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

Prepared for the Nelson Marlborough District Health Board

Public Health Consultancy
Wellington School of Medicine and Health Sciences

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Te toto o te tangata he kai
Te oranga o te tangata he whenua

Food supplies the blood of mankind
Just as land provides for our health and well-being

FOREWORD

Nelson Marlborough District Health Board and its predecessors have for many years recognised the importance of understanding the health needs of the community and of using this information to plan health services. Since the first health needs assessments were done in the region in 1989/1990, our understanding of the factors that influence health has increased and this is reflected in the broader range of information contained in this report.

As a District Health Board, we are enthusiastic about having responsibility for improving, promoting and protecting the health of the people in this region. We recognise that to make progress on this we need to work collaboratively with the community and with people from other social services such as housing, education and employment.

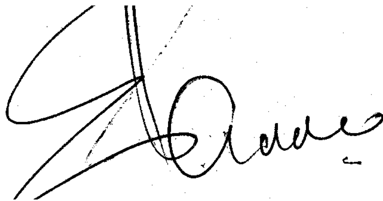
Health needs assessment is an important foundation for our work. Firstly, it provides the basis for the planning and funding of health and disability services and secondly, it shows us the areas where if we all work together we can influence health.

Undertaking this health needs assessment has been an excellent opportunity to share resources and expertise with the eleven other provincial DHBs and the Public Health Consultancy of the Wellington School of Medicine and Health Sciences.

Information has been gathered together from national and local sources, and we have complemented this with ideas and opinions generously given by local people. We are appreciative of the support of the unitary authorities and others on the local reference group who provided an overview of the process in Nelson Marlborough.

Whilst this document is a key milestone in our understanding of the health needs of our community, it is also a starting point. As part of this project important information currently not available has been identified. We will continually update the health needs assessment as new information becomes available. At this stage, the information presented is mostly at a regional or district level. Over time, however, we will need to carry out reviews of the needs of specific populations and areas. It is intended that a similar process will be undertaken to provide a picture of the extent to which disabilities are affecting the lives of people in our region.

This report enhances our understanding of the health needs of our region. We are delighted to share this with the community and hope it will stimulate debate about ways we can all work together to improve the health and independence of the people of Nelson Marlborough. We look forward to this opportunity.



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Board Chairman

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This project has combined the efforts and expertise of the Public Health Consultancy of the Wellington School of Medicine and Health Sciences and the district health boards involved in the Provincial Public Hospital and Community Services Group.

The members of the research team of the Public Health Consultancy were Dr Gary Mitchell (principal researcher), Winnie Chang (researcher) and Paul Hirini (researcher), with support from Bridget Allan (Director, Public Health Consultancy), Jennifer Martin (researcher), Michael Murphy (writer), and Karen Smyth (editor).

The staff of the Nelson Marlborough District Health Board who were principally involved in the project were Dr Maree Leonard, Lorraine McMath and Claire McKenzie. Kirsty Peel, Hilary and John Mitchell co-ordinated the key informant/focus group interviews.

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Professor Alistair Woodward (epidemiologist), Associate Professor Richard Morgan (Geography), Dr Paul Callister (economist).

We wish to thank our colleagues at Te Ropu Rangahau Hauora a Eru Pomare, especially Vera Keefe-Ormsby and Dr Papaarangi Reid, for organising a hui in March 2001 to inform Maori people about the project and to explore methodologies for health needs assessments appropriate for Maori. Thanks to Jacob Tapiata of Te-Putahi-a-Toi (Massey University in Palmerston North) for his valuable guidance with Maori titles in this report.

We are grateful for the assistance that we received from the Ministry of Health, the Land Transport Safety Authority, the Mental Health Commission, and colleagues in the Department of Public Health, Wellington School of Medicine and Health Sciences. Special thanks to Gordon Purdie for statistical assistance, and to Dr Kevin Dew for assistance in training local staff involved in gathering qualitative data.

We wish to thank the Steering Group for their guidance and support throughout the project. The group included representatives from the 12 district health boards and the Ministry of Health. It was ably led by Dr Zoran Bolevich who skilfully integrated the needs of the Steering Group with the demands of the research task and the constraints of time and funding, in a way that made the whole project possible.

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SUMMARY: NGA HUA O TE MAHI

The picture of health need for the Nelson Marlborough District Health Board has been created using both qualitative and quantitative methods. Full details of methodology, findings and discussion are available in the technical report.

Nelson Marlborough's population of 122 540 (medium series projection for 2001 from the 1996 Census) is characterised by a smaller percentage of Maori (8%) than the New Zealand average, a small but growing Pacific peoples population, a sizeable rural spread into Nelson Marlborough's isolated hinterland and small towns, and a relatively large percentage of elderly compared with New Zealand overall. Nelson Marlborough's total population is projected to increase in all three of its unitary authorities (UAs) over the next ten years, and Nelson Marlborough's Maori population is expected to increase proportionately more than the national Maori population.

Nelson City and Tasman District have around 1600 community and sporting organisations, of which about 25% are social service organisations. Community events are popular and high profile, for example the New Zealand Wearable Art Awards and associated arts festival; and the summer festival culminating in Opera in the Park. A survey of residents, undertaken for Nelson City Council in 2000, found a sense of Nelson being a healthy and safe community, with a strong spirit and a high level of pride in the city and a strong sense of belonging.

Marlborough has a good level of participation in sporting activities by all ages and a wide range of sporting codes. Social services include a food bank, a food kitchen (one night a week) and a women's refuge. Festival week prior to the Wine and Food Festival is always very well supported and the community is very active in fundraising activities for community facilities such as ultrasound, CAT scan, and MRI equipment. The Parents Room Appeal Trust, the Marlborough Stadium Trust, and appeals for local individuals requiring specialised health treatment are other examples of very well supported fundraising.

Nelson Marlborough shows a mixed picture for socioeconomic measures, relative to the New Zealand average; income is lower, employment higher, social and occupational class lower and educational achievement mixed. A smaller proportion of the Nelson Marlborough population live in deciles at each end of the deprivation scale.

Two main groups are identified as having high health need in Nelson Marlborough: those of relatively low socioeconomic status and Maori. While there is interaction and overlap between these two groups, a focus on one alone would miss a large group with high health needs. For example, most people of low socioeconomic status are not Maori, and the health status of Maori is still relatively poor compared to non-Maori, even after controlling for socioeconomic status.

Of the 13 priority objectives in the *New Zealand Health Strategy*, 2000 (*NZHS*), and noting the lack of data for some categories, the health of the people of Nelson Marlborough appears better than New Zealand overall. However, oral health, violence, appropriate child health care and smoking, all seem to be of particular importance. All age groups in Nelson Marlborough show higher levels of participation in physical activity than the New Zealand average, which key informants ascribe to the quality of the outdoor environment.

Of the 26 major diagnostic categories used to classify admission diagnoses, in Nelson Marlborough the crude hospitalisation rate was higher than the New Zealand average for eye conditions, ear, nose, and throat (ENT), liver/pancreas, reproductive (both male and female), blood immunity and cancer categories. However, hospitalisation rates can sometimes reflect the availability of services and clinical practice, rather than a measure of health need.

In addition, areas of comparative need (where the situation in Nelson Marlborough showed higher rates than the New Zealand average) included oral health for five-year-old children, numbers of minor and serious road crashes (the hospitalisation rate is higher than the national rate, but not to a level of statistical significance) and a low breast screening rate. Im munisation rates appear low, although data quality is very poor.

The number of people waiting for outpatient services has risen dramatically in some areas over the last year, particularly in Nelson. The numbers waiting for elective surgery have been af fected by the change in eligibility and therefore cannot be commented on.

Rural populations are reported to have high health needs, and be relatively under-serviced, with low numbers per capita of general practitioners, nurses, dentists and pharmacists, and Maori health providers who are stretched to provide services. Travel times to hospital are significant for some rural populations.

Substandard water supplies are the main environmental issue of concern in Nelson Marlborough. The concept of 'kaitiakitanga' and the spiritual relationship Maori people have with the land is an illustration of the strong environmental link with health.

Of note is the paucity of information on primary health care, and the difficulties in measuring health disparities between ethnic groups.

Recommendations

The project brief required the research team to make some broad strategic recommendations for health action. The intention is to assist district health boards (DHBs) to make decisions about addressing health needs.

Two potential areas of activity are outlined. One involves the DHB working intersectorally with other agencies; the other describes activities the DHB can pursue within its own health services, or by linking with other DHBs and the Ministry of Health (the Ministry). It is acknowledged that many of these activities may be currently happening in the region.

Intersectoral activities

- Improving Maori health by acknowledging the rights of Maori to equality in health status, and supporting tino rangatiratanga whereby Maori gain control over factors that influence their health. This could involve the DHB advocating and working with other organisations such as local iwi and Maori development organisations (MDOs), local authorities, the regional Te Puni Kokiri office and other government agencies, and social services and non-government organisations (NGOs) in the Nelson Marlborough DHB region.
- Addressing the socioeconomic determinants of health, through advocacy and working with other government agencies (eg, Ministry of Social Development on benefit entitlements, Housing New Zealand Corporation on further housing initiatives, Child Youth and Family on factors leading to injuries to children, and regional and local authorities on transport issues).
- Reducing smoking, and alcohol and other drug use (eg, through community action projects) and working with relevant agencies such as District Licensing Authorities, the Alcohol Advisory Council, and the Health Sponsorship Council.
- Advocating for protection of the environment, and safe and sustainable use of resources with unitary authoritiess, iwi and MDOs, and local businesses.

DHB activities

- Addressing Maori health through such activities as developing closer working relations with Maori in the region, involving Maori in decision-making, increasing the numbers and scope of well-resourced Maori health providers, promoting Maori workforce development in both mainstream and by Maori for Maori sectors, encouraging and resourcing the use of traditional Maori medicine, actively promoting the use of te reo Maori in all health services in Nelson Marlborough, ensuring DHB staff have appropriate cultural training and exploring more holistic ways of measuring Maori health need in future needs assessments.
- Improving the accuracy and consistency of data collection (eg, ethnicity coding, primary care data and immunisation data).
- Allocating resources according to need. Funding should follow patterns of disadvantage so that groups with higher need (eg, Maori, socioeconomically disadvantaged) receive more resources.
- Focusing on well-resourced primary health care. There is potential for improving health status and reducing avoidable hospitalisations through better access to improved primary care. Working with the Ministry towards affordable primary care services in line with the *Primary Health Care Strategy*, 2001, would improve accessibility to primary care services in the Nelson Marlborough DHB region. Consideration of using mobile clinics, and/or increasing rurally-based services to rural areas would be desirable, as would fostering the interface between primary and secondary health care services.
- Working closely with the local public health service, who have considerable expertise in improving, promoting and protecting health across all the DHB's priority health gain areas.
- Continuing to present the health needs of the people of Nelson Marlborough on a national stage. Although absolute numbers of people with high socioeconomic need are larger in New Zealand's urban areas, rural areas such as Nelson Marlborough need special attention and resourcing because barriers to health and health care are often greater.

INTRODUCTION: TE TIMATA

The project grew out of the work of Good Health Wanganui, which completed a 'first phase' health needs assessment, jointly with the Wanganui District Council, in 2000. Subsequently, a group of six provincial hospitals, of which Good Health Wanganui was a part, contracted the Public Health Consultancy of the Wellington School of Medicine and Health Sciences to carry out a health needs assessment for each of their DHB areas. As the project gained momentum, six other provincial DHBs joined, to make a total of twelve. The 12 DHBs are Northland, Tairawhiti, Hawkes Bay, Taranaki, Lakes, Whanganui, MidCentral, Wairarapa, Nelson Marlborough, West Coast, South Canterbury and Southland.

Although needs assessments are now a requirement of DHBs, this project was set up in advance of the legal imperative, because the organisations involved realised the importance and value of gathering information on health needs to assist with decision-making. The Ministry has released guidelines for DHBs on how it expects needs assessments to be carried out. These have been followed in this project.

The primary intention was to carry out an assessment that demonstrated a picture of health needs for the population in each DHB region. This project includes most of the smaller DHBs in the country with significant rural hinterland areas. Therefore, issues of assessing and addressing health needs of small or thinly spread populations in remote areas are important factors in these assessments.

The project objectives were:

- To produce relevant and accurate information in a health needs assessment document that can be used for the strategic planning and decision-making process at a local DHB level.
- To develop a 'standard' (repeatable) methodology for doing DHB needs assessments.
- To focus primarily on the main population determinants of health, that is social, economic and cultural factors, with the aim of reducing social and economic inequalities in health.
- To carry out the assessment with the involvement of Maori at all levels, so that the final document reflects Maori needs, as defined by Maori.
- To identify gaps in the availability of data and in the capability of providers to supply information relevant to health needs assessment.
- To ensure that the needs assessment is used as a vehicle for consultation and participation with the community and providers, including Maori and Pacific peoples.

This report describes the health needs of the people of the Nelson Marlborough DHB region and compares them with the New Zealand 'average'. It presents information which is consistent with the objectives of the *NZHS*, and which can be used in the monitoring of progress and the planning of services to meet those objectives. A separate disability strategy is being developed by the Ministry. Assessment of the needs of people with disabilities will need to be guided by this strategy, and is beyond the scope of this project.

While this project has collected and analysed a wide range of data and information, there are still gaps, for example in primary care and mental health data. Further data collection and analysis will be needed in future rounds of the DHB planning cycle, for example analyses using the 2001 Census results, which are not yet available.

This report summarises the larger technical report that contains a wide range of descriptive and comparative data, a literature review, the methodology underlying the work, and the report of the project hui which was convened to ensure that Maori concepts of health and measurement of health need were included in the methodology. The reader is referred to these background documents for more detail.

PART 1: ASSESSING REGIONAL HEALTH NEEDS: HE TIROHANGA HAUORA

Rationale for needs assessment

DHBs face 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. This needs assessment project identifies needs in the DHB region. The process of prioritisation is a separate part of the DHB planning cycle, which draws on the needs assessment, and also involves consideration of community views, current services, and cost-benefit analyses.

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.

DHBs are tasked with protecting, improving and maintaining the health of their geographical populations. 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 in the Nelson Marlborough DHB region would mean both treating resulting illness (such as meningococcal disease and respiratory infections) *and* working with Housing New Zealand Corporation to improve housing conditions.

Maori health status and health priorities

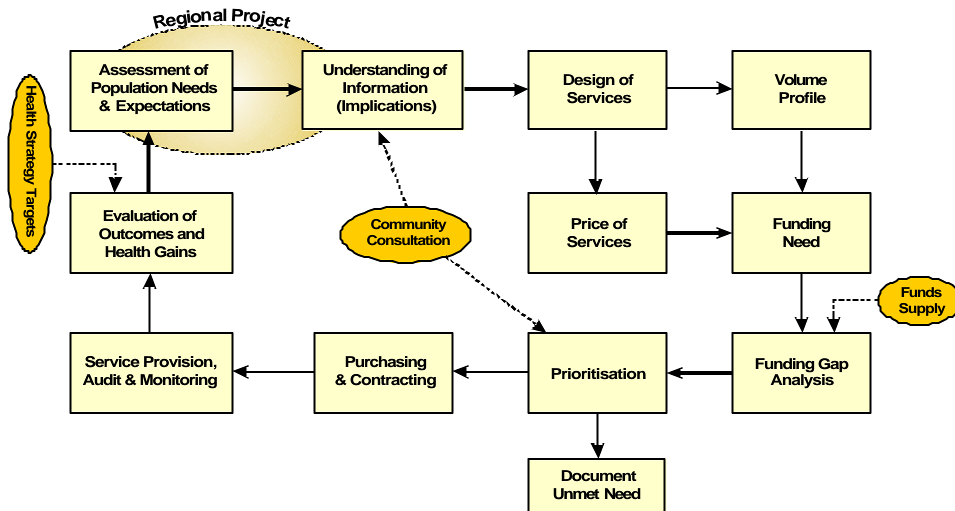
Maori concepts of health are holistic, with spiritual, emotional, social and bodily dimensions. The Treaty of Waitangi guaranteed Maori control over and protection of their taonga (treasures), of which health is one. Historically, this protection and control have been breached and eroded, resulting in much of the current state of health for Maori. It is important to acknowledge this in the needs

assessment, since it is by rebuilding Maori capacity to protect and control their own health, and factors that influence their health that improvement of Maori health status can happen.

There have been considerable gains in some aspects of Maori health over recent decades, yet Maori health need is still greater than that of any other ethnic group, as shown by measurement against almost every health status and socioeconomic measure. Non-Maori are more favourably spread across the socioeconomic spectrum relative to Maori, and the poorer health of Maori relative to non-Maori is evident even when socioeconomic factors and risk behaviours are taken into account. How DHBs can help work towards altering the experience of being Maori in ways that improve health outcomes is a challenge. As was noted at the project hui, '*The health of Maori living within a DHB may be looked upon as the ultimate measure of success of DHBs*'.

District health board responsibilities

The DHB planning cycle



The above figure, supplied by Bolevich (2000), illustrates the part that needs assessment plays in the DHB planning cycle. The main steps in the needs assessment process are data collection and analysis.

Health priorities for New Zealand

Both the *NZHS* and *He Korowai Oranga*, 2001, the Maori health strategy discussion document, set out strategic directions for health and health services. They list priority objectives DHBs are expected to focus on initially. These health priorities cover issues that represent a high burden of disease and mortality (eg, cancer, cardiovascular disease and diabetes) and risk factors (eg, smoking and obesity). They also include issues where there are significant disparities (eg, suicide and oral health) and some relatively neglected but important areas, such as rangatahi (youth) health and sexual health.

This needs assessment covers these priority areas, as well as identifying other areas which may lie outside the priority objectives yet seem to indicate significant need within the DHB. This needs assessment presents a broader socioeconomic and environmental profile, alongside disease-based data.

DHBs have the responsibility for implementing the *Primary Health Care Strategy* through their funding of primary care services. More accessible and affordable primary care holds the promise of improved health status and reduced avoidable hospitalisations for the populations served (avoidable hospitalisations are those which could be avoided by either preventing the illness or accident that leads to the admission in the first place, such as through the provision of health promotion or disease prevention, or by better management of patients in the community). This health needs assessment summarises the existing primary care data, and identifies the gaps within it.

Pacific and Asian people are present in low numbers in Nelson Marlborough, therefore detailed quantitative analysis of rates and figures for these groups is not possible. Nevertheless, DHBs are encouraged to liaise with groups advocating for the health of these populations.

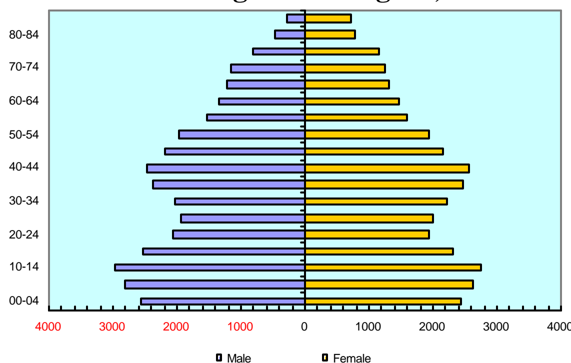
PART 2: PROFILE OF NELSON MARLBOROUGH DISTRICT HEALTH BOARD: TE AHUA O TE ROHE

Demographic information

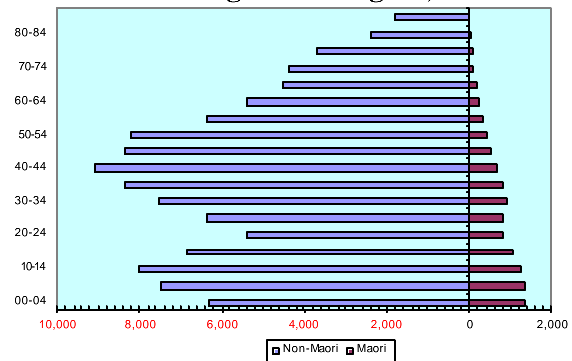
There are about 122,540 people living in the Nelson Marlborough DHB region in 2001. It is the characteristics of this population (age, sex, ethnicity, rurality) together with a summation of influences (socioeconomic and environmental determinants) that determines health needs for Nelson Marlborough. Females outnumber males (61 290 versus 61 250 projected for 2001) in Nelson Marlborough, as they do in New Zealand as a whole. Nelson Marlborough's total population is expected to continue to increase over the next ten years.

The proportion of Maori in Nelson Marlborough, at around 8%, is lower than in the total New Zealand population (15%). However, the number and proportion of Maori in all age groups are projected to increase at a rate higher than the local non-Maori population, and faster than the national rate of population increase for Maori, in the next ten years. Maori have a younger population structure than non-Maori, due to a higher birth rate and lower life expectancy. They also tend to be over-represented in the lower socioeconomic status and poorer health status groups, and to therefore have higher health needs. Maori are not evenly distributed between the three UAs; Marlborough has the highest proportion of Maori (10.2%), and Tasman (6.9%), the lowest. The Maori population in Tasman is higher in Motueka than in other areas.

Age structure by gender, Nelson Marlborough DHB region, 2001



Age structure by ethnicity, Nelson Marlborough DHB region, 2001



The small (1%), but increasing, Pacific peoples population, also tends to have lower levels of socioeconomic status and poorer levels of health, and is likely to increasingly feature in the health needs of the region.

Non-Maori in Nelson Marlborough have a population age structure with a higher proportion of older people than New Zealand overall. The smaller proportion of the population in the 15 to 24 age group may be related to a lack of tertiary education opportunities in Nelson Marlborough. Since the over 65 age group has high health needs, and consumes more health services than younger age groups, the higher proportion of older people in the region is also likely to place a higher than average demand upon health services.

The way a population changes over time is related to fertility, birth rates, death rates and migration patterns. The fertility rate in Nelson Marlborough is lower than the national rate. This can be partly explained by the lower proportion of Maori and Pacific people in the region. The birth rate for the total

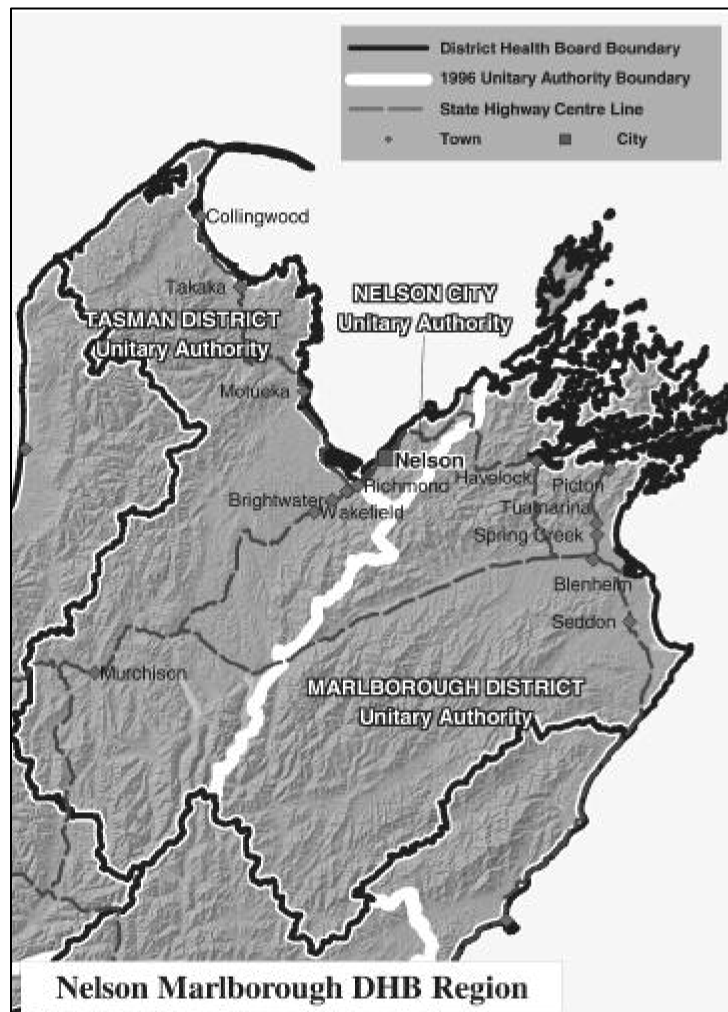
Nelson Marlborough population is lower than the birth rate for New Zealand overall. The Maori birth rate appears to be similar to the national Maori rate. The all cause mortality rate is also lower than the New Zealand average, which is not unexpected given the socioeconomic profile of the region.

The proportion of people living rurally in Nelson Marlborough has grown in recent years and is predicted to continue to grow. This has significant service delivery issues as it is more costly to deliver health services to scattered populations.

Nelson Marlborough has strong migration inflows both inter-regionally and internationally. This inflow is characterised by a high rate of Maori inter-regional migration, which is one of the reasons for the increase in Maori population in the region.

Geography

The Nelson Marlborough DHB region covers a total land area of 22 715 square kilometres with the Marlborough Sounds having approximately 2000 kilometres of coastline and Nelson and Golden Bay another 500 kilometres. Much of the region is mountainous and sparsely populated, though the three national parks bring huge numbers of visitors to the region. The highest population density is in the two cities in the region (Nelson, with 40 242 in 1996, and Blenheim with 20 502). The rest of the population is scattered in and around small rural centres.



Nelson Marlborough DHB Region

The rainfall for both areas is lower than the New Zealand mean. In recent years both Nelson and Marlborough have experienced drought conditions. This has implications for water supply, and for the economic and social wellbeing of the communities.

There are 2857 kilometres of road in total in the Nelson Marlborough region, of which 1543 kilometres (54%) are unsealed. This is higher than the New Zealand figure of 43% unsealed.

Of the 93 schools in the region (24 in Nelson, 36 in Tasman, and 33 in Marlborough) only eight have a decile rating of 1 to 3 (most disadvantaged).

Seismic events would appear to be the most likely cause of any major disaster in the Nelson and Tasman districts. The Waimea and Flaxmore faults are two

major faults that run from the Cook Strait directly into Nelson City. The hills on which large proportions of the city's houses are built are known to be unstable. Subsidence and major slips have caused significant damage in the past, and the frequent occurrence of minor slips is a reminder of this vulnerability. Tectonic movements similarly dominate the Marlborough district's geological history. The major fault lines in the area are the Wairau, Awatere and Clarence faults. Blenheim is situated directly over the Wairau fault, and Seddon directly over the Awatere fault. These faults link in with the major fault seams running the length of New Zealand. There has been seismic activity on varying scales in this area over the past 100 years.

All of the large concentrations of population in the region are grouped together in areas that are subject to flooding from nearby rivers. Parts of Nelson City, and Tahunanui, flood with sea water on every occasion that there is a slightly higher than normal (king) spring tide. Significant areas to the north of Nelson City are below high tide level and rely on a system of drains and valves to stop the sea from encroaching each high tide. Marlborough also has had serious flooding problems in its history.

Local government: unitary authorities

In Nelson Marlborough all three districts, Tasman, Nelson and Marlborough are unitary authorities (UAs) – meaning they have the responsibilities of regional councils. All three UAs fall neatly within the DHB boundary.

Economy, industry and occupation

The regional economy has recorded one of New Zealand's highest economic growth rates between 1990 and 2000. As with other parts of New Zealand the employment situation for Nelson Marlborough varies from year to year. Employment in this region tends to be concentrated in manufacturing, retail and service sectors. Agriculture, fishing and forestry provide a large number of part time and seasonal jobs but their significance for employment is reduced when converted into full-time-equivalents. However, downstream processing of these primary products enhances the value of these industries to the region in income and employment. Some of the key industries include forestry, wine production, marine farming, horticulture, food/gourmet businesses, mining, arts and crafts, and hospitality. The Royal New Zealand Air Force base at Woodbourne also provides employment in the region.

Marlborough is the largest grape producing area in New Zealand, producing 40% of the country's total production. The total wine industry (grape growing, wine producing, wine hospitality) employs about 1000 people and has grown by 94% in the past three years. The major constraining factors are availability of labour and suitably irrigated land.

Aquaculture (mussel and salmon farming) is a large industry, mainly primary production. The establishment of bio-toxin-producing algae in the Marlborough Sounds would be a major blow for the industry.

Forestry is becoming a significant industry, with harvesting forecast to increase dramatically over the next five to ten years. Again, a lack of labour, and inadequate roading (especially in the Sounds) are perceived to be issues that could pose problems.

Nelson Marlborough has one of the lowest levels of unemployment in New Zealand, so labour is scarce. Unemployment in this region appears to be seasonal - it peaks during December and decreases in late summer and early autumn. Median incomes for both individuals and households in Nelson Marlborough are lower than the median incomes for the whole of New Zealand (by $2000 and $5000 respectively).

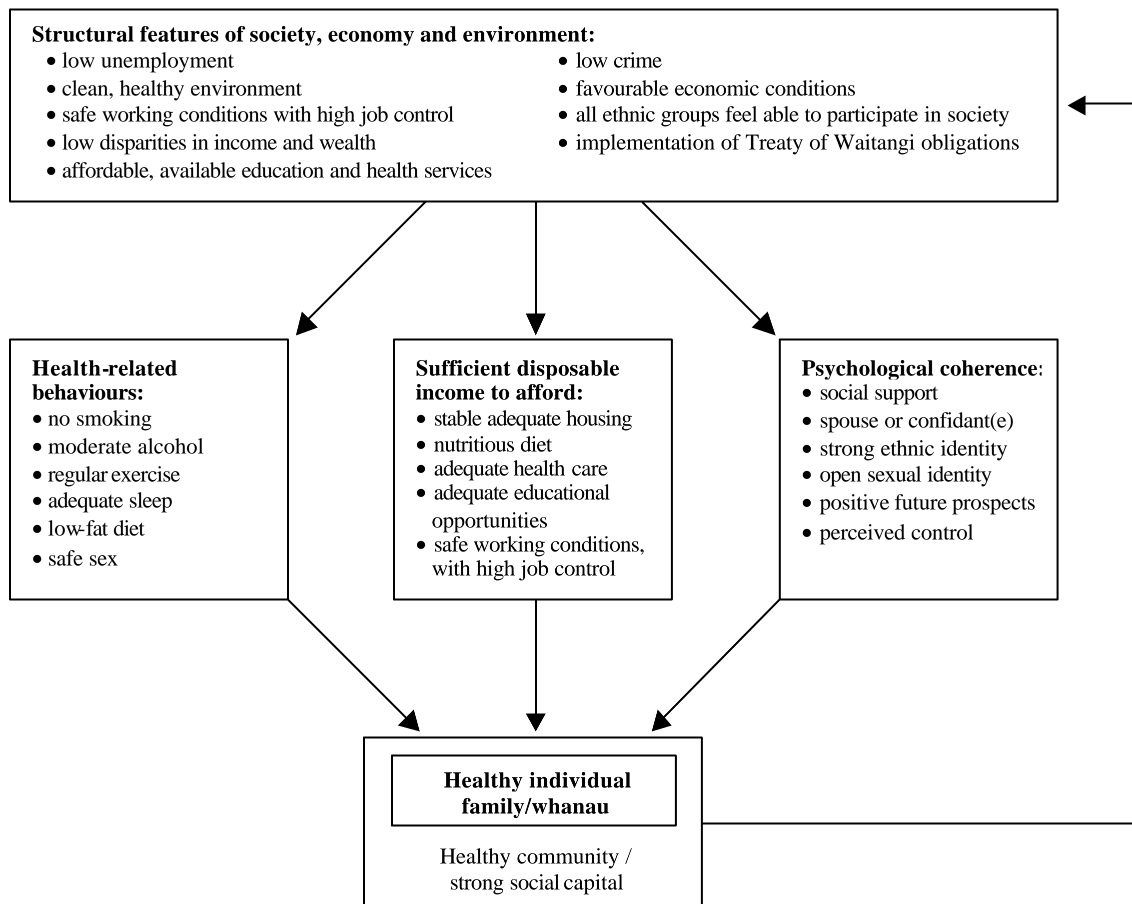
In Nelson Marlborough most 15 to 29-year-olds leave the region for post-secondary education. There is one Institute of Technology, with two campuses, which has increased the range of courses offered over the last few years. However, as Nelson Marlborough has one of the lowest wage structures in New Zealand it is not attracting young people back.

PART 3: SOCIAL, ECONOMIC AND ENVIRONMENTAL DETERMINANTS OF HEALTH: TE TIROHANGA OHAOHA

Socio economic status and health

People who have higher levels of education, higher incomes and live in less socioeconomically deprived neighbourhoods are likely to live longer and enjoy better health than those who have no qualifications, are unemployed or in low-skilled jobs, earn less and live in socioeconomically deprived neighbourhoods. *A wide range of health indices and risk factors have been found to be patterned by socioeconomic factors such as deprivation, income, education, labour force status, housing, and occupational class*.

Model of social and economic determinants of health



Source: Howden-Chapman P and Tobias M (eds). Social Inequalities in Health: New Zealand 1999, p4.

Lower socioeconomic status is also associated with reduced access to cars and phones, with consequent difficulties in accessing health (and many other) services. Rural populations are particularly disadvantaged as transport costs and travel times to health services are greater for them. The prevalence of unsealed roads adds significantly to the travel time and cost to access services, to the extent that the Ministry of Education has suggested that the isolation index it developed could weight the distance of unsealed over sealed roads by a factor of as much as two. Nelson Marlborough has a higher than average proportion of unsealed, rural roads.

Nelson Marlborough has lower average income and more benefit use than the average for New Zealand overall. Higher benefit use is mainly due to a higher percentage on New Zealand Superannuation than the national average. Because there are fewer people at the extremes of socioeconomic status, Nelson Marlborough overall presents a less deprived picture compared with the New Zealand average. However, the picture is a mixed one. While people in Nelson Marlborough are less likely to have a university qualification than New Zealanders nationally there are fewer low decile schools than the average for New Zealand. Nelson Marlborough people have lower unemployment than New Zealand as a whole and are disproportionately more represented in lower social class groups based on occupation.

Key informants commented that lower incomes in the region were not only the result of unemployment in the region, but were also because Nelson Marlborough has a low wage economy. Many employed people are, therefore, also living below the comfort zone.

People in Nelson Marlborough are more likely to own their own home, and there are proportionately lower numbers of sole parent households. There are fewer people living in crowded households than the New Zealand average. Households in Nelson Marlborough are less likely to be without a phone or a car compared with the New Zealand average.

Various socioeconomic parameters for the Nelson Marlborough DHB region, 1996

	1996 pop'n	% Maori	Equivalised household income	% Unemployed	% Carless	% Phoneless
Tasman District	37 971	6.9%	27 370	4.2%	7.7%	7.9%
Nelson District	40 239	7.5%	28 557	6.1%	11.1%	3.9%
Marlborough District	38 397	10.2%	27 370	5.6%	8.8%	4.8%
Nelson Marlborough DHB	116 610	8.2%	N/A	5.3%	9.3%	5.5%
New Zealand	-	14%	33 325	7.7%	11.5%	4.9%

Source: Statistics NZ
N/A – Not Available
Note: Equivalised means adjusted for family size.

All three UAs in the Nelson Marlborough DHB region show favourable levels of socioeconomic determinants relative to the New Zealand average.

Maori incomes in the Nelson Marlborough DHB region are higher than Maori incomes nationally, and are around 65% of non-Maori incomes. Maori unemployment is on average three to four times the non-Maori rate, though unemployment for Maori is lower in Nelson Marlborough than in New Zealand, overall.

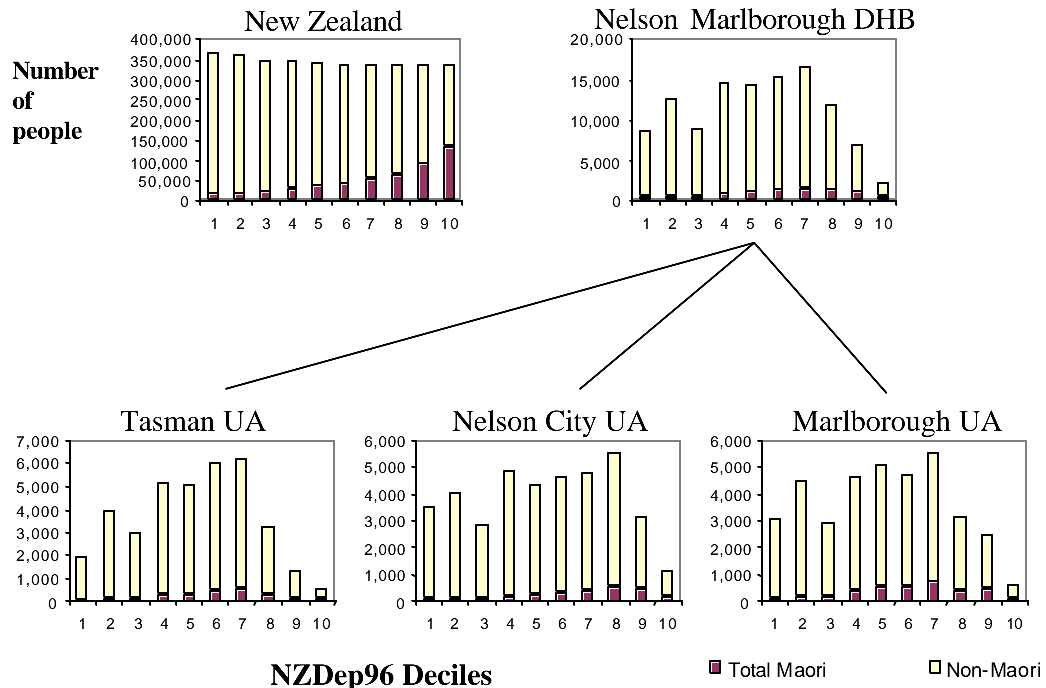
Deprivation

A collection of indicators measured for small geographical areas (usually populations of 100 to 200 people) have been combined into a New Zealand Index of Deprivation 1996 (NZDep96). There is a consistent and pervasive correlation between various health-related parameters and increasing deprivation using the NZDep96 scale. Increasing small area socioeconomic deprivation is consistently associated with decreasing life expectancy, increasing mortality rates, increasing hospitalisation rates and higher smoking rates. *High decile areas are therefore an important indicator of likely areas of health needs.*

NZDep96 is one measure of socioeconomic status. It is a relative measure compared to the whole of New Zealand; all small areas in New Zealand are ranked in terms of deprivation and divided into ten deciles. By definition, each decile has equal numbers of people at a national level. Decile one is the lowest deprivation, decile ten the highest. Individuals residing in a small area cannot be assumed to all have the same socioeconomic status. However, there is a strong correlation between personal socioeconomic status and location of residence.

An NZDep96 map for the region is presented after page 36. In that map, areas in red represent areas of very high deprivation. Nelson Marlborough is characterised by only small pockets of population in the extreme deciles. Tasman has the least deprivation, with the urban areas of Nelson and Blenheim showing clusters of higher deprivation.

Deprivation profiles for New Zealand and the Nelson Marlborough district health board region, 1996



In the graphs above, the horizontal axis shows the NZDep96 index of deprivation scale from 1 (least deprived) to 10 (most deprived) deciles of small area socioeconomic deprivation. The vertical axis shows the number of people in each decile. Note the even distribution of people at the national level by decile (by definition). However, within DHBs the population may be skewed towards either a more or less deprived pattern than the national picture.

The Nelson Marlborough region shows marked differences from the national norm in both overall distribution, and in Maori distribution. A higher proportion of both Maori and non-Maori live in deciles four to seven, and relatively few Maori and non-Maori live in deciles nine and ten. While the distribution of the Maori population in Nelson Marlborough is less heavily skewed towards the high deprivation deciles than in the New Zealand distribution, Maori are still heavily over-represented compared to non-Maori in deciles nine and ten, though in Nelson Marlborough this represents very small actual numbers.

Environment as an influence on health

The standard of drinking-water is a concern in Nelson Marlborough. The national *Drinking-water Standards for New Zealand,* 1995, lists three Priority 1 determinants that are to be tested for at the treatment plant, namely faecal coliforms, giardia and cryptosporidium. The presence of these organisms indicates the potential for other disease-causing organisms to also be present. In Nelson, only nine of its 72 treatment plants were fully compliant. These nine plants supplied water to 39% of the population. In Marlborough, only one of its 101 treatment plants was fully compliant (most of these are very small local supplies which are not graded). This plant supplied water to 2% of the population.

The population of Marlborough UA continues to grow quickly and the services provided in sewage disposal are being challenged all the time. A significant upgrade of the Blenheim oxidation ponds was completed in May 2001. A new sewage treatment plant for Picton was commissioned in September 1999. Monitoring results for the receiving waters, and for both the sewage treatment systems and the effluent quality, show a greatly reduced impact from faecal coliforms on the receiving waters.

The identified problems associated with septic tanks in the satellite settlements around Blenheim have not been resolved. In numerical terms this relates to 743 households and approximately 2316 people (6.5 % of the total Marlborough population) at direct risk from illness or disease relating to malfunctioning septic tanks, not including the Marlborough Sounds communities. The Marlborough District Council is presently planning for a reticulated sewage treatment system in Renwick.

In Nelson UA the major population centres in the region are well served by sewage treatment systems.

In the Nelson Marlborough DHB region 120 contaminated sites have been identified. There are houses close to the chemical dump in Mapua (Tasman UA); and there are other areas where timber has been logged and milled, with the potential for PCP contamination. There is ongoing use of hazardous substances in the region associated with agricultural activities.

Some communicable diseases are notifiable (meaning that diagnosed cases must be reported). However, numbers are generally considered to be underestimated because of under-reporting, under-diagnosis and the fact that many people with some of these diseases never access health services, either because of barriers to access or lack of serious symptoms. Nelson Marlborough rates of notification are lower than national rates except for pertussis (whooping cough). Nelson Marlborough region has experienced a significant epidemic of pertussis over the last two years. This initially appeared in the Golden Bay area and then spread to the rest of the region. Since January 1999 there have been 350 cases in Nelson and 288 in Tasman. The rate in 2000 was 432 per 100 000 compared

with a national rate of 115. There have not been any deaths from pertussis. Cases have predominantly been children, but all age groups have been affected. The epidemic appears to be tailing off over the months of April, May and June 2001. There are low rates of meningococcal disease compared to national rates (4.3 versus 13.2 per 100 000, in 2000). The rate in 2001 will be higher, since by June 2001 there have already been seven cases and two deaths from meningococcal disease.

PART 4: HEALTH STATUS IN NELSON MARLBOROUGH: TE HAUORA O TE IWI WHANUI

Much of the information concerning health status uses death and hospitalisation rates. Note that hospitalisation rates can be more a reflection of availability and supply than need. Rarely are true prevalence or incidence rates available for specific diseases and conditions.

Health strategy priority objectives

The *NZHS* outlines the Government's overall health focus and direction. The strategy outlines more specific goals and objectives to guide action on improving the health of the population, and reducing inequalities in health status between population groups. There are 61 objectives, 13 of which have been highlighted for DHBs to focus on for immediate action.

A number of the priority objectives relate to risk behaviour, which is that behaviour that either protects individuals or puts them at risk of illness or injury or death. This is considered to be preventable in the sense that behaviour is modifiable, though for some groups to date programmes to change lifestyle and behaviour have not been significantly effective.

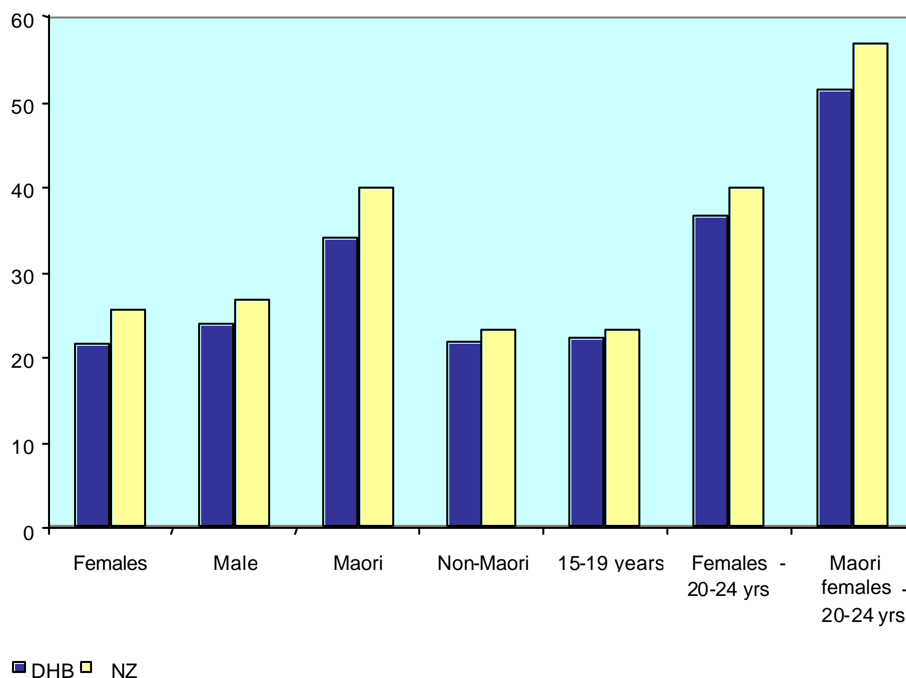
Risk behaviour is usually, with some minor exceptions, more prevalent among groups with lower socioeconomic status. It is important to address the socioeconomic determinants of health, upon which risk behaviour is strongly patterned, in order to reduce obesity, smoking, alcohol and other drug use.

The 13 priority objectives are presented below, together with available data for Nelson Marlborough.

Priority 1: To reduce smoking

Smoking is considered to be an intermediate factor between deprivation and morbidity. Smoking is one of the most significant preventable causes of ill health, and remains a considerable burden to the health status of Maori in particular. There are 4700 deaths annually in New Zealand attributable to smoking. Smoking kills one in two smokers, and smokers who die prematurely from smoking-related causes on average die 14 years earlier than non-smokers. Smoking is also an important perinatal and child health risk factor.

Smoking prevalence (%), Nelson Marlborough versus New Zealand, 1996



Source: Ministry of Health, from 1996 Census data

The percentage of people over 15 who smoked in Nelson Marlborough was 22% in 1996, compared to 24% nationally. It was lower in Nelson Marlborough for all sub-groups studied. It is of concern that youth rates are only slightly lower than the national rates, given the socioeconomic advantage of the region. Tasman in particular has higher rates of youth smoking (31% compared with 28% nationally).

Priorities 2 and 3: To improve nutrition and reduce obesity

Nationally, 15% of males and 19% of females are obese, and 40% of males and 30% of females are overweight (but not obese). Obesity and nutrition have been linked to most major non-communicable diseases including diabetes, most cancers and cardiovascular disease. This is a particularly significant issue for Maori and Pacific peoples. Hypertension, osteoporosis and dental decay are other ailments directly attributable to nutritional status.

Nelson Marlborough has never had a regional dietary intake survey done, but key informants commented that access to good food contributes to the health of the population in the region.

Priority 4: To increase the level of physical activity

Physical activity is important in reducing avoidable mortality and avoidable morbidity, particularly in relation to stroke, high blood pressure, obesity, diabetes and colon cancer. The best available regional data is from the Hillary Commission Push Play survey, carried out every month from May 1997 to April 1998. Information was collected for 449 adults and 131 young people living in the wider region (includes the Buller, Kaikoura, Marlborough and Tasman District Councils, and Nelson City Council). Within this wider region, all age groups of the population were more active, in terms of the proportion who take part in physical exercise, and in terms of hours spent exercising, than the national population.

Priority 5: To reduce the rate of suicides and suicide attempts

New Zealand leads the Organisation for Economic Co-operation and Development (OECD) in suicide rates. In 1998 there were 574 deaths from suicide in New Zealand, compared to 561 in 1997 (a 2% increase). In New Zealand overall, the rate of suicide death in 1998 for Maori was substantially higher than the non-Maori rate. Almost one in four suicides in New Zealand in 1998 were in people aged between 15 and 24 years (140 deaths), predominantly among males (three-quarters). Recent decades have witnessed increases in suicide rates for young Maori people. Links have been made between cultural alienation and the observed increases in psychological distress among young Maori, as signalled by increasing psychiatric admissions and suicide attempts.

The mortality rate from suicide in Nelson Marlborough is lower than the overall rate for New Zealand, though the numbers are too small to be able to say the difference is significant.

Priority 6: To minimise the harm caused by alcohol and drug use

At some time in their life, nearly one in five New Zealanders will suffer an alcohol-use disorder, whether from a disease such as cirrhosis, or an increased risk of some types of cancer, stroke, and heart disease. Alcohol abuse also significantly contributes to death and injury on the roads, drowning, suicide, assaults and domestic violence. While alcohol use can offer some protective effect against heart disease and stroke later in life, the net effect on mortality is negative because so many of the deaths occur at younger ages (particularly from accidents and injuries).

Illicit drug use is difficult to quantify. Daily use of cannabis is recognised as having adverse health effects. Only one percent of people in a New Zealand national sample were daily users. Young people aged between 18 and 24 years have the highest frequency of cannabis consumption and are thus most at risk of adverse consequences. Injecting drug use (IDU) produces serious risks to individuals and society. Current estimates suggest that there are around 15 000 regular IDUs in New Zealand.

In Nelson Marlborough the mortality and hospitalisation rates for alcohol-related conditions appear to be slightly lower than the national. Alcohol is the second major cause of serious or fatal motor vehicle accidents in Nelson Marlborough.

Priority 7: To reduce the incidence and impact of cancer

Cancer is one of the leading causes of death for middle to older age groups. Maori loss of life from cancer is high in relation to non-Maori.

In Nelson Marlborough there is a consistent pattern of lower cancer death rates than average for the total population, as well as for some, or all, sub-groups by gender and ethnicity, but numbers are small. The only exception is melanoma where the rate appears higher (but the confidence intervals are wide). Nelson Marlborough has higher sunshine hours, and higher rates of physical activity (which probably takes place outdoors) both of which might contribute to a higher rate of melanoma. It also has a high percentage of outdoor occupations including farming, viticulture, aquaculture and forestry.

Priority 8: To reduce the incidence and impact of cardiovascular disease

Although cardiovascular disease in New Zealand is declining it is still the leading cause of death, mainly due to ischaemic heart disease and stroke. Nationally, males have over double the rate of hospitalisations than females. Modifiable risk factors for cardiovascular diseases include smoking, obesity, lack of physical exercise, diabetes, stress, diet, and high blood pressure. Maori are known nationally to have higher rates of heart disease, and higher consequent mortality from heart disease,

than non-Maori, yet recent research has shown that intervention rates (such as coronary bypass operation rates) are significantly lower for Maori than non-Maori.

In Nelson Marlborough the hospitalisation rate for cardiovascular disease appears to be lower than the national rate. The hospitalisation rate for stroke is significantly lower than the national rate. Discharge rates for angina for Maori are lower than non-Maori in Nelson Marlborough. This may indicate a problem with ethnicity coding or may point to an unmet need in terms of improving access to services for Maori.

Priority 9: To reduce the incidence and impact of diabetes

Diabetes is a major cause of morbidity and early mortality, and causes problems for both those affected and their families. The most common of the two types of diabetes is non-insulin-dependent diabetes mellitus (type II), which is a disease of insulin deficiency and resistance and diagnosed most frequently in middle and older age groups. This form of diabetes accounts for nearly nine out of every ten cases of diabetes. Diabetes is rapidly increasing in New Zealand and the incidence is expected to double in the next 20 years. Maori and Pacific peoples are three to four times more likely to develop diabetes than other ethnic groups.

Modifiable risk factors for diabetes include diet, obesity, and a lack of physical exercise.

Hospitalisation rates for diabetes for both Maori and non-Maori in Nelson Marlborough are significantly lower than the national rates. In the case of Maori the rate is less than half the national rate, though this figure may be misleading due to numerator-denominator bias.

Priority 10: To improve oral health

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. Most dental disease is preventable, and early dental disease can be an indicator of poor overall health status, both present and future. The vast improvement in children's oral health over the last 30 years is due to the improvement in social conditions and the introduction of preventive measures such as fluoridation, fluoride toothpastes, clinical application of fluoride and fissure sealants as well as health promotion, health education and regular dental care.

Nelson Marlborough has a slightly higher percentage of 5-year-old children with caries than New Zealand as a whole, and a higher average missing or filled (MF) score among these 5-year-old children. Twelve- year-old children had 1.3 teeth missing or filled, compared with 1.6 for New Zealand as a whole. Nationally, Maori children have worse oral health than non-Maori. A large number of kohanga reo children are not enrolled or have not had their 2.5-year dental assessment. Maori children are disproportionately represented amongst the children having dental treatment under general anaesthetic at Wairau and Nelson hospitals (31% of under 5-year-olds receiving inpatient dental treatment in 2000/01 were Maori). Often more than one child from a family requires this treatment. Maori key informants highlighted oral health as a major concern.

Nelson Marlborough water supplies are non-fluoridated, apart from the supply at the RNZAF Base at Woodbourne.

Priority 11: To reduce violence

There is little data available regarding violence in Nelson Marlborough. During the period 1996 to 2000, there were 12 children hospitalised in Nelson Marlborough from intentional injuries - this

translates to a rate higher than the national rate, but the small numbers do not reach statistical significance.

Priority 12: To ensure access to appropriate child health care

Achieving good child health is vital for later adult health, as the risk factors for many adult diseases and the opportunities for preventing these diseases arise in childhood. Poor child health and development also have an adverse impact on broader social outcomes, including sexual and reproductive health, mental health, violence, crime and unemployment.

Infant mortality has often been used as a broad indicator of child health. The infant mortality rate in Nelson Marlborough is the same as the national rate. The child mortality rate may be slightly higher than the national rate, but the difference does not reach statistical significance. The sudden infant death syndrome (SIDS) rate has declined, as it has nationally. The percentage of babies seen by Plunket in Nelson Marlborough is similar to the national average for both Maori and non-Maori. Being seen by Plunket is strongly associated with breast feeding.

Immunisation data is incomplete and there is no available breakdown by ethnicity. National data is unreliable and shows very low immunisation rates. Whilst using a practice denominator population, rather than the DHB population, the GP audit in June 2001 showed coverage rates between 82% for the 5-month vaccination (for children aged 6 months) to 97% for the 6-week vaccination (for children aged 6 months) according to the Marlborough Immunisation Facilitator. The hospitalisation rate for immunisation-preventable disease for the total Nelson Marlborough population is lower than the national rate.

Injuries are the leading cause of death and disability in the 1 to 14 age group, and after infectious diseases are the second leading cause of hospitalisation of children. It is estimated that nearly one-third of child injury deaths are readily preventable. Hospitalisation rates for unintentional injuries in Nelson Marlborough are significantly lower than the New Zealand average for under 5 years and 5 to 14 years. The hospitalisation rates for burns and poisonings of children are also lower than average.

In Nelson Marlborough the referral rates for failed hearing tests are very much lower than the national rates for Maori, Pacific and other children. Provider focus groups regarded glue ear as a significant issue for the health and development of Maori tamariki.

Priority 13: To improve the health status of people with severe mental illness

Mental health is traditionally a weak area in terms of data for health status profiles. The situation is improving with the setting up of the Mental Health Information National Collection project (MHINC). There is no robust diagnosis data available at this stage.

Mental health is considered by some to be the most pressing health need for Maori in current times. Key informants considered that Maori are over-represented among those with mental illness associated with alcohol and drug problems.

Key health issues for Maori

Maori have the highest health needs of any ethnic group in Nelson Marlborough, as shown by health status and health determinant (socioeconomic) statistics. The historical contribution of colonisation to this situation has been touched on earlier. The ongoing maldistribution of health determinants together with the importance of 'resources following need' has also been discussed. For example, there is research demonstrating that non-Maori are paid higher incomes than Maori when in similar jobs with similar qualifications.

The growing and ageing Maori population will lead towards greater health needs in future, unless resources and determinants of health are redistributed.

Socioeconomically, Maori are disadvantaged relative to non-Maori. There may be additional influences on health status related to the experience of being Maori that are important. Regaining tino rangatiratanga and control over socioeconomic determinants is a step for Maori towards reducing health inequalities. DHB activities which would assist this process involve the DHB working closely with Maori and other agencies, both government and non-government.

Although gathering the usual measures of health and health determinants and disparities is important, it was emphasised at the project hui that the usual measures of health needs fall short in terms of capturing the richness and diversity of Maori understandings and realities in health. Additional suggestions of measures relevant to Maori health service needs included:

- Maori consumer satisfaction
- the scope of Maori providers and shared services within DHBs
- funding allocated for local Maori development initiatives
- the organisational promotion of te reo Maori
- the number of DHB staff in Maori cultural training (eg, cultural safety or responsiveness)
- the quality of services and relationships between DHBs and tangata whenua
- the quality of consulting with local tangata whenua
- Maori access patterns to health services
- access also to traditional Maori health practices.

In essence, the project hui recommended that Maori must be a visible Treaty partner throughout the health needs assessment process, and in the implementation of recommendations at local level. This can only be achieved with adequate resourcing to enable genuine Maori involvement.

In Nelson Marlborough a series of key informant interviews was carried out with representatives of local iwi, roopu, and health providers. The summary document of these interviews is in the technical and project hui report and provides understanding of the above measures. However, detailed measurement of these factors, together with population measures of health (such as strength of Maori community, measures of cultural identity, number of Maori in positions of influence, and value of resources in Maori ownership), is also suggested for future work that builds on this assessment.

At the 1996 Census the percentage of Maori reporting some fluency with te reo Maori in Nelson Marlborough DHB region was less than the 25% for New Zealand overall (14.8% in Tasman, 16.8% in Nelson City and 16.0% in Marlborough).

He Korowai Oranga, 2001, the Maori health strategy discussion document, lists 20 population health objectives for Maori. Some of these have been discussed elsewhere in the report, others are discussed below (see items in **bold**). In all areas where comparative data are available, there is a disparity between Maori and non-Maori health. In many areas data for Maori are not presented because numbers are too low to reach clear conclusions.

In terms of **child health,** the infant mortality rate in Nelson Marlborough appears to be the same as the New Zealand rate, but the statistics are not presented by ethnicity due to low numbers. For Maori tamariki, rates of referral for failed **hearing** tests are greater than non-Maori, and oral health status is another need as shown by higher caries rates in Maori tamariki compared with non-Maori. **Rangatahi health** is a priority area. As for all of New Zealand, **smoking** prevalence in Nelson Marlborough among Maori, and especially young Maori, is much higher than for non-Maori. Maori health providers comment on the level of young women smoking and the implication of this for Maori tamariki. **Suicide** among young people in Nelson Marlborough may be lower than for New Zealand as a whole, but numbers are too low for rates to be determined by ethnicity. Key informants placed a particular emphasis on Maori tamariki and rangatahi health needs, and provided detailed information with regard to barriers to service for these groups.

The all cause rate for **injuries** to Maori in Nelson Marlborough appears to be similar to non-Maori, and is significantly lower than the national rate for Maori. For **alcohol and drug problems** the numbers are too small to determine rates with certainty. **Sexual and reproductive health** issues for Maori in Nelson Marlborough are another issue of concern to key informants, as is the high Maori teenage birth rate.

Nationally, the major diseases in terms of illness and death for older Maori are **diabetes, cancer** and **cardiovascular diseases**. Where data is available, it shows higher death rates and hospitalisation rates for Maori than non-Maori. Key informants commented on the lack of services for kaumata, and on the issue of undiagnosed illness (particularly diabetes) among older Maori. The hospitalisation rate for **asthma**, for the total Nelson Marlborough population, is lower than the rate for New Zealand overall, as is the prevalence of asthma in the region. The national admission rate for Maori is considerably higher than for non-Maori. There is no data available for Nelson Marlborough regarding **nutrition** and **obesity**. However, these are risk factors for, among other things, cardiovascular diseases, diabetes and some cancers; all of which affect Maori disproportionately. The final population health objective is **disability support,** which is not covered by this project.

The disproportionately low numbers of Maori in the health workforce, both in terms of 'by Maori for Maori' and within mainstream services, is evident from this work, and has also been raised by local key informants as a significant need. Meaningful Maori involvement in all areas of health, from management to service provision, in ways that allow Maori control over how Maori health needs are met, was listed as one potential measure of health needs for Maori at the project hui. Adequate resourcing of Maori health initiatives was seen as another vital area.

Key informants and Maori providers listed income levels at the top of the list of barriers to health for Maori in Nelson Marlborough; however, concerns were also expressed about the appropriateness of mainstream services, conflicts between Maori health concepts and medical concepts and poor access to primary care services. Particular areas of concern are dental health, undiagnosed conditions, tamariki and rangatahi health and smoking behaviour. While there was strong support for existing Maori-provided services, concerns were expressed about the level of funding and the narrowness of the contracting; there were also some concerns about the professionalism of some of the existing services.

It was generally felt that funding, resource allocation and staffing were inadequate to meet the Maori health gain priority areas in the region and that the tightly targeted contracting contradicted Maori holistic health ideas, and disadvantaged providers. In addition, some geographic areas (Motueka and Waikawa/Picton) are particularly poorly off in terms of a lack of by Maori for Maori health providers.

Health of young people

The Nelson Marlborough DHB region has a similar proportion of young people in the population to the proportion in the total New Zealand population.

The hospitalisation rate for **motor vehicle accidents** and road crashes for 15 to 25-year-olds in Nelson Marlborough may be slightly higher than the New Zealand average (6.5 versus 5.9 per 1000). The death rate from vehicle accidents for this age group, however, appears to be slightly lower in Nelson Marlborough. During the period 1996 to 1998, the rate of **youth suicide** in Nelson Marlborough appears to be higher than the national rate. The hospitalisation rate for attempted suicide in youth for Nelson Marlborough may also be higher than the national rate.

While **smoking** prevalence is lower in Nelson Marlborough for all age groups compared with the national average the prevalence is higher than would be expected from the socioeconomic profile of the region. The **teenage fertility rate** is lower than the national rate. In Nelson Marlborough, the hospitalisation rate for pregnancy complications is lower than the national rate for the 15 to 24 age group. Sexually transmitted infection (STI) rates are not available, but are known to be increasing nationally.

Key informants, from both Maori and mainstream groups, identified young people as one of the population groups in Nelson Marlborough with high health needs (especially around risk-taking behaviour) not being met by existing services.

Men's health

Men's health is signalled here as an important, often overlooked, area. Life expectancy for men is less than for women, and mortality rates are higher for men. The avoidable hospitalisation rate for men in Nelson Marlborough is higher than for women (39.6 versus 33.6 per 1000), though it is significantly lower than the rate for men in New Zealand overall.

More men than women are in the labour force in Nelson Marlborough. Unemployment is lower in Nelson Marlborough than in New Zealand overall. Among 25 to 64-year-olds a 50% increased rate of mortality has been associated with unemployed people in New Zealand, compared with the employed. Of particular note, is a strong and independent association of unemployment with **suicide**, with suicide two to three times more common among the unemployed than the employed. This is a particular issue for males, who tend to attempt suicide less than women, but succeed more often. Of 49 suicides in Nelson Marlborough, for the years 1996 to 1998, 37 (75%) were males.

Accidents and motor vehicle crashes more commonly involve males than females, as do injuries related to work and sports, and males are over-represented in injuries due to **violence**. National figures show that **alcohol and drugs** are used disproportionately by men, and the death rate from alcohol overuse in men is higher than for women. The top three morbidities of **cancer, cardiovascular diseases and diabetes** affect men disproportionately. Data concerning prostate cancer registrations could be usefully examined in future. Admission rates for cardiovascular diseases for men in Nelson Marlborough, though less than the New Zealand average, are double the rate for women. Diabetes hospitalisation rates for men and women have not been calculated, though national studies show higher rates for men.

Women's health

Women are known to be disproportionately located in lower socioeconomic groups in New Zealand. In the workforce, women are proportionately more commonly found in lower occupational classes, and are much more likely to not be employed than men. They are higher users of health services, but have longer life expectancies. Most of the higher utilisation of health services relates to maternity care and 'psychological stress', and also to their longer life expectancy. In addition, women's health in the childbearing years is important because this directly affects the next generation.

Young women, particularly young Maori women, have among the highest **smoking** rates of any sub-group in Nelson Marlborough.

In Nelson Marlborough the **cervical screening coverage** rate is slightly higher than the New Zealand average (73% versus 72%) but still well below the national target of 85%. The Marlborough District had the poorest coverage in the region's rates, at 70%. Rates for Maori were not available. The **breast screening** rate is slightly lower than the national rate (62% versus 65%), but for Maori women the rate is very low (30% versus 42% for Maori women nationally).

Information on **reproductive health** shows that while the birth rate for the total Nelson Marlborough population is slightly lower than the national rate, the birth rate for Maori in the region is similar to the national rate for Maori. The percentage of babies born by caesarean section deliveries appears to have increased in Nelson Marlborough during the last decade, as they have in New Zealand. The ectopic pregnancy rate (a proxy for STI rates) for Nelson Marlborough is similar to the national rate.

Older people

Good health and quality of life are particularly strongly linked in older age groups. Older people are major users of health services, both in terms of frequency of use and the costs of supplying services. For both these reasons, assisting older people to maintain good health is important.

Nelson Marlborough has a higher percentage of older people than New Zealand overall (14.0% versus 11.8% respectively), and the over 65 population is expected to grow by 26% in the next ten years. The proportion of both Maori and non-Maori older people is projected to increase faster in Nelson Marlborough than it is in New Zealand overall.

Nationally, Maori life expectancy is around eight to nine years less than non-Maori, and in Nelson Marlborough the difference is about three years. Diseases affecting older people occur at younger ages for Maori, and the premature death of many Maori kaumatua has serious implications for Maori as a people. The diseases which dominate the over 65 age group are **diabetes, cardiovascular, stroke**, and **cancer**, which are discussed in the 13 priority areas section. National studies have shown **respiratory infections** to be the commonest infectious cause of admission to hospital for older people. In Nelson Marlborough respiratory infections are the fifth commonest avoidable cause of admission to hospital for all age groups.

Most deaths in older people are caused by gradual-onset, progressive illnesses, which are best prevented from an early age. Reducing socioeconomic inequalities and improving overall socioeconomic conditions in Nelson Marlborough should have a positive impact on the health, quality of life and longevity of older people. Interventions to reduce risk behaviours such as smoking, unhealthy eating habits and alcohol misuse (which are strongly patterned by socioeconomic factors) may be most beneficial. Attention to Maori health in a holistic sense (improving the control of Maori over factors which influence all dimensions of health) would also be desirable.

In Nelson Marlborough, the hospitalisation rate from **falls** for those aged over 65 years is lower than the national rate (13.3 versus 19.5 per 1000). The mortality rate also appears to be lower, though this has not reached statistical significance. Accurate data on **flu immunisation** rates in the region is not available.

Avoidable hospitalisations

Avoidable hospitalisations are those which could be avoided by either preventing the illness or accident that leads to the admission in the first place, such as through the provision of health promotion or disease prevention (eg, preventing lung cancer through smoking education), or by better management of patients in the community (ambulatory-sensitive avoidable hospitalisation). Injuries and accidents are considered to be avoidable but are addressed separately. There is no expectation that avoidable hospitalisations could be avoided altogether. Rather, the concept is useful in guiding interventions to where an improvement could be made.

People from socioeconomically disadvantaged population groups have less money to pay for health services, are more likely to smoke and to have a poor diet, tend to have less education regarding health issues and services, and have less access to transport for travel to health services. They tend to have poorer health, access health services at later stages of illness, and therefore have higher rates of avoidable hospitalisations.

There were 19 024 avoidable hospitalisations in Nelson Marlborough in the four years between 1996 and 2000. These make up 28.9% of all hospitalisations (similar to the New Zealand figure). Nelson Marlborough has a significantly lower age-standardised avoidable hospitalisation rate for its total population than New Zealand as a whole (36.5 versus 42.5 per 1000). Avoidable hospitalisation rates for Maori are higher than non-Maori in New Zealand, but in Nelson Marlborough the Maori rate for avoidable admissions (31.1 per 1000) is significantly lower than the national rate (55.3 per 1000), and in fact lower than the non-Maori rate in Nelson Marlborough (37.6 per 1000). Under-coding of Maori ethnicity may be contributing to this picture.

The top ten avoidable hospitalisation diagnoses in New Zealand are, in decreasing order of *total numbers admitted*: angina; respiratory infections; ear, nose and throat (ENT) infections; asthma; ischaemic heart disease; gastroenteritis; cellulitis; chronic obstructive respiratory disease (CORD); congestive heart failure and skin cancers.

Avoidable Hospitalisations top ten causes by ethnicity, Nelson Marlborough, April 1996 to March 2000

Condition group	DHB							NZ rate
	Total			Non-Maori		Maori		
	Total no of discharges in DHB	Crude rate in DHB	Total rate	Non-Maori no of discharges	Non-Maori rate	Maori no of discharges	Maori rate	
Angina	2601	633.1	363.6	2514	364.0	87	327.2	438.7
Ischaemic heart disease	1838	583.1	249.1	1791	250.1	47	200.7	164.5
Dental conditions	1778	371.3	465.0	1641	490.9	137	295.7	169.4
Respiratory infections	1168	243.9	251.3	1058	248.6	110	340.4	388.9
ENT infections	891	186.1	268.4	801	282.2	90	200.6	337.1
Skin cancers	781	204.5	96.3	779	99.4	2	7.2	98.4
Gastroenteritis	779	162.7	217.8	728	235.8	51	136.9	259.1
Asthma	652	136.2	186.3	557	184.1	95	218.5	286.8
Congestive heartfailure	597	159.1	60.5	571	58.3	26	123.9	97.7
Cellulitis	587	122.6	118.2	546	120.0	41	109.6	184.0

Source: National Minimum Data Set, Ministry of Health

Note: Age-standardised to Segi's world population

Ambulatory-sensitive hospitalisations

Ambulatory-sensitive hospitalisations (ASH) are a category of avoidable hospitalisation that could have been prevented by good access to high quality primary health care and outpatient specialist services. Quality in this sense means not only effectiveness, but also acceptability of services and the removal of barriers to access such as cost and cultural barriers. ASH make up around two-thirds of the total avoidable hospitalisations.

The age standardised ASH rate for Nelson Marlborough (23.9 per 1,000) is significantly lower than the New Zealand average rate (29.8). One factor relating to this may be a higher GP: population ratio in the region. The Maori ASH rate is 21.8 per 1000, while the non-Maori rate is 24.1 per 1000. This lower rate for Maori may reflect numerator-denominator bias.

Accidents, injuries and occupational health

In Nelson Marlborough, the hospitalisation rate for injuries of all causes is significantly lower than the New Zealand rate for both Maori (12.9 versus 26.6 per 1000) and non-Maori (18.3 versus 23.7 per 1000). Accident Compensation Corporation (ACC) data indicates that in Nelson Marlborough the claim rate for accidents is less than for New Zealand overall, as is the amount spent per person on new and ongoing claims. The most common reasons for ongoing ACC claims were, in decreasing order of numbers: soft tissue injury, fracture and dislocation, dental injuries, and deafness.

Nelson Marlborough reflects the national pattern regarding the location of accidents, with the most common location of accidents being in the home. The remainder, in decreasing order of numbers, occurred in recreational or sports locations, roads or streets, industrial locations, commercial or service locations, and on farms.

In Nelson Marlborough, the reported numbers of serious motor vehicle crashes have trended down during the last decade, reflecting the national pattern, but crashes per vehicle kilometre are higher than the national rate. Hospitalisation rates for road crash injuries in 15 to 24-year-olds also appear to be slightly higher than the national rate.

Occupational health and safety

The largest industry sectors represented in Nelson Marlborough are community, social and personal services (22%); agriculture, hunting, forestry and fishing (19.8%); wholesale, retail, restaurants and hotels (19.2%) and manufacturing (13.8%). The largest occupational groupings are agriculture and fisheries (17.3%, or nearly twice the national proportion) and service and sales (13.6%).

It is difficult to fully establish the levels of occupational diseases because the notification system is voluntary and severely under-counts the cases. Recent data on workplace injuries is also not comprehensive, but ACC data suggests that in Nelson Marlborough, agriculture and fisheries workers are particularly at risk.

Primary health care utilisation

The paucity of primary health care data for Nelson Marlborough, as for New Zealand as a whole, is a clear gap in the needs assessment. Understanding the ways and reasons that people use primary health care services is vital for robust analysis. Increasing the capacity for gathering and sharing primary health care data is an important issue for Nelson Marlborough DHB.

Recently all but one of the 97 actively-practising GPs in the region joined Southlink Health, a Dunedin-based independent practitioners association (IPA). At this stage none of the practices is capitated. There are GPs employed in primary/secondary liaison positions in both Nelson and Marlborough, and their role is to improve the communication between primary and secondary care with respect to interface issues.

Nelson Marlborough has a higher number of GPs per population in all districts than New Zealand as a whole. Key informants commented that this high rate enables easy access and a wide choice of GPs, with regard to gender, age and focus.

Prescriptions

The use of prescribed drugs in each DHB can be used as a proxy for utilisation of primary health 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 Nelson Marlborough, the total annual per capita expenditure on prescriptions is lower than the national average ($132.99 versus $139.30). The average annual number of prescriptions per capita in Nelson Marlborough is similar to the New Zealand average (10.7 versus 10.1) The types of prescriptions for which numbers, and cost per capita, were above average were cardiovascular and nervous system prescriptions. The higher proportion of older people in Nelson Marlborough may account for this, since older people consume relatively more drugs than younger age groups.

Diagnostic laboratory tests

Utilisation figures for laboratory tests ordered by referring GPs in the DHB region provide a further component of the health status picture.

In Nelson Marlborough the average per capita costs of diagnostic laboratory tests was lower than average, but figures did not include the vast majority of the community-referred tests from Marlborough which are bulk funded so no conclusions can be drawn about this.

Secondary health care utilisation

There were 65 836 admissions to public hospitals of people living in the Nelson Marlborough DHB region in the four years between 1996 and 2000, an annual average crude rate of 137.5 per 1000 (compared with the New Zealand rate of 150.6). The age-standardised all cause hospitalisation rates for Nelson Marlborough and New Zealand are 126.9 and 143.1 respectively (SSR = 0.89, 95% CI = 0.88 to 0.89). During that period in Nelson Marlborough major diagnostic categories showed both higher and lower hospitalisation rates compared with New Zealand overall.

An analysis of case weighted acute admissions for the period July 1996 to June 1999 revealed that in New Zealand during this period the acute growth is largely an urban phenomenon, whereas many regional providers have experienced falling acute volumes.

Whilst Nelson and Wairau Hospitals experienced falling acute admission volumes between 1996 and 2000 (admissions fell by 1.7%) in common with other regional hospitals, it is interesting to note that the residents of the region experienced a significant increase in acute admissions during this period. The rate of acute admissions into a hospital anywhere in New Zealand, from the population normally resident in Nelson Marlborough, rose 15% between 1996 and 2000. The population of the region rose 3.3% during this period. This could be related to a number of reasons, for example data problems with domicile coding; tertiary referrals could be included; people may be more likely to require an acute admission whilst away from home; admission criteria at other hospitals may be different from those operating at Nelson and Wairau Hospitals.

Admissions to hospital in Nelson Marlborough of patients who normally reside outside the DHB region made up 3.7% of all admissions between 1996 and 2000, compared with the New Zealand average of 17.9%. During this time, there was an annual average of 1624 admissions of Nelson Marlborough residents to hospitals outside the DHB region, compared with an annual average of 574 admissions of people resident outside Nelson Marlborough to hospitals in Nelson Marlborough. During key informant interviews, the high use of medical and emergency services by holidaymakers was mentioned as a drain on local resources.

Waiting lists and times

Reducing waiting times is a priority service area for the *NZHS*. The objectives are to have 90% of people assessed by a specialist within two months of referral, all people assessed by a specialist within six months of referral, and all people assessed by a specialist as meeting the criteria for publicly funded treatment receiving treatment within six months of the assessment.

Outpatient clinic waiting list numbers which increased in Nelson during 2000 were general surgery, audiology, ENT, gynaecology, neurology, orthopaedics, paediatrics, urology, oncology, gastroenterology and ophthalmology. In Wairau, waiting list numbers that have increased include ENT, gynaecology, paediatrics, and oncology. Numbers waiting more than six months, and more than 12 months, for elective surgery operations reduced in all categories other than dental. It is difficult to know, however, how much of the reduction is due to the introduction of the Clinical Priority Assessment Criteria (CPAC) for managing elective services, and how much is due to people receiving services.

Key informants saw both the waiting lists for services and the lack of co-ordination for rural people as weaknesses of the service.

Rural populations

Nelson Marlborough covers a total land area of 22 715 square kilometres, a large portion of which is rural. This rural area, including minor urban centres, is home to approximately 40 230 people, or 34.5% of the region's population. Provider survey respondents and key informants expressed concerns about reduced access to some services in rural locations (eg, public health nurse, diabetes nurse educator, asthma educator, dietician) and lack of co-ordination and appropriate scheduling for those with multiple needs or who live rurally and are required to travel. In some rural areas GPs may be professionally isolated and there is difficulty in attracting and maintaining staff (eg, at Murchison). Those in rural communities saw the need to maintain current levels of service without further reductions as being a very important issue. The outlying hospitals provide some local services, thereby reducing travel costs and time for the local population and maintaining a professional link for local GPs.

Utilisation of other services

Limited data has been obtained concerning utilisation of other service providers such as dentists, Maori health providers, pharmacies, complementary health services, and physiotherapists. This is an area to explore in future needs assessments.

PART 5: HEALTH SERVICES STOCKTAKE: NGA HUA O TE REHITA RATONGA HAUORA

Primary health care services

Maori health providers

Poumanawa Oranga, a Maori development organisation owned by iwi/Maori operates across Te Tau Ihu (Nelson Marlborough). It was formed to improve the health and wellbeing of all people, particularly Maori. They are encouraging the expansion and development of kaupapa Maori services by Maori for Maori across the region. There are three Maori health providers who have contracts directly with the Ministry of Health.

Maori provider survey respondents emphasised the cost of health care and distance to services as the greatest obstacles to accessing health services in the region. Along with other survey respondents, they regarded current funding levels, resource allocation and staffing as inadequate to meet the Maori health gain priority areas that have been identified for the region. They also mentioned the need for more health education, health promotion, and information regarding services that are available. They echoed the concerns expressed by other respondents regarding the need for funded transport, dental care, and more community support for many people with health needs such as diabetes, respiratory disease and mental illness, and for pharmaceutical, family planning and sexual health services.

Both Maori and mainstream respondents emphasised the need for a 'memorandum of understanding' between the DHB, local iwi, and Maori health providers to progress forward in partnership. A Memorandum of Agreement between iwi and the DHB has just been signed, in October 2001.

Service responsiveness to Maori includes the promotion of access by Maori health consumers to Maori tohunga for use of **rongoa** or other specialist/traditional Maori health interventions. Collaborative relationships between local Maori health providers and mainstream providers are ways to improve service access and responsiveness to Maori tangata whaiora/consumers.

Maori provider survey respondents listed the strengths of Maori health provision in the region as the "by Maori for Maori" health services, which take appropriate and free services to whanau. However, there are several areas where such services are either not available or not adequate to needs, and a lack of funding for the development of such services.

Pacific providers

There are no Pacific peoples providers in the Nelson Marlborough region.

General medical practitioners and nurses

Local general practice sources state that there are 97 practising GPs in the Nelson Marlborough DHB region (year 2000). Medical Council data shows the number of GPs per 10 000 population is 9.0, which is higher than the national average of 8.3.

The total nursing workforce in Nelson Marlborough was 1332 in the year 2000 (this includes nurses working in both primary and secondary care) of which 39 (2.9%) are Maori. This is well below the proportion of Maori in the Nelson Marlborough DHB region (8%). The ratio of nurses per 10 000 population is 118, compared to the national ratio of 106. The proportion of nurses with midwifery qualifications for Nelson Marlborough is less than the national proportion.

Dental services

The number of active dentists per 100 000 population in Nelson Marlborough is slightly lower than the national ratio. However, it is better than any of the other provincial areas in the project. Provider survey respondents mentioned the unaffordability of community-based dental services for adults, and the long waiting lists for the limited hospital-based services.

Rural hospital services

In the Nelson Marlborough DHB region there are three rural hospitals: Motueka, Murchison and Golden Bay. Motueka has 19 beds (4 maternity, 12 continuing care and 3 medical/surgical), and medical input is provided by local GPs on contract to the DHB. Murchison has 11 beds (8 continuing care and 3 medical/surgical), with the medical input provided by a GP employed by the DHB under the Special Area Scheme. Golden Bay has 15 beds (3 maternity, 7 continuing care and 5 medical/surgical), and the medical input is from the local GPs.

Key issues for rural health in the region include:
- distribution and availability of health care services
- recruitment and retention of health professionals (key informants mentioned Murchison as having particular difficulty)
- role of nurse practitioners
- emergency services (there are not enough volunteers for ambulance, fire and helicopter rescue services)
- professional isolation for rural GPs (identified by key informants).

Secondary health services

There are two secondary care hospitals in the DHB region: Nelson Hospital and Wairau Hospital, with 199 beds in total. Tertiary referrals are largely to Wellington or Christchurch, although children are frequently referred to Starship Children's Hospital in Auckland.

Manuka Street is a private hospital in Nelson, which is operated by a trust. The Nelson Hospice Trust runs an inpatient hospice facility and a 'hospice-at-home' service. Volunteers are a significant part of the service. In Blenheim the Churchill Trust provides private hospital services co-located on the Wairau Hospital site. It leases a ward and operating theatre time from the hospital.

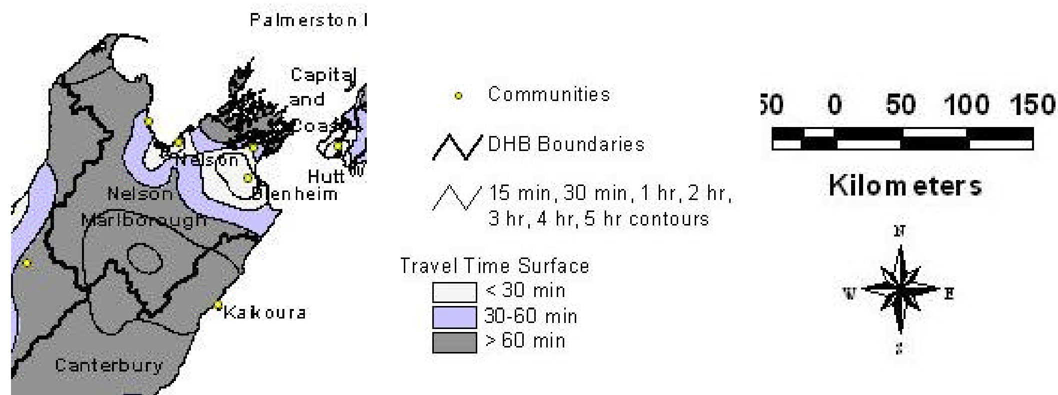
Medical specialists

The number of medical specialists for Nelson Marlborough is 5.4 per 10 000 population, compared with the New Zealand average of 7.0 per 10 000 population (year 2000). Provider survey respondents mentioned the limited range of specialists as a problem, particularly the lack of rheumatology, and the relative lack of dermatology, urology, palliative care and respiratory specialists.

Travel times

The following graph shows travel times to hospital for the region.

Travel time to closest hospital



Travel time in motor vehicle to nearest hospital (sub-acute or higher). Note that this map provides population level travel estimates across the country; it is not intended that this should be used to predict an individual's travel time

For those living in rural areas, travel times to hospital are a major access barrier. Difficulties are compounded for people without access to a car or suitable public transport.

Mental health services

There are 31 acute mental health beds in Nelson Marlborough, in the acute mental health unit on the Nelson Hospital campus. There are 46 psychogeriatric beds at Alexandra Hospital in Richmond.

Complementary health care services

Data relating to utilisation of complementary health care practitioners is limited. However, there are increasing numbers of alternative health services and practitioners nationwide with significant numbers of people seeking care within these fields. These services therefore need to be considered as part of needs assessments.

In Nelson Marlborough there are 13 complementary health practitioners affiliated with the New Zealand Charter of Health Practitioners, and there are many more who are not affiliated. Data relating to utilisation is not available at this time.

APPENDICES

Appendix 1: A note on the methodology

The following points are important for this report:

- Assessment of the needs of people with disabilities is beyond the scope of this project.
- An economic cost-benefit approach is beyond the scope of this project.
- Both qualitative and quantitative methods are used, because these are seen as complementary.
- References are not given in this report. The reader is referred to the technical report for full references, as well as greater detail.
- *Ethnicity coding and numerator-denominator bias.* In measuring the health status and disparities in health among ethnic groups, the way people classify themselves or are classified by others, is important. The way that Maori and Pacific peoples (and others) have been classified differs between health (ie, *numerator*) and Census (ie, *denominator*) data used to calculate rates of health events. This is a function of people self-identifying their own ethnicity on the Census, hospital clerks collecting self-identified ethnicity at hospitalisation, undertakers collecting ethnicity at death, and so on. These different systems of data collection, and the different questions they use, have tended to result in marked underestimation of Maori and Pacific peoples health event rates – at least up until 1996.This is called the **numerator-denominator bias**.
  - *Variation in numerator-denominator bias over time*. The ethnicity question in the Census (ie, denominator) has changed a number of times in the last two decades. On the other hand, the coding of health status data (ie, numerator data) has also changed over time, most notably in 1995 when the ethnicity question asked by undertakers and hospital admission clerks was changed to be more in line with the Census question. For example, between 1994 and 1996 the number of Maori deaths appeared to increase by 80%. Thus it is difficult to compare rates of health events by ethnicity before and after 1995. The combined effect of changing Census and morbidity/mortality data is that the national age-standardised *mortality rate for Maori appeared to increase by 25%* from 1994 to 1996, and the total *hospitalisation rate appears to have decreased by about 30%*. Similar changes apply to the Pacific ethnic group.
  - *Variation in numerator-denominator bias by region*. Prior to 1996 the magnitude of the numerator-denominator bias varied by region such that Maori mortality rates in the south of New Zealand were even more underestimated than those in the north. This regional variation may have reduced post-1996, but still probably remains in part. Therefore, even at one point in time comparing Maori mortality rates by region may be biased.
  - *Numerator data from other agencies*. To further complicate things, the myriad of other agencies involved in collecting ethnicity data also vary to greater or lesser extents in their coding practices. For example, primary care services, Police, Plunket, Ministry of Social Development, ACC, and others, all code ethnicity and it is difficult to be sure of the consistency across these agencies.
- *Small numbers*. Nelson Marlborough has a relatively small population. Calculation of rates based on small numbers can lead to spurious results, because rates can so easily be influenced by a few extra cases here and there. Therefore, caution is advised in interpretation of data, particularly mortality and hospitalisation rates.
- 1996 Census data is somewhat dated. The extent to which projected population predictions are accurate, and the extent to which other parameters have changed, eg, migration and socioeconomic determinants, will be clear in 2002 when the definitive census results are available.
- *Age standardisation* has been done using the direct standardisation method, standardising against Segi's world population. Note that when standardised rates are presented these rates are not real, and are only of value in comparisons (eg, comparing with the New Zealand rate or with other DHBs). Crude rates are not presented, except for admission rates for major diagnostic categories. For the most part, no attempt has been made to standardise for other variables such as gender, socioeconomic status or ethnicity. The technical report contains more detail, including confidence intervals. In this report, rates or parameters which are said to be significantly different to national

rates are associated with p-values less than 0.05. Rates or parameters which appear higher or lower but which have not shown statistical significance are prefaced by the phrases such as ‘appear to be’ or ‘ may be’. In many cases, statistical significance of higher rates is not possible to demonstrate because of low numbers, and local knowledge, further analysis, or extrapolation from national figures may clarify things.

- Unless otherwise stated, hospitalisation rates by locality refer to *the usual place of residence of the patient*, not the location of the provider.

Appendix 2: Projected age structure by gender and ethnicity for Nelson Marlborough, 2001

	Maori		Non-Maori		Total	
Age group	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**
00-04	650	680	3115	3290	3765	3970
05-09	640	710	3700	3940	4340	4650
10-14	620	630	3980	4185	4600	4815
15-19	500	550	3250	3705	3750	4255
20-24	390	450	2485	3005	2875	3455
25-29	430	410	3185	3280	3615	3690
30-34	440	450	3850	3790	4290	4240
35-39	400	430	4345	4145	4745	4575
40-44	350	340	4620	4500	4970	4840
45-49	250	250	4220	4200	4470	4450
50-54	220	190	4035	4185	4255	4375
55-59	180	140	3145	3240	3325	3380
60-64	110	130	2665	2755	2775	2885
65-69	80	80	2245	2270	2325	2350
70-74	50	40	2305	2050	2355	2090
75-79	50	40	2070	1635	2120	1675
80-84	20	10	1445	965	1465	975
85+	10	0	1240	580	1250	580
Total	**5390**	**5530**	**55 900**	**55 720**	**61 290**	**61 250**

Source: medium series population projections, Ministry of Health

Appendix 3: Age structure by ethnicity, unitary authorities, 1996

TA	Tasman District				Nelson City				Marlborough District			
	Total Maori	Pacific Island	Non-Maori	Total	Total Maori	Pacific Island	Non-Maori	Total	Total Maori	Pacific Island	Non-Maori	Total
>5	354	18	2367	2775	420	51	2196	2700	495	42	2103	2685
5-9	354	15	2688	3165	396	57	2385	2925	486	42	2352	2985
10-14	294	24	2490	2931	303	33	2220	2658	456	39	2217	2823
15-19	243	15	2061	2424	303	33	2220	2682	402	21	1962	2487
20-24	222	15	1893	2223	321	42	2412	2922	300	24	1851	2283
25-29	213	12	2109	2451	318	48	2472	2970	303	15	2112	2550
30-34	204	18	2535	2850	258	42	2841	3264	333	30	2295	2763
35-39	174	15	2844	3138	207	24	2805	3141	273	18	2595	3003
40-44	144	12	2646	2898	132	21	2706	2961	213	12	2406	2739
45-49	117	6	2700	2913	108	15	2613	2823	180	12	2343	2616
50-54	102	6	2019	2190	78	9	1935	2088	135	6	2109	2325
55-59	69	9	1623	1755	66	12	1656	1791	120	6	1752	1944
60-64	51	6	1482	1578	36	6	1458	1551	78	0	1590	1725
65+	69	12	4446	4686	78	9	5487	5757	129	9	5121	5466
Total	**2613**	**177**	**33 912**	**37 971**	**3015**	**402**	**35 409**	**40 242**	**3909**	**273**	**32 808**	**38 397**

Source: Stats NZ Census data 1996

Appendix 6: NZDep96 measures of deprivation in Nelson Marlborough, 1996