

West Coast — Te Tai O Poutini

Māori Health Profile



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He Kupu Whakataki

*“Tatai Whetu ki te Rangi... tu tonu, tu tonu.
Tātai tangata ki te whenua...ngaro noa,ngaro noa”*

*“E mihi ana ki nga mate huhua,e hinga mai ra, e okioki mai ra.
Whakataa, tīraha, e moe. Waiho ko o koutou tapuwae hei tohutohu
te huarahi mo matou – haere, haere, haere”*

Te Tai o Poutini, koutou raurangatira ma nga kaitiaki o nga taonga o te Ao Kohatu, o te Ao tuawhakarere. Tena koutou, tēnā koutou. He mihi matakuikei tēnei mo to koutou tautoko mai i tēnei purongo me ona hua hauora kua wharikihia ki mua i to koutou aroaro.

Ko te inoi, he taonga kei roto i enei mahi kua tukua nei kia koutou hei whakaora i te iwi. Mehemea e whakāe ana koutou he hua enei, tikina mai – whakamahia hei oranga mo koutou a,mo tātou katoa.

Kei aku rangatira o te tatau o te pounamu, tēnā koutou tēnā koutou. Ma te rungarawa koutou, tātou katoa, e manaki e tiaki iroto i nga Tini putanga ke tanga o tēnei Ao matemate.

*“A formation of stars, endures forever.
A formation of men recedes, wanes and disappears.”*

*“I acknowledge the many who have passed on –you who now recline in sleep.
Let your footprints be our guide to salvation and posterity.
go forth in your myriads and rest.”*

To the esteemed people of Te Tai Poutini – the guardians of the treasures from the ancients and from the world of our distant past – greetings to you all. We congratulate and commend you for your support and endorsement of this project report, and the positive benefits that may accrue from it.

The hope is that the information presented will assist in some way in achieving healthy outcomes for the people. If the consensus is that there is much knowledge and benefit to be gained from the report – grasp it and use it for the betterment of the community.

Finally, once again, to the guardians of the gateway to the greenstone paths – greetings and salutations. May the blessings and the protection of the creator be upon us all in this world of uncertainty and conflict.

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Executive Summary

The *West Coast — Te Tai O Poutini Māori Health Profile* is a document to inform the subsequent stages of a health needs assessment for Māori in the West Coast DHB.

Data have been accessed from a variety of sources, and Māori and Non-Māori/All ethnicities data are presented on a range of indicators. The choice of indicators was guided by the *New Zealand Health Strategy* (Minister of Health, 2000) and *He Korowai Oranga — The Māori Health Strategy* (Minister of Health and Associate Minister of Health, 2002). Age-standardised and age-specific rates are presented where possible and it has been important to present 95% confidence intervals, because the small numbers of Māori on the West Coast reduce the precision of rate estimates.

The document presents demographic and social data first, followed by health data. Key points are summarised in each section for quick reference.

Demographic and social data

Māori make up 9.3% of the West Coast population. Like the national Māori population, the West Coast Māori population has a younger age structure than the Non-Māori population. West Coast Māori fertility rates are higher than West Coast European rates, but lower than the New Zealand Māori average.

The West Coast population is relatively deprived overall, as defined by the New Zealand Deprivation Index 2006. West Coast Māori have a similar deprivation profile to the total West Coast population, and this is in contrast to the national picture, in which Māori have a more deprived profile.

However, data from the 2006 Census indicate that West Coast Māori have higher levels of deprivation than the total West Coast population on a number of Census measures, including income, education, access to a car and telephone, and home ownership.

Health data

All-cause mortality is significantly higher for West Coast Māori than Non-Māori, and this is consistent with the national picture. Māori are under-represented among communicable disease notifications on the West Coast, although this may be due to a number of factors, including lower rates of presentation to General Practitioners. Early data from the National Immunisation Register indicate lower coverage for West Coast Māori children.

West Coast Māori have a higher burden of cardiovascular disease than West Coast Non-Māori. This includes higher mortality rates for all cardiovascular disease, and higher mortality and hospitalisation rates for stroke. In contrast, comparison of cardiovascular and ischaemic heart disease hospitalisation rates (no difference in rates for the former, and lower rates for the latter) suggest that cardiovascular disease is an important area of unmet need for West Coast Māori.

West Coast Māori have similar cancer registration rates but significantly higher cancer mortality than West Coast Non-Māori. This suggests a similar incidence of disease but poorer overall outcomes for West Coast Māori. Adequacy of screening is especially important in light of these results. While cervical screening data indicate lower

participation and coverage rates for West Coast Māori women, breast screening data indicate that coverage rates for West Coast Māori women are comparable to those for Non-Māori, Non-Pacific women.

Māori are largely under-represented in injury mortality and morbidity data on the West Coast, whereas nationally Māori are over-represented among injury data.

There are no significant differences in Māori and Non-Māori hospitalisation rates for children and youth on the West Coast, and no significant differences in rates of low birthweight and pre-term birth. Recent West Coast Plunket data suggest an increase in the proportion of breastfeeding for Māori babies. Hearing screening coverage is lower for West Coast Māori children than for West Coast children overall at 3 years, but similar at school entry. Asthma hospitalisations are not significantly different between West Coast Māori and Non-Māori, and West Coast Māori rates are significantly lower than Māori rates nationally.

The smoking prevalence remains substantially higher for West Māori than for West Coast Non-Māori at the 2006 Census. Year 10 survey data indicate that Māori girls have the highest rates of daily smoking. West Coast Māori have significantly higher rates of hospitalisation for chronic obstructive airways disease than West Coast Māori and New Zealand Māori and Non-Māori.

Diabetes hospitalisations are significantly higher for Māori both on the West Coast and nationally, and Local Diabetes Team data indicate that West Coast Māori with diabetes are less likely to have an annual review.

West Coast Māori have similar rates of mental health hospitalisations to West Coast Non-Māori and there are also no significant differences in rates of deliberate self-harm hospitalisations.

West Coast Māori children have poorer oral health than West Coast children overall, and than Māori children living in areas with fluoridated water supplies. West Coast children (both Māori and Non-Māori) have higher rates of hospitalisation for dental extractions than children nationally.

Drug and alcohol hospitalisation rates are significantly higher for both Māori and Non-Māori on the West Coast than nationally. There are no differences between West Coast Māori and Non-Māori.

Preventable disease and death (as represented by ambulatory sensitive hospitalisations and avoidable mortality) do not differ significantly between West Coast Māori and Non-Māori, however comparisons for these indicators are limited by small numbers.

Māori are under-represented in enrolment and utilisation data for the West Coast PHO and its clinical programmes.

Summary

West Coast Māori have a similar social profile to the West Coast Non-Māori population, unlike the Māori and Non-Māori populations nationally. However, a number of indicators from the 2006 Census suggest a higher level of need in some areas.

In terms of health, West Coast Māori have poorer overall health status than West Coast Non-Māori, as demonstrated by a range of indicators, including cardiovascular disease, cancer, diabetes and respiratory disease indicators. In many instances, West Coast Māori mortality and morbidity rates are significantly lower than those for Māori nationally, however there are a few notable exceptions to this.

Underlying the poorer health status for West Coast Māori are under-representation among primary care utilisation data, and higher rates of smoking, which is a key risk factor for a range of morbidities, including cancer, and cardiovascular and respiratory disease. In addition, discrepancies between hospitalisation and mortality rates for cardiovascular disease, and registration and mortality rates for cancer, point to these being important areas of unmet need for West Coast Māori.

1 Introduction

1.1 Health needs assessment

Health needs assessment is a process of assessing the health and disability needs of a population, including those who do not access services. It is defined by Coster (2000) as: “assessment of the population’s capacity to benefit from health care services prioritised according to effectiveness, including cost-effectiveness, and funded within available resources.”

There are a number of approaches to health needs assessment. More comprehensive approaches usually involve, in the initial stages, description of the population and of its health and disability status. Subsequent stages include the assessment of the current health and disability service providers, including utilisation data, and the seeking of community and provider views on services.

1.2 Scope of this document

This document is a health profile compiled to inform the subsequent stages of health needs assessment for Māori in the West Coast District Health Board.

The document includes demographic and health and disability status data sourced from various routinely collected data sets. A small amount of service or provider information is presented, for example in relation to primary care, but this is not the focus of this document.

1.3 Data sources

The data used in this document have been accessed from a range of sources, both from existing data sets and through special requests. The data sources include the following:

- Statistics New Zealand (Census data 2001 and 2006)
- New Zealand Health Information Service (hospitalisations, cancer registry, mortality, and mental health collections – both special request and National Minimum Data Set reports sent routinely to the West Coast DHB)
- Injury Prevention Research Unit (morbidity and mortality data)
- Action on Smoking and Health (Year 10 smoking survey results)
- West Coast Primary Health Organisation (quarterly and annual report data)
- West Coast Plunket (annual report data)
- Environmental Science and Research (ESR) (sexual health clinic surveillance data and EPISURV notifiable disease surveillance data).

1.4 Statistical analysis

Because of the small numbers of Māori in the West Coast DHB, it was necessary to aggregate data over several years. In general, data are presented either for Māori and ‘Non-Māori’ or for Māori and ‘all ethnicities’, depending on the format in which the data were available from the data source.

Hospitalisations, cancer registry and mortality data are presented as age-standardised rates, with the 2001 Census New Zealand Māori population used as the standard. Age-specific rates are also presented where appropriate, and 95% confidence intervals are

presented throughout. Due to important methodological differences, the rates presented are generally not comparable outside of this document. However, some broad comparisons may be made with the age standardised rates presented in the *Māori Health Chart Book* (Ministry of Health, 2006).

The above, and other aspects of the statistical analysis, are discussed further in Appendix I.

1.5 Structure of this document

Broadly, this document presents demographic and social data first, followed by health and disability data. Health and disability data are organised according to thirteen priority population health objectives identified in the *New Zealand Health Strategy* (Minister of Health, 2000) and the Māori health gain areas identified in *He Korowai Oranga – The Māori Health Strategy* (Minister of Health and Associate Minister of Health, 2002). Later sections also cover avoidable morbidity and mortality, primary care, and self report of disease and risk and protective factors from the New Zealand Health Survey.

In each section, key points are summarised in bullet form for quick reference.

New Zealand Health Strategy, priority population health objectives

- reduce smoking
- improve nutrition
- reduce obesity
- increase the level of physical activity
- reduce the rate of suicides and suicide attempts
- minimise harm caused by alcohol and illicit and other drug use to both individuals and the community
- reduce the incidence and impact of cancer
- reduce the incidence and impact of cardiovascular disease
- reduce the incidence and impact of diabetes
- improve oral health
- reduce violence in interpersonal relationships, families, schools and communities
- improve the health status of people with severe mental illness
- ensure access to appropriate child health care services including well child and family health care and immunisation.

He Korowai Oranga, Māori health-gain priority areas

- Immunisation
- Injury Prevention
- Hearing
- Asthma
- Smoking
- Diabetes
- Mental Health
- Oral Health
- Disability Support Services
- Rangatahi Health
- Sexual and Reproductive Health
- Alcohol and Drug Use

2 Demographic Profile

Key points

- Māori made up 9.3% of the overall West Coast population at the 2006 Census.
- The highest proportion of Māori (12.1%) live in the Westland District.
- Like the national Māori population, the West Coast Māori population has a younger age structure than the Non-Māori population.
- Fewer Māori on the West Coast indicate that they speak Te Reo than nationally (12.4% versus 23.3%).
- Ngai Tahu, Ngapuhi and Ngati Porou remain the most common iwi affiliations for West Coast Māori.
- The proportion of West Coast births to Māori women ranged from 9.1% to 13.9% over the period 1996 to 2002.
- Similar proportions of West Coast Māori and Non-Māori women giving birth are from the most deprived deciles (deciles 8, 9, and 10).
- West Coast Māori fertility rates are higher than West Coast European rates, lower than the New Zealand Māori average, and peak at a younger age than West Coast European rates.

2.1 West Coast population

The West Coast DHB total population was 31,326 at the 2006 Census, having increased from 30,303 at the 2001 Census. The Grey District had the largest population, with a total of 13,221 in 2006, followed by the Buller and Westland Districts, with 9,702 and 8,403 respectively. The populations of all three territorial local authorities have grown since the last Census, with the largest increase of 8% occurring in the Westland District, compared to 2.6% in the Grey District and 0.8% in the Buller District (Statistics New Zealand website, accessed March 2007).

Table 2.1 presents ethnicity data for the West Coast and New Zealand in 2006. The West Coast population continues to have low proportions indicating Non-Māori, Non-European ethnicities – although the high numbers in the ‘other’ category in 2006 reflect the inclusion of ‘New Zealander’ in that group.

**Table 2.1 Number and proportion of people indicating each ethnic group
West Coast and New Zealand, 2006***

(Source: Statistics New Zealand)

Ethnicity	Area				
	Buller	Grey	Westland	West Coast	New Zealand
European	7,575 78.1%	10,284 77.8%	6,162 73.3%	24,021 76.7%	2,609,589 64.8%
Māori	804 8.3%	1,098 8.3%	1,014 12.1%	2,916 9.3%	565,329 14.0%
Pacific	63 0.6%	147 1.1%	69 0.8%	279 0.9%	265,974 6.6%
Asian	78 0.8%	150 1.1%	120 1.4%	348 1.1%	354,552 8.8%
Other**	1,482 15.3%	2,241 17.0%	1,386 16.5%	5,109 16.3%	465,624 11.6%
Total Number of People	9,702	13,221	8,403	31,326	4,027,947

* Note these are level 1 grouped responses. Hence 'Māori' includes all people who stated Māori as an ethnic group, whether as their sole ethnic group or as one of several ethnic groups. The number of responses is divided by the total population to obtain the proportion of each population indicating a given ethnicity. Because one person can be counted in more than one category, totals will add to more than 100%.

**Other includes 'New Zealander' (and Middle Eastern, Latin American and African ethnicities). In 2006, the numbers of 'New Zealander' responses were as follows: Buller 1,458; Grey 2,214; Westland 1,362.

2.2 West Coast Māori

Overall, 9.3% of the West Coast population indicated Māori ethnicity in the 2006 Census (Table 2.2). This compares to the national figure of 14.0% of the population indicating Māori ethnicity. The proportion of the population indicating Māori ethnicity has increased across all three territorial local authorities at the 2006 Census, and is highest, at 12.1%, in the Westland District, compared to 8.3% in both the Buller and Grey Districts. It is important to note both the potential for undercounting in Census data and the impact of any changes to the ethnicity question. For example, the introduction of the 'New Zealander' option in 2006 may have affected the likelihood of individuals indicating other ethnicities.

Table 2.2 Number and proportion of Māori* in the West Coast DHB and Territorial Local Authorities, 2001 and 2006
(Source: Statistics New Zealand)

	2001 Census		2006 Census	
	Number of Māori	Percentage of total population	Number of Māori	Percentage of total population
Buller District	762	7.9%	804	8.3%
		Total 9,624		Total 9,702
Grey District	954	7.4%	1,098	8.3%
		Total 12,891		Total 13,221
Westland District	834	10.7%	1,014	12.1%
		Total 7,776		Total 8,403
Total West Coast DHB	2,547	8.4%	2,916	9.3%
		Total 30,303		Total 31,326
Total New Zealand	526,281	14.1%	565,329	14.0%
		Total 3,737,277		Total 4,027,947

* Includes all people who stated Māori as an ethnic group, whether as their sole ethnic group or as one of several ethnic groups.

Figures 2.1 to 2.4 illustrate the age distribution of the West Coast and New Zealand Māori and Non-Māori populations in 2001 and 2006. 2006 ethnicity data were not available by 5-year age groups at the time of writing. Both the New Zealand and West Coast Māori populations show a younger age distribution than the Non-Māori populations. This is due to a combination of higher fertility, a greater proportion of women of childbearing age, and lower life expectancy for the Māori population. Both the Māori and Non-Māori populations on the West Coast have a small proportion of people in the 20 to 40 year age groups, possibly reflecting net out-migration of people in these age groups.

Figure 2.1 West Coast 2001 population pyramid

(Source: Statistics New Zealand)

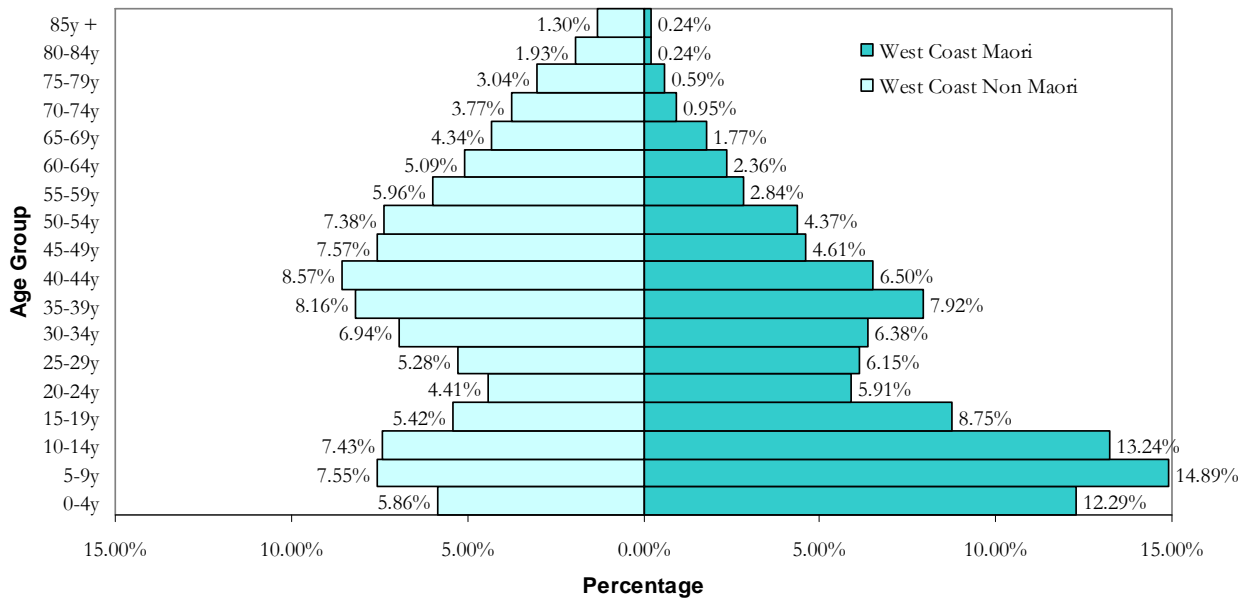


Figure 2.2 New Zealand 2001 population pyramid

(Source: Statistics New Zealand)

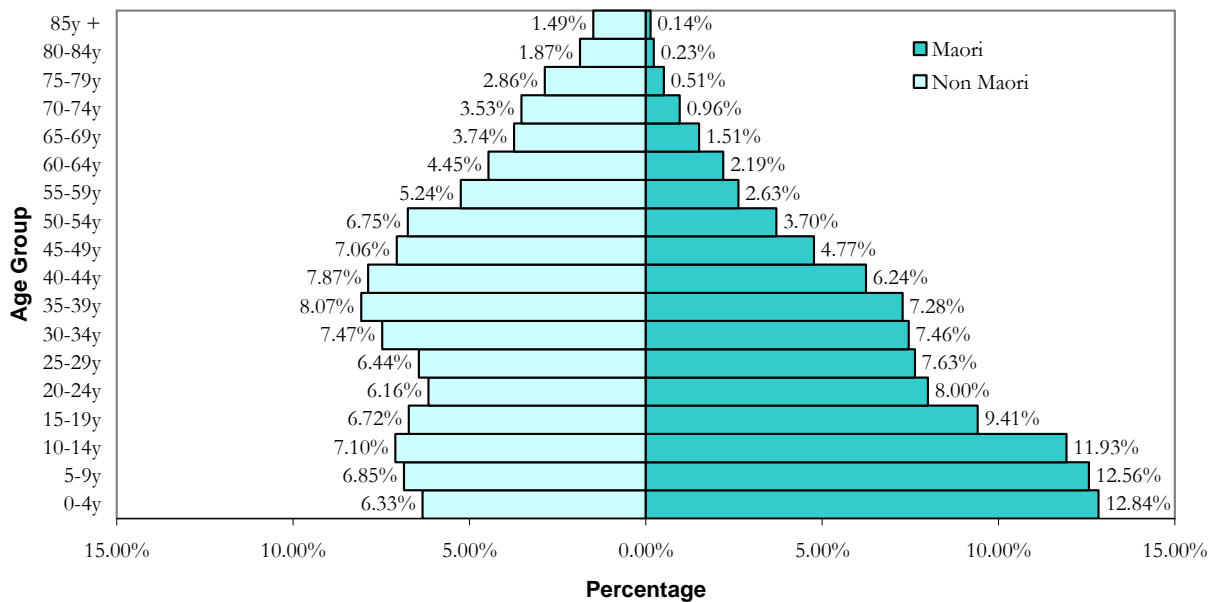


Figure 2.3 West Coast 2006 population pyramid
 (Source: Statistics New Zealand)

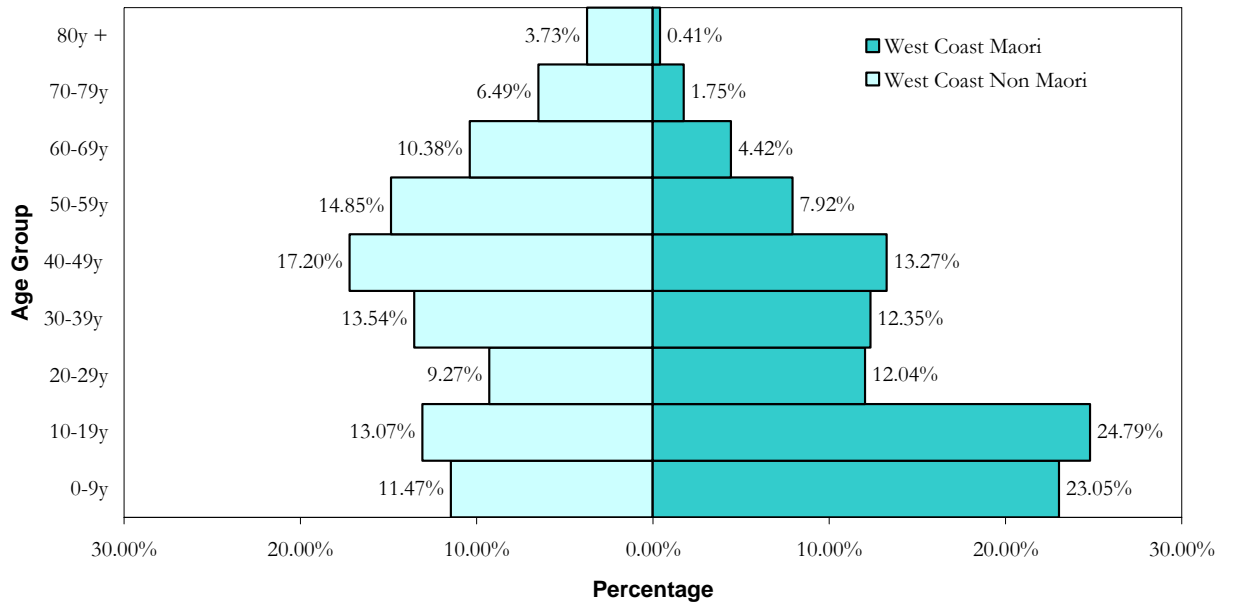
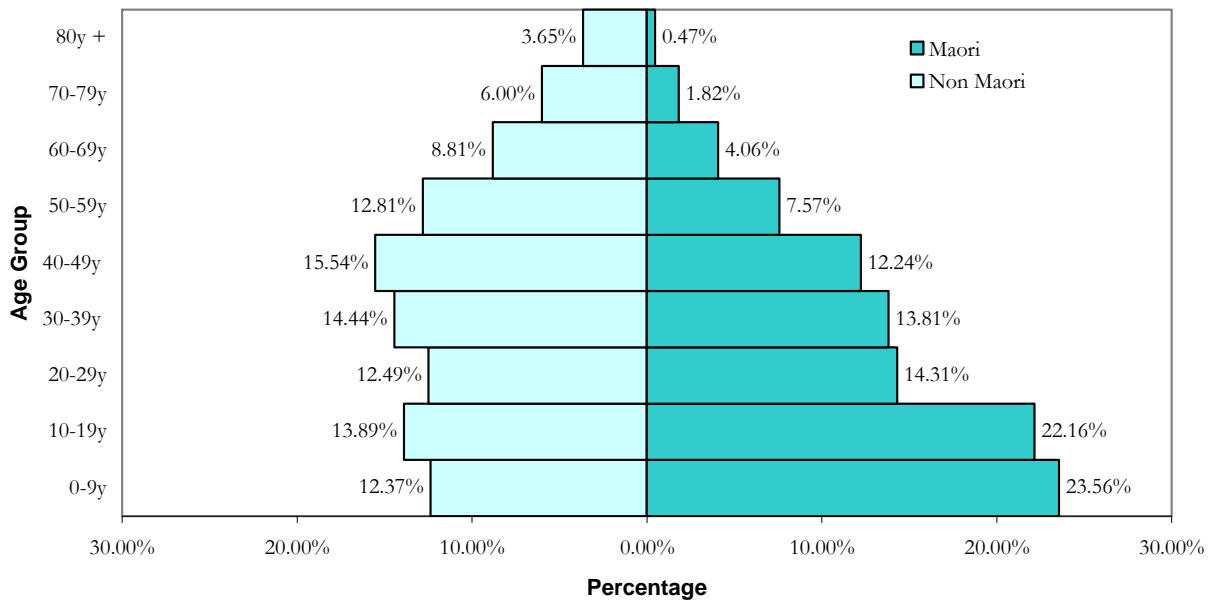


Figure 2.4 New Zealand 2006 population pyramid
 (Source: Statistics New Zealand)



In 2006, 12.4% (n=363) of West Coast Māori indicated that they spoke Te Reo. This compares to a national percentage of 23.3% (n= 131,610) in 2006.

Ngai Tahu was the most common iwi affiliation indicated in the 2006 Census, followed by Ngapuhi and Ngati Porou (Table 2.3).

Table 2.3 West Coast DHB Iwi, 2006
(Source: Statistics New Zealand*)

Iwi**	WCDHB	New Zealand
Ngai Tahu/ Kai Tahu	1,101	49,185
Ngapuhi	339	122,214
Ngati Porou	228	71,910
Ngati Tuwharetoa	114	34,674
Ngati Maniapoto	81	33,627
Tuhoe	81	32,670
Kati Mamoe	72	2,877
Waikato	66	33,429
Ngati Kahungunu, region unspecified	63	18,459
Te Arawa	63	23,316
Ngati Kahungunu ki te Wairoa	60	20,982
Ngati Apa ki Te Ra To	57	741
Ngaiterangi	51	12,201

* 2006 Census: Iwi (total responses) for the Māori descent Census usually resident population count

** Includes all Iwi for which there were 50 or more responses on the West Coast at the 2006 Census.

2.3 Births

Ethnicity and NZDep

In 2004, 79% of births to women usually resident on the West Coast occurred in West Coast hospitals and, of these, 7.7% of children born were identified as Māori. Nine per cent of women delivering babies at home identified as Māori (WCDHB Midwifery Review draft report, 2007).

In 2004, 53% of births in West Coast DHB hospitals were to women usually resident in NZDep 8, 9, and 10 areas. Fifty-three per cent (10 out of 19) of Māori women giving birth lived in deciles 8-10, compared to 52% of NZ European women (Table 2.4). Home birth data on the West Coast are dominated by births to women at the decile 7 Gloriavale Christian Community, which limits comparison between home and hospital births with respect to socioeconomic status (WCDHB Midwifery Review draft report, 2007).

Table 2.5 shows total births by ethnicity for the period 1996-2002. The proportion of births to Māori women ranges from 9.1% in 1996 to 13.9% in 1999. The most recent figure is 11.7% in 2002.

Table 2.4 West Coast hospital births by NZDep area of mother's usual residence, 2004

(Source: WCDHB Midwifery Review draft report, 2007)

Ethnicity	Number of Births	Number living in NZDep 8,9,10 areas	% living in NZDep 8,9,10 areas
NZ European	247	129	52%
Māori	19	10	53%
Other	18	11	61%
Total	284	150	53%

Table 2.5 Total births by maternal ethnicity, West Coast 1996-2002
(Source: West Coast DHB 2007, Fertility Rates draft document)

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

Table 2.5 uses information from the birth registration dataset and is based on the usual area of residence of women at the time of delivery, rather than the region in which they gave birth. This ensures any births to West Coast resident women that occur in other centres are captured.

When looking at the numbers of deliveries it is important to consider both the total numbers in each ethnic group and the age structure of each group. As the population pyramids in section 2.2 demonstrate, the West Coast Māori population is younger than the Non-Māori population, with a greater proportion of women of reproductive age.

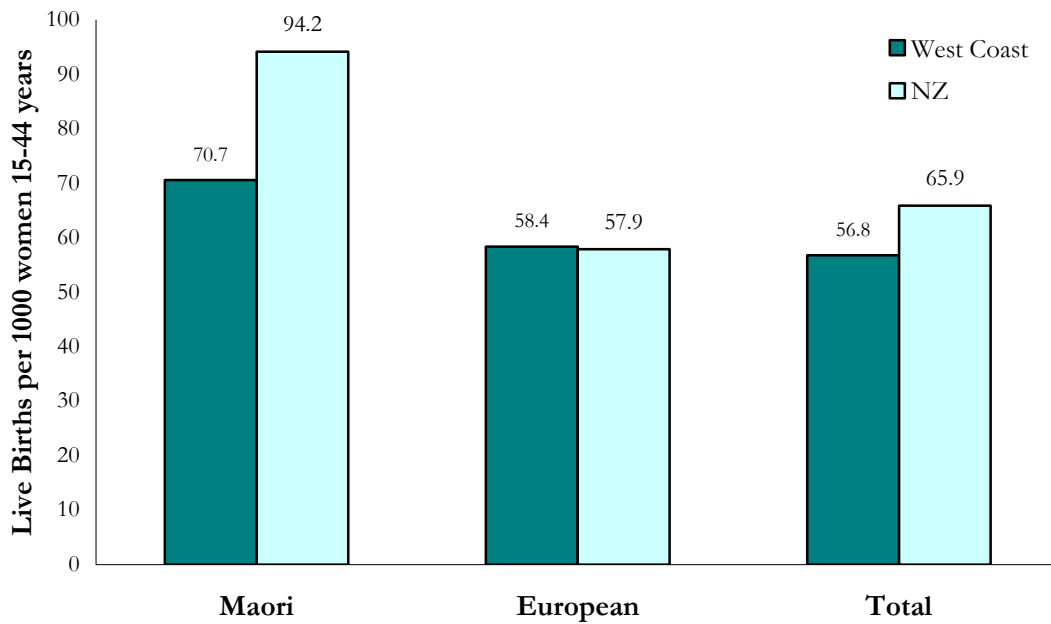
Fertility

Figure 2.5 presents the fertility rates by ethnicity for 15- to 44-year old women on the West Coast and in New Zealand in 2002. Fertility rates for Māori women were higher than for Non-Māori women in the West Coast in 2002. While rates for West Coast European women were similar to the New Zealand average, rates for Māori were lower than the New Zealand Māori average. Note that these rates are not age standardised and they therefore do not take into account any differences in the distribution of women within the 15 to 44 year age group (West Coast DHB 2007, Fertility Rates draft document).

Figure 2.6 compares the age-group-specific fertility rates for West Coast Māori and European women during 1999-2003. For Māori, fertility peaked at 152.0 live births per 1,000 women in the 20-24 year age group, compared to the peak of 127.5 live births per 1,000 women for European women, which occurs in the 25- to 29-year age group (West Coast DHB 2007, Fertility Rates draft document).

Figure 2.5 Fertility rates by ethnicity, West Coast vs New Zealand, 2002

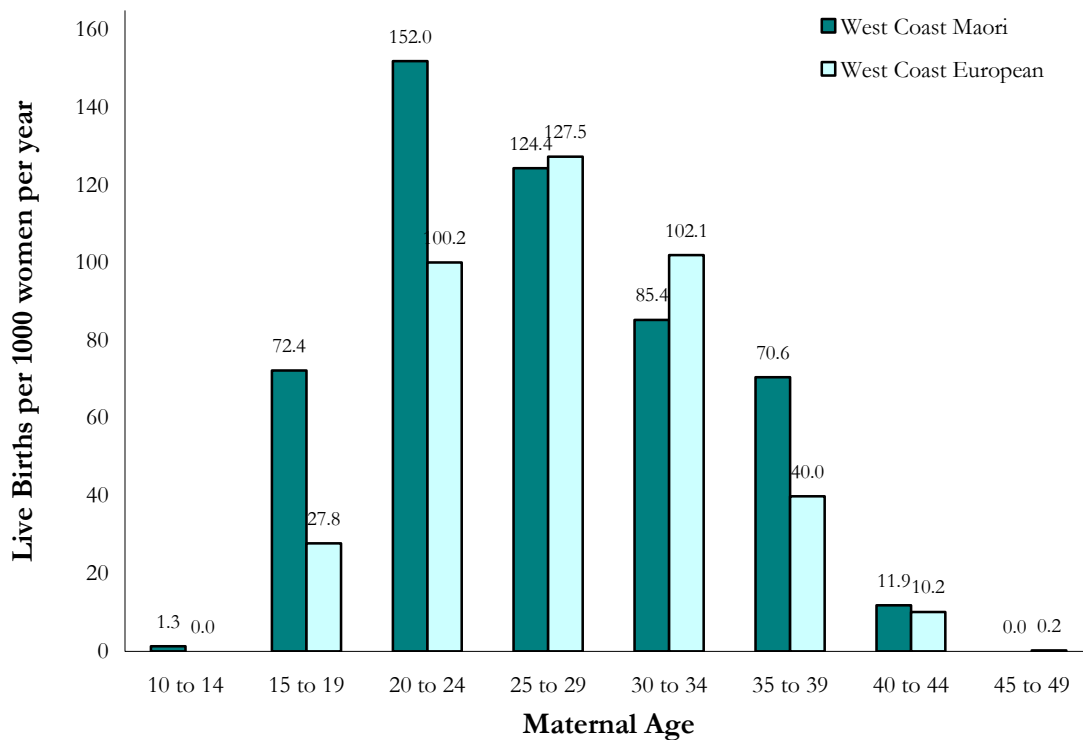
(Source: West Coast DHB 2007, Fertility Rates draft document)



* Numerator birth registration data New Zealand Health Information Service; denominator Statistics New Zealand

Figure 2.6 Fertility rates by ethnicity and age for West Coast women, 1999-2003

(Source: West Coast DHB 2007, Fertility Rates draft document)



* Numerator birth registration data New Zealand Health Information Service; denominator Statistics New Zealand

Teenage births

Teenage pregnancy rates are made up of three components: births, terminations and miscarriages. Information on births is available from the birth registration dataset held by the New Zealand Health Information Service; information on terminations of pregnancy is held by the Abortion Supervisory Committee; and rates of spontaneous miscarriage are estimated (as being 10% of induced abortions and 20% of live births). Total numbers of teenage births on the West Coast are presented below in Table 2.6. These numbers suggest that the number of teenage births is dropping, but as crude numbers they are not adjusted for any changes in the age and ethnicity distribution of the West Coast population over this time period. Abortion Supervisory Committee data for the West Coast were not available.

Table 2.6 Total number of teenage births to women in West Coast region, 1990-2001

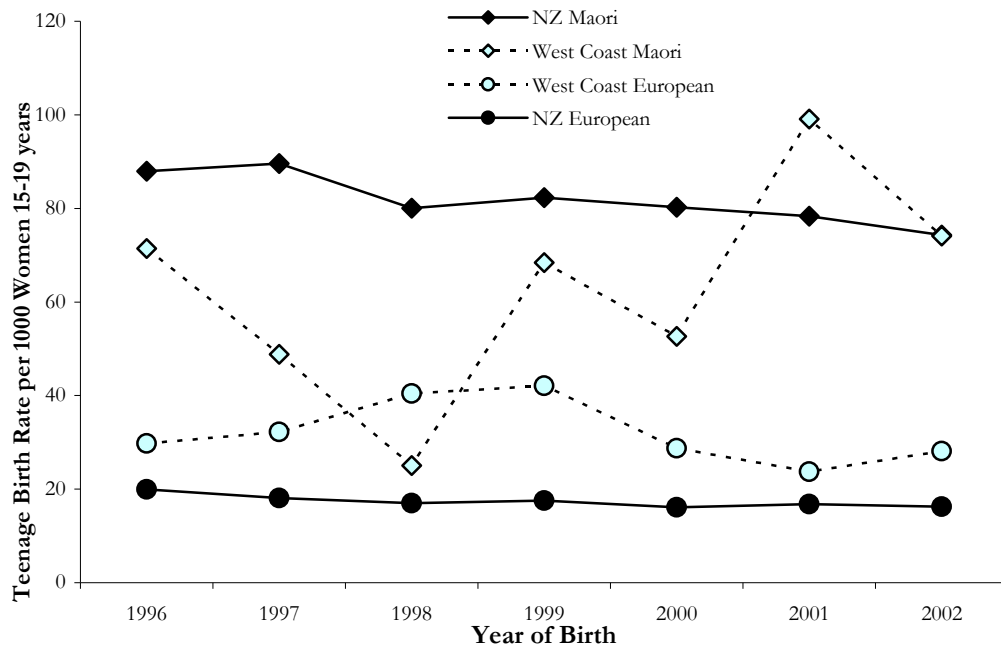
(Source: West Coast DHB 2007, Fertility Rates draft document)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Births	42	48	33	41	26	37	32	30	33	39	25	26	25

Figure 2.7 compares teenage birth rates for West Coast women with national averages. Small numbers make comparison of West Coast Māori teenage birth rates with national rates unreliable. West Coast European teenage birth rates are higher than the national European average.

Figure 2.7 Teenage birth rates by ethnicity, West Coast vs New Zealand, 1996-2002

(Source: West Coast DHB 2007, Fertility Rates draft document)



*Numerator birth registration data New Zealand Health Information Service; denominator Statistics New Zealand

3 Social Indicators

Key points

- The West Coast population is relatively deprived overall when compared to the total New Zealand population.
- West Coast Māori have a similar deprivation profile to West Coast 'all ethnicities'. This is in contrast to the national picture where Māori have a more deprived profile than 'all ethnicities'.

West Coast Māori, when compared to the total West Coast population:

- have lower incomes and fewer tertiary qualifications
- are less likely to have access to a car or telephone, or to own their own home
- are less likely to be employers or to be self employed
- are more likely to be unemployed
- have a greater proportion of the population aged 15 and above in the labour force.

Deprivation - The New Zealand Deprivation Index

The New Zealand Deprivation Index (NZDep) is a measure used to describe the deprivation experienced by groups of people (Salmond and Crampton, 2002). NZDep is created from Census data, with the most recent NZDep data available being that based on the 2006 Census. Nine different Census indicators are used to calculate the index. These represent eight deprivation factors: income, employment, communication, transport, social support, education, living space and home ownership. A weighted sum of these variables is calculated for the whole of New Zealand and the deprivation of different populations (for example, ethnic groups and geographical populations) can then be compared to national figures.

NZDep data from 2006 (Figures 3.1 to 3.4) indicate that the West Coast population is relatively deprived overall, with a high proportion in the four most deprived deciles. West Coast Māori have a similar deprivation profile to all ethnicities on the West Coast, whereas nationally Māori have a more deprived profile than all ethnicities.

Table 3.1 considers the NZDep components using 2006 Census data. These data indicate that West Coast Māori have lower incomes and fewer tertiary qualifications than the overall West Coast population. In addition, West Coast Māori are less likely than the overall West Coast population to have access to a telephone or a car, or to own their own home. When compared to the New Zealand Māori population, the West Coast Māori population has lower income, fewer tertiary qualifications and lower levels of home ownership.

Figure 3.1 Deprivation profile for West Coast Māori, 2006

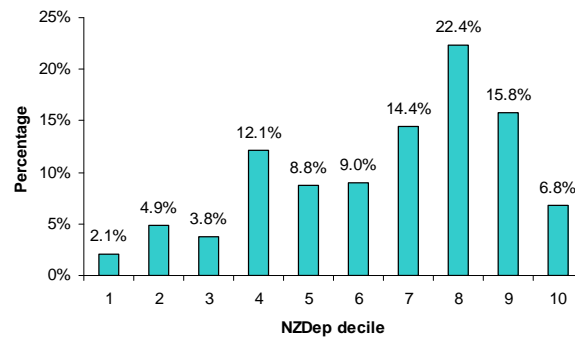


Figure 3.2 Deprivation profile for West Coast all ethnicities*, 2006

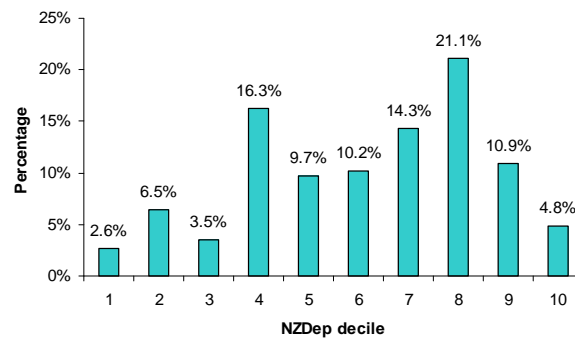


Figure 3.3 Deprivation profile for New Zealand Māori, 2006

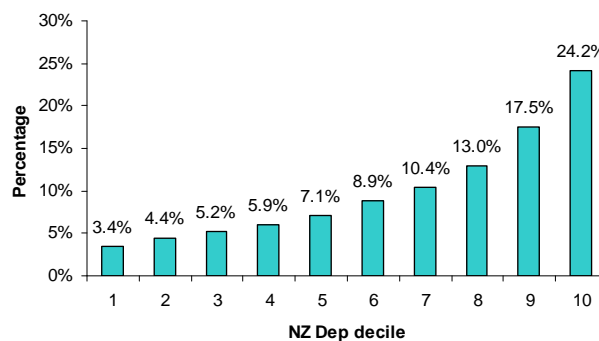
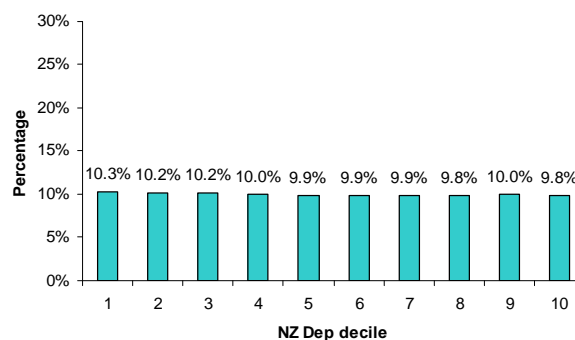


Figure 3.4 Deprivation profile for New Zealand all ethnicities*, 2006



*Note: 'All ethnicities' here is based on level 1 grouped responses, hence an individual is counted once for each ethnicity that they have indicated.

Table 3.1 2006 Census: Income, education, access to telephone, access to car, and home ownership by ethnicity

(Source: Statistics New Zealand, 2006 Census data)

Characteristic	WCDHB Māori	WCDHB All ethnicities	NZ Māori	NZ All ethnicities
Income more than \$50,000*	4.6%	9.1%	5.9%	12.7%
Income less than \$20,000*	29.3%	35.2%	27.7%	30.4%
Degree or higher qualification*	1.9%	5.3%	4.1%	11.1%
No qualification*	23.4%	25.5%	23.0%	17.6%
No access to telephone** ***	20.7%	12.1%	23.3%	10.9%
No access to a car**	8.0%	4.6%	8.2%	4.7%
Home not owned by residents**	39.5%	23.9%	49.0%	29.9%

* For population aged 15 years and over. Total people (i.e., all ages) is used as the denominator hence percentages are of the total population.

** Note that this is a dwelling characteristic rather than an individual characteristic. The dwelling characteristic is cross tabulated against the personal characteristics. This data excludes those who were absent from the dwelling on census night – i.e. is different from ‘usually resident population’.

*** Includes ‘no’ and ‘not stated’ responses.

3.1 Employment and work status

Data from the 2006 Census (Table 3.2) indicate that West Coast Māori are less likely to be employers or to be self employed than the total West Coast population. A similar picture is seen for Māori nationally. Māori have higher rates of unemployment both on the West Coast and nationally (Table 3.3). However, the proportion of population aged 15 years and over in the labour force is greater for Māori both on the West Coast and nationally, which may reflect the younger age profile of the Māori population.

Table 3.2 Status in employment - West Coast DHB and New Zealand, 2006

(Source: Statistics New Zealand, 2006 Census data*)

	WCDHB Māori (% of total)	WCDHB All ethnicities (% of total)	NZ Māori (% of total)	NZ All ethnicities (% of total)
Paid employee	978 (80.0%)	11,826 (72.8%)	189,483 (84.1%)	1,511,250 (76.1%)
Employer	45 (3.7%)	1,347 (8.3%)	7,062 (3.1%)	142,881 (7.2%)
Self-employed, no employees	90 (7.4%)	1,839 (11.3%)	14,007 (6.2%)	234,954 (11.8%)
Unpaid family worker	30 (2.5%)	459 (2.8%)	4,008 (1.8%)	39,567 (2.0%)
Total stated	1,143	15,474	214,560	1,928,652
Not elsewhere included	75 (6.1%)	765 (4.7%)	10,797 (4.8%)	57,126 (2.9%)
Total	1,221	16,236	225,357	1,985,775

* Usually resident population 15 years and over.

Table 3.3 Work status - West Coast DHB and New Zealand, 2006

(Source: Statistics New Zealand, 2006 Census data*)

	WCDHB Māori (% of total)	WCDHB All ethnicities (% of total)	NZ Māori (% of total)	NZ All ethnicities (% of total)
Employed full-time	906 (49.8%)	12,282 (49.3%)	175,545 (48.0%)	1,531,017 (48.4%)
Employed part-time	312 (17.1%)	3,957 (15.9%)	49,812 (13.6%)	454,758 (14.4%)
Unemployed	93 (5.1%)	555 (2.2%)	27,873 (7.6%)	106,497 (3.4%)
In labour force	1,311 (72.0%)	16,794 (67.4 %)	253,233 (69.3%)	2,092,275 (66.2%)
Not in labour force	510 (28.0%)	7,398 (29.7%)	112,176 (30.7%)	961,788 (30.4%)
Total	1,821	24,930	365,406	3,160,374

* Usually resident population 15 years and over.

3.2 Rurality

Rurality and ease of access to services are important issues for all West Coast residents, as illustrated in Figure 3.1. Rurality data are not available by ethnicity, however Figures 3.6 and 3.7 represent the distribution of Māori in the Buller, Grey and Westland Districts at the 2001 Census. These maps indicate that the largest numbers of West Coast Māori resided in 2001 in Hokitika, Cobden, Blaketown and Westport.

Figure 3.5 Distance to health services – 10 km distance bands (along roads) to service providers
 (Source: Public Health Intelligence, Ministry of Health)

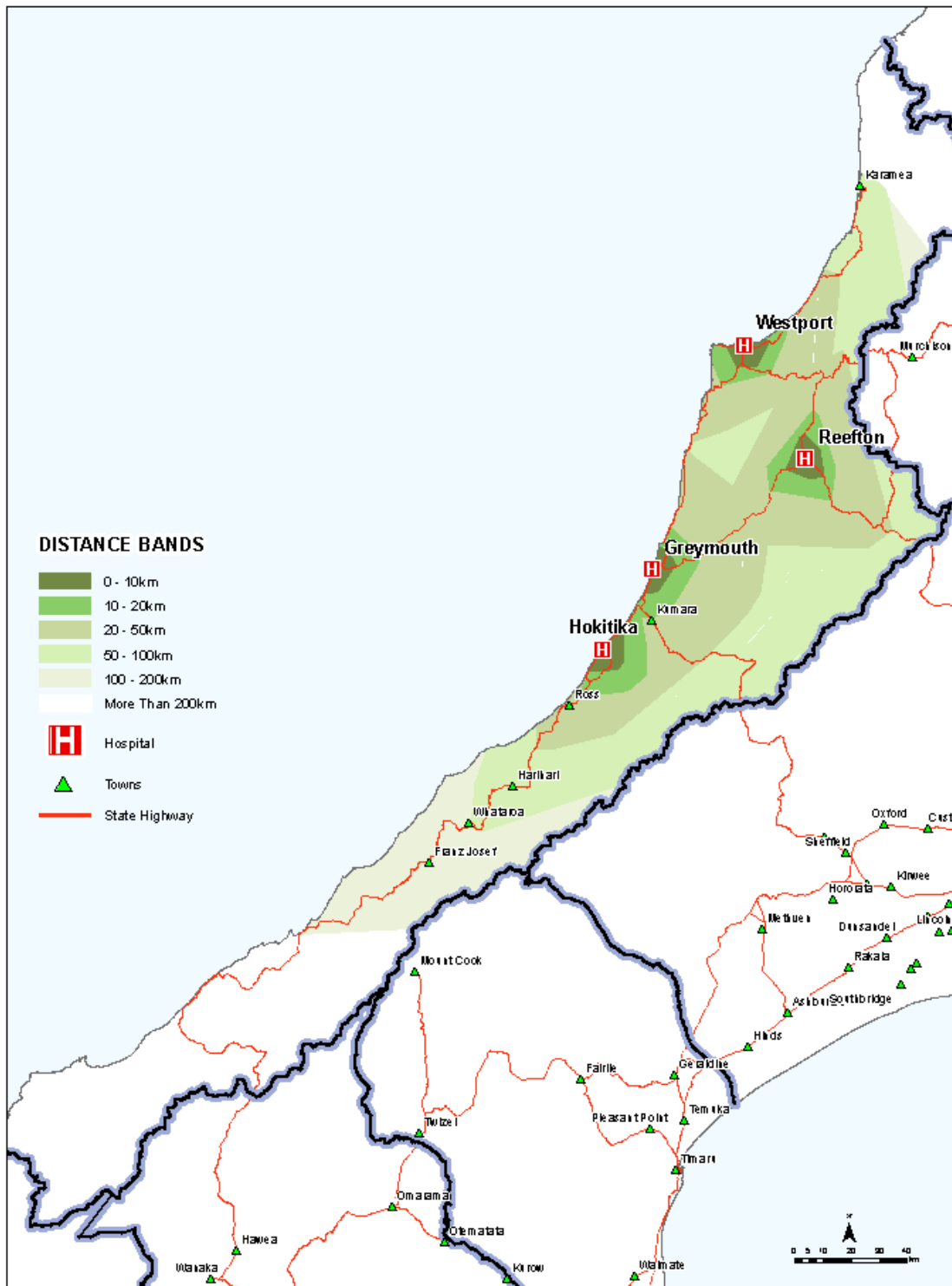


Figure 3.6 Māori population counts Buller and Grey Districts, 2001
 (Source: Community and Public Health)

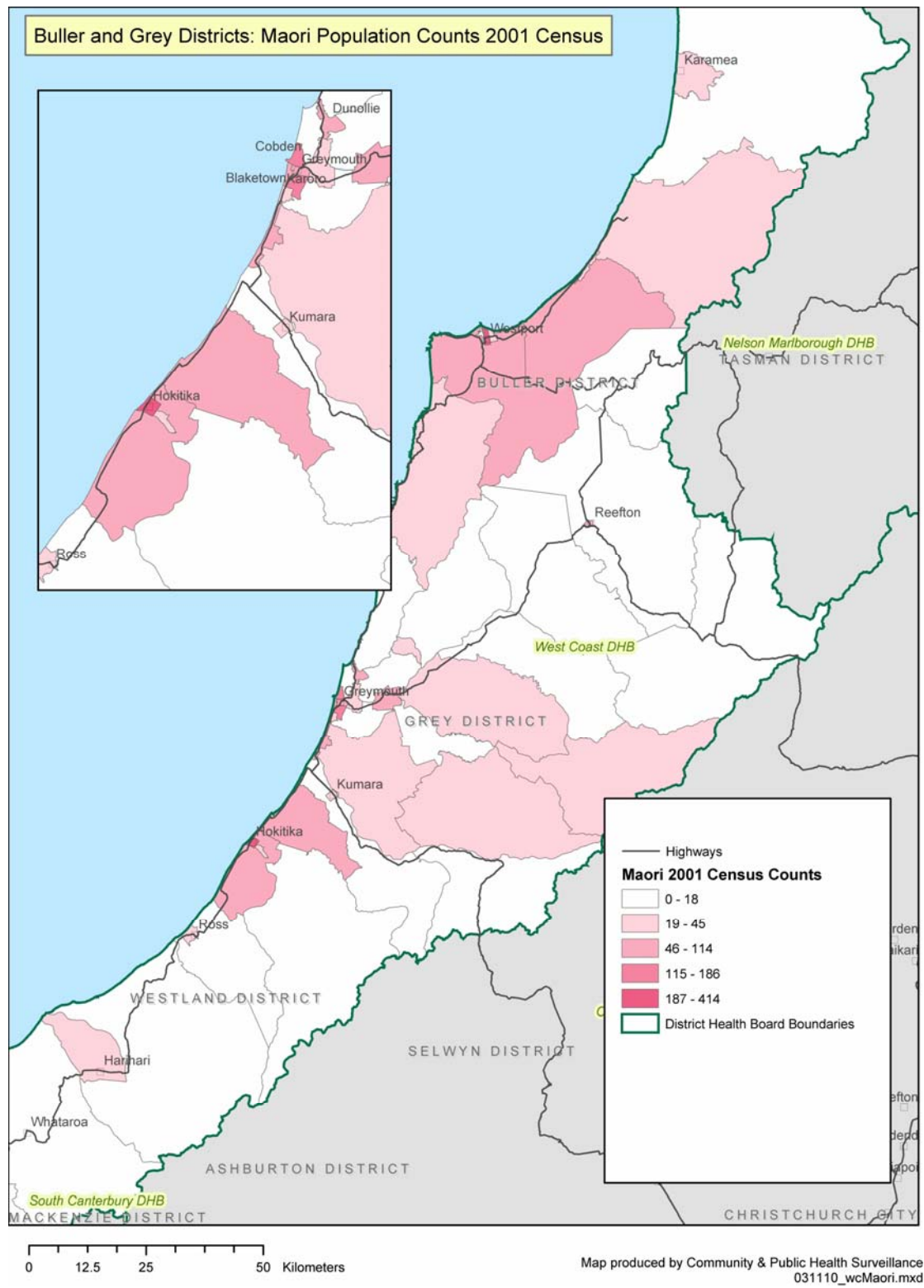
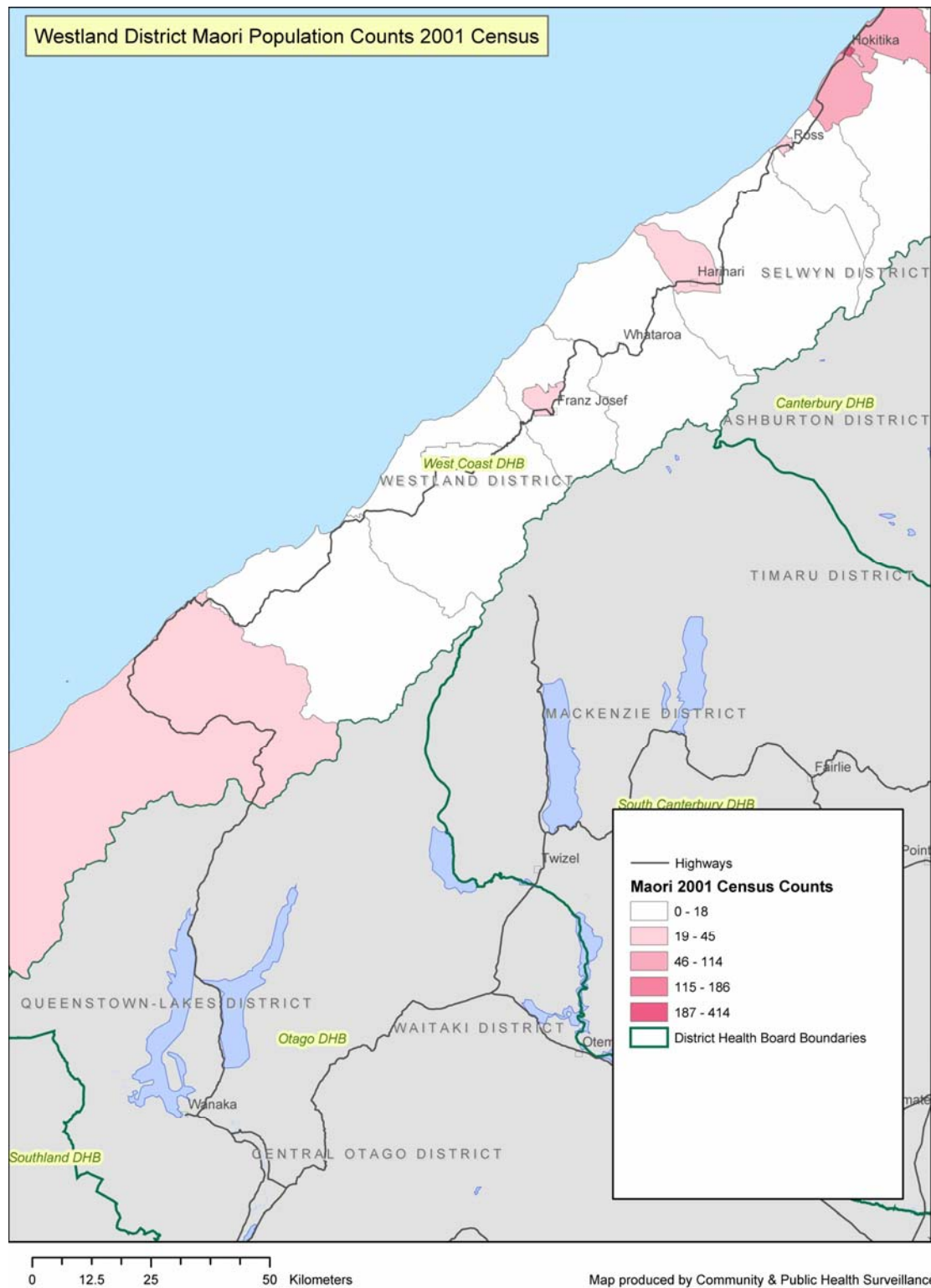


Figure 3.7 Māori population counts Westland District, 2001
 (Source: Community and Public Health)



4 All-Cause Mortality

Key point

- All-cause mortality is significantly higher for Māori than Non-Māori both on the West Coast and nationally.

Table 4.1 presents age standardised all-cause mortality rates per 100,000 for the New Zealand and West Coast populations. All-cause mortality is higher for Māori both on the West Coast and in New Zealand as a whole.

Table 4.1 All-cause mortality

(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
All ages all-cause mortality, 1996-2004, mean annual rate per 100,000*	410.1 (334.1-498.0)	236.6 (225.6-248.0)	475.8 (469.6-482.0)	201.3 (200.3-202.3)

* Age standardised to 2001 Census New Zealand Māori population.

5 Communicable Disease

Key points

- Māori are under-represented among communicable disease notifications on the West Coast.
- This may be explained by any combination of: the different age structure of the Māori population, a lower incidence of disease among Māori, undercounting of Māori among disease notifications, and lower rates of presentation to health services for Māori.
- Early National Immunisation Register (NIR) data indicate lower coverage for Māori than Non-Māori children on the West Coast at the 6-week timepoint, although small numbers for Māori necessitate caution when comparing these figures.

5.1 Notifiable communicable disease

Table 5.1 presents crude aggregate data for communicable disease notifications over the seven-year period 2000-2006. These data indicate that Māori are under-represented in giardiasis, pertussis and campylobacter notifications, in that they make up a smaller proportion of notified cases of these diseases than they do of the population. This crude comparison does not take into account the different age structures of the Māori and Non-Māori populations. The lower-than-expected rates of notifications among Māori may be explained by any combination of: the different age structure of the Māori population, a lower incidence of disease among Māori, under-counting of Māori among notifications (for example, ethnicity incorrectly classified as Non-Māori) and lower rates of presentation for Māori (for example, Māori may be less likely to present to General Practitioners and be notified as a case). It is not possible to identify which of these possible explanations is correct.

Table 5.1 WCDHB Communicable Disease Notifications, 1st January 2000 - 31st December 2006

(Source: ESR, Episurv database)

Disease	West Coast DHB 2000-2006		
	European Cases (% of total cases)	Māori Cases (% of total cases)	Total Cases*
Campylobacter	513 (91.8%)	19 (3.4%)	559
Cryptosporidiosis	83 (94.3%)	—	88
Gastroenteritis	20 (87.0%)	—	23
Gastroenteritis -foodborne	5 (100%)	—	5
Giardiasis	81 (82.7%)	7 (7.1%)	98
Hepatitis A	—	—	1
Hepatitis B	—	—	2
Hepatitis C	8 (72.7%)	—	11
Legionellosis	—	—	5
Leptospirosis	18 (100%)	—	18
Malaria	—	—	2
Measles	20 (95.2%)	—	21
Meningococcal disease	14 (87.5%)	—	16
Mumps	—	—	3
Pertussis**	323 (85.2%)	26 (6.9%)	379
Rubella	8 (100%)	—	8
Salmonellosis	61 (89.7%)	—	68
Shigellosis	—	—	2
Tuberculosis disease –new case	—	—	7
Tuberculosis disease –on prevention	—	—	1
VTEC/STEC Infection	—	—	2
Yersiniosis	80 (94.1%)	—	85

— Indicates cell count of 0, 1, 2, 3 or 4.

*Note 'Total cases' also includes Non-European Non-Māori ethnicities.

** Note that the majority of pertussis notifications were made during a 1-year period.

5.2 Immunisation coverage

Table 5.2 presents data from the National Immunisation Register, which was established in 2005. These data indicate lower rates of immunisation for West Coast Māori children than for West Coast children as a whole at the 6-week timepoint.

Table 5.2 Regular childhood immunisation coverage, West Coast 2007
(Source: National Immunisation Register)

Immunisation Event	WC Māori		WC Total	
	Number eligible	% vaccinated	Number eligible	% vaccinated
6 Week	39	49%	338	66%
12 Months	36	78%	352	84%
18 Months	28	68%	231	66%

6 Cardiovascular Disease

Key points

- Cardiovascular disease hospitalisation rates are no different for Māori and Non-Māori on the West Coast, which contrasts with the national picture.
- Cardiovascular mortality rates are significantly higher for Māori than Non-Māori both on the West Coast and nationally.
- Both stroke mortality and hospitalisation rates are higher for Māori than Non-Māori on the West Coast and nationally.
- In contrast, West Coast Māori have lower rates of hospitalisation for ischaemic heart disease than Non-Māori. This suggests an important area of unmet need for West Coast Māori.
- Overall, West Coast Māori carry a greater burden of cardiovascular disease morbidity and mortality than Non-Māori.

6.1 Cardiovascular disease hospitalisations and mortality

Table 6.1 presents cardiovascular disease morbidity and mortality data for the West Coast and all of New Zealand. Cardiovascular mortality is significantly higher for Māori both on the West Coast and nationally. Cardiovascular disease hospitalisation rates are no different for Māori and Non-Māori on the West Coast, in contrast to the national picture, in which Māori hospitalisation rates are higher.

The stroke mortality rate for West Coast Māori is more than twice that for Non-Māori, and is higher than for Māori nationally. West Coast hospitalisation rates for stroke are higher than national rates, overall, and West Coast Māori rates are significantly higher than Non-Māori rates.

These data indicate a greater burden of cardiovascular disease on the West Coast overall, and that this is carried disproportionately by Māori. This higher need appears not to be reflected in hospitalisation rates for West Coast Māori.

Table 6.2 presents ischaemic heart disease indicators for the West Coast and all of New Zealand. Ischaemic heart disease is a subset of total cardiovascular disease, and so has smaller numbers and wider 95% confidence intervals. There is no significant difference between West Coast Māori and Non-Māori ischaemic heart disease mortality rates. Hospitalisation rates are, however, lower for Māori than for Non-Māori on the West Coast, and this is in contrast to the national data where Māori have significantly higher rates of hospitalisation for ischaemic heart disease. This appears to represent an area of unmet need for West Coast Māori.

Table 6.1 Cardiovascular disease indicators
(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
Total cardiovascular disease mortality, 35+ years, 1996-2004, mean annual rate per 100,000*	453.0 (314.2-631.5)	262.4 (242.9-282.8)	536.9 (524.9-549.1)	212.4 (210.7-214.1)
Total cardiovascular disease hospitalisation, 35+ years, 1996-2005, mean annual rate per 100,000*	2,689.8 (2,347.9-3,067.5)	2,764.2 (2,691.1-2,838.6)	3,576.7 (3,547.3-3,606.3)	2,100.5 (2,094.4-2,106.7)
Stroke mortality, 35+ years, 1996-2004, mean annual rate per 100,000*	136.7 (65.3-251.6)	47.7 (40.0-56.3)	80.6 (76.0-85.4)	46.1 (45.4-46.9)
Stroke hospitalisations, 35+ years, 1996-2005, mean annual rate per 100,000*	708.6 (538.7-914.8)	353.8 (330.2-378.3)	460.4 (449.9-471.1)	273.4 (271.3-275.5)

* Age standardised to 2001 Census New Zealand Māori population.

Table 6.2 Ischaemic heart disease indicators
(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
Ischaemic heart disease mortality, 35+ years, 1996-2004, mean annual rate per 100,000*	210.9 (120.2-342.7)	159.1 (143.7-175.5)	310.8 (301.7-320.1)	126.5 (125.1-127.8)
Ischaemic heart disease hospitalisations, 35+ years, 1996-2005, mean annual rate per 100,000*	633.2 (473.9-828.6)	1,096.7 (1,051.1-1,143.6)	1,145.6 (1,129.0-1,162.3)	894.5 (890.4-898.5)

* Age standardised to 2001 Census New Zealand Māori population.

7 Cancer

Key points

- There is no significant difference between all-cancer registration rates for Māori and Non-Māori on the West Coast.
- West Coast Māori mortality rates for all cancers are higher than those for West Coast Non-Māori.
- These results suggest a similar incidence of disease but poorer overall outcomes for West Coast Māori, and mirror the results seen at the national level.
- Small numbers for West Coast Māori prevent the consideration of age-standardised rates for site-specific cancers.
- Screening coverage is an important indicator in light of the poorer cancer outcomes for Māori. Recent National Cervical Screening Programme data indicate lower participation and coverage rates for West Coast Māori women compared to West Coast Non-Māori women. Breastscreen Aotearoa data indicate comparable coverage rates for West Coast Māori and Non-Māori women.

7.1 Cancer registrations

Table 7.1 presents the total numbers of cancer registrations, by site, for West Coast Māori and Non-Māori over the time period 1995-2004. Note that carcinoma *in situ* of the cervix is not compulsorily notified and cases are likely to be undercounted in this table.

Small numbers prevent the calculation of site-specific age-standardised rates and instead all-cancer (i.e., all-site) registrations and mortality are presented in Table 7.2. There is no significant difference between Māori and Non-Māori all-cancer registration rates on the West Coast, however, all-cancer mortality rates are significantly higher for Māori. While it is difficult to comment in detail when looking at all-site cancer morbidity and mortality, these patterns suggest similar rates of cancer registration but poorer overall outcomes for Māori on the West Coast. A similar pattern is seen in the national data.

Table 7.1 Cancer registrations by site for West Coast DHB, 1995-2004
(Source: New Zealand Health Information Service)

Site	Number of registrations		
	Māori	Non-Māori	Total
Carcinoma <i>in situ</i> of cervix**	15	195	210
Lung cancer	11	151	162
Breast cancer	6	170	176
Leukaemia	*	50	53
Non-Hodgkin's lymphoma	*	20	23
Prostate cancer	*	248	251
Testicular cancer	*	9	12
Cancer of rectosigmoid junction	*	20	22
Pancreatic cancer	*	29	31
Bowel cancer	*	182	184
Total / All sites	69	1,890	1,959

* Indicates a cell count of less than 5.

** Note that carcinoma *in situ* of the cervix is not compulsorily notified and therefore likely to be undercounted.

Table 7.2 Cancer registrations and mortality
(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
All cancer registrations*, 25+ years, 1995-2004, mean annual rate per 100,000**	399.7 (294.9-529.3)	424.8 (399.9-450.7)	443.1 (434.7-451.6)	417.7 (415.3-420.1)
All cancer mortality, 25+ years, 1996-2004, mean annual rate per 100,000**	283.9 (193.6-401.4)	153.7 (139.9-168.5)	281.5 (274.5-288.7)	146.5 (145.1-147.9)

* Excludes D codes, which are not compulsorily notified and include carcinoma *in situ* of the cervix.

** Age standardised to 2001 Census New Zealand Māori population.

7.2 Screening

Cervical and breast screening coverage are especially important given the picture of poorer cancer outcomes for West Coast Māori. Reports for the National Screening Unit provide a picture of cervical screening coverage on the West Coast. The 2004 *Annual Monitoring Report for the National Cervical Screening Programme* (Centre for Public Health Research, 2007) reported that, while 87.3% of West Coast women were enrolled in the programme in 2004, only 68.4% of Māori women were enrolled. These proportions compare to 90.7% for all women nationally and 75.4 % for Māori women nationally.

Table 7.3 presents recent summary cervical screening data for the West Coast DHB. These data indicate that Māori women have lower participation and coverage rates than women from the 'Other' group (which in this instance includes all Non-Māori, Non-Asian, Non-Pacific women).

Table 7.3 Cervical Screening Programme mean monthly coverage and participation rates for West Coast DHB, January 2006-May 2007

(Source: West Coast DHB)

	Māori	Other	Asian	Pacific
Population*	682	7,439	92	47
Participation**	63.6%	88.9%	45.7%	67.8%
Coverage***	47.4%	72.5%	39.1%	57.1%

* Population = number of eligible women as at May 2007.

** Participation = enrolled women who have had a smear recorded on the register during the previous six years.

***Coverage = enrolled women who have a smear recorded on the register during the previous three years.

Table 7.4 presents coverage data for Breastscreen Aotearoa for 2005-2006. These data indicate that Māori coverage rates are comparable to those for the 'Other' group (which in this instance includes all Non-Māori, Non-Pacific women). The overall coverage rate for both Māori and 'Other' women exceeds the 70% target, although coverage is lower for both groups in the Buller District.

Table 7.4 Breast Screen Aotearoa coverage rates 2005-2006, inclusive
(Source: West Coast DHB)

District	Coverage*		
	Māori	Other**	Coverage rate*
Buller	65%	67%	66.9%
Grey	81%	74%	75.7%
Westland	78%	74%	74.5%
Total (WCDHB)	75%	72%	72.50%

* Coverage = the percentage of women in the eligible age group (45-69 years) who have had a screening mammogram in the programme. The target is that $\geq 70\%$ of eligible women have had a screen within the programme in the most recent 24-month period.

** Other = Non-Māori Non-Pacific. Pacific data is not shown due to small numbers.

8 Injury

Key points

- Māori make up a smaller proportion of fatal injuries on the West Coast than nationally.
- Māori are also largely under-represented in injury morbidity data on the West Coast, whereas, nationally, Māori are over-represented among injury morbidity data.
- Falls are the most common mechanism of non-fatal injury for Māori and Non-Māori on the West Coast. For Māori, falls are followed by being struck by or against something, poisoning, and motor vehicle traffic injuries. For Non-Māori, falls are followed by adverse effects, being struck by or against something, and motor vehicle traffic injuries.
- West Coast Māori are under-represented compared with Non-Māori on the West Coast as victims of injuries due to violence (as indicated by injuries with intent as assault and/or with cause as struck by or against) whereas on a national scale Māori are over-represented as victims of injuries due to violence.

8.1 Injury mortality

Over the years 1999-2003, inclusive, there were a total of 8,469 fatal injuries in New Zealand, 1,573 (18.6%) of which were to Māori. Eighty-eight fatal injuries occurred in the West Coast DHB, 10 (11.4%) of which were to Māori (Table 8.1). Five of these ten fatalities among Māori were as a result of motor vehicle crashes. Māori made up 14.7% of all motor vehicle traffic deaths on the West Coast over this time period. This compares to the national figure of 23.3% of motor vehicle traffic deaths being Māori.

Table 8.1 External cause of fatal injury by ethnicity, for West Coast DHB and New Zealand, 1999-2003

(Source: Injury Prevention Research Unit, special request)

Major Cause	West Coast DHB		New Zealand	
	Māori (% of total for that cause)	All ethnicities	Māori (% of total for that cause)	All ethnicities
Fall	—	13	96 (6.2%)	1,548
Firearm	—	7	33 (11.7%)	281
Motor vehicle traffic	5 (14.7%)	34	531 (23.3%)	2,277
Other transport	—	5	34 (13.0%)	261
Poisoning	—	16	114 (11.2%)	1,017
Suffocation	—	6	362 (26.4%)	1,371
Total	10 (11.4%)	88	1573* (18.6%)	8,469*

*Includes fatalities due to causes in addition to those listed here.

— Indicates a cell count of 0, 1, 2, 3, or 4.

8.2 Injury morbidity

Table 8.2 presents injury morbidity data by cause, aggregated over the time period 1999-2005. Māori made up 6.7% of all injuries recorded in the West Coast DHB during this time period. This compares to a national figure of 15.5%. In terms of cause of injury, Māori made up 14.3% of West Coast DHB injuries due to machinery, 9.0% of injuries due to cutting/piercing, 8.3% of injuries due to being struck by or against something, and 8% of motor vehicle traffic injuries. These proportions are consistently lower than the national proportions, which for these causes were as follows: 14.9% (machinery), 23.3% (cutting/piercing), 23.6% (struck by or against), 18.9% (motor vehicle traffic injuries).

These data indicate that Māori are largely under-represented in injury morbidity data in the West Coast DHB – with the exception of injuries due to machinery. This is in contrast to the national picture of over-representation of Māori amongst injury morbidity data.

In terms of causes of injury among Māori in the West Coast DHB, falls are the most common cause (27.1% of all injuries recorded for Māori), followed by being struck by or against something (14.7%), and motor vehicle traffic injuries (10.6%) (Figure 8.1). For all ethnicities in the West Coast DHB, falls remain the most common cause (30.6% of all injuries recorded), followed by adverse effects (14.1%), and being struck by or against something (9.0%) (Figure 8.2).

Table 8.2 External cause of injury by ethnicity, for West Coast DHB and New Zealand, 1999-2005

(Source: Injury Prevention Research Unit, special request)

Major Cause	West Coast DHB		New Zealand	
	Māori (% of total for that cause)	All ethnicities	Māori (% of total for that cause)	All ethnicities
Adverse effects	17 (4.7%)	358	5,949 (12.8%)	46,497
Cut/pierce	13 (9.0%)	145	5,059 (23.3%)	21,728
Drowning	*	*	92 (19.8%)	465
Fall	46 (5.9%)	780	12,069 (11.8%)	102,360
Fire/Hot object or substance	*	39	1,167 (27.3%)	4,267
Firearm	*	*	89 (24.0%)	371
Machinery	6 (14.3%)	42	731 (14.9%)	4,922
Motor Vehicle Traffic	18 (8%)	225	4,634 (18.9%)	24,534
Natural /Environmental	5 (7.8%)	64	1,061 (17.8%)	5,963
Other land transport	*	93	1,091 (11.3%)	9,697
Other specified	*	82	1,954 (19.9%)	9,819
Other specified, nec	*	18	325 (24.9%)	1,304
Other transport	*	12	141 (9.1%)	1,551
Overexertion	*	112	1,229 (13.0%)	9,424
Pedal cyclist, other	*	35	901 (15.6%)	5,785
Pedestrian, other	*	9	266 (23.3%)	1,139
Poisoning	19 (8.8%)	216	3,127 (15.4%)	20,351
Struck by or against	25 (10.9%)	229	5,089 (23.6%)	21,559
Suffocation	*	5	167 (20.6%)	811
Unspecified	*	77	1,219 (18.8%)	6,480
Total	170 (6.7%)	2,548	46,360 (15.5%)	299,027

Figure 8.1 Mechanism of injury for West Coast Māori, all ages
(Source: Injury Prevention Research Unit)

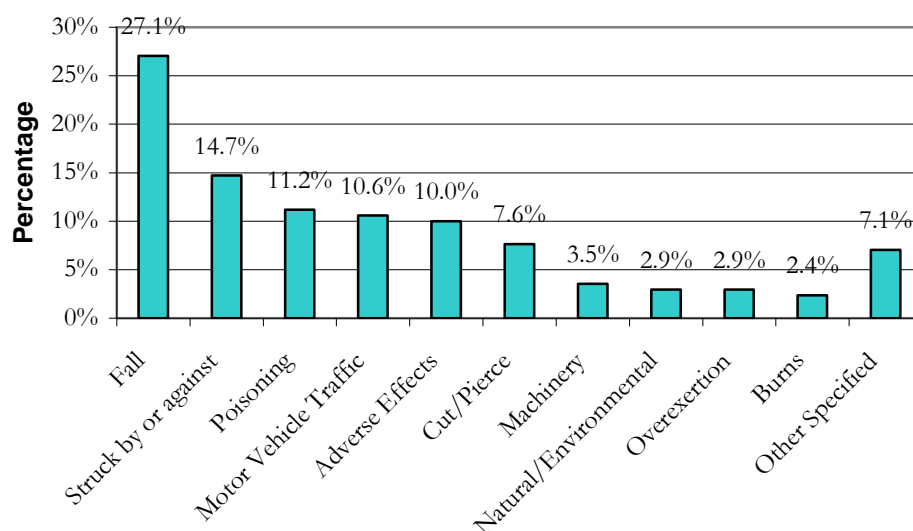
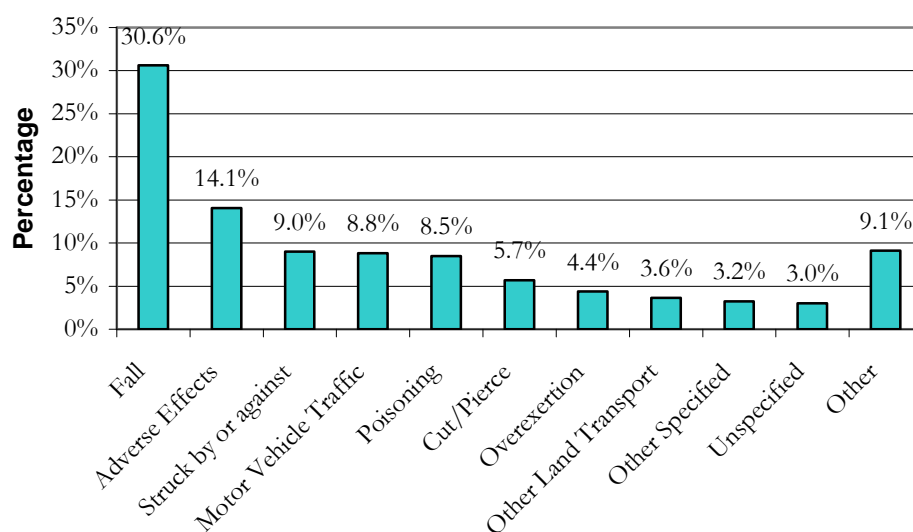


Figure 8.2 Mechanism of injury for West Coast all ethnicities, all ages
(Source: Injury Prevention Research Unit)



8.3 Childhood injury

Data from the National Minimum Dataset (Table 8.3) indicate that West Coast DHB rates of discharge for childhood injury were lower than national rates in 2005, although these differences were not statistically significant at the 99% confidence level. This applies to both the under-5 and the 5- to 14-year age groups. Small numbers prevent the presentation of a discharge rate for Māori children under 5 on the West Coast, however, the discharge rate for Māori children aged 5-14 years is comparable to that for all ethnicities.

Table 8.3 Childhood injury: Discharge rate per 1,000 for injuries, 2005

(Source: National Minimum Dataset Indicators 2005)

	Rate per 1,000			
	Māori		Total	
	Under 5	5-14	Under 5	5-14
West Coast	—	9.7	9.1	9.9
New Zealand	13.8	12.8	12.7	12.2

—=Fewer than five discharges.

8.4 Violence

Injury morbidity data from the Injury Prevention Research Unit indicate that from 1999-2005, 8.8% (6 out of 68) of West Coast assault injuries resulting in hospitalisation were sustained by Māori. Over the same time period, 10.9% (25 out of 229) of all injuries with cause “struck by or against” were sustained by Māori (note that this includes all intents: assault, self-inflicted and other). Nationally, 23.6% (5,089 out of 21,559) of all injuries with cause “struck by or against” were sustained by Māori. These data suggest that West Coast Māori are under-represented as victims of injuries due to violence (as indicated by injuries with intent as assault and/or with cause as struck by or against) while on a national scale Māori are over represented as victims of injuries due to violence. Small numbers prevent comparison of assault fatality data by ethnicity. Note that these data are not age adjusted, and therefore do not take into account the differences in the age profile of the West Coast and New Zealand Māori and Non-Māori populations.

9 Child and Youth Health

Key points

- There are no significant differences in Māori and Non-Māori hospitalisation rates for children and youth on the West Coast. Nationally, Māori youth hospitalisation rates are significantly higher, which is partly due to the effect of hospitalisations for childbirth.
- There are no significant differences in rates of low birthweight and pre-term birth between West Coast Māori and Non-Māori. Nationally, Māori rates are higher for both of these indicators. Small numbers – especially for low birthweight – result in wide confidence intervals around the West Coast Māori rates.
- Recent data suggest an increase in the proportion of breastfeeding of West Coast Māori babies at the 6-week timepoint and that the Māori and overall (all ethnicities) rates are now comparable at the 6-week and 6-month timepoints.
- Hearing screening coverage is lower for West Coast Māori children than for West Coast children overall at age 3 years, but similar at school entry.
- Asthma hospitalisation rates for those aged 5 to 34 are not significantly different between Māori and Non-Māori on the West Coast. West Coast Māori hospitalisation rates are significantly lower than Māori rates nationally.

9.1 Mortality and morbidity

Small numbers prevent the calculation of child and youth age-specific mortality rates for the West Coast. Age-specific morbidity (hospitalisation) rates are presented in Table 9.1. Child hospitalisation rates are lower than for Non-Māori on the West Coast, although this difference does not reach statistical significance. There is no difference in youth discharge rates. Nationally, Māori have significantly lower hospitalisation rates for children and significantly higher rates for youth. The higher rates for Māori youth will be partly explained by hospitalisations for childbirth.

Table 9.1 Child and youth hospitalisations
(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
Child (0-14 years) hospitalisations, 1996-2005, mean annual rate per 1,000*	162.0 (139.1-188.6)	194.4 (183.4-206.1)	190.9 (189.0-192.9)	196.9 (195.8-198.0)
Youth (15-24 years) hospitalisations, 1996-2005, mean annual rate per 1,000*	180.1 (141.8-228.8)	200.1 (184.0-217.6)	205.8 (202.9-208.8)	135.4 (134.3-136.5)

* 95% confidence intervals calculated using normal approximation.

9.2 Pre-term birth and low birthweight

Table 9.2 presents rates per 1,000 live births of low birthweight and pre-term birth for the West Coast DHB. The small numbers for Māori are reflected in the width of the 95% confidence intervals and there are no significant differences in the Māori and Non-Māori rates for either indicator.

Table 9.3 presents data from the National Minimum Dataset report for 2005. In 2005, the West Coast DHB discharge rate for low birthweight was lower than the national rate. Nationally, rates of low birthweight were highest among Māori. Small numbers prevent the presentation of a rate for Māori in the West Coast DHB. Note that these differences between the West Coast and national rates are not statistically significant (not significant at the 99% confidence level). At the national level, the Māori rate is significantly higher than the overall (all ethnicities) rate at the 99% confidence level.

Table 9.2 Pre-term birth and low birthweight West Coast DHB, 1996-2002

(Source: New Zealand Health Information Service)

Indicator	West Coast Māori	West Coast Non-Māori
Low birthweight, rate per 1,000 live births* **	5.9 (1.5-23.6)	9.0 (5.9-13.7)
Pre-term birth, rate per 1,000 live births* **	97.3 (69.2-137.0)	91.6 (80.4-104.4)

*Denominator for rates is from birth registration dataset and includes births to WCDHB resident women that occur in other districts. Numerator also includes out-of-district hospitalisations.

** 95% confidence intervals calculated using normal approximation.

Table 9.3 Discharge rate per 1,000 hospital births for low birthweight, 2005

(Source: National Minimum Dataset Indicators, 2005)

Region	Rate per 1,000			
	Māori	Other	Pacific	Total
West Coast	—	45.9	—	51.5
New Zealand	72.3	58.4	47.5	60.2

— =Fewer than five discharges.

9.3 Breastfeeding

Table 9.4 shows the rates of full and exclusive breastfeeding at six weeks and six months for Plunket enrolled babies in the West Coast DHB. A lower proportion of Māori babies were breastfed at the 6-week timepoint, when compared to the total West Coast population. This difference is no longer apparent at the 6-month timepoint. Breastfeeding rates at 6 months meet the New Zealand targets for 2005, however rates are below target at the 6-week timepoint.

Table 9.5 presents more recent breastfeeding data for the West Coast. These data suggest an increase in breastfeeding rates for West Coast Māori at 6 weeks. The West Coast all ethnicities data are similar to the 2004-2005 data. Note that confidence intervals are not provided around these estimates.

Table 9.6 presents deprivation data for West Coast Plunket enrolments for July 2005 to June 2006. There is a similar proportion in deciles 8-10 for West Coast Māori and West Coast all ethnicities.

Table 9.4 Plunket-enrolled babies' breastfeeding at 6 weeks and 6 months, 2004-2005

(Source: West Coast DHB Draft Child Health Plan, version 1.4)

	West Coast Total	West Coast Māori	New Zealand Targets 2005	New Zealand Targets 2010
6 weeks	62%	37%	74%	90%
6 months	20%	21%	21%	27%

Table 9.5 Plunket-enrolled babies' breastfeeding at 6 weeks and 6 months, July 2005 to June 2006

(Source: West Coast Plunket Annual Report, September 2006)

	West Coast All Ethnicities (n=274)			West Coast Māori (n=44)		
	Exclusive	Full	Total	Exclusive	Full	Total
6 weeks	45%	18%	63%	63%	13%	76%
6 months	13%	9%	22%	11%	5%	16%

Table 9.6 Plunket enrolments by NZDep of domicile, July 2005 to June 2006

(Source: West Coast Plunket Annual Report, September 2006)

West Coast All Ethnicities (Total n=274)		West Coast Māori (Total n=44)	
Dep 1-7 % (n)	Dep 8-10 % (n)	Dep 1-7 % (n)	Dep 8-10 % (n)
60% (164)	40% (110)	68% (30)	30% (13)

9.4 Nutrition

The 2002 National Children's Nutrition Survey

The National Children's Nutrition Survey is a survey of 3,275 children aged 5 to 14 years undertaken in 2002. The survey results are published in the document *NZ Food NZ Children: Key Results of the 2002 National Children's Nutrition Survey* (Ministry of Health, 2003). The survey sample was nationally representative, and data collection involved anthropometric (for example, height and weight) and clinical measures (for example, urine samples) completed at school and a main interview carried out in the home. Māori and Pacific children were over-sampled so that ethnicity-specific analyses could be carried out. The Survey did not present data for individual DHBs, however some overall conclusions about the nutritional status of Māori children were drawn, with suggested opportunities for improvement as follows:

- the mean contribution of fat to energy increased with age
- Māori children had high median usual daily intakes of fat and sugar
- 30.6 % of girls were overweight and 16.7% obese
- close to 11% of girls and 9% of boys watched more than 20 hours of television per week
- 16% of girls and 12.7% of boys did not take part in physical activity during the weekends
- about 16% of girls aged 11-14 years did not consume any food before leaving for school in the morning.

Overall, younger Māori children were more likely, when compared with older, to have healthier nutrition practices and to be more physically active. The same applied to children of Pacific, New Zealand European, and Other ethnicities.

9.5 Hearing

Table 9.7 presents hearing screening data for 3-year olds and new entrants for the West Coast DHB for 2005-2006. Coverage for Māori children is lower than for West Coast children overall at 3 years, but is comparable at school entry. The failure rates in Table 9.7 represent small numbers – especially for Māori – and so make it difficult to draw comparisons.

Table 9.7 Hearing screening: Coverage and failure rates, 2005-2006
(Source: West Coast DHB)

Indicator	Māori % (n)	All Ethnicities % (n)
3-year old tympanometry coverage rate*	73% (94/128)	115% (875/758)
3-year old tympanometry failure rate	4.2% (4)	7.8% (68)
School entrant audiometry coverage rate**	89% (125/140)	82% (664/812)
School entrant audiometry failure rate	0.8% (1)	0.9% (6)

*Denominator calculated as 1/5 of Census data for 0-4 year olds multiplied by 2 for 2005 and 2006.

** Denominator calculated as 1/5 of Census data for 5-9 year olds multiplied by 2 for 2005 and 2006.

9.6 Asthma

Table 9.8 presents age standardised rates for asthma for the 5- to 34-year age group. Asthma hospitalisation rates are not significantly different between Māori and Non-Māori on the West Coast and West Coast Māori hospitalisation rates are significantly lower than Māori rates nationally. At the national level, Māori rates are significantly higher than Non-Māori rates.

While 2005 readmission rates for 5- to 14-year olds with asthma appear high both for Māori in the West Coast DHB (50 readmissions per 100 discharges, compared to 22.2 readmissions per 100 discharges for all ethnicities) and for the West Coast DHB overall, these rates are not significantly different from the national rates (at the 99% confidence level) (Table 9.9).

Table 9.8 Asthma hospitalisations
(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
Asthma hospitalisations, 5-34 years, 1996-2005, mean annual rate per 100,000*	169.0 (108.4-250.7)	251.5 (220.9-285.1)	308.0 (301.7-314.3)	208.3 (205.7-211.0)

* Age standardised to 2001 Census New Zealand Māori population.

Table 9.9 Childhood asthma: Readmission rate per 100 discharges by DHB region for asthma (within 30 days)
 (Source: National Minimum Dataset Indicators 2005)

	Rate per 1,000			
	Māori		Total	
	Under 5	5-14	Under 5	5-14
West Coast	0.0	50.0	0.0	22.2
New Zealand	2.2	6.0	1.4	5.6

10 Tobacco

Key points

- The prevalence of current smoking for West Coast Māori aged 15 years and above remains considerably higher than for West Coast Non-Māori.
- There has been a small reduction in the proportion of current smokers among West Coast Māori between the 1996 and 2006 Censuses.
- The proportion of ex smokers has increased slightly for West Coast Māori and Non-Māori since 1996.
- Over the time period 1999-2005 on the West Coast, Māori girls had the highest rates of daily or at least monthly smoking, followed by Māori boys, European/Other girls and European/Other boys.
- West Coast Māori have significantly higher rates of hospitalisation for chronic obstructive pulmonary disease than West Coast Non-Māori and New Zealand Māori and Non-Māori.

10.1 Smoking prevalence

Table 10.1 presents smoking data from the 1996 and 2006 Censuses. The smoking question was not asked in the 2001 Census. The proportion of smokers in the West Coast Māori population has dropped slightly from 43.3% in 1996 to 41.4% in 2006. Within this, the prevalence of current smoking is higher for Māori women than Māori men, by almost 5% in 1996 and by less than 3% in 2006. The proportion of ex smokers has increased slightly among West Coast Māori between 1996 and 2006, for example with the proportion of ex smokers among West Coast Māori increasing from 19.1% in 1996 to 21.2% in 2006. The proportion of never smokers shows little change over the 10-year period, with the exception of a 3% increase, from 54.2% in 1996 to 57.2% in 2006, for all ethnicities nationally.

The prevalence of current smoking remains higher for West Coast Māori than for Non-Māori, with a more-than 15% difference in 2006. Correspondingly, the proportion of ex and never smokers remains lower in the Māori population than the Non-Māori population. A similar picture is seen nationally.

Table 10.1 Smoking status 1996 and 2006 Census
(Source: Statistics New Zealand*)

Population			Smoking Status**		
			Smoker (%)	Ex smoker (%)	Never smoker (%)
West Coast DHB 1996	Māori	M	41.0	18.5	41.0
		F	45.8	20.2	34.0
		Total	43.3	19.1	37.5
	All ethnicities	M	27.8	25.9	46.3
		F	26.6	19.9	53.5
		Total	27.2	22.9	49.8
West Coast DHB 2006	Māori	M	39.6	22.0	38.5
		F	43.2	20.5	36.3
		Total	41.4	21.2	37.2
	All ethnicities	M	26.2	26.0	47.9
		F	25.2	22.5	52.2
		Total	25.7	24.3	50.0
New Zealand 1996	Māori	M	39.7	17.6	42.6
		F	47.4	17.6	35.0
		Total	43.7	17.6	38.7
	All ethnicities	M	24.8	24.9	50.3
		F	22.8	19.4	57.9
		Total	23.7	22.0	54.2
New Zealand 2006	Māori	M	38.5	18.3	43.2
		F	45.5	19.7	34.7
		Total	42.2	19.1	38.7
	All ethnicities	M	21.9	23.9	54.1
		F	19.5	20.3	60.1
		Total	20.7	22.1	57.2

*Usually resident population count total people aged 15 years and over.

** Denominator for percentages is total stating smoking status, rather than total aged 15 and above.

10.2 Youth smoking

Action on Smoking and Health (ASH) conducts annual surveys of year 10 students in New Zealand. A comparison between 1999 and 2005 West Coast data shows a large drop (from 22.1% to 8.8%) in the prevalence of daily smoking, which is highly statistically significant. Correspondingly, the proportion of total smokers has dropped and the proportion of never smokers has increased. A similar pattern is seen in the national data (Scragg, 2007).

Table 10.2 Distribution of year 10 students by smoking category, 1999 and 2005 (all ethnicities)

(Source: Scragg, 2007)

Smoking category	West Coast DHB		New Zealand	
	1999 (n=263)	2006 (n=329)	1999 (n=29,032)	2006 (n=33,556)
Daily	22.1%	8.8%*	15.6%	8.2%*
Total ≥monthly	13.7%	15.6%*	28.6%	14.2%*
Never smoked	26.2%	49.9%*	31.6%	53.8%*

*p for difference <0.001 compared with 1999, adjusted for age, sex and ethnicity.

Aggregate data for West Coast students are available from ASH on special request, (Table 10.3). These data show that over the time period 1999-2005 West Coast Māori girls had the highest rates of daily or at least monthly smoking, followed by Māori boys, European/Other girls and European/Other boys. Small numbers necessitate the data being aggregated over several years and prevent comparison of results between years.

Table 10.3 Distribution of West Coast year 10 students by smoking category, 1999-2005

(Source: ASH, special request)

Smoking category	Māori		European/Other	
	Male (n=150)	Female (n=119)	Male (n=718)	Female (n=730)
Daily	18.7%	29.4%	9.2%	14.8%
Total ≥monthly	26%	42.9%	16.7%	27%
Never smoked	26.7%	22.7%	38.6%	29.9%

National data (Scragg, 2007) demonstrate a significant drop in smoking prevalence for both female and male Māori and European/Other students between 1999 and 2006. Correspondingly, the proportion of never smokers has increased significantly for all of these groups across this time period. Māori female students continue to have the highest proportion of students who smoke daily or at least monthly.

10.3 Adult respiratory disease

Hospitalisation data indicate a substantially higher burden of chronic obstructive pulmonary disease for Māori than Non-Māori on the West Coast. A similar picture is seen nationally, although the Māori/Non-Māori difference is not as large. While higher smoking prevalence largely explains the higher rate for West Coast Māori, other risk factors, such as greater occupational exposure to agents that may cause respiratory damage, may contribute.

Table 10.4 Chronic obstructive pulmonary disease hospitalisations
(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
COPD hospitalisation, 35+ years, 1996-2005, mean annual rate per 100,000*	1,295.6 (1,061.2-1,566.2)	366.2 (343.4-390.0)	783.5 (769.8-797.4)	232.7 (230.8-234.6)

* Age standardised to 2001 Census New Zealand Māori population.

11 Diabetes

Key points

- Diabetes hospitalisations are significantly higher for Māori than Non-Māori both on the West Coast and nationally.
- Local Diabetes Team data indicate West Coast Māori with diabetes are less likely to have an annual review. Those who have had an annual review are more likely to have smoking as an additional risk factor and less likely to receive pharmacological intervention, when compared to Non-Māori undergoing annual reviews.

11.1 Diabetes hospitalisations

Diabetes hospitalisations are significantly higher for Māori than Non-Māori both on the West Coast and nationally (Table 11.1). While the Māori/Non-Māori difference is smaller on the West Coast, the 95% confidence intervals are wide due to the small numbers involved. Small numbers for West Coast Māori also prevent the presentation of age-standardised mortality rates for diabetes.

Table 11.1 Diabetes hospitalisations

(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
Diabetes hospitalisations, 35+ years, 1996-2005, mean annual rate per 100,000*	351.1 (234.9-504.6)	167.2 (148.0-188.0)	558.0 (546.4-569.7)	135.5 (133.9-137.2)

* Age standardised to 2001 Census New Zealand Māori population

11.2 Local Diabetes Team data

The Local Diabetes Team reports on clinical indicators as presented in Table 11.2. These data indicate that Māori are under-represented among those being checked, while the proportion of Māori exceeding an HbA1c level of 8 is similar to the proportion for all ethnicities.

Data for 2006, by ethnicity, are presented in Table 11.3. These data indicate the following:

- Māori made up a small proportion of Type I diabetics (number not presented, as it is less than 5) and 9.2% of Type II diabetics seen by the Local Diabetes Team in 2006.
- Of the expected number of Māori with diabetes (n=143), 31% (44) received free annual reviews in 2006. This compares to 61% of the expected number of those of NZ European ethnicity receiving reviews in 2006.
- The proportion with a glyated haemoglobin level exceeding 8.0 is similar for Māori, NZ European and all ethnicities.
- The proportion having had a retinal exam within the last 2 years is similar for Māori, NZ European and all ethnicities.
- The proportion of smokers is higher among Māori than NZ European and all ethnicities.
- A lower proportion of Māori are prescribed ACE inhibitors and statins.
- A lower proportion of Māori are hypertensive (blood pressure >130/85).

In summary, West Coast Māori with diabetes are less likely to have had an annual review. Those who have had an annual review are more likely to have smoking as an additional risk factor and less likely to receive pharmacological intervention, when compared to Non-Māori undergoing annual checks. Note that confidence intervals are not presented for the data in Table 11.3, so the statistical significance of any differences is unknown.

Table 11.2 Local Diabetes Team data

(Source: West Coast PHO Annual Report 2005-2006)

Outcome	Jan-Dec 2005	Jan-Jun 2006
Total checks done	514	187
% checks for Māori	6.6%	5.3%
% HbA1c>8	21%	21%
% HbA1c>8 Māori	21%	22%
% on lipid lowering medication	58%	70%
% retinal screening	87%	90%

Table 11.3 Local Diabetes Team data: Aggregated data from free annual reviews, 1st January 2006 to 31st December 2006

(Source: West Coast PHO Annual Report 2006-2007)

Type of diabetes	Māori	NZ European	Total*
Type 1	—	48	51
Type 2	41	446	498
Total reviews	44	494	549
Expected number with diabetes in population	143	813	959
% receiving reviews	31%	61%	57%
Glycated haemoglobin			
>7.0 and ≤8.0	10	100	111
>8.0	9	103	114
%>8.0	20%	21%	21%
Other clinical data			
Retinal exam within last 2 years	37	437	483
% Retinal exam within last 2 years	84%	88%	88%
Smokers	14	76	91
% Smokers	32%	15%	17%
BP >130/85 (systolic >130, diastolic >85)	18	265	285
% BP >130/85	41%	54%	52%
On ACE inhibitor	26	329	365
% On ACE inhibitor	59%	67%	66%
Cholesterol measured	44	481	535
% Cholesterol measured	100%	97%	97%
Cholesterol >9.0	—	—	—
On statin	21	310	341
% On statin	48%	63%	62%
Albumin/creatinine > 30	—	16	20
Alb/creat >30 and on ACE	—	15	Not available

— Indicates a cell count of 0, 1, 2, 3 or 4.

* Totals include Māori, NZ European, Pacific, Other, and 'Not stated' ethnicities.

12 Mental Health

Key points

- From 2001-2003, the proportion of Māori accessing mental health services on the West Coast was below the target set by the Mental Health Commission.
- West Coast Māori have similar volumes of contacts with mental health services to Non-Māori, with the exception of the 25+ age group where the level of contact is higher for Māori.
- A similar pattern is seen for bednights for children and youth, however, the bednight rate per 1,000 adults aged 25+ is considerably higher for Non-Māori than for Māori on the West Coast.
- West Coast Māori have a similar rate of mental health hospitalisations to West Coast Non-Māori. Nationally, the rate of hospitalisations is significantly higher for Māori.
- Māori do not appear to be over-represented among suicide deaths on the West Coast.
- There are no significant differences between Māori and Non-Māori deliberate self harm hospitalisation rates on the West Coast (both for all ages and for 15 and above), while nationally the rates of hospitalisation are higher for Māori.

12.1 Access to services

The Mental Health Commission (1998) has suggested that the access target for secondary mental health services should be 6% for Māori, with a target for the general population of 3%. Over the years 2001-2003, the proportion of Māori accessing secondary mental health services on the West Coast was just under 5% and therefore below target (Table 12.1).

Table 12.2 presents West Coast data from the New Zealand Health Information Service Mental Health National Collection (MHINC). These data are aggregated over a five-year time period (2001-2005) and are combined data, rather than being linked to individuals. The data are presented in child (0-14), youth (15-24) and adult (25+) age groups. An important limitation of these data is that any one person may be able to appear several times in the numerator, for example, if they have long and/or frequent hospitalisations or multiple contacts with mental health services.

These data indicate that Māori have similar volumes of contacts with mental health services to Non-Māori on the West Coast, with the exception of the 25+ age group where the level of contact is higher for Māori (7,993 per 1,000 people compared with 6,373 per 1,000 people). A similar pattern is seen for bednights for children and youth, however the bednight rate per 1,000 adults aged 25+ is considerably higher for Non-Māori than for Māori on the West Coast. Potential explanations for this include that Māori may have lower morbidity or lower rates of hospitalisation, or shorter stays.

Table 12.1 Access to mental health services: West Coast DHB Māori utilisation of mental health services, 2001-2003

(Source: West Coast Māori Health Plan, draft 2006)

Calendar Year	Māori Population (Based on 2001 Census)	Number of Māori Accessing Services	% Accessing Services
2001	2,790	133	4.8%
2002	2,820	138	4.9%
2003	2,810	137	4.9%

Table 12.2 Mental Health Collection 2001-2005, West Coast DHB mean annual number and rate per 1,000 population for bednights and contacts

(Source: New Zealand Health Information Service)

Age group	Contacts				Bednights			
	Māori		Non-Māori		Māori		Non-Māori	
	Number	Rate per 1,000*	Number	Rate per 1,000*	Number	Rate per 1,000*	Number	Rate per 1,000*
0-14y	2,263	2,206	11,900	2,058	53	52	235	41
15-24y	1,688	4,538	13,171	4,830	233	626	2,140	785
25+	9,112	7,993	122,471	6,373	1,899	1,666	81,787	4,256

* 2001 Census data used as denominators.

12.2 Mental health hospitalisations

Table 12.3 presents mental health hospitalisation rates. These data indicate a similar hospitalisation rate for Māori and Non-Māori on the West Coast, which is in contrast to a significantly higher hospitalisation rate for Māori nationally.

Table 12.3 Mental health hospitalisations

(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
All ages mental disorders hospitalisations, 1996-2005, mean annual rate per 100,000	935.8 (816.0-1,068.2)	904.8 (868.8-941.6)	694.1 (687.0-701.3)	403.5 (401.3-405.7)

* Age standardised to 2001 Census New Zealand Māori population.

12.3 Suicide

In the period 1999-2003 there were 24 suicide deaths in the West Coast DHB with a standardised mortality ratio (the ratio of observed suicide to the number expected on the basis of the age and socioeconomic structure of the DHB) of 124.0 deaths per 100,000 (95% confidence interval 79.4 to 184.5). This indicates that there were more suicides observed than predicted during this time period, although this was not statistically significant. Over 80% of those deaths were male and all were aged 20 years and above (Source: 2003 Summary Suicide Statistics, New Zealand Health Information Service).

The overall age-standardised suicide rate in the period 1999-2003 was 24.7 per 100,000 for males and 3.9 per 100,000 for females, with an overall rate of 14.3 per 100,000.

Although West Coast suicide data are not presented here by ethnicity due to small numbers, it appears that Māori are not over-represented among suicide deaths on the West Coast.

12.4 Deliberate self-harm

In the period 2002-2003 there were 83 deliberate self harm hospitalisations in the West Coast DHB. This was more than twice the predicted number of hospitalisations, thus giving a standardised discharge ratio of 208.2 (95% confidence interval 165.8-258.1). Of these hospitalisations, 59 were female and 24 were male (Source: 2003 Summary Suicide Statistics, New Zealand Health Information Service).

Table 12.4 presents deliberate self harm hospitalisation data for all ages and for 15 years and above. There are no significant differences between Māori and Non-Māori

hospitalisation rates on the West Coast, while nationally the rates of hospitalisation are higher for Māori in both of these age groups.

Table 12.4 Deliberate self harm hospitalisations
(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
All ages deliberate self harm hospitalisations, 1996-2005, mean annual rate per 100,000*	121.8 (81.6-174.5)	107.7 (93.9-122.8)	103.4 (100.7-106.2)	69.9 (68.9-70.9)
15+ deliberate self harm hospitalisations, 1996-2005, mean annual rate per 100,000*	160.1 (101.8-239.2)	141.2 (121.7-162.5)	132.9 (129.0-136.9)	85.3 (84.0-86.6)

* Age standardised to 2001 Census New Zealand Māori population.

13 Oral Health

Key points

- In 2004, Māori children in the West Coast DHB had poorer oral health status than Māori children in fluoridated areas of New Zealand and poorer oral health status than the national (all ethnicities) population in both fluoridated and non-fluoridated areas.
- Māori children in the West Coast DHB had better oral health status than Māori children in other non-fluoridated areas of New Zealand.
- West Coast children have higher rates of hospitalisations for dental extractions than children in New Zealand overall. There is no significant difference between the rate of hospitalisations for Māori and for Non-Māori children on the West Coast.

13.1 Oral health status

Table 13.1 presents oral health data routinely collected by the School Dental Service. There are two measures used: the 'percent caries free' indicates the proportion of children with no caries or dental decay at the age in question, the 'mean DMFT score' refers to the number of decayed, missing or filled teeth at the age in question. The data in this table indicate that in 2004 Māori children in the West Coast DHB had better oral health status (a greater likelihood of being caries free and lower mean DMFT scores) than Māori children in other non-fluoridated areas of New Zealand. However, Māori children in the West Coast DHB had poorer oral health status than Māori children in areas of New Zealand where water supplies are fluoridated, and poorer health status than the national (all ethnicities) population in both fluoridated and non-fluoridated areas. Within each group (West Coast, New Zealand fluoridated, and New Zealand non-fluoridated) Māori have consistently poorer oral health status. The data in this table demonstrate the potential for community water fluoridation to improve the oral health status of Māori.

Table 13.1 Oral health status by ethnic group, West Coast and New Zealand, 2004

(Source: Ministry of Health, School Dental Service)

Indicator	West Coast		New Zealand Non-Fluoridated		New Zealand Fluoridated	
	Māori	Total	Māori	Total	Māori	Total
% Caries free at 5 years	34.6%	42.2%	24.2%	45.4%	38.1%	58.9%
Mean DMFT score at 5 years	3.58	2.93	4.39	2.56	2.94	1.66
% Caries free at year 8	36.0%	34.7%	29.1%	40.4%	37.8%	50.7%
Mean DMFT score at year 8	2.43	1.98	2.71	1.82	1.90	1.32

13.2 Child hospitalisations for dental extractions

Table 13.2 presents child hospitalisations data for dental extractions. Children are hospitalised for general anaesthetic for two reasons: severe early childhood caries, which peaks at age five, and high levels of anxiety regarding dental treatment, which also includes older children. West Coast children have higher overall rates of hospitalisations for dental extractions than children in the whole of New Zealand. There is no significant difference between the rate for Māori and for Non-Māori children. It is important to note that the New Zealand data presented here cover both fluoridated and non-fluoridated areas, whereas the West Coast is entirely non-fluoridated.

Table 13.2 Hospitalisations for dental extractions, 0 to 9 years

(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
0-9 year hospitalisations for dental extractions, 1996-2005, mean annual rate per 1,000*	16.2 (9.0-29.2)	14.2 (10.1-18.6)	9.3 (8.8-9.8)	6.34 (6.1-6.6)

* 95% confidence intervals calculated using normal approximation.

14 Sexual and Reproductive Health

Key points

- West Coast Māori women have a similar rate of hospitalisation for pregnancy-related conditions to West Coast Non-Māori women, and a lower rate than Māori women nationally.
- Termination of pregnancy data are not available by ethnicity and the limitations of sexual health clinic surveillance data prevent comparisons by ethnicity.

14.1 Hospitalisations for pregnancy-related conditions

Over the period 1996-2005 there were 6,208 hospitalisations for pregnancy-related conditions, childbirth and the puerperium for West Coast resident women aged 15 to 44 years, 588 (9.5%) of whom were Māori. Mean annual age-specific hospitalisation rates are presented in Table 14.1. Age-specific rates of hospitalisation for pregnancy-related conditions are not significantly different for Māori and Non-Māori on the West Coast, while, nationally, Māori have significantly higher rates. Note that these rates are specific to the 15-44 year age range, but do not take into account differences in the Māori and Non-Māori population structure within this age range.

Table 14.1 Pregnancy-related hospitalisations

(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
15-44 year hospitalisations for pregnancy related conditions, 1996-2005, mean annual rate per 1,000*	106.5 (82.5-137.5)	105.6 (97.2-114.7)	141.5 (139.4-143.6)	101.0 (100.3-101.8)

* 95% confidence intervals calculated using normal approximation

14.2 Termination of pregnancy

Termination of pregnancy services are not available on the West Coast. Terminations for women from the West Coast DHB are carried out at the Lyndhurst Hospital in Christchurch. Total numbers of referrals to Lyndhurst are not available and, similarly, data are not available by ethnicity.

14.3 Sexually transmitted infections

Surveillance of sexually transmitted infections (STIs) in New Zealand is based on voluntary reporting from a range of different providers. These include sexual health clinics, family planning clinics, student youth health clinics and some government and commercial laboratories. Sexual health clinics send monthly reports to Environmental Science and Research in Wellington and clinic-specific rates¹ of various diseases are calculated for each clinic and published in quarterly and annual reports. Two West Coast sexual health clinics, from Greymouth and Westport, respectively, participate in STI surveillance. National numbers and rates of STIs are published by ethnic group, and data is available by ethnic group for individual DHBs on request, as presented in Table 14.2. Note that valid comparisons between ethnic groups are not possible, due to the limitations of the data – in particular there is no fixed catchment area for sexual health clinics and differences in numbers and rates may reflect differential use of clinics by different groups (for example, some groups may be more likely to present to GPs than to sexual health clinics).

Numbers and rates for gonorrhoea, genital warts and non-specific urethritis are not presented due to small numbers (fewer than 5 cases over this time period).

**Table 14.2 Sexually transmitted infection rates (confirmed cases only)
Greymouth Sexual Health Clinic*, 1997-2006**

(Source: Institute of Environmental Science and Research Limited, special request)

	Total number of cases 1997-2006		Rate per 100 clinic visits**	
	Māori	Total	Māori	Total
Chlamydia	16	130	4.3	3.3
Genital Herpes	7	70	1.9	1.8
Genital Warts	30	224	8.0	5.6

* Data presented for Greymouth Sexual Health Clinic, only, due to very small numbers through Family Planning Clinics.

** Rate = (total no. cases/total no. clinic visits) x 100.

¹ The clinic-specific rate is the total number of reported cases of a given disease divided by the total number of clinic visits for any reason.

15 Alcohol and Other Drugs

Key points

- Limited alcohol and drug data are available by ethnicity on the West Coast.
- New Zealand Health Survey results indicate no significant difference between West Coast Māori and Non-Māori for self-reported hazardous drinking and marijuana use. This is in contrast to higher rates of hazardous drinking and marijuana use for Māori nationally.
- Drug and alcohol hospitalisation rates are significantly higher for both Māori and Non-Māori on the West Coast than nationally. There is no significant difference between hospitalisation rates for Māori and Non-Māori on the West Coast.

15.1 Self-report data

Limited alcohol and other drug data are available by ethnicity for the West Coast DHB. The Youth Access to Alcohol (YATA) Group conducts surveys of youth attitudes and practices about alcohol. The Buller YATA Group conducted a survey of 539 youth aged 11 to 17 years in 2005. Key findings were that: 72% of youth reported that they drink alcohol, 16% said that they had got into trouble because of their drinking, 27% drank at least weekly, and 29% reported drinking at least five units in a session. The majority of youth said they got their alcohol from their parents (YATA, 2005). These survey data are not presented by ethnicity.

The New Zealand Health Survey collects data on hazardous drinking and other risk factors at the DHB level. Estimations from the 2002/2003 survey (Ministry of Health, 2004) are of a prevalence of self-reported hazardous drinking of 28.6% for West Coast Māori and 23.6% for West Coast Non-Māori. These compare to 25.9% for Māori nationally and 18.1% for Non-Māori nationally. The West Coast figures are based on small numbers and do not differ significantly between Māori and Non-Māori. The national Māori prevalence of hazardous drinking is significantly higher than the Non-Māori prevalence.

Similarly, there is no significant difference in the prevalence of self-reported marijuana use in the last 12 months for West Coast Māori and Non-Māori (25.8% and 18%) whereas the prevalence is significantly higher for Māori than Non-Māori nationally (27.3% and 14.9%). (Further detail about the New Zealand Health Survey follows in Section 16.)

15.2 Alcohol and other drug hospitalisations

Table 15.1 presents alcohol and drug hospitalisations data for 1996 to 2005. (Note that these are a subset of the whole group of mental health hospitalisations, rates for which are presented in Table 12.3.) These data indicate that drug and alcohol hospitalisation rates are significantly higher for both Māori and Non-Māori on the West Coast than nationally. There is no significant difference between hospitalisation rates for Māori and Non-Māori on the West Coast. It is important to consider that the higher hospitalisation rates for the West Coast may reflect higher morbidity and/or different management practices for alcohol and drug disorders.

Table 15.1 Alcohol and other drug hospitalisations
(Source: New Zealand Health Information Service)

Indicator	West Coast		New Zealand	
	Māori	Non-Māori	Māori	Non-Māori
15+ alcohol and drug hospitalisations, 1996-2005, mean annual rate per 100,000*	245.6 (171.2-341.0)	186.5 (164.7-210.1)	74.8 (71.9-77.8)	70.9 (69.7-72.1)

* Age standardised to 2001 Census New Zealand Māori population.

16 The New Zealand Health Survey

Key points

- The New Zealand Health Survey produces national and DHB level data on self report of disease and risk and protective factors.
- Nationally, Māori have higher rates of self-reported diabetes and heart disease, than Non-Māori. In terms of risk and protective factors, Māori have higher rates of smoking, hazardous drinking, hypertension, high cholesterol, marijuana use, and being obese or overweight, and lower rates of fruit and vegetable consumption.
- Small numbers surveyed on the West Coast result in wide confidence intervals around the estimates produced and, as a result, few differences reach statistical significance. West Coast Māori have significantly higher rates of self-reported diabetes, heart disease and smoking than West Coast Non-Māori.

The New Zealand Health Survey is a population-based health survey conducted by the Ministry of Health. Results of the most recent survey are published in the document *A Portrait of Health: Key Results of the 2002/2003 New Zealand Health Survey* (Ministry of Health, 2004) and a selection of data from the survey are accessible in Excel spreadsheet format from the Public Health Intelligence Website of the Ministry of Health (<http://www.phionline.moh.govt.nz/>).

The 2002/2003 survey involved face-to-face interviews with 12,929 adults aged 15 years and over. Information was collected in the following areas:

- chronic disease (respondents' self report of a doctor ever having told them they had any of the selected chronic diseases)
- risk and protective factors (respondents' self report)
- health service utilisation (respondents asked if they had seen certain health care providers or workers in the last 12 months)
- self-reported health status (using the SF-36, which is a questionnaire for measuring self-reported physical and mental health status).

West Coast and national data are presented in Tables 16.1 and 16.2. These data were accessed from the PHI Online website. The figures shown are *estimates* (based on small area estimation) and not direct measurements. Note that small numbers interviewed on the West Coast result in wide 95% confidence intervals around the estimates.

Table 16.1. Self report of chronic disease

(Source: New Zealand Health Survey via PHI Online, accessed March 2007)

DHB	Ethnicity	Gender	Age standardised % Estimate	95% CI
Arthritis				
National	Māori	All	14.6	12.2-17.1
		F	13.8	10.6-16.9
		M	15.6	12.1-19.2
	Non-Māori	All	13.3	12.5-14
		F	14.5	13.4-15.5
		M	12	11-13
WCDHB	Māori	All	15.9	12.6-19.3
		F	14.7	9.7-19.6
		M	17.3	12-22.5
	Non-Māori	All	16.1	14.2-17.9
		F	18.2	15.5-20.8
		M	14	11-17
Diabetes				
National	Māori	All	8	6.3-9.7
		F	6.7	4.7-8.6
		M	9.5	6.4-12.6
	Non-Māori	All	3.6	3.1-4.1
		F	3.3	2.7-4
		M	4	3.2-4.7
WCDHB	Māori	All	8.1	4.7-11.6
		F	5	2.2-7.9
		M	11.4	4.9-17.9
	Non-Māori	All	3.3	2.3-4.3
		F	3.1	1.8-4.4
		M	3.5	1.9-5.1
Heart Disease				
National	Māori	All	12	10.1-13.9
		F	10.6	8.5-12.6
		M	13.6	9.6-17.7
	Non-Māori	All	8.6	7.9-9.3
		F	8.2	7.2-9.1
		M	9.2	8.1-10.3
WCDHB	Māori	All	9.2	6.1-12.3
		F	10.4	7-13.9
		M	7.8	3.1-12.6
	Non-Māori	All	11.1	9-13.3
		F	11.2	8.6-13.8
		M	11	7.8-14.2

Table 16.1 (continued) Self report of chronic disease

(Source: New Zealand Health Survey via PHI Online, accessed March 2007)

DHB	Ethnicity	Gender	Age standardised % Estimate	95% CI
Spinal Disorders				
National	Māori	All	20.6	17.7-23.5
		F	18.7	15.6-21.9
		M	22.8	18.4-27.1
	Non-Māori	All	24.1	22.8-25.5
		F	23.3	21.5-25.1
		M	25	23-27
WCDHB	Māori	All	18.5	14.2-22.7
		F	18.8	13.9-23.7
		M	18.1	11.3-25
	Non-Māori	All	23.2	20.6-25.9
		F	22.1	18.9-25.2
		M	24.3	19.7-28.9
Stroke				
National	Māori	All	2.7	1.6-3.8
		F	2.8	1.5-4.2
		M	2.5	0.9-4.1
	Non-Māori	All	1.6	1.3-1.8
		F	1.4	1-1.7
		M	1.8	1.4-2.2
WCDHB	Māori	All	3.1	0.8-5.4
		F	*	*
		M	*	*
	Non-Māori	All	2.1	1.3-2.8
		F	1.5	0.9-2.1
		M	2.6	1.3-4

* Not provided due to small numbers.

Table 16.1 (continued) Self report of chronic disease

(Source: New Zealand Health Survey via PHI Online, accessed March 2007)

DHB	Ethnicity	Gender	Age standardised %	
			Estimate	95% CI
Asthma				
National	Māori	All	24.6	21.1-28.1
		F	27.2	22.7-31.6
		M	21.6	15.9-27.3
	Non-Māori	All	21.7	19.6-23.8
		F	23.9	21.5-26.3
		M	19.3	15.7-23
WCDHB	Māori	All	21.9	15-28.9
		F	23.2	16.3-30.1
		M	20.6	8.6-32.5
	Non-Māori	All	22.9	18-27.8
		F	25.9	20.7-31.1
		M	19.9	12.1-27.8
COPD (Chronic obstructive pulmonary disease)				
National	Māori	All	6.2	3.4-8.9
		F	6.3	3.4-9.1
		M	6	1.3-10.8
	Non-Māori	All	5.3	4.3-6.4
		F	6	4.6-7.3
		M	4.6	3.3-6
WCDHB	Māori	All	4	1.6-6.4
		F	5.7	2.1-9.2
		M	0	0-0
	Non-Māori	All	4.6	2.6-6.6
		F	4.5	2.6-6.5
		M	4.6	1-8.2

Table 16.2 Self report of risk and protective factors

(Source: New Zealand Health Survey via PHI Online, accessed March 2007)

DHB	Ethnicity	Gender	Age standardised %	
			Estimate	95% CI
Current smoker (smoke one or more cigarettes per day – excludes cigars)				
National	Māori	All	47.2	43.9-50.6
		F	51.1	46.8-55.3
		M	42.9	37.8-47.9
	Non-Māori	All	20.5	19.2-21.9
		F	19.4	17.8-20.9
		M	21.8	19.7-23.8
WCDHB	Māori	All	44.1	37.2-51
		F	47.2	38.1-56.3
		M	40.9	31.3-50.4
	Non-Māori	All	23.5	20-27
		F	20.9	17-24.9
		M	26.1	20.6-31.5
Fruit consumption (average of two or more servings per day)				
National	Māori	All	46.3	42.9-49.7
		F	54.6	50.3-58.8
		M	36.8	31.2-42.5
	Non-Māori	All	54.8	53.2-56.4
		F	64.8	62.7-66.8
		M	44.1	41.6-46.6
WCDHB	Māori	All	46.1	40.1-52.1
		F	53.7	45.9-61.4
		M	38.2	28.7-47.6
	Non-Māori	All	48.8	45.2-52.4
		F	60.9	56.7-65.1
		M	36.9	31.2-42.5
Hazardous Drinking (defined as a score of 8 or more on the AUDIT Test)				
National	Māori	All	25.9	22.7-29.1
		F	18.4	14.6-22.2
		M	34.5	29.8-39.2
	Non-Māori	All	18.1	16.7-19.5
		F	10.5	9.2-11.9
		M	26.2	23.7-28.7
WCDHB	Māori	All	28.6	23.1-34.1
		F	20.9	14.3-27.5
		M	36.7	28.2-45.2
	Non-Māori	All	23.6	20-27.2
		F	14.6	11.1-18
		M	32.6	26.7-38.5

Table 16.2 (continued) Self report of risk and protective factors
 (Source: New Zealand Health Survey via PHI Online, accessed March 2007)

DHB	Ethnicity	Gender	Age standardised %	
			Estimate	95% CI
High blood pressure (doctor diagnosed high blood pressure -other than during pregnancy)				
National	Māori	All	23.8	21.2-26.5
		F	23.9	20.6-27.3
		M	23.7	19.6-27.8
	Non-Māori	All	18	17.2-18.9
		F	18.7	17.3-20
		M	17.3	16.1-18.6
WCDHB	Māori	All	21.5	17.3-25.7
		F	21.5	17.1-25.9
		M	21.5	14-29
	Non-Māori	All	19.7	17.7-21.7
		F	21	17.6-24.3
		M	18.5	15.5-21.5
High cholesterol (doctor diagnosed high cholesterol)				
National	Māori	All	13.8	11.7-15.9
		F	12	9.7-14.3
		M	15.9	12-19.7
	Non-Māori	All	13.6	12.9-14.4
		F	13	12-14
		M	14.3	13.2-15.4
WCDHB	Māori	All	13.7	9.9-17.4
		F	11.9	7.7-16.1
		M	15.5	9-22.1
	Non-Māori	All	13.9	12.1-15.8
		F	14.4	11.5-17.3
		M	13.4	11.1-15.7
Marijuana used in last 12 months				
National	Māori	All	27.3	24.3-30.4
		F	22.5	18.8-26.2
		M	32.9	28.5-37.3
	Non-Māori	All	14.9	13.7-16.2
		F	11.2	9.7-12.8
		M	18.9	17-20.8
WCDHB	Māori	All	25.8	19.9-31.7
		F	21.5	14.6-28.4
		M	30.4	22.3-38.5
	Non-Māori	All	18	14.4-21.6
		F	12.4	8.9-15.8
		M	23.5	16.9-30.2

Table 16.2 (continued) Self report of risk and protective factors

(Source: New Zealand Health Survey via PHI Online, accessed March 2007)

DHB	Ethnicity	Gender	Age standardised %	
			Estimate	95% CI
Obese or overweight (BMI\geq25.0 for Euro/Other/Asian; \geq26.0 for Māori and Pacific)				
National	Māori	All	64.1	60.9-67.2
		F	61.2	56.9-65.5
		M	67	62.3-71.7
	Non-Māori	All	52.9	51.2-54.5
		F	47	44.7-49.2
		M	58.8	56.5-61.2
WCDHB	Māori	All	63.1	57-69.2
		F	61.9	54.5-69.3
		M	64.2	55.1-73.4
	Non-Māori	All	56.9	53.6-60.2
		F	48.9	44.1-53.7
		M	64.4	59.5-69.4
Physically active (At least 150 minutes of physical activity, with exercise accumulated on one or more days of the week, i.e. physical activity not necessarily regular)				
National	Māori	All	74.9	71.1-78.7
		F	70.7	65.7-75.7
		M	79.7	75.4-84
	Non-Māori	All	73.9	72.3-75.5
		F	69.8	67.6-72
		M	78.2	76.3-80.2
WCDHB	Māori	All	75.7	70.6-80.8
		F	67.6	61.5-73.7
		M	84.2	77.3-91.1
	Non-Māori	All	74.8	71.2-78.4
		F	74	69.6-78.5
		M	75.6	70.5-80.6
Vegetable consumption (average of three or more servings of vegetables per day)				
National	Māori	All	65.6	62-69.2
		F	67.6	63-72.2
		M	63.4	58.3-68.5
	Non-Māori	All	67.6	65.6-69.5
		F	71.5	69.4-73.7
		M	63.3	60.6-66
WCDHB	Māori	All	71.7	67.1-76.4
		F	71.5	66.4-76.7
		M	71.9	64.6-79.2
	Non-Māori	All	73.1	69.2-77.1
		F	77.9	73.8-82
		M	68.4	61-75.8

17 Avoidable Hospitalisations

Key points

- Rates of ambulatory sensitive hospitalisations for West Coast Māori are significantly lower than for Māori nationally. There is no significant difference between Māori and Non-Māori rates on the West Coast.
- This indicates the burden of preventable disease carried by Māori on a national scale is not reflected in the West Coast DHB data. However, small numbers make conclusions about Māori/Non-Māori comparisons difficult.

Avoidable hospitalisations are those that could – theoretically – be avoided either by preventing the development of the condition in the first place (for example, by preventing the initiation of smoking) and those that are amenable to preventive or therapeutic interventions deliverable in a primary healthcare setting. The former are called **population preventable hospitalisations** and the latter **ambulatory sensitive hospitalisations**. Examples of ambulatory sensitive hospitalisations are vaccine preventable diseases and effective glycaemic control in people with diabetes.

The rates of ambulatory sensitive hospitalisations for the period 1998-2002 are presented in table 17.1. These data indicate that rates of ambulatory sensitive hospitalisations for West Coast Māori are significantly lower than for Māori nationally. Nationally, hospitalisation rates for Māori are significantly higher than for Non-Māori. This pattern is also seen in the West Coast DHB, but these differences are not statistically significant. Thus, overall, the burden of ambulatory sensitive hospitalisation carried by Māori on a national scale is not reflected in the West Coast DHB data. Note that small numbers in the West Coast DHB lead to wide confidence intervals, thus reducing the likelihood of being able to detect a statistically significant difference.

Table 17.1 Ambulatory sensitive hospitalisations, 1998-2002
 (Source: PHI Online accessed March 2007)

DHB			Age Standardised Rate per 100,000 Population	
			Rate	95% CI
National	Māori	All	4,143	4,117-4,168
		F	4,156	4,120-4,193
		M	4,113	4,077-4,149
	Non-Māori	All	2,567	2,558-2,575
		F	2,447	2,436-2,458
		M	2,685	2,674-2,697
WCDHB	Māori	All	2,950	2,648-3,277
		F	2,755	2,348-3,211
		M	3,168	2,727-3,661
	Non-Māori	All	2,752	2,665-2,842
		F	2,618	2,496-2,744
		M	2,901	2,775-3,030

Tables 17.2 and 17.3 show 2005 data on ambulatory sensitive hospitalisations and population preventable hospitalisations. In each of the three age groups, the West Coast Māori and West Coast total rates, are not different from each other or from the national rates at the 99% confidence level.

Table 17.3 reflects the small absolute numbers of West Coast Māori hospitalised in 2005. As in table 17.2, for each of the age groups presented the West Coast Māori and West Coast total rates, are not different from each other or from the national rates at the 99% confidence level.

Table 17.2 Ambulatory sensitive hospitalisations: Discharge rate per 1,000 ages 5 to 14, 15 to 24 and 65 to 74, 2005
(Source: National Minimum Dataset Indicators 2005)

	Rate per 1,000					
	Māori			Total		
	5-14	15-24	65-74	5-14	15-24	65-74
West Coast	19.9	10.9	—	17.6	15.8	54.6
New Zealand	22.5	18.2	103.9	19.0	14.5	61.9

—=Fewer than five discharges.

Table 17.3 Population preventable hospitalisations: Discharge Rate per 1,000, 2005
(Source: National Minimum Dataset Indicators 2005)

	Rate per 1,000							
	Māori				Total			
	Under 5	5-14	15-24	65-74	Under 5	5-14	15-24	65-74
West Coast	—	7.7	—	—	9.3	3.5	—	35.3
New Zealand	7.2	3.1	1.4	49.5	6.4	2.7	1.3	34.4

—=Fewer than five discharges.

18 Avoidable and Amenable Mortality

Key points

- There are no significant differences in avoidable mortality rates for Māori and Non-Māori on the West Coast, although comparisons are limited by small numbers.
- Nationally, avoidable mortality rates are significantly higher for Māori than for Non-Māori.
- These findings suggest that the burden of avoidable deaths is no greater for West Coast Māori than Non-Māori, which is in contrast to national figures.

Avoidable mortality is “those causes of death that are potentially avoidable at the present time, given available knowledge about social and economic policy impacts, health behaviour and health care” (Public Health Information Development Unit and Ministry of Health, 2006). Amenable mortality is mortality that is preventable by appropriate health care.

Avoidable mortality is considered a useful indicator of the quality, effectiveness and productivity of a health system. A recent *Australian and New Zealand Atlas of Avoidable Mortality* (Public Health Information Development Unit and Ministry of Health, 2006) includes a comprehensive overview of avoidable mortality in New Zealand. Overall, just over 74% of all deaths at ages 0 to 74 in New Zealand for the period 1997-2001 were considered to be avoidable. Of these, just over 43% were considered to be amenable to health care. The Māori rate of death due to avoidable causes was 509.5 per 100,000 population compared to 186.9 per 100,000 population for European/Others. The rate of death due to amenable causes was 198.2 per 100,000 population for Māori, compared to 81.6 per 100,000 population for European/Others.

On the West Coast, the number of avoidable deaths from all causes over the period 1997-2001 was 492, with an age standardised rate of 267.0 avoidable deaths per 100,000 population. This compares to an age standardised rate nationally of 219.3 per 100,000 population. The number of amenable deaths from all causes for the West Coast DHB was 205, with an age-standardised rate of 110.4 per 100,000 population, which compares to an age standardised rate nationally of 94.2 per 100,000 population.

The *Atlas of Avoidable Mortality* does not provide rates by ethnic group at the level of individual DHBs, however, these are available for 1997-2001 from PHI Online and are shown in Table 18.1.

Small numbers prevent the calculation of an avoidable mortality rate for West Coast Māori females, and contribute to wide 95% confidence intervals around the rate for West Coast Māori males. The avoidable mortality rate for West Coast Māori is significantly lower than for Māori nationally, at 246 per 100,000 compared to 488 per 100,000. There are no significant differences in avoidable mortality rates for Māori and Non-Māori on the West Coast. Nationally, avoidable mortality rates are significantly higher for Māori than for Non-Māori.

Table 18.1 Age-standardised avoidable mortality (number of deaths per 100,000 population) for ages 0 to 74, 1997-2001
 (Source: PHI Online accessed March 2007)

	National				West Coast DHB			
	Māori		Non-Māori		Māori		Non-Māori	
	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI
All	488	477-499	184	182-186	246	148-384	202	181-223
Female	407	394-421	137	135-139	—	—	143	120-169
Male	576	560-593	234	230-237	379	212-625	258	225-293

— =Rate not presented due to absolute numbers being less than 5.

19 Primary Health Care

Key points

- Māori and Pacific people made up 7.6% of the population enrolled in the West Coast PHO at the end of June 2007.
- Māori were under represented in the Care Plus Programme at end June 2007.
- Māori made up 16% of those seen by the Contraceptive and Sexual Health Programme in from July 2006 to end June 2007 and 4.8% of patients seen by the Mental Health programme over the same time period.
- A number of planned and recently established programmes will result in a greater range of primary care data becoming available over the next few years.

19.1 Introduction

The majority of first line or primary care on the West Coast is delivered by the West Coast Primary Health Organisation (West Coast PHO), which is a not-for-profit charitable trust funded by the West Coast DHB. The West Coast PHO delivers both primary care services and targeted programmes to improve and maintain health. The following data are sourced from the *West Coast Primary Health Organisation Annual Report 2005-2006* and *2006-2007*.

At the end of June 2007 the enrolled population of the West Coast PHO was 29,415. Of these, 5,899, or 20.0%, met the Ministry of Health's criteria for being 'high needs' (Māori/Pacific ethnicity and/or New Zealand deprivation index quintile 5).

Table 19.1 Characteristics of West Coast PHO enrolled population
(Source: West Coast PHO Annual Report 2006-2007)

	Enrolled Patients	Percentage
Māori/Pacific Dep 5*	443	1.5%
Māori/Pacific not Dep 5	1,804	6.1%
Other Dep 5	3,652	12.4%
Other not Dep 5	23,484	79.8%
HUHC**	32	0.1%

*Dep 5 = New Zealand Deprivation Index, quintile 5, ie most deprived 20% of households in New Zealand.

** = High Use Health Card

19.2 West Coast PHO programmes

The West Coast PHO's three priority strategic health gain areas are:

1. Chronic disease management, with an initial focus on diabetes and cardiovascular disease
2. Continued improvement of existing screening and prevention initiatives
3. Youth health, including drug and alcohol issues and sexual health.

The 2006-2007 Annual Report summarises progress in each of the programme areas. A brief summary of the active programmes is presented below, highlighting outcomes for Māori and noting those areas where ethnicity data are not yet available. A number of further programmes are planned but not yet underway. These new programmes will result in a greater range of primary care data becoming available over the next few years.

Māori Health Programme: Kaiawhina in Buller

This programme has the aim “to improve access to primary care services for Māori in Buller”. The kaiawhina was appointed in February 2007, with key activities including to identify and locate Māori missing out on services and entitlements and to provide education to clinicians and practice staff. From April to July 2007 this programme reports outcomes including 48 home visits, 29 clients/whanau assisted to attend the medical centre and an increase in Māori on the Buller capitation register of 70 (West Coast PHO Annual Report 2006-2007).

Other Activities to Improve Health Outcomes for Māori

The West Coast PHO Annual Report 2006-2007 also reports a range of activities to improve Māori health outcomes, which include the following:

- practice audits in regions other than Buller to identify all Māori patients and ensure they have been offered the clinical services to which they are entitled
- reporting to practices as to their expected numbers of Māori patients identified with diabetes, numbers actually identified, and percentage of those identified who have had an annual review
- reporting on the clinical management of Māori with diabetes in comparison with that of Non-Māori with diabetes.

Diabetes Programmes: Diabetes Annual Review, Diabetes Retinal Screening, Diabetes Integration

Outcomes for diabetes programmes are presented in Table 11.3.

Cardiovascular Disease Annual Reviews

This programme has the aim “to enhance the management of cardiovascular disease with particular emphasis on high-needs patients (Māori, Pacific and socioeconomic quintile 5). Key activities include to identify all patients with cardiovascular disease, to provide an annual review for those patients and to ensure that they are on the most appropriate treatment regime and to ensure that the review rate for high needs groups is at least as high as for other groups. Ethnicity data are not yet available for this recently-established programme (West Coast PHO Annual Report 2006-2007).

Cardiovascular and Diabetes Screening

This programme has the aim “to identify patients at high risk of cardiovascular disease and diabetes and work with these patients to decrease their risk”. The target group is all patients identified by the cardiovascular disease guidelines, with an emphasis on high needs groups, including Māori.

The key activities for this programme include the screening and optimal treatment for those with >15% risk of cardiovascular disease and with pre-diabetes and encouragement of self management. Ethnicity data are not yet available for this recently-established programme (West Coast PHO Annual Report 2006-2007).

Care Plus

This programme has the aim to “improve health and independence, relieve suffering, maintain people in their home environment and to reduce inequalities in health status” (West Coast PHO Annual Report 2006-2007). Care Plus is targeted at patients with two or more chronic conditions or with high primary care utilisation. By the end of June 2006 the number of enrolments in Care Plus was estimated at 1,024. Non-Māori, non-Pacific patients from deprivation quintile 5 were over-represented in the programme (25% of patients compared with 20% of available places) and Māori were under-represented in the programme (5.9% of patients enrolled in Care Plus were Māori, compared with 7.9% of available places). At end June 2007 Māori continued to be under-represented in Care Plus, with Māori enrolments at 50% of the calculated places available (West Coast PHO Annual Reports 2005-2006 and 2006-2007).

19.3 Youth health programmes

Contraception and Sexual Health

This programme has the aim to reduce teenage pregnancy rates. The key activities in this programme include to “work actively with Māori providers including the Rata Te Awhina Trust and with the community to improve the reproductive and sexual health of young Māori” (PHO Annual Report 2006-2007).

In the period July 2006 to end June 2007 a total of 786 young people were seen by this programme, of whom 16% were Māori and 96% were female.

19.4 Other clinical programmes

Palliative Care

This programme has the aim “to relieve any potential financial barriers for patients and their whānau in the terminal stage of their illnesses” (PHO Annual Report 2006-2007).

In the period July 2006 to end June 2007, a total of 48 patients were cared for by this programme, of whom 8% were Māori.

Mental Health

This programme has the aim “to support West Coast General Practice Teams to improve health outcomes and decrease inequalities for the enrolled population with mental health needs”. The target group is patients with mild to moderate mental health issues who would not qualify for secondary mental health services (West Coast PHO Annual Report 2006-2007).

The key activities of this programme are the provision of education and assistance to general practice teams by a General Practice Liaison Nurse and the provision of free counselling sessions and staff training by a clinical psychologist.

In the period July 2006 to end June 2007, a total of 254 patients were seen by this service, of whom 4.8% (19 patients) were Māori (West Coast PHO Annual Report 2006-2007).

Corrections Vouchers

This programme has the aim “to provide free acute care and general check-ups for very high needs patients, many of whom do not have a general practitioner” (West Coast PHO Annual Report 2006-2007).

The programme involves clients of the Corrections Services being given vouchers that entitle them to free general practice care and prescription subsidies. In the July 2006 to June 2007 period there were 39 contact episodes recorded with this programme, 23% of which were with Māori.

Appendix I. Statistical Methods

Aggregation of data over time

Because of the small numbers of Māori in the West Coast DHB, it was necessary to aggregate data over several years. This ensures preservation of confidentiality and enables comparisons of data by ethnicity. In general, data are presented either for Māori and 'Non-Māori' or for Māori and 'All ethnicities' (i.e., the total population, including Māori), with the choice of comparison group depending on the format in which data were available from the relevant source.

An important limitation of the aggregation of data over several years is the loss of the ability to compare trends over time. In addition, when aggregating data over time or when comparing data from two or more time points (as with the Census data) any changes in accuracy and completeness of ethnicity coding must be considered.

The undercounting of Māori in routinely collected health data is an important issue. For example, it has been estimated that for the period 1996-2001 (inclusive) Māori cancer registrations were undercounted by approximately 17%, and Māori deaths were undercounted by approximately 6% (Wellington School of Medicine and Health Sciences, 2005). Other documents, such as the *Māori Health Chart Book* (Ministry of Health, 2006) have addressed this by using the 'ever Māori' method of classification (see 'Comparability with other documents', below) although this was not possible in this document.

The West Coast DHB has undertaken work to assess and improve the quality of ethnicity data collection. A 2003-2004 survey of West Coast DHB staff involved with ethnicity data collection found that 65% of respondents always asked patients their ethnicity, and 88% of respondents indicated that they used an appropriate method of identifying ethnicity (asking the patient, giving a form to the patient, or referring to the admission form). An Ethnicity Data Collection Programme was subsequently implemented, and it is expected that ethnicity data collection will have improved over subsequent years (West Coast DHB, 2004).

While the 2001 Census tables present prioritised ethnic groups, the 2006 Census data are currently only available as level 1 grouped total responses, where each person is counted once for each ethnicity that they indicate (thus the total numbers represent the total number of ethnicities recorded rather than the total number of individuals). This means that when calculating proportions or percentages, the total number in a table cannot be used as a denominator – for example, the total number of ethnicities indicated will be greater than the total number of people, because any one person can indicate more than one ethnicity. The general approach taken throughout this document is to use the total number of people (taken from the usually resident population count of the relevant Census) as the denominator. Where necessary, these details are explained in footnotes.

Finally, the main geographical boundary used in this document is that of the West Coast District Health Board, which is congruent with the boundary of the West Coast Regional Council. This variable has also changed between Censuses, as, at the time of writing, it is not intended to make 2006 Census data routinely available according to DHB boundaries. In this document this has been accommodated by a special request to statistics New Zealand and the use of the regional council boundary as a proxy for the DHB boundary where necessary.

Age standardisation

Because of the different age profile of the Māori and Non-Māori populations – both on the West Coast and nationally – hospitalisations, cancer registry and mortality data are presented as age-standardised rates. This enables comparison between the two populations. These rates have been calculated by summing of numerators (for five-year age groups) over the relevant time period (for example, cancer registry data covers a 10-year time period), and dividing by the number of years and the number of people in that age group at the 2001 Census. This produces a mean annual rate age-specific rate, which is then multiplied by weightings from a standard population.

The New Zealand Māori 2001 Census population was used as the standard. This has two important methodological advantages in this context: firstly it results in narrower 95% confidence intervals around the Māori rates, and, secondly it produces standardised rates for Māori which approximate the crude rates, hence giving a truer picture of morbidity and mortality for Māori (Robson *et al.*, 2007).

The use of the 2001 Census as the denominator population will have the effect of underestimating rates prior to 2001 and overestimating rates after 2001, as population growth results in the true denominator being smaller prior to 2001 and larger after 2001.

Age standardisation was not carried out where the total number of cases for West Coast Māori was less than 10 over the aggregate time period. This related to mortality and cancer registry data in particular. For example, site-specific cancer registrations could not be age standardised.

Other methods of analysis

Age-specific rates are presented where appropriate, for example for children's hospitalisations for dental procedures. Ninety five percent confidence intervals are calculated using the normal approximation (Clayton and Hills, 2003).

When data are not available by age group, and so cannot be age-standardised, Māori and Non-Māori numbers are presented as a proportion of the total number of cases. This enables consideration of whether Māori and Non-Māori are equally represented among cases, but is a crude measure as it does not take into account the different age profile of the populations (for example, it is expected that Māori will be over-represented among childhood illnesses, as there are proportionally more children in the Māori population).

Comparability with other documents

Overall, the age standardised rates presented are not comparable outside of this document, for the reasons discussed above. However, the methodology used is similar to that in the *Māori Health Chart Book* (Ministry of Health, 2006), with two key exceptions: firstly, the *Māori Health Chart Book* uses 'ever Māori' as the ethnicity classification (to address the issue of under counting, hence if a person has ever been recorded as Māori during the relevant time period they are counted in this group – this involves linking individuals across data sets, which was not possible in this document); secondly, the *Māori Health Chart Book* uses national data aggregated over a shorter time period, for example hospitalisations are aggregated over 2002-2004. Bearing these differences in mind, the *Māori Health Chart Book* is able to be used as a general comparator for the age standardised rates presented in this document.

Appendix II. ICD Codes

Table I. ICD-9 codes used for hospitalisations data

Condition	ICD-9
Asthma	493
Total cardiovascular disease	390-459
Ischaemic heart disease	410-414
Total stroke	430-438
Chronic obstructive pulmonary disease	491,492,494,496
Diabetes	250
All cancer	140-208
Low birthweight	764
Pre-term birth	765
Complications of pregnancy, childbirth and puerperium	630-677
Dental procedures for children aged 0-9 years	521-523
Mental disorders	290-319
Alcohol and drug disorders	303-305
Deliberate self harm	E950-E959

Table II. ICD-9 and ICD-10 codes used for mortality data*

Condition	ICD-9	ICD-10
Total cardiovascular disease	390-459	I00-I99
Ischaemic heart disease	410-414	I20-I25
Total stroke	430-438	I60-I69
Chronic obstructive pulmonary disease	490-492,494,496	J40-J44, J47
Diabetes	250	E10-E14
All cancer	140-208	C00-C97

*ICD-10 codes were used for mapping of mortality data, as data from 2000-2004 were coded to ICD-10. Hospitalisations and cancer registry data were provided as ICD-9 throughout and did not require mapping.

References

- Centre for Public Health Research (2007). Annual Monitoring Report 2004, National Cervical Screening Programme. Wellington, Massey University.
- Clayton, D. and Hills, M. (1993). Statistical Models in Epidemiology. Oxford, Oxford University Press.
- Cormack, D., B. Robson, et al. (2005). Access to Cancer Services for Māori , Wellington School of Medicine and Health Sciences.
- Coster, G. (2000). Health Needs Assessment for New Zealand: Background paper and literature review. Wellington, Ministry of Health.
- Mental Health Commission (1998). Blueprint for Mental Health Services in New Zealand. Wellington, Mental Health Commission.
- Minister of Health (2000). The New Zealand Health Strategy. Wellington, Ministry of Health.
- Minister of Health and Associate Minister of Health (2002). He Korowai Oranga - The Māori Health Strategy. Wellington, Ministry of Health.
- Ministry of Health (2003). New Zealand Food New Zealand Children: Key Results of the 2002 National Children's Nutrition Survey. Wellington, Ministry of Health.
- Ministry of Health (2004). A Portrait of Health: Key results of the 2002/03 New Zealand Health Survey. Wellington, Ministry of Health.
- Ministry of Health (2006). Tatau Kahukura - Māori Health Chart Book. Wellington, Ministry of Health.
- Public Health Information Development Unit and Ministry of Health (2006). Australian and New Zealand Atlas of Avoidable Mortality. Adelaide, Public Health Information Development Unit and Ministry of Health.
- Robson, B., G. Purdie, et al. (2007). "Age standardisation - an indigenous standard?" Emerging Themes In Epidemiology 4(3): doi: 10.1186/1742-7622-4-3.
- Salmond, C. and P. Crampton (2002). NZDep2001 Index of Deprivation User's Manual, Department of Public Health, Wellington School of Medicine and Health Sciences.
- Scragg, R. (2007). Report of 1999-2006 National Year 10 Snapshot Smoking Survey, ASH (Action on Smoking and Health).
- West Coast DHB (2004). A Guide to Ethnicity Data Collection.
- West Coast DHB (2007). Child Health Pan (Draft).
- West Coast DHB (2007). Fertility Data (Draft).
- West Coast DHB (2007). Midwifery Review Report (Draft).

West Coast Primary Health Organisation (2006). West Coast PHO Annual Report 2005-2006.

West Coast Primary Health Organisation (2007). West Coast PHO Annual Report 2006-2007 (Draft).

Youth Access to Alcohol Group (YATA) (2005). Buller District Youth Alcohol Survey, YATA.