survey. Public Health Intelligence Occasional Bulletin No. 21. Wellington: Ministry of Health.

Ministry of Health (2004h). Final Indicators of DHB Performance 2004/2005. Wellington: Ministry of Health.

Ministry of Health (2004i). Overview of the National Immunisation Register. Wellington: Ministry of Health.

Ministry of Health (2004j). A Snapshot of Health: Provisional Results of the 2002/03 New Zealand Health Survey. Wellington: Ministry of Health.

Ministry of Health (2004k). Health Practitioners Competence Assurance Act (2003). Website: http:// www.moh.govt.nz/hpca

Ministry of Health (March 2004). Looking Upstream. Causes of Death Cross-Classified by Risk and Condition New Zealand 1997. Wellington: Ministry of Health.

Ministry of Health (April 2004). Suicide Facts: Provisional 2001 Statistics (all ages). Wellington: Ministry of Health.

Ministry of Health and Ministry of Pacific Island Affairs (2004). Tupu Ola Moui, Pacific Health Chart Book 2004. Wellington: Ministry of Health.

Ministry of Health/New Zealand Health Information Services (2002). Fracture of Neck of Femur Services in New Zealand Hospitals 1999/2000. Wellington:MoH 2002

Morris, A. (1998). Victims of Crime: The Women's Safety Survey. New Zealand Law Journal. February, 1998.

National Audiology Centre (2004). New Zealand Hearing Screening Statistics. Auckland: Auckland District Health Board.

National Health Committee (2003). Improving Child Oral Health and Reducing Child Oral Health Inequalities: Report to the Minister of Health from the Public Health Advisory Committee, Wellington.

National Health Committee (June 1981). The Social, Cultural and economic Determinants of Health in New Zealand: Action to Improve Health.

Nelson Marlborough DHB (2003-2005). Mäori Health Foundation Strategy (DRAFT).

Neverlien P.O. (1994). Dental Anxiety, Optimism-Pessimism and Dental Experience from Childhood to Adolescence. Community Dentistry and Oral Epidemiology 22.

New Zealand Government (2003). Health Practitioners Competence Assurance Bill. Wellington: New Zealand Government.

New Zealand Guidelines Group (2003a). Life After Stroke – New Zealand Guidelines for Management of Stroke. Wellington: NZGG. Available electronically at www.nzgg.org.nz.

New Zealand Guidelines Group (2003b). Prevention of Hip Fracture Amongst People Aged 65 Years and Over. Wellington: NZGG.

New Zealand Health Information Service (2001). Suicide Trends in New Zealand 1978-1998. Wellington: New Zealand Health Information Service.

New Zealand Health Information Service (2003a). Immunisation Data Mart: Data Dictionary. Wellington: NZHIS.

New Zealand Health Information Service (2003b). New Zealand Workforce Statistics 2002: General Practitioners. Website: http://www.nzhis.govt.nz/stats/genpracstats.html

New Zealand Health Information Service (2004a). New Zealand Workforce Statistics 2002: Nurses and Midwives. Website: www.nzhis.govt.nz/stats/nursestats-p.html.

New Zealand Health Information Service (2004b). New Zealand Workforce Statistics 2002: Dentists. Website: www.nzhis.govt.nz/stats/dentstats-p.html

New Zealand Health Information Service (2004c). Comments with Graphs on Key Performance Indicators around Waiting Times. Statistics New Zealand. 2001.

New Zealand Medical Council (2003). New Zealand Medical Workforce in 2001. Wellington: Medical Council of New Zealand.

Nielson A.C. (2004). Pulp Fiction - The Facts Harvested A Study of New Zealanders' Physical Activity and Nutrition. Wellington: Cancer Society.

North Shore City Council, Waitakere City Council, Auckland City Council, Manukau City Council, Hamilton City Council, Wellington City Council, Christchurch City Council, Dunedin City Council (2003). Quality of Life in New Zealand's Eight Largest Cities. Website: www.bigcities.govt.nz.

O'Hara M., Kokaua J. (Unpublished Draft April 2004). Pacific Mental Health Profile. Wellington: Ministry of Health and Mental Health Directorate.

Oakley-Browne M.A., Joyce P.R., Wells J.E., Bushnell J.A. and Hornblow A.R. (1989). Christchurch Psychiatric Epidemiological Study. Part II: Six Month and Other Period Prevalences of Specific Psychiatric Disorders. Australian and New Zealand Journal of Psychiatry 23(3): and the Australian National Drug Strategy Household Survey.

Office of the Police Commissioner (2004a). New Zealand Crime Statistics 2003/04: A Summary of Recorded and Resolved Offence Statistics.

Office of the Police Commissioner (2004b). Tasman District Crime Statistics 2003/04: A Summary of Recorded and Resolved Offence Statistics. Tasman Police Stats

Office of the Police Commissioner (2004c). Canterbury Crime Statistics 2003/04: A Summary of Recorded and Resolved Offence Statistics.

Office of the Police Commissioner (2004d). Southern District Crime Statistics 2003/04: A Summary of Recorded and Resolved Offence Statistics.

Otago DHB (2002). Strategic Plan Part Two (July 2002). Dunedin: Otago DHB.

Pappas G., Queen S., Hadden W., Fisher G. (1993). The increasing Disparity in Mortality between Socioeconomic Groups in the United States, 1960 and 1986. N Engl J Med;329.

Parnell W. et al (2003). NZ Food NZ Children Key Results of the 2002 National Children's Nutrition Survey. Wellington: Ministry of Health.

Paton-Simpson G., Gruys M., Hannafin J. (2003). Problem Gambling Counselling in New Zealand: 2002 National Statistics. Palmerston North: Problem Gambling Purchasing Agency.

Poorman P.B. (2001). Forging Community Links to address Abuse in Lesbian Relationships. Intimate Betrayal: Domestic Violence in Lesbian Relationships. New York, London, Oxford, The Haworth Press.

Public Health Advisory Committee (2003). Improving Child Oral Health and Reducing Child Oral Health Inequalities. A Report to the Minister of Health from the Public Health Advisory Committee. Wellington: Public Health Advisory Committee.

Public Health Consultancy (2001a). An Assessment of Health Needs in the Nelson Marlborough District Health Board Region: Te Tirohanga Hauora o Te Tau Ihu o Te Waka a Maui. Wellington: Wellington School of Medicine and Health Sciences.

Public Health Consultancy (2001b). An Assessment of Health Needs in the West Coast District Health Board Region. Wellington: Public Health Consultancy.

Public Health Consultancy (2001c). An Assessment of Health Needs in the South Canterbury District Health Board Region. Wellington: Public Health Consultancy.

Public Health Consultancy (2001d). An Assessment of Health Needs in the Southland District Health Board Region. Wellington: Public Health Consultancy.

Public Health Intelligence (2001). Life Expectancy and Small Area Deprivation in New Zealand. Occasional Bulletin No. 6. Wellington : MoH.

Public Health Intelligence (2002a). Modelling Diabetes: A Summary. Occasional bulletin No.11, March 2002.

Public Health Intelligence (2002b). Modelling Stroke – A Multi-State Life Table Model. Occasional Bulletin No 12. Wellington: MoH

Public Health Intelligence (2002c). Cancer in New Zealand – Trends and Projections. Wellington: MoH

Public Health Intelligence (2004). A Portrait of Health – Key Results of the 2002/03 New Zealand Health Survey. Occasional Bulletin No 21. Wellington: MoH

Ristock J.L. (2002). No More Secrets: Violence in Lesbian Relationships. Routledge Press: New York.

Robson B. (2004). Economic Determinants of Mäori Health and Disparities: A Review of Te Ropu Tohutohu I te Hauora Tumatanui. Wellington.

Royal NZ Foundation for the Blind (2004). National Register of Visually impaired or Blind Members and Service Users. From the Technical Advisory Services' website – www.centraltas.co.nz.

Salmond C. and Crampton P. (2002). NZDep2001 Index of Deprivation. Wellington School of Medicine and Health Sciences: Department of Public Health.

Schluter P.J., Ford R.P.K. and Ford C.J. (2002). A Biomedical Prevalence Study of Smoking in Pregnancy for a Cross Section of Women in Christchurch, New Zealand. Australian and New Zealand Journal of Public health 2002 vol 26 No. 3.

Schrijvers C., Stronks K., van de Mheen H., Mackenbach J. (1999). Explaining educational Differences in Mortality: The Role of Behavioural and Material Factors. Am J Public Health;89.

Scragg R. (2004). Report of 1999 - 2003 National Year 10 Smoking Surveys. Auckland: School of Population health University of Auckland.

Semple R.J. (2000). Psychological Abuse in Intimate Relationships: A New Zealand Perspective. New Zealand Journal of Psychology. 30(2).

Sims A. (1987). Why the Excess Mortality from Psychiatric Illness? British Medical Journal 294.

Sisely A. Jacobs L.M. Poole G. Campbell S. & Esposito T. (1999). Violence in America: A Public Health Crisis – Domestic Violence, The Journal of Trauma: Injury and Critical Care. 46 (6).

Snively S. (1994). The New Zealand Economic Costs of Family Violence. Wellington: Coppers and Lybrand.

Snively S. (2000). Improving Outcomes for Women and Children using Refuge Services. Wellington: National Collective of Independent Women's Refuges Incorporated.

Sorlie P., Backlund E., Keller J. (1995). US Mortality by Economic, Demographic, and Social Characteristics: The National Longitudinal Mortality Study. Am J Public Health;85.

South Island District Health Boards (2004). South Island Alcohol and Other Drug Services Review: Discussion Document and Strategic Framework for Service Development. Christchurch: South Island Shared Service Agency.

South Island Shared Service Agency Ltd (2003). Primary Mental Health Scoping Paper.

Southern Regional Health Authority (1998). Health of the South, Dunedin: SRHA

SPARC (2002a). SPARC Facts - Tasman. Downloaded www.sparc.org.nz 13.09.04.

SPARC (2002b). SPARC Facts - Canterbury Westland. Downloaded www.sparc.org.nz13.09.04.

SPARC (2002c). SPARC Facts - Otago Southland. Downloaded www.sparc.org.nz13.09.04.

SPARC ihi Aotearoa (December 2003). Obstacles to Action A Study of New Zealanders' Physical Activity and Nutrition. Downloaded from www.sparc.org.nz

Statistics New Zealand (1998). New Zealand Now Mäori. Wellington: Statistics New Zealand.

Statistics New Zealand (2001). New Zealand Census of Population and Dwellings 2001. Definitions and Questionnaires. Wellington: Statistics New Zealand

Statistics New Zealand (2002). Disability Counts 2001. Wellington: Stats NZ.

Statistics New Zealand (2003). Demographic Trends. Wellington: Statistics New Zealand.

Statistics New Zealand (2004a). Older New Zealanders – 65 and beyond. Wellington: Stats NZ.

Statistics New Zealand (2004b). Life tables 2000-2002 Commentary (available electronically at www.stats.govt.nz)

Statistics New Zealand (July 2003). (Ref No: C12280RS): Population Projections prepared for the Ministry of Health.

Sullivan C., Oakden J., Young J., Butcher H., Lawson R. (2003). Obstacles to Action: A Study of New Zealanders' Physical Activity and Nutrition. Wellington: Sport and Recreation New Zealand (SPARC).

Swanwick D. (2004). How to Beat the Workplace Bully. Management. June.

Taft A. Watson L.F. (2004). Violence against young Australian women and association with reproductive events: a cross-sectional analysis of a national population sample. Australian and New Zealand Journal of Public Health. 28.

Te Waipounamu Kaupapa Mäori Services Review: Te Roopu Awhiowhio, April 2004.

The Commonwealth Fund (June 2004). First Report and Recommendations of The Commonwealth Fund's International Working Group on Quality Indicators, A report to Health Ministers of Australia, Canada, New Zealand, the United Kingdom, and the United States. Website: www.cmwf.org.

The MaGPIe Research Group. The nature and prevalence of psychological problems in New Zealand primary healthcare: a report on Mental Health and General Practice Investigation (MaGPIe). NZMJ Vol 116 No1171.

The New Zealand Medical Association (2004). A Report from the New Zealand Medical Association: An Analysis of the New Zealand General Practitioner Workforce. Wellington: New Zealand Medical Association.

The Sainsbury Centre for Mental Health (2002). Primary Solutions. An Independent Policy Review on the Development of Primary Care Mental Health Services (Briefing 19). London: Sainsbury Centre for Mental Health.

Thom D.H., Haan M.N., van den Eeden S.K. (1999). Medically Recognised Urinary Incontinence and Risks of Hospitalisation, Nursing Home Admission and Mortality. Age & Ageing; 26:367-374

Thompson J. (1994). Sex Specific Birthweight Percentiles by Gestational Age for New Zealand. The New Zealand Medical Journal 107:(970).

Thomson W., Ayers K., Broughton J. (2003). Child Oral Health Inequalities in New Zealand. A Background Paper to the Public Health Advisory Committee. Wellington: National Health Committee.

Thomson W.M. (2004). Dental Caries Experience in Older People Over Time: What can the Large Cohort Studies tell us? British Dental Journal 196.

Thomson W.M. et al. (2004a). Socioeconomic Inequalities in Oral Health in Childhood and Adulthood in a Birth Cohort. Community Dentistry and Oral Epidemiology; 32.

Thomson W.M. et al. (2004b). Socioeconomic Inequalities in Oral Health in Childhood and Adulthood in a Birth Cohort. Community Dentistry and oral Epidemiology 28.

Thomson W.M., Stepehnson S., Kieser J.A., Langley J.D.S. (2003). Dental and Maxillofacial Injuries Among Older New Zealanders during the 1990s. International Journal of Oral and Maxillofacial Surgery 32.

Todd F., Sellman J.D., Robertson P.J. (1999). The Assessment and Management of People with Co-existing Substance Use and Mental Health Disorders. Wellington: Alcohol Advisory Council, Ministry of Health, Mental Health Commission.

TPK (1999). Rangatahi – Mäori Youth. Wellington.

Trotter M.J., Stephenson S.C.R., Simpson J.C., Casey D.M. (June 2004). Fact Sheet Number 33. University of Otago: Injury Prevention Research Unit.

Turley M.C., Nicolas, Garrett (2000). STI in New Zealand, Surveillance Report 2000. ESR Report to Ministry of Health. In Ministry of Health (2001). Sexual and Reproductive Health Strategy. Wellingotn: Ministry of Health.

United Nations (2002). Abuse of Older Persons: Recognising and Responding to the Abuse of Older Persons in a Global Context: Report of the Secretary General.

Van Aalst and Daly C. (2004). Survey of Green Prescription Patients. PS Services.

Van Doorslaer E., Wagstaff A., Bleichrodt H., Calonge S., Gerdtham U.-G., Gerfin M., et al. (1997). Income-related Inequalities in Health: Some International Comparisons. Journal of Health Economics;16.

Wainwright T. (2002). Seeking National Consistency in Personal Health Funded Community Services – A Report of the Community Service Group of the Ministry of Health's Nationwide Service Framework Project. Wellington: Ministry of Health.

Wainwright T. (2003). Home Care Thoughts from Abroad – A Review of the Literature on the Cost-Effectiveness of Home-Based Services and on Ways of Funding and Organising Home-Based Care. Christchurch: NZ Health Technology Assessment (NZHTA).

Waters A. Hyder A. Rajkotia Y. Basu S. Rehwinkel JA, Butchart A. (2004). The Economic Dimensions of Interpersonal Violence. Department of Injuries and Violence Prevention, World Health Organisation, Geneva.

Weatherall M. (2001). Elder Abuse: A Survey of Managers of Residential Care Facilities in Wellington, New Zealand. Journal of Elder Abuse & Neglect. 13(1).

Wellington School of Medicine (2001). An Assessment of the Health Needs in the Nelson Marlborough DHB Region. Wellington: School of Medicine.

West Coast DHB (2003) Te Poari Haupra a Rohe O Poutini. West Coast DHB, Te Kaupapa Hauora Mäori. Draft Mäori Health Plan 2003-2006.

World Health Organisation .(2002). World Health Report. Geneva: World Health Organisation.

INDEX