

Tatau Kahukura

Māori Health Chart Book 2010

2nd Edition

Manakotanga: Acknowledgements

The authors of this report were from the Māori Research team (Natalie Talamaivao, Roimata Timutimu, Paula Searle and Peter Himona) and from Health and Disability Intelligence (Li-Chia Yeh and Erin Holmes) of the Ministry of Health.

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The title of this publication, *Tatau Kahukura*, refers to valuable, high-quality information that has been woven and gathered from a variety of sources to be presented as a whole. It can be used by many different people to give knowledge and tools to assist in working towards the achievement of whānau ora: Māori families supported to achieve their maximum health and wellbeing.

Cover acknowledgement

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Whakamōhiotanga: Introduction

Tatau Kahukura: Māori Health Chart Book 2010 2nd Edition updates the first Māori Health Chart Book, which was released in 2006 and was based on data from the early 2000s. The second edition presents a snapshot for Māori health in the mid to late 2000s. Like the first edition, this chart book presents key indicators relating to the socioeconomic determinants of health, risk and protective factors for health, health status, health service utilisation and the health system.

The chart book provides a descriptive analysis of the data, with the statistical information accessible in an easy-to-use format. The most recent data available are presented for each indicator. This publication, along with the full suite of data tables that sit behind the figures and text, is available on the Ministry of Health website <http://www.moh.govt.nz> and the Māori Health website <http://www.maorihealth.govt.nz>

It is intended that this profile of Māori health will continue to be updated regularly (every 3–5 years).

The New Zealand health and disability system

The health and disability system does not always work as well as it should for all populations and in particular for the Māori population. This is evident in the differential health outcomes that exist between Māori and non-Māori (eg, in high-level indicators such as life expectancy and infant mortality). Māori have higher rates across many health conditions and chronic diseases, including cancer, diabetes, cardiovascular disease and asthma. Therefore, one of the biggest challenges for the health and disability system is to improve its performance so that it can deliver on some of its fundamental principles of fairness and equity and ensure New Zealanders live long, healthy and independent lives.

All parts of the health and disability system are responsible for improving Māori health outcomes. Health and disability services in New Zealand are delivered by a complex network of organisations and people. Most of the day-to-day business is administered by District Health Boards (DHBs). DHBs plan, manage, provide and purchase services for the population of their district. This includes funding for primary health care, public health services, aged care, and services provided by other non-government health providers. For more detailed information about key parts of the New Zealand health system see: <http://www.moh.govt.nz/healthsystem>

Primary Health Organisations (PHOs) play a key role in delivering Government and community priorities for primary health care at a local level. Primary health care includes first-level services such as general practice, mobile nursing and community health services targeted at certain conditions. These community health services include maternity, family planning and sexual health, mental health and dentistry services, or particular therapies such as physiotherapy, chiropractic and osteopathy services. Chronic diseases, such as diabetes, are best managed by primary health care services so that complications can be prevented or mitigated. For more detailed information about primary health care, see: <http://www.moh.govt.nz/primaryhealthcare>

Māori health and disability providers are a distinctive feature of the New Zealand health sector and play a crucial role in developing health services that work for Māori. There are approximately 275 Māori health and disability providers nationwide, providing diverse services and delivering them in ways that empower Māori and their whānau to take control of their health and wellbeing

(Ministry of Health 2009b). In 2008/09, estimated funding specifically for Māori health and disability providers accounted for only about 2 percent of health and disability expenditure – with the overwhelming proportion of health and disability funding going to mainstream providers.

Indicator selection and presentation

Health indicators are summary measures that provide an indication of wider health concerns and serve to focus attention on key issues. This chart book focuses on presenting key information through graphs and tables, with short explanations that document some key results. It is intended to complement other sources of Māori health information and resources (see the following ‘Useful Information and Resources’ section).

The indicators were selected using conventional criteria relating to their ability to signal wider health concerns, to focus on salient health issues, to be reliably and validly monitored and for their responsiveness to change. The indicators align to those already used in annual monitoring at a national level.

Indicators are divided into the following sections:

- Tatauranga Taupori: Demographics
- Ngā Awe o te Hauora: Socioeconomic Determinants of Health
- Ngā Tauwehe Tūpono me te Marumaru: Risk and Protective Factors
- Ngā Mana Hauora Tūtohu: Health Status Indicators
- Ngā Ratonga Hauora Kua Mahia: Health Service Utilisation
- Ngā Pūnaha Hauora Tūtohu: Health System Indicators.

Useful information and resources

Ministry of Health web resources

- The Ministry website <http://www.moh.govt.nz>
- The Māori Health website <http://www.maorihealth.govt.nz>
- Māori health statistics, including tables of all data presented in this report <http://www.maorihealth.govt.nz/moh.nsf/menuma/Statistics>
- Ministry data and statistics: <http://www.moh.govt.nz/dataandstatistics>
This webpage is a central access point for New Zealand health data and statistics collected and produced by the Ministry and the wider health sector. The Ministry receives data from different parts of the health sector through the utilisation of health services or mandatory reporting via national collections and also from national population health surveys.

National collections

The Ministry has operational responsibility for national collections of health and disability information (eg, mortality collections, maternity and newborn collections and the New Zealand Cancer Registry, NZCR). National collections and systems provide valuable health information to support decision-making in policy development, funding and at the point of care.

<http://www.moh.govt.nz/moh.nsf/indexmh/dataandstatistics-collections>

Population health surveys

The Ministry collects, maintains and analyses data from national population health surveys (eg, New Zealand Health Survey, Alcohol and Drug Use Survey). In the webpage below, you can find information about these surveys, as well as the data and publications resulting from them.

<http://www.moh.govt.nz/moh.nsf/indexmh/dataandstatistics-survey>

Ministry of Health Publications

- Ministry of Health. 2010. *Kōrero Mārama: Health Literacy and Māori – Results from the 2006 Adult Literacy and Life Skills Survey*. Wellington: Ministry of Health.
- Ministry of Health. 2009. *A Focus on the Health of Māori and Pacific Children: Key findings of the 2006/07 New Zealand Health Survey*. Wellington: Ministry of Health.
- Ministry of Health. 2008. *A Portrait of Health: Key results of the 2006/07 New Zealand Health Survey*. Wellington: Ministry of Health.

Useful Ministry publications such as those listed above can be accessed via the following web pages:

- Ministry of Health publications and resources index <http://www.moh.govt.nz/publications>
- Māori Health website media and publications page <http://www.Māorihealth.govt.nz/moh.nsf/menuma/Media+and+Publications>

Sources of further information relevant to particular indicators are noted within the relevant sections and under 'Pūtea Kōrero: References' at the end of this document.

Other resources

- Hauora: Māori Standards of Health, a website presenting information about Te Rōpū Rangahau Hauora a Eru Pōmare and the Hauora series of books: <http://www.hauora.maori.nz>
- Ethnicity Data in Aotearoa/New Zealand, a website dedicated to examining ethnicity data issues in Aotearoa/New Zealand, specifically issues for Māori health and ethnic inequalities: <http://www.ethnicity.maori.nz>
- Statsphere, New Zealand's official statistics portal: <http://www.statisphere.govt.nz>
- The social report website of the Ministry of Social Development, a website providing social indicators for New Zealand society: <http://www.socialreport.msd.govt.nz>
- Population and Sustainable Development, a website that includes population statistics published by a wide range of New Zealand government departments and agencies: <http://www.population.govt.nz>
- Te Puni Kōkiri (Ministry of Māori Development): <http://www.tpk.govt.nz>

Ngā Tapuāe me ngā Raraunga: Methods and Data Sources

Data

Numerator

Data sources for the indicators are listed in Table 1 below.

Table 1: Data sources for numerators

Source (agency or collection)	Data	Period	Type of data
Ministry of Health	Mortality collection data set – mortality	2004–2006	National collection
	National Minimum Data Set (NMDS) – hospitalisations	2006–2008	National collection
	New Zealand Cancer Registry (NZCR) – cancer registrations	2004–2006	National collection
Statistics New Zealand	Infant mortality	2004–2006	Notifications
	Low birthweight	2005–2007	Notifications
	Life expectancy	1951–2006	Life tables
	Disability	2006	Survey
	Demographics	2006	Census
	Population projections	2011–2026	Official estimates
	Socioeconomic indicators	2006	Census
Institute of Environmental Science and Research Limited (ESR)	Infectious disease notifications	2006–2008	Notifications
2006/07 New Zealand Health Survey (NZHS)	Risk and protective factors, disease prevalence, health service utilisation and self-rated health	2006/07	Survey
Action on Smoking and Health (ASH) Snapshot Survey 1999–2008	Smoking prevalence for youth	2008	Survey
Alcohol and Drug Use Survey (ADUS)	Alcohol and drug use rates	2009	Survey
Tobacco Use Survey (TUS)	Smoking rates	2008	Survey
School Dental Service	Oral health data	2008	Administrative

Full details of ICD-10 codes used for data from national collections are given in Appendix 1. For all administrative data (ie, national collections and notifications), the most recent three years of data were aggregated to provide stable rate estimates. For survey data, the most recent survey year was presented.

Denominator

Population information was obtained from Statistics New Zealand.

Census population data were used for census years, and population data were interpolated between census years (using Spline interpolation). The relevant census populations or population estimates (for the three-year period) were added together and used as the denominator.

Statistical methods

Age standardisation allows comparison between ethnic groups with different age distributions. Most of the indicators are presented as age-standardised rates and are expressed as a rate per 100, per 1000 or per 100,000. Direct age standardisation was used in this report, with most rates (unless noted otherwise) standardised to the total Māori population from the 2001 Census. The 2001 Census Māori population can be found in Appendix 2. The age-standardised rate was not calculated for counts less than five.

Standardising to the Māori population provides rates that closely approximate the crude Māori rates (ie, the actual rates among the Māori population) while also allowing comparisons with the non-Māori population. Readers should note that the use of different standard populations in other reports means that results obtained elsewhere may differ from those presented in this chart book, affecting comparability. In addition, note that data for a specific age or age group were not age standardised; this was indicated under relevant tables or figures.

Standardised rate ratios (RRs) presented in this report are calculated for the Māori population compared with the non-Māori population. Ninety-five percent confidence intervals (CIs) are presented for both rates and rate ratios.

Ethnicity

Most indicators are presented comparing Māori with non-Māori. 'Prioritised' ethnicity was used for data from surveys and all official data sets except hospitalisations.

Prioritised ethnicity classifies a person as Māori if any one of their recorded ethnicities was Māori. So for Māori, prioritised and total response outputs are the same. All other people were recorded as non-Māori and represent a comparative or reference group.

For this edition of *Tatau Kahukura*, population rates for death and cancer registrations were calculated using ethnicity as recorded on death and cancer registrations respectively. Recent research has shown that Māori data on death registrations have improved, so that there is no net undercount of Māori deaths (Fawcett et al 2008).

In 2009, the methodology used to assign ethnicity to cancer registrations changed. Ethnicity is assigned to cancer registrations by looking at the ethnicity recorded in each of the corresponding death registrations, hospitalisation records and the National Health Index (NHI)¹. A cancer registration is automatically assigned the ethnicity(s) on death registrations and the NHI (unless not stated or 'Other' on the NHI). In addition, if a particular ethnicity is recorded on at least

¹ The National Health Index (NHI) is a system used by public hospitals and other health and disability support services to assign a unique alphanumeric identifier (the NHI number) to people who use their services. Most people know the NHI number as their hospital number; it is the number on their clinical notes and on the hospital identity bracelets.

20 percent of hospitalisation records, the ethnicity is assigned to the cancer registration. This means that when there are different ethnic groups on the different source datasets, multiple ethnicities are recorded on the cancer register. This chart book does not adjust for an undercount, so cancer registration rates for Māori could still be underestimated. Further information about the current methodology used to assign ethnicity to cancer registrations can be sourced from the Ministry by emailing data-enquiries@moh.govt.nz

For this chart book, the ethnicity as recorded on death and cancer registrations was prioritised, as explained above, to estimate Māori and non-Māori numbers.

Hospitalisation statistics continue to undercount Māori (Harris et al 2007; Cormack and Harris 2009). Therefore, to improve the Māori hospitalisation estimates, Māori adjusters were calculated by using an encrypted NHI number to link hospitalisation data from 2003–2006 to death registrations 2003–2006, which was assumed to be a reliable source of ethnicity (see Appendix 4 for further details).

The adjusters were applied to the number of Māori hospitalisations (as recorded on the hospitalisation data set) to estimate Māori numbers. Non-Māori numbers were estimated as the difference between the total number of hospitalisations and the adjusted number of Māori hospitalisations. The standard error on the adjusters was incorporated in to the 95 percent (CIs) for the hospitalisation rates and ratios.

The method of ethnicity classification is indicated under each table or figure.

Age groups

For most indicators in this chart book, the data are presented across all ages in the population. For a selection of indicators, age-specific (crude) rates are presented (eg, for meningococcal disease). For all indicators, the relevant age group is noted under each table or figure.

Comparability with *Tatau Kahukura: Māori Health Chart Book 2006*

It is recommended that readers do not make comparisons between rates in this chart book with those in the first edition of *Tatau Kahukura* (Ministry of Health 2006) as the rates can vary for reasons other than a real-life increase or decrease. Some differences include the following.

- In the first edition of *Tatau Kahukura*, ethnicity for official data sets was classified using the ‘ever Māori’ method.² In this edition, ethnicity is classified as recorded or using customised adjusters.
- ICD-9 codes were used to classify conditions in the first edition of *Tatau Kahukura*. ICD-10 codes are used in the current edition.
- The denominator used in the first edition assumed that the population was static over the three-year period, whereas the estimated population used for the denominator in this edition increases across the three years.
- Better (more accurate and/or up-to-date) sources of data have become available (eg, New Zealand Tobacco Use Survey 2008), so either the source of an indicator may have changed or the indicator itself may have changed.

² For information on the ‘ever Māori’ method, please see Appendix 3 in the first edition of *Tatau Kahukura: Māori Health Chart Book* (Ministry of Health 2006).

Ninety-five percent confidence intervals

The results presented have a margin of error. The 95 percent confidence interval (CI) gives an indication of this error. It indicates the interval that has a 95 percent probability of enclosing the 'true' value.

The CI is influenced by the sample size of the group. When the sample size is small, the CI becomes wider and there is less certainty about the rate.

When the CIs of two groups do not overlap, the difference in rates between the groups is statistically significant. For example, in Figure Y overpage, the rate of lung cancer for Māori males is significantly higher than that for non-Māori males, and the difference between the two rates is considered to be statistically significant. Sometimes, even when there are overlapping CIs the difference between the groups is statistically significant. In this report, if CIs overlap but a difference has been reported, a t-test has been completed to confirm the finding.

Unless otherwise stated, all differences noted in the body text of this chart book are statistically significant.

Rate ratios

Age-standardised ratios are used to compare the age-standardised rates of Māori and non-Māori. The rate ratio (RR) is equal to the age-standardised Māori rate divided by the age-standardised non-Māori rate. Thus the non-Māori population is used as the reference population.

For example, an age-standardised RR of 1.5 means that the rate is 50 percent (or 1.5 times) higher in Māori than in non-Māori, after taking into account the different age structures of these two populations.

Rate ratios and their 95 percent CIs are given in the body text of this chart book. In this chart book, if the CI of the RR does not include the number 1, the ratio is said to be significant.

How to interpret results: tables

The table's title indicates what the table is about.

Column 1 provides information about the indicator, including name, age group, years of data and type of measure.

Numbered amounts within all other columns relate to prevalence or other rates; for example, proportion of the Māori population at a given time with the disease/condition (prevalence).

Table X: Asthma indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Asthma hospitalisation, 5–34 years, 2006-08, rate per 100,000 ^{1,3,*}	216.3 (200.2–233.7)	269.6 (252.6–287.7)	245.1 (233.2–257.6)	122.2 (114.6–130.5)	129.7 (121.9–138.0)	126.4 (120.8–132.2)
Diagnosed asthma, 15–45 years, (self-reported) 2006/07, percent ^{1,2,**}	24.4 (20.4–28.5)	29.6 (26.4–32.9)	27.2 (24.7–29.7)	18.4 (16.3–20.5)	20.8 (18.9–22.8)	19.7 (18.3–21.0)

Notes:

1. Age standardised to 2001 Census total Māori population.
2. Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.
3. Ethnicity adjusted rate – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Sources:

- * Ministry of Health
- ** 2006/07 New Zealand Health Survey

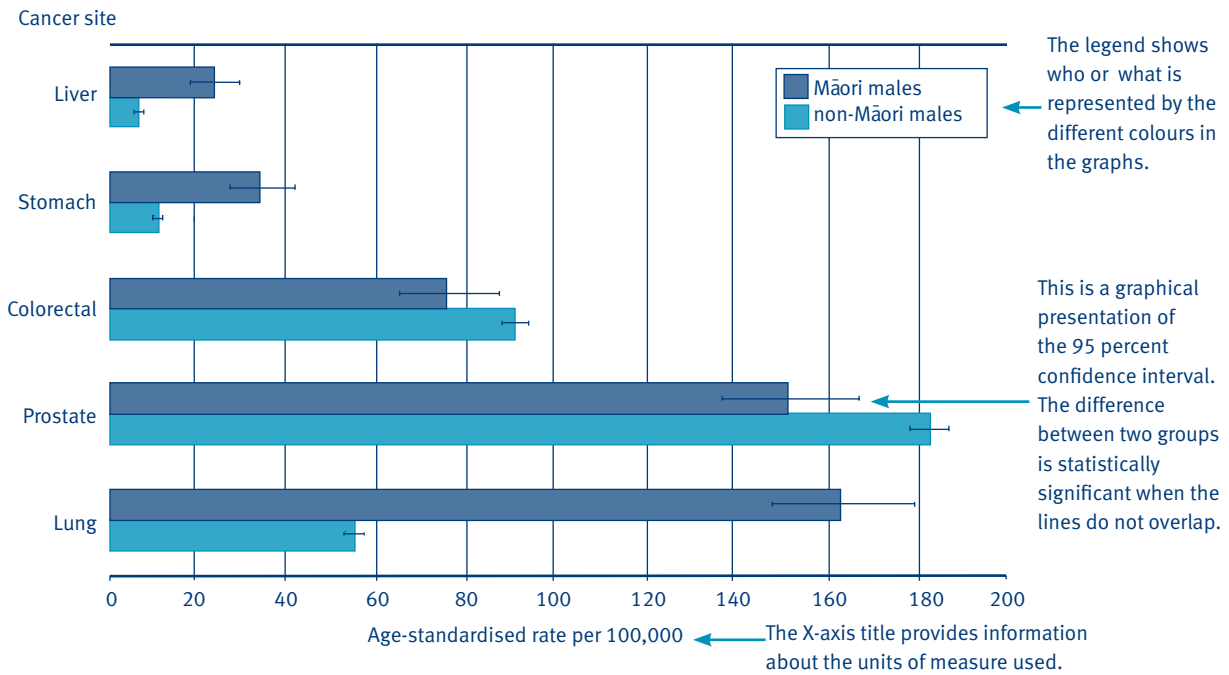
The sources sit under the notes and acknowledge where the data for each indicator have been sourced from.

The notes provide extra information about the indicators.

The 95 percent CI indicates the range of values that have a 95 percent probability of enclosing the true value.

How to interpret results: figures

Figure Y: Male cancer registration (2004–2006), by site, 25+ years ← The figure's title indicates what the figure is about.



Tatauranga Taupori: Demographics

Age structure

Table 2: Population by age group, Māori and non-Māori, 2006

Age group (years)	Māori			non-Māori		
	Males	Females	Total ¹	Males	Females	Total ¹
0–14	102,645	97,278	199,923	341,379	326,268	667,653
15–24	49,371	51,933	101,304	238,152	231,720	469,872
25–44	70,824	82,608	153,435	471,177	509,643	980,817
45–64	41,547	46,002	87,537	429,375	442,416	871,797
65+	10,479	12,645	23,124	210,663	261,819	472,479
Total ¹	274,860	290,469	565,326	1,690,758	1,771,860	3,462,621

Note:

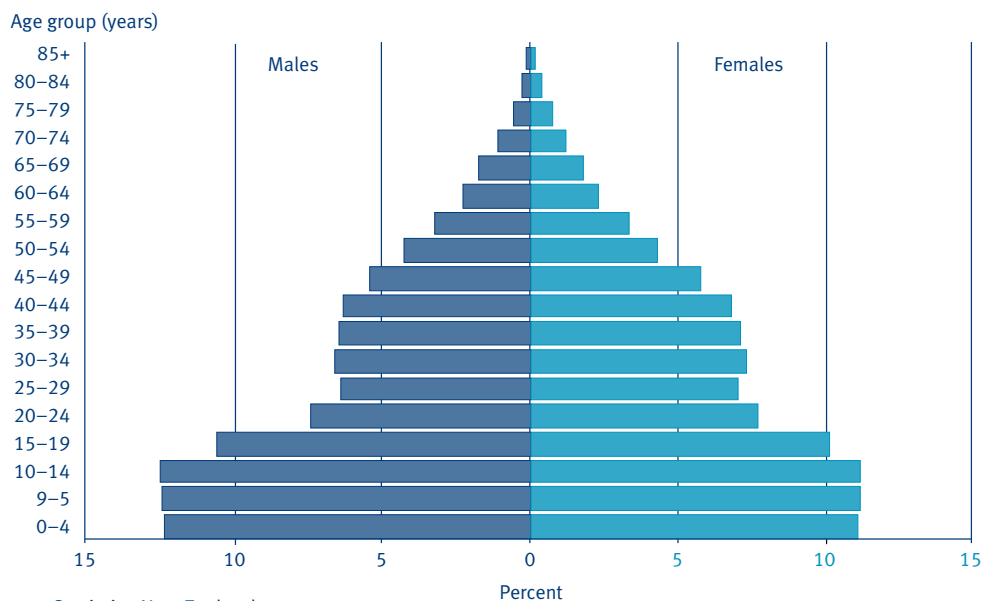
¹ Due to rounding, individual figures in this table do not add to give the stated totals.

Source: Statistics New Zealand

In 2006, Māori comprised 14 percent of the New Zealand population. Females made up 51 percent of the Māori population and males 49 percent.

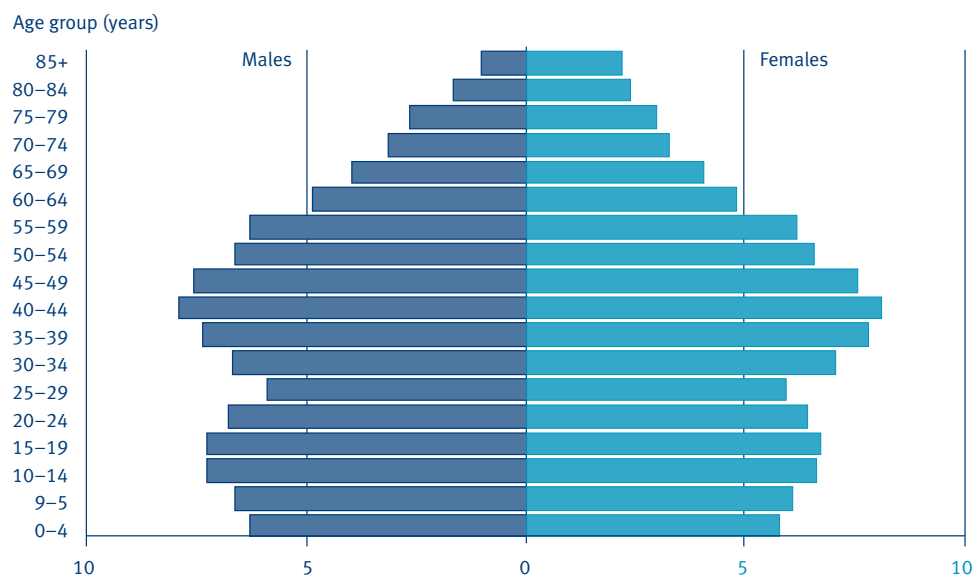
In comparison with non-Māori, Māori constituted a very youthful population (see Figures 1 and 2): 35 percent of Māori were aged less than 15 years, compared with only 19 percent of non-Māori.

Figure 1: Age distribution of the Māori population, males and females, 2006



Source: Statistics New Zealand

Figure 2: Age distribution of the non-Māori population, males and females, 2006



Source: Statistics New Zealand

Population projections

Table 3: Projected populations,¹ Māori and non-Māori, 2011–2026

Year	Māori			non-Māori		
	Males	Females	Total ²	Males	Females	Total ²
2011	331,600	344,100	675,700	1,823,800	1,893,700	3,717,500
2016	357,400	369,400	726,800	1,897,000	1,964,900	3,861,900
2021	380,800	392,300	773,100	1,964,900	2,032,800	3,997,700
2026	403,400	414,300	817,700	2,026,000	2,095,600	4,121,700

Notes:

- 1 Māori figures are series 6 projections based on the 2006 Census and assume medium fertility, medium mortality, medium annual net migration and medium inter-ethnic mobility. Non-Māori figures are derived from national series 5 projections based on the 2006 Census and assume medium fertility, medium mortality and long-term annual net migration of 10,000. The two series are designed to be directly comparable.
- 2 Due to rounding, individual figures in this table do not add to give the stated totals.

Source: Statistics New Zealand

Table 3 shows that the Māori population has a high growth rate (average annual increase of 1.4 percent) relative to non-Māori (average annual increase of 0.7 percent). Between 2011 and 2026, the Māori population is predicted to grow by 21 percent, whereas the non-Māori population is predicted to grow by only 11 percent.

There are a number of drivers of this higher population growth for Māori, including a higher fertility rate for Māori females compared with non-Māori females (a higher number of births per woman of childbearing age); in 2008, the Māori total fertility rate was 2.95, compared with 2.01 for non-Māori³.

Another factor is that the Māori population has a younger age structure, with a relatively large proportion in the main reproductive ages (15–44 years). This provides built-in momentum for future population growth (Statistics New Zealand 2005).

Population by DHB

Table 4 contains the Māori and non-Māori populations of each DHB, by life-cycle age group. A map showing the proportion of each DHBs population that is Māori follows as Figure 3.

³ The total fertility rate is the average number of live births that a woman would have during her life if she experienced the age-specific fertility rates of a given period (usually a year). It excludes the effect of mortality.

Table 4: DHB age populations, Māori and non-Māori, 2006^{1,2}

	0–14 years		15–24 years		25–44 years		45–64 years		65+ years		Total ¹	
	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori	Māori	Non-Māori
Northland	15,579	19,197	6873	10,287	10,827	24,864	7575	31,785	2670	18,789	43,527	104,913
Waitemata	15,312	89,244	7875	59,835	12,300	130,815	6138	107,154	1251	51,690	42,876	438,735
Auckland	8736	67,359	5736	61,515	9423	126,759	4785	81,537	1167	37,602	29,847	374,772
Counties Manukau	25,365	86,745	12,096	53,019	18,288	105,777	9558	84,090	1944	36,204	67,248	365,838
Waikato	24,027	53,337	12,426	36,498	17,871	72,279	10,332	69,711	2820	39,900	67,476	271,716
Lakes	11,028	12,837	5304	7155	8457	18,228	5133	18,468	1458	10,251	31,377	66,942
Bay of Plenty	16,305	27,306	7329	15,282	11,913	36,927	7758	41,211	2346	28,554	45,642	149,289
Tairāwhiti	6807	4842	3138	2616	5103	6096	3540	6981	1176	4158	19,758	24,705
Taranaki	5679	17,037	2817	10,266	4158	23,013	2421	23,460	738	14,697	15,819	88,458
Hawke's Bay	12,174	21,921	5742	12,471	8913	29,145	5544	31,800	1533	19,005	33,903	114,345
Whanganui	5112	8685	2514	5337	3732	11,487	2343	13,212	720	9069	14,424	47,787
MidCentral	9858	24,072	5091	18,999	7059	33,840	3690	33,888	1008	21,336	26,712	132,129
Hutt	7701	23,136	3900	14,580	6126	32,964	3162	29,079	597	14,853	21,480	114,621
Capital and Coast	8583	43,332	5226	37,134	8079	77,208	3804	55,179	810	27,294	26,496	240,162
Wairarapa	2055	6096	912	3309	1356	7734	894	9933	276	6048	5493	33,120
Nelson Marlborough	3813	21,960	1947	12,744	2982	31,104	1785	34,548	426	18,756	10,953	119,109
West Coast	1092	5304	471	2919	756	7629	471	8349	120	4215	2916	28,410
Canterbury	11,817	79,872	6411	60,099	9291	122,382	4818	109,032	1071	61,617	33,417	432,990
South Canterbury	1164	9336	594	5208	786	12,204	483	14,382	135	9582	3159	50,718
Otago	3783	28,128	2742	28,983	2973	42,177	1593	43,149	375	25,491	11,466	167,931
Southland	3939	17,874	2151	11,589	3021	28,107	1707	24,642	504	13,296	11,319	95,508

Notes:

1 Due to rounding, individual figures in this table do not add to give the stated totals.

2 Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Source: Statistics New Zealand

Ngā Awe o te Hauora: Socioeconomic Determinants of Health

Socioeconomic position is regarded as a major determinant of health. Factors such as income, employment status, housing and education can have both direct and indirect impacts on health and have cumulative effects over lifetimes (Robson and Harris 2007). In this section deprivation is presented as an area-based measure of socioeconomic position, followed by some specific socioeconomic indicators.

Neighbourhood deprivation

NZDep2006 is a small-area-based relative deprivation index based on nine socioeconomic variables from the 2006 Census. NZDep2006 scores are usually categorised into tenths (deciles), numbered from 1 (least deprived) to 10 (most deprived). NZDep2006 describes the deprivation experienced by groups of people in small areas and describes the general socio-economic deprivation of an area. It does not describe the deprivation of an individual.

Table 5 presents the Māori and non-Māori populations by deprivation decile.

Table 5: Māori and non-Māori populations, by neighbourhood deprivation decile (NZDep 2006)

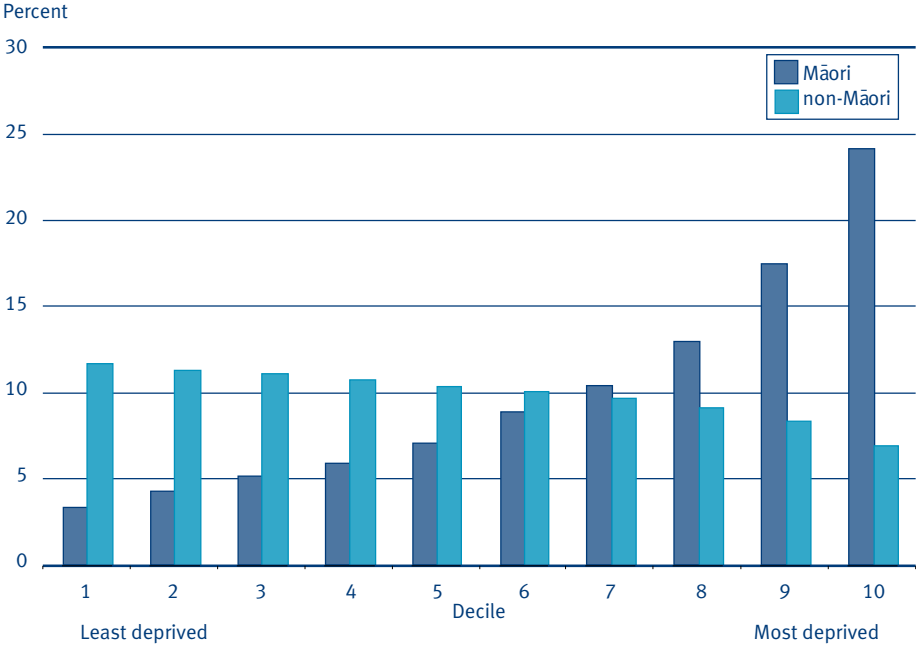
NZDep2006 decile	Māori		non-Māori	
1 (least deprived)	19,215	3%	386,277	12%
2	24,603	4%	374,643	11%
3	29,361	5%	367,875	11%
4	33,678	6%	355,188	11%
5	40,191	7%	343,464	10%
6	50,184	9%	333,948	10%
7	58,908	10%	319,884	10%
8	73,692	13%	300,948	9%
9	98,838	17%	278,652	8%
10 (most deprived)	136,452	24%	229,626	7%
Unknown ¹	213	0%	4329	0%
Total ²	565,326	100%	3,294,834	100%

Notes:
 1 The population for whom an NZDep2006 score was not ascertained.
 2 Due to rounding, individual figures in this table do not add to give the stated totals.

Source: Salmond et al 2007

Figure 4 shows that higher proportions of Māori live in areas with the most deprived NZDep2006 scores. In 2006, 24 percent of Māori lived in decile 10 areas (compared to with 7 percent of non-Māori), while only 3 percent of Māori lived in decile 1 areas (compared with 12 percent of non-Māori).

Figure 4: Neighbourhood deprivation distribution (NZDep 2006), Māori and non-Māori, 2006



Source: Salmond et al 2007

Socioeconomic indicators

Table 6 presents crude rates rather than age-standardised rates.

Caution should be taken when comparing Māori with non-Māori results. Crude rates accurately portray the situation in each population but make comparisons difficult because they do not take into account different age distributions in each of the populations (the Māori population is much younger than the non-Māori population).

The results show that non-Māori are more advantaged than Māori across all socioeconomic indicators presented.

Table 6: Socioeconomic indicators: percentage of each ethnic group, 2006¹

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
School completion (Level 2 Certificate or higher), 15+ years, 2006, percent	40.7	45.7	43.4	65.0	62.5	63.7
Unemployed, 15+ years, 2006, percent	7.1	8.2	7.6	2.8	3.0	2.9
Total personal income less than \$10,000, 15+ years, 2006, percent	22.8	27.9	25.5	16.1	25.6	21.0
Receiving means-tested benefit, 15+ years, 2006, percent	19.9	32.6	26.7	8.8	12.1	10.5
Living in household without telephone access, 15+ years, 2006, percent	5.6	5.3	5.5	1.5	1.0	1.2
Living in household without motor vehicle access, 15+ years, 2006, percent	7.8	10.2	9.1	3.8	6.2	5.0
Not living in own home, 15+ years, 2006, percent	69.6	70.1	69.9	44.9	42.6	43.7
Household crowding ² , all age groups, 2006, percent	22.2	23.3	22.8	7.9	7.9	7.9

Notes:

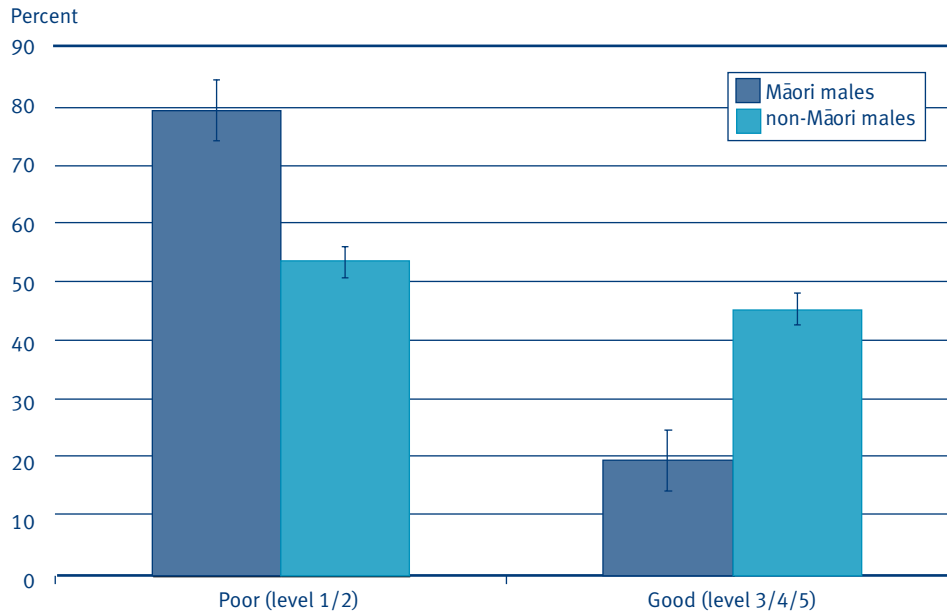
- 1 Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.
- 2 Based on the Canadian National Crowding Index. A required number of bedrooms is calculated for each household (based on the age, sex and number of people living in the dwelling), which is compared with the actual number of bedrooms. A household is considered crowded when there are fewer bedrooms than required.

Source: Statistics New Zealand

Health literacy

Health literacy is defined as the ability to obtain, process, and understand basic health information and services in order to make informed and appropriate health decisions.

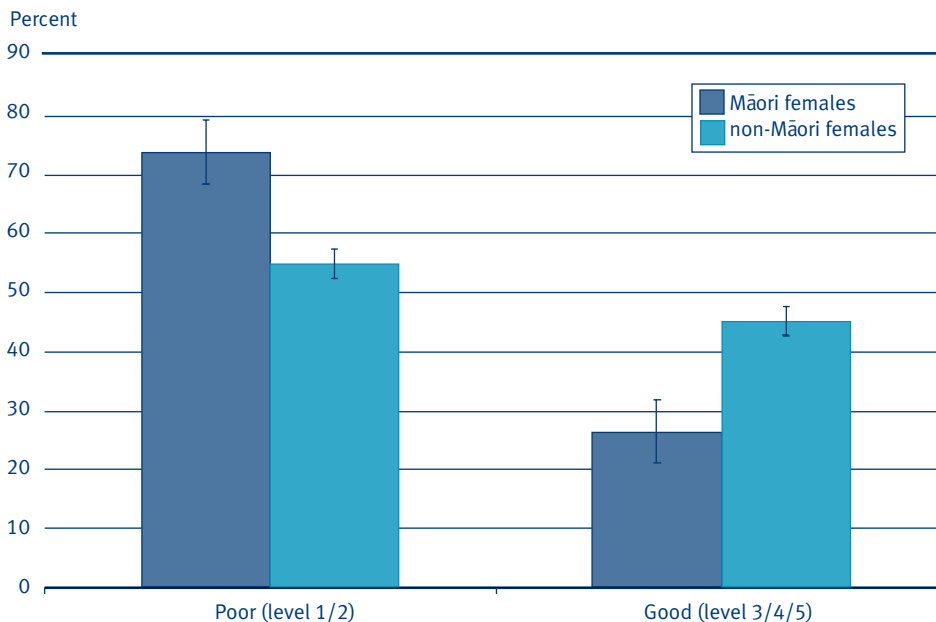
Figure 5: The distribution of health literacy for males, 16–65 years, 2006



Note: Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006 Adult Literacy and Life Skills Survey

Figure 6: The distribution of health literacy for females, 16–65 years, 2006



Note: Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006 Adult Literacy and Life Skills Survey

Figure 5 and 6 show that Māori males and females have significantly lower health literacy skills than non-Māori males and females. Having a health literacy score within level 1 and 2 means that an individual has insufficient skills to cope with the health literacy demands they typically face.

Level 3 is described as the ‘minimum required for individuals to meet the complex demands of everyday life and work in the emerging knowledge-based economy’.

For a full description of health literacy levels and further information and findings on health literacy and Māori see the report, *Korero Marama: Health Literacy and Māori. Results from the 2006 Adult Literacy and Life Skills Survey* (Ministry of Health 2010).

Ngā Tauwehe Tūpono me te Marumaru: Risk and Protective Factors

The indicators in this section relate to individual risk and protective factors. It should be noted that socioeconomic determinants are linked to risk and protective factors, which in turn impact on health outcomes. Consequently, differences in socioeconomic position between Māori and non-Māori are likely to contribute to differences in individual risk and protective factors.

Tobacco smoking

Table 7: Tobacco smoking indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Daily smoking (self-reported), 14–15 years, 2008, percent ^{2, 3, *}	12.6 (11.0–14.2)	21.6 (19.3–23.9)	17.3 (15.7–18.9)	4.2 (3.7–4.8)	4.6 (3.9–5.3)	4.4 (3.9–4.9)
Current smoking (self-reported), 15–64 years, 2008, percent ^{1, 2, 4, **}	41.9 (36.1–47.7)	50.0 (44.7–55.4)	46.3 (42.4–50.2)	22.4 (20.2–24.7)	17.5 (15.5–19.5)	19.9 (18.4–21.4)
Non-smokers exposure to second-hand smoke in their home or in the car, 15–64 years, 2008, percent ^{1, 2, 5, **}	23.9 (17.8–30.1)	19.5 (13.1–25.9)	21.7 (17.5–25.9)	10.8 (9.1–12.5)	8.7 (7.2–10.2)	9.7 (8.4–11.0)

Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 3 Crude age-specific rates.
- 4 ‘Current smoking’ is defined as a person who has smoked more than 100 cigarettes in their lifetime and currently smokes at least monthly.
- 5 Refers to second-hand smoke exposure in their home in the past week and second-hand smoke in the car they usually travelled in during the last week.

Sources:

- * Action on Smoking and Health (ASH) Year 10 Snapshot Survey 2008
- ** New Zealand Tobacco Use Survey 2008

Table 7 shows that for young people aged 14–15 years, the prevalence of tobacco smoking among Māori was higher than that among non-Māori (17.3 percent and 4.4 percent respectively).

Among adults aged 15–64 years, Māori were also twice as likely as non-Māori adults to smoke tobacco (RR 2.33, CI 2.07–2.58). Māori females had the highest prevalence of tobacco smoking, with 50 percent reporting being a current smoker.

For more information on Māori smoking and tobacco use, refer to *Māori Smoking and Tobacco Use 2009* (Quit Group and the Ministry of Health 2009).

Alcohol and drug use

Table 8: Alcohol and drug use indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Consumed alcohol in the past 12 months (15–64 years), 2007/08, percent ^{1, 2}	88.7 (85.9–91.5)	83.8 (81.3–86.3)	86.1 (84.3–87.9)	88.4 (86.6–90.2)	82.2 (80.5–84.0)	85.2 (83.8–86.5)
Drinking alcohol daily in the past 12 months (past year drinkers 15–64 years), 2007/08, percent ^{1, 2}	5.2 (3.3–7.1)	2.7 (1.7–3.8)	3.9 (2.9–4.9)	8.4 (6.8–10.0)	5.8 (4.8–6.9)	7.1 (6.2–8.0)
Drinking large amounts of alcohol at least weekly in the past 12 months, (past year drinkers 15–64 years), 2007/08, percent ^{1, 2, 3}	28.1 (22.6–33.6)	22.0 (18.1–25.9)	24.9 (21.6–28.2)	13.6 (11.7–15.5)	8.5 (6.9–10.0)	11.0 (9.8–12.3)
Using cannabis in the past 12 months, (15–64 years), 2007/08, percent ^{1, 2}	32.6 (27.4–37.8)	23.9 (20.5–27.2)	27.9 (25.0–30.8)	16.3 (14.3–18.3)	9.7 (8.3–11.2)	12.9 (11.6–14.2)

Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 3 ‘Drinking a large amount of alcohol’ is defined as drinking more than six (for men) or four (for women) standard drinks on one drinking occasion.

Source: 2007/08 New Zealand Alcohol and Drug Use Survey

Table 8 shows that Māori and non-Māori adults were equally likely to have consumed alcohol in the past year (RR 1.01, CI 0.99–1.03). Māori adults were less likely than non-Māori adults to have drunk alcohol daily in the past year (RR 0.55, CI 0.38–0.71). However, of those who had drunk in the past year, Māori were more than twice as likely as non-Māori to have consumed a large amount of alcohol at least weekly (RR 2.26, CI 1.91–2.61).

Prevalence of having used cannabis in the past year was significantly higher among Māori adults than among non-Māori adults (RR 2.16, CI 1.83–2.50).

Nutrition

Table 9: Nutrition indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
3 or more servings of vegetables per day (self-reported), 15+ years, 2006/07, percent ^{1,2}	54.1 (50.5–57.7)	65.0 (61.8–68.2)	60.0 (57.7–62.2)	58.2 (56.4–60.0)	70.6 (68.8–72.4)	64.6 (63.3–66.0)
2 or more servings of fruit per day (self-reported), 15+ years, 2006/07, percent ^{1,2}	46.5 (42.5–50.5)	62.9 (60.1–65.8)	55.3 (52.9–57.7)	51.1 (49.2–53.0)	69.6 (67.8–71.4)	60.7 (59.3–62.1)
3 or more servings of vegetables and 2 or more of fruit per day (self-reported), 15+ years, 2006/07, percent ^{1,2}	29.1 (25.7–32.5)	44.8 (41.6–48.0)	37.5 (35.6–39.5)	33.7 (31.9–35.5)	53.4 (51.4–55.5)	43.9 (42.5–45.4)

Notes:
 1 Age standardised to 2001 Census total Māori population.
 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

It is recommended that New Zealanders eat at least three servings of vegetables and at least two servings of fruit per day (Ministry of Health 2003). Having consistent access to affordable foods of high nutritional value is a key determinant for whether such foods will be consumed (an indication of food security).

Table 9 shows that a substantial proportion of both Māori and non-Māori did not meet this minimum recommended vegetable and fruit intake. Māori adults were slightly less likely than non-Māori adults to meet the recommended daily intake of three or more servings of vegetables per day (RR 0.93, CI 0.89–0.97) and the recommended daily intake of two or more servings of fruit per day (RR 0.91, CI 0.87–0.95).

Māori females and non-Māori females were more likely than their male counterparts to eat the recommended number of vegetables and fruit servings.

Body size

A healthy body size is recognised as important for good health and wellbeing, with evidence showing that obese children and adults are at greater risk of short- and long-term health consequences (Ministry of Health 2008).

Body mass index (BMI) provides a useful population-level indicator of excess body weight. It is a measure of weight adjusted for height and is calculated by dividing weight in kilograms by the square of height in metres (kg/m^2). BMI is used internationally to classify underweight, overweight and obesity.

It should be noted that the BMI provides a crude measure and does not distinguish between weight associated with muscle and weight associated with fat. However, it does provide a good estimate of increased risk of health conditions associated with obesity (World Health Organization 2008).

To comply with current international practice, the same BMI cut-off points are now used for all ethnic groups (please refer to the online 2006/07 New Zealand Health Survey body size technical report for more information at: <http://www.moh.govt.nz/moh.nsf/indexmh/portrait-of-health>). Therefore, data presented in this edition of the chart book should not be compared with those presented in the first edition, which used ethnic-specific cut-off points to analyse body size (Ministry of Health 2006).

Table 10: International cut-off points for adults aged 18 years and over

Classification	BMI score kg/m^2	Risk of health conditions
Underweight	<18.50	Low risk
Overweight	25.00–29.99	Increased risk
Obese	≥ 30.00	Substantially increased risk

Note: Only includes health conditions associated with increasing BMI.

Source: Ministry of Health 2008

Details on the classification of overweight and obesity in children can be found in Cole et al (2000, 2007).

There is an association between BMI and health risk (Asia Pacific Cohort Studies Collaboration 2004), and therefore, it is useful to have some information about the BMI distribution rather than relying on BMI cut-offs alone. For this reason, this chart book presents data on BMI percentiles as well as underweight, overweight and obesity. For example, a 10th percentile BMI of 22 means that 10 percent of the population have a BMI of 22 or less; a 50th percentile BMI of 28 means that 50 percent of the population have a BMI of 28 or less.

Table 11: Body size indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Children						
Overweight, 5–14 years, 2006–07, percent ^{1,2}	23.7 (20.0–27.3)	25.6 (20.1–31.1)	24.6 (21.3–27.9)	19.1 (15.9–22.2)	18.5 (15.7–21.3)	18.8 (16.6–21.1)
Obese, 5–14 years, 2006–07, percent ^{1,2}	12.0 (9.0–15.0)	13.3 (9.6–16.9)	12.6 (10.4–14.9)	6.9 (5.5–8.4)	7.3 (5.7–8.9)	7.1 (6.0–8.2)
BMI 10th percentile, 5–14 years, 2006–07, BMI value ^{1,2}	15.6 (15.3–15.9)	15.3 (14.9–15.7)	15.4 (15.2–15.7)	15.4 (15.2–15.7)	15.1 (14.8–15.3)	15.3 (15.1–15.5)
BMI 50th percentile, 5–14 years, 2006–07, BMI value ^{1,2}	18.6 (18.1–19.0)	18.9 (18.5–19.2)	18.8 (18.5–19.1)	18.0 (17.7–18.3)	18.1 (17.8–18.4)	18.0 (17.8–18.3)
BMI 90th percentile, 5–14 years, 2006–07, BMI value ^{1,2}	25.1 (24.0–26.2)	26.7 (24.9–28.5)	25.8 (24.8–26.8)	23.6 (22.9–24.2)	24.1 (23.4–24.8)	24.0 (23.5–24.4)
Adults						
Underweight, 15+ years, 2006–07, percent ^{1,2}	0.4 (0.1–0.9)	1.3 (0.6–2.3)	0.8 (0.5–1.4)	1.2 (0.8–1.7)	1.5 (1.0–2.0)	1.3 (1.0–1.7)
Overweight, 15+ years, 2006–07, percent ^{1,2}	33.9 (30.4–37.5)	29.3 (26.3–32.3)	31.5 (29.5–33.6)	42.9 (41.3–44.5)	30.7 (29.1–32.2)	36.8 (35.8–37.8)
Obese, 15+ years, 2006–07, percent ^{1,2}	40.6 (37.1–44.0)	41.6 (38.6–44.6)	41.1 (39.2–43.1)	24.1 (22.6–25.7)	25.0 (23.4–26.5)	24.6 (23.5–25.6)
BMI 10 th percentile, 15+ years, 2006–07, BMI value ^{1,2}	22.4 (21.9–22.9)	21.4 (20.9–21.9)	22.0 (21.6–22.3)	21.7 (21.4–22.0)	20.5 (20.4–20.7)	21.0 (20.8–21.1)
BMI 50 th percentile, 15+ years, 2006–07, BMI value ^{1,2}	28.3 (27.7–29.0)	28.2 (27.6–28.8)	28.3 (27.9–28.7)	26.9 (26.7–27.1)	25.7 (25.5–25.9)	26.4 (26.2–26.5)
BMI 90 th percentile, 15+ years, 2006–07, BMI value ^{1,2}	37.2 (36.2–38.3)	39.6 (38.5–40.7)	38.3 (37.7–38.9)	33.3 (33.0–33.7)	35.1 (34.5–35.6)	34.0 (33.7–34.3)

Notes:

1 Age standardised to 2001 Census total Māori population.

2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

Table 11 shows that for children aged 5–14 years, Māori and non-Māori boys had a similar prevalence of overweight, but Māori girls were nearly 1.4 times more likely to be overweight than non-Māori girls (RR 1.38, CI 1.02–1.74). Overall, the prevalence of obesity in Māori children was more than one-and-a-half times greater than that in non-Māori children (RR 1.77, CI 1.32–2.22). Both the BMI 10th and 50th percentiles for Māori and non-Māori children were similar; however, Māori children had a slightly higher BMI 90th percentile.

Māori adults were slightly less likely than non-Māori adults to be overweight (RR 0.86, CI 0.80–0.92). However, Māori adults were more than one-and-a-half times more likely to be obese than non-Māori (RR 1.67, CI 1.56–1.78). Māori adults had higher 10th, 50th and 90th percentiles for BMI than non-Māori adults.

Physical activity

Table 12: Physical activity indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Regular physical activity (self-reported), 15+ years, 2006/07, percent ^{1, 2, 3}	60.3 (57.0–63.6)	50.3 (47.3–53.4)	55.0 (52.8–57.2)	53.1 (51.3–54.9)	47.1 (45.2–49.1)	50.0 (48.6–51.4)

Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 3 Regular physical activity is defined in the 2006/07 New Zealand Health Survey as at least 30 minutes of physical activity per day on five or more days of the week.

Source: 2006/07 New Zealand Health Survey

Table 12 shows that Māori were more likely than non-Māori adults to report regular physical activity in the 2006/07 New Zealand Health Survey (RR 1.10, CI 1.05–1.15).

Sport and Recreation New Zealand (SPARC) ran a national survey in 2007/08 (the 2007/08 Active NZ Survey) that provided new benchmarks for monitoring physical activity. The physical activity guidelines state that adults should participate in at least 30 minutes of moderate-intensity physical activity on most, if not all days of the week. To meet this guideline, participation in at least 30 minutes of moderate-intensity physical activity on five or more days of the week is required (referred to as the 30 x 5 recommendation).

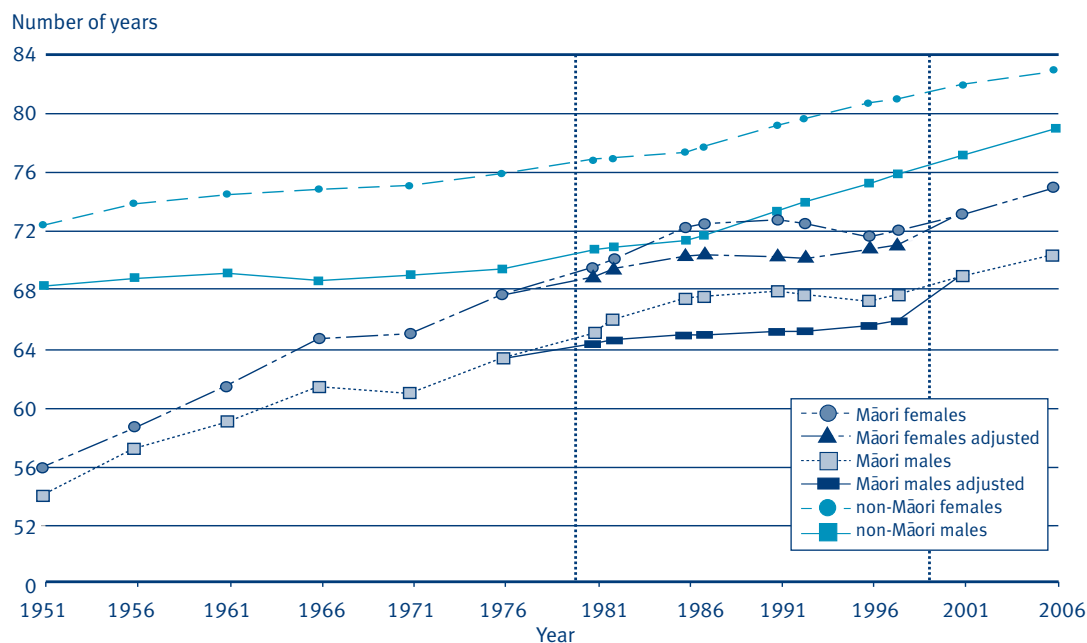
Results from SPARC, show that 53.5 percent of Māori met the 30 x 5 recommendation compared with 48.2 percent for the total New Zealand population. For further information and results from this survey, see <http://www.activenzsurvey.org.nz/Results/2007-08-Active-NZ-Survey>

Ngā Mana Hauora Tūtohu: Health Status Indicators

This section presents a range of indicators relating to health status. The indicators in this section include: life expectancy; disability; major causes of death; self-rated health; cardiovascular disease; cancer; respiratory disease; diabetes; infectious disease; suicide and intentional self-harm; mental health; interpersonal violence; oral health; infant health and unintentional injury.

Life expectancy

Figure 7: Life expectancy at birth, by gender and ethnicity, 1951–2006



Note: Adjusted life expectancy estimates for Māori 1980–1999 use estimates from the New Zealand Census – Mortality Study graphed at the mid-point of each time period. From 2001, adjusted estimates are close to unadjusted.

Sources: Blakely et al 2007; Statistics New Zealand

In 2006, life expectancy at birth was 70.4 years for Māori males and 75.1 years for Māori females, while life expectancy at birth for non-Māori males was 79.0 years and for non-Māori females 83.0 years. Overall, in 2006, Māori life expectancy at birth was at least eight years less than that for non-Māori for both genders.

During the 1980s and early 1990s, Māori mortality was seriously undercounted due to the use of a different ethnicity data recording system on death registration forms compared with that used for the census. The broken lines on Figure 5 for Māori males and females represent adjusted life expectancy from the New Zealand Census Mortality Study (NZCMS). This adjusted life expectancy takes into account the undercounting of Māori deaths, thereby providing more reliable life expectancy estimates over this period (Ajwani et al 2003; Blakely et al 2007).

Most notably, Figure 7 shows that Māori life expectancy rapidly increased up until the late 1970s or early 1980s, after which Māori life expectancy was (mostly) static while non-Māori life expectancy continued to increase. Since the late 1990s, Māori life expectancy has been increasing at about the same rate as non-Māori, or even slightly faster (Blakely et al 2007).

Disability

The 2006 New Zealand Household Disability Survey estimated that 95,700 Māori living in New Zealand households were living with a disability (17 percent).⁴

The age-standardised⁵ disability rate for Māori was 19 percent compared with a rate of 13 percent for non-Māori (Office for Disability Issues and Statistics New Zealand 2010).

Fourteen percent of Māori children aged 0–14 years (28,200) had a disability, compared to 9 percent of non-Māori children aged 0–14 years. The most common disability type experienced by Māori children was special education needs and chronic conditions/health problems (both 5 percent).

Nineteen percent of Māori adults (aged 15 and over) living in households had a disability compared with 17 percent of non-Māori adults. Disability rates for Māori adults were higher than for non-Māori adults across all age groups. The prevalence of disability increases with age, with the highest rates among those aged 65 years and older.

These data are drawn from the 2006 New Zealand Household Disability Survey. For further information and data on disability and Māori, refer to the report *Disability and Māori in New Zealand in 2006* (Office for Disability Issues and Statistics New Zealand 2010) available at: <http://www.stats.govt.nz/publications/socialconditions/disability-and-maori.aspx>

4 Disability was defined in the survey as any self-perceived limitation in activity resulting from a long-term condition or health problem lasting or expected to last six months or more and not completely eliminated by an assistive device.

5 For the report *Disability and Māori in New Zealand in 2006*, age-standardised rates were calculated using the World Health Organization world standard population (Office for Disability Issues and Statistics New Zealand 2010).

Major causes of death

The major causes of death for Māori and non-Māori, and gender are presented in this chart book. Causes of death have been ranked in two different ways: first by age-standardised mortality rates (Table 13) and then by years of life lost (YLL) (Table 14).

Growing old is a natural biological process, and death, being inevitable, reflects population health status only to a limited extent. Therefore, YLL has been used to provide a measure of the social burden of premature mortality across the life span, including deaths in old age. See Appendix 3 for further information about YLL.

Table 13: Major causes of death, 2004–2006, ranked by age-standardised mortality rates

	Males	Females
Māori	Ischaemic heart disease	Ischaemic heart disease
	Lung cancer	Lung cancer
	Diabetes	Chronic obstructive pulmonary disease
	Suicide	Cerebrovascular disease
	Chronic obstructive pulmonary disease = Other forms of heart disease	Diabetes
non-Māori	Ischaemic heart disease	Ischaemic heart disease
	Suicide	Breast cancer
	Lung cancer	Cerebrovascular disease
	Cerebrovascular disease	Lung cancer
	Colorectal cancer	Colorectal cancer

Notes:

- 1 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 2 Age standardised to 2001 Census total Māori population.

Source: Ministry of Health

Table 13 shows that ischaemic heart disease was the leading cause of death for both Māori and non-Māori. Lung cancer was the second leading cause of death for Māori and was also in the top five causes of death for non-Māori. Diabetes featured in the top five causes of death for both Māori males and Māori females but did not feature in the top five for non-Māori of either gender. Suicide was the fourth leading cause of death for Māori males and the second leading cause of death for non-Māori males. Apart from suicide for males, the major causes of death were all chronic diseases, regardless of gender or ethnicity.

Table 14: Major causes of death, 2004–2006, ranked by YLL

	Males	Females
Māori	Ischaemic heart disease	Ischaemic heart disease
	Suicide	Lung cancer
	Lung cancer	Breast cancer
	Diabetes	Chronic obstructive pulmonary disease
	Other forms of heart disease	Diabetes
non-Māori	Ischaemic heart disease	Ischaemic heart disease
	Lung cancer	Cerebrovascular disease
	Cerebrovascular disease	Breast cancer
	Suicide	Colorectal cancer
	Chronic obstructive pulmonary disease	Lung cancer

Note: Prioritised Māori ethnic group – see ‘Ngā Tapuāe me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

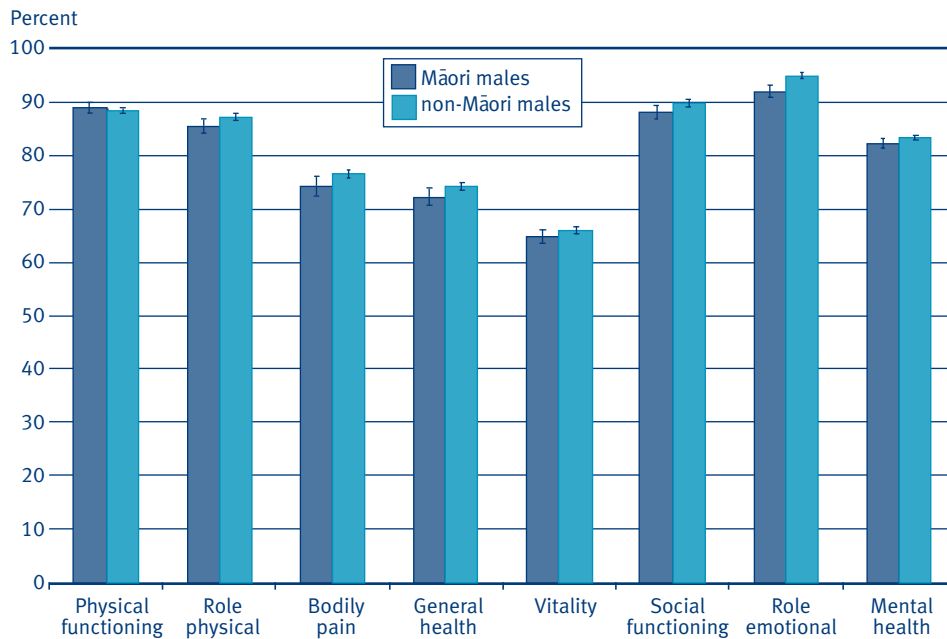
When considering cause of death by YLL, the major causes of premature death were still dominated by chronic diseases (eg, ischaemic heart disease and lung cancer were the leading causes for all groups).

Table 14 shows that suicide was a major cause of premature death for males in both populations – for Māori males it was the second leading cause of premature death, while it ranked fourth for non-Māori males. Breast cancer was the third leading cause of premature death for both Māori and non-Māori females.

Self-rated health

The SF-36 is one of the most widely used questionnaires for measuring self-reported physical and mental health status. The SF-36 questionnaire consists of 36 questions (items), measuring physical and mental health status in relation to eight health scales: physical functioning, role limitation (physical), bodily pain, general health perceptions, vitality (energy/fatigue), social functioning, role limitation (emotional) and general mental health (Ministry of Health 2008). Scores are expressed on a 1–100 scale for each of the eight health scales, with higher scores representing better self-perceived health.

Figure 8: Mean SF-36 scores, males, 15+ years



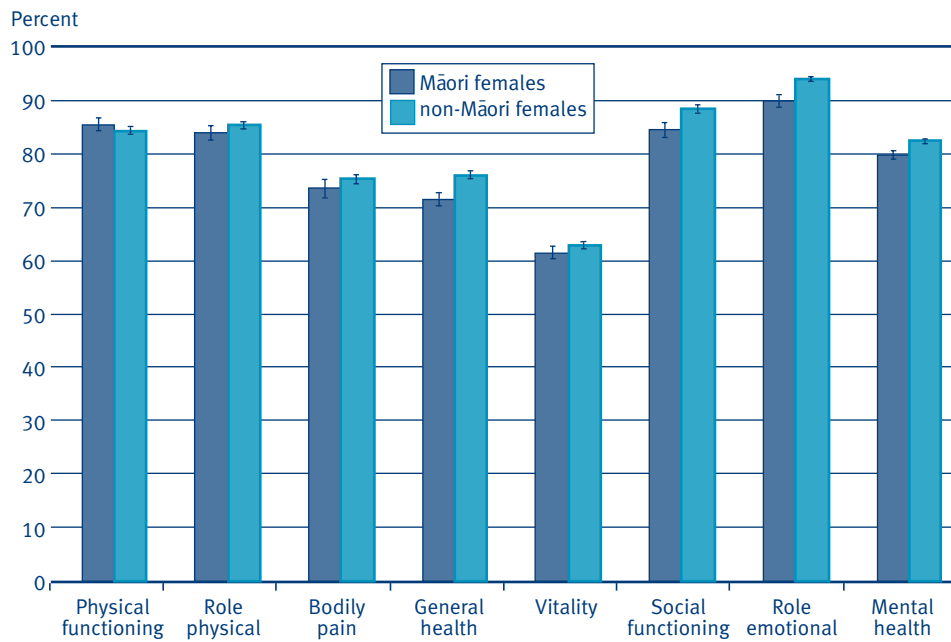
Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see 'Ngā Tapuāe me ngā Raraunga: Methods and Data Sources' for further information.

Source: 2006/07 New Zealand Health Survey

Māori adults generally rated their health lower than non-Māori adults. Māori males rated their health slightly lower than non-Māori males on all scales except physical functioning. Significant differences were seen in role limitation (physical), bodily pain, role limitation (emotional) and mental health (Figure 8).

Figure 9: Mean SF-36 scores, females, 15+ years



Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuāe me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

Likewise, Māori females rated their health lower than non-Māori females on all scales except physical functioning. The differences were significant for general health perceptions, vitality, social functioning, role limitation (emotional) and mental health (Figure 9).

Cardiovascular disease

Table 15: Cardiovascular disease indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Total cardiovascular disease mortality, 35+ years, 2004–06, rate per 100,000 ^{1, 2}	520.4 (494.1–547.8)	306.3 (288.3–325.1)	406.8 (391.1–422.9)	211.6 (208.1–215.1)	122.2 (120.4–124.1)	164.7 (162.8–166.6)
Total cardiovascular disease hospitalisation, 35+ years, 2006–08, rate per 100,000 ^{1, 3}	4775.6 (4604.2–4953.3)	3696.3 (3557.3–3840.7)	4220.4 (4110.0–4333.9)	2882.7 (2852.9–2912.8)	1628.7 (1606.8–1650.9)	2221.2 (2203.0–2239.7)
Stroke mortality, 35+ years, 2004–06, rate per 100,000 ^{1, 2}	56.4 (47.9–66.0)	68.7 (60.3–77.9)	63.4 (57.4–70.0)	38.2 (36.8–39.7)	36.8 (35.7–37.8)	37.8 (37.0–38.7)
Stroke hospitalisation, 35+ years, 2006–08, rate per 100,000 ^{1, 3}	407.0 (368.1–449.9)	433.2 (396.9–472.9)	423.3 (396.3–452.1)	253.9 (245.7–262.5)	172.8 (166.1–179.7)	211.2 (206.0–216.7)
Heart failure mortality, 35+ years, 2004–06, rate per 100,000 ^{1, 2}	5.9 (3.4–9.6)	5.6 (3.6–8.5)	6.0 (4.2–8.2)	2.8 (2.5–3.2)	3.2 (2.9–3.4)	3.1 (2.9–3.3)
Heart failure hospitalisation, 35+ years, 2006–08, rate per 100,000 ^{1, 3}	1000.1 (935.6–1069.0)	625.9 (579.5–676.0)	803.1 (763.8–844.5)	229.0 (220.0–238.4)	141.3 (134.9–148.1)	180.0 (174.5–185.6)
Rheumatic heart disease mortality, 15+ years, 2004–06, rate per 100,000 ^{1, 2}	7.8 (5.6–10.4)	9.2 (7.1–11.9)	8.5 (7.0–10.3)	1.3 (1.1–1.6)	1.4 (1.2–1.6)	1.4 (1.2–1.5)
Rheumatic heart disease hospitalisation, 15+ years, 2006–08, rate per 100,000 ^{1, 3}	33.6 (27.0–41.8)	47.2 (40.4–55.2)	40.9 (36.0–46.5)	9.7 (8.3–11.3)	10.7 (9.3–12.3)	10.2 (9.2–11.3)

Notes:

1. Age standardised to 2001 Census total Māori population.
2. Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
3. Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

According to Table 15, total cardiovascular disease mortality was two-and-a-half times higher for Māori than for non-Māori (RR 2.47, CI 2.37–2.57). Māori were almost twice as likely to be hospitalised for cardiovascular disease as non-Māori (RR 1.90, CI 1.86–1.94).

Stroke mortality was over one-and-a-half times higher for Māori than for non-Māori (RR 1.68, CI 1.51–1.86), and the stroke hospitalisation rate for Māori was twice that of non-Māori (RR 2.00, CI 1.88–2.14).

The heart failure mortality rate for Māori was almost twice as high as the rate for non-Māori (RR 1.92, CI 1.39–2.66). Māori were four-and-a-half times more likely to be hospitalised for heart failure than non-Māori (RR 4.46, CI 4.25–4.69).

Rheumatic heart disease mortality was over six times higher in Māori than in non-Māori (RR 6.27, CI 4.95–7.94), and the rheumatic heart disease hospitalisation rate was four times higher in Māori than in non-Māori (RR 4.01, CI 3.47–4.62).

Table 16: Ischaemic heart disease indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Ischaemic heart disease mortality, 35+ years, 2004–06, rate per 100,000 ^{1,2}	337.2 (316.1–359.3)	151.9 (139.3–165.3)	238.3 (226.3–250.7)	135.3 (132.4–138.1)	59.6 (58.2–60.9)	95.1 (93.6–96.5)
Ischaemic heart disease hospitalisation, 35+ years, 2006–08, rate per 100,000 ^{1,3}	1583.0 (1504.9–1665.1)	1203.3 (1136.3–1274.2)	1392.6 (1340.5–1446.8)	1306.1 (1287.2–1325.2)	586.1 (573.5–599.1)	928.5 (917.3–939.9)
All re-vascularisation (CABG ⁴ and angioplasty) heart disease procedures, 35+ years, 2006–08 rate per 100,000 ^{1,3}	261.4 (234.0–292.0)	125.9 (107.6–147.2)	189.9 (173.4–207.9)	278.4 (269.7–287.3)	81.4 (76.6–86.4)	176.5 (171.6–181.5)

Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 3 Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 4 Coronary artery bypass graft.

Source: Ministry of Health

Table 16 shows that, among Māori, the ischaemic heart disease mortality rate was two-and-a-half times the non-Māori rate (RR 2.51, CI 2.37–2.65), and Māori were one-and-a-half times more likely to be hospitalised for ischaemic heart disease than non-Māori (RR 1.50, CI 1.45–1.55). The disparity was greater for Māori females, who had twice the hospitalisation rate of non-Māori females (RR 2.05, CI 1.95–2.16).

Despite this, there was no significant difference between the rates of re-vascularisation procedures for Māori and non-Māori (RR 1.08, CI 0.98–1.18). Thus it appears that relative to need (assessed by mortality and hospitalisation for ischaemic heart disease), there is a difference in access to interventions for ischaemic heart disease for Māori compared with non-Māori.

Although the risk of ischaemic heart disease and cardiovascular disease was higher among males, relative differences were greater between Māori and non-Māori females than between Māori and non-Māori males.

Cancer

Table 17: Cancer indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
All cancer registrations, 25+ years, 2004–06, rate per 100,000 ^{1,2} .	709.0 (678.1–741.0)	700.3 (672.9–728.5)	702.4 (681.9–723.3)	624.4 (616.9–632.0)	490.3 (484.0–496.6)	551.2 (546.4–556.0)
All cancer mortality, 25+ years, 2004–06, rate per 100,000 ^{1,2} .	253.1 (238.2–268.8)	243.8 (230.1–258.0)	247.1 (237.0–257.5)	144.0 (141.4–146.7)	118.3 (116.0–120.6)	129.6 (127.9–131.3)

Notes:

1 Age standardised to 2001 Census total Māori population.

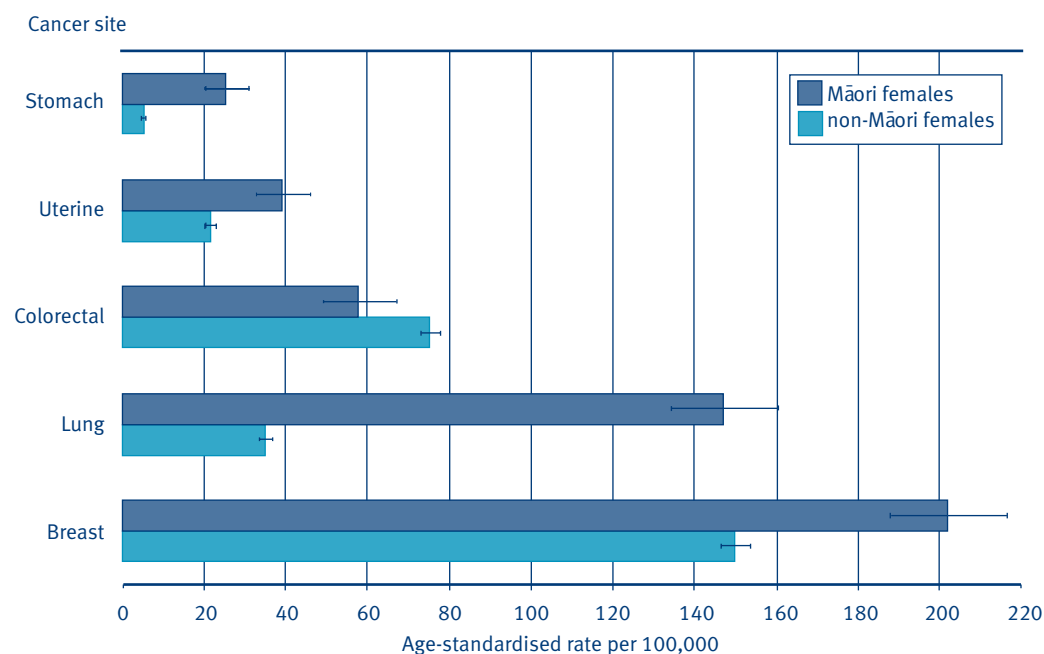
2 Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Source: Ministry of Health

Māori adults had significantly higher cancer registration rates than non-Māori adults for all cancers (RR 1.27, CI 1.22–1.33). Moreover, Māori adult all-cancer mortality rates were almost twice those of non-Māori (RR 1.91, CI 1.82–1.99).

The most common cancers registered for Māori females were breast, lung, colorectal, uterine and stomach⁶ (Figure 10a). The leading causes of cancer death for Māori females were lung, breast, colorectal, stomach and cervical (Figure 10b).

Figure 10a: Female cancer registration rates (2004–2006), by site, 25+ years



Notes:

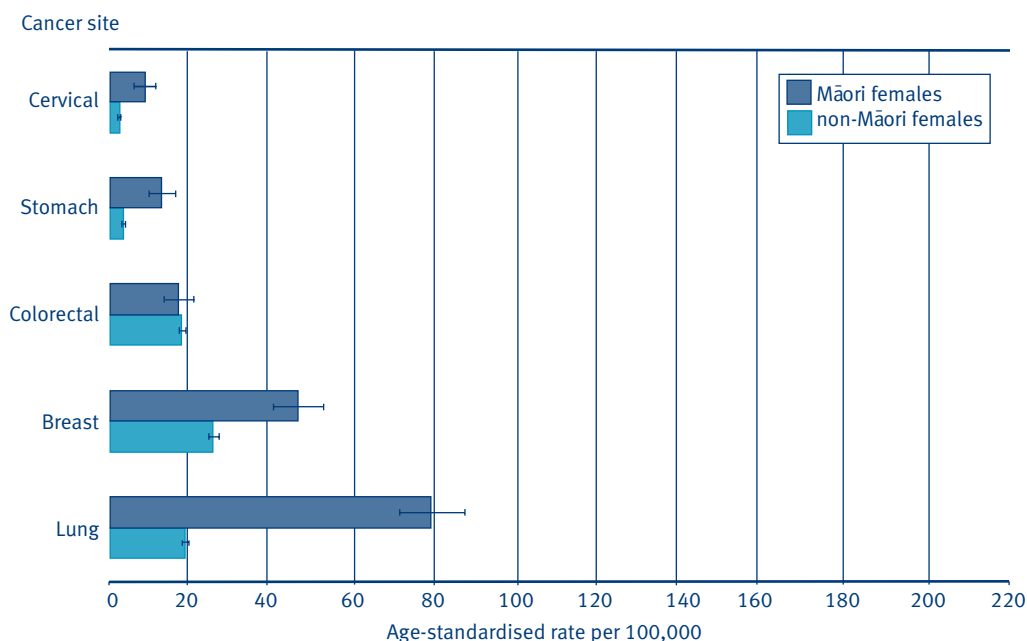
1 Age standardised to 2001 Census total Māori population.

2 Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Source: Ministry of Health

⁶ Note cervical cancer was the sixth most common cancer registered for Māori females.

Figure 10b: Female cancer mortality rates (2004–2006), by site, 25+ years



Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

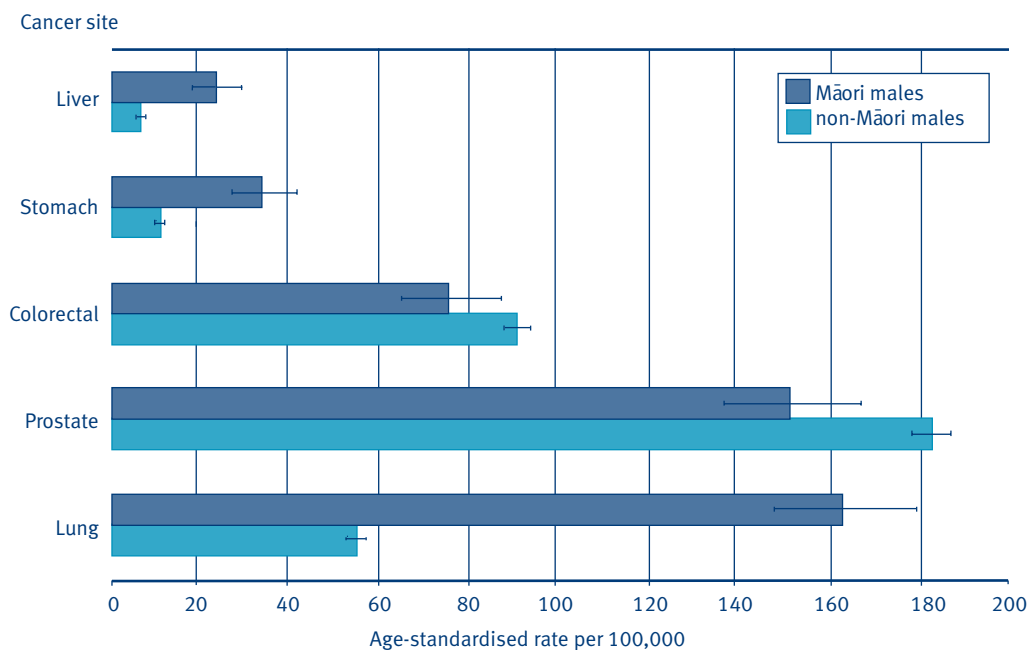
Figure 10a shows that Māori females had a breast cancer registration rate 1.3 times that of non-Māori females (RR 1.34, CI 1.22–1.48), but the breast cancer mortality rate (Figure 10b) was almost twice that of non-Māori females (RR 1.82, CI 1.57–2.10). For cervical cancer, Māori females had a registration rate twice that of non-Māori females (RR 2.02, CI 1.51–2.71), however, the mortality rate (Figure 10b) for Māori females was disproportionately higher at three-and-a-half times that of non-Māori females (RR 3.64, CI 2.49–5.32).⁷

Māori females had a lung cancer registration rate four times that of non-Māori females (RR 4.20, CI 3.66–4.81). The relative disparity between Māori and non-Māori females was similar for lung cancer mortality, with Māori female lung cancer mortality over four times that of non-Māori females (RR 4.29, CI 3.82–4.83).

Although Māori females had a significantly lower colorectal cancer registration rate than non-Māori females (RR 0.76, CI 0.62–0.94), colorectal cancer mortality rates were similar between the two groups (RR 0.94, CI 0.75–1.18).

⁷ There are screening programmes for both breast and cervical cancer in New Zealand. For both these programmes, Robson and Harris (2007) cite research that indicates that coverage rates are lower for Māori than for non-Māori (refer to Page and Taylor 2007 and NCSP IMG 2007).

Figure 11a: Male cancer registration rates (2004–2006), by site, 25+ years

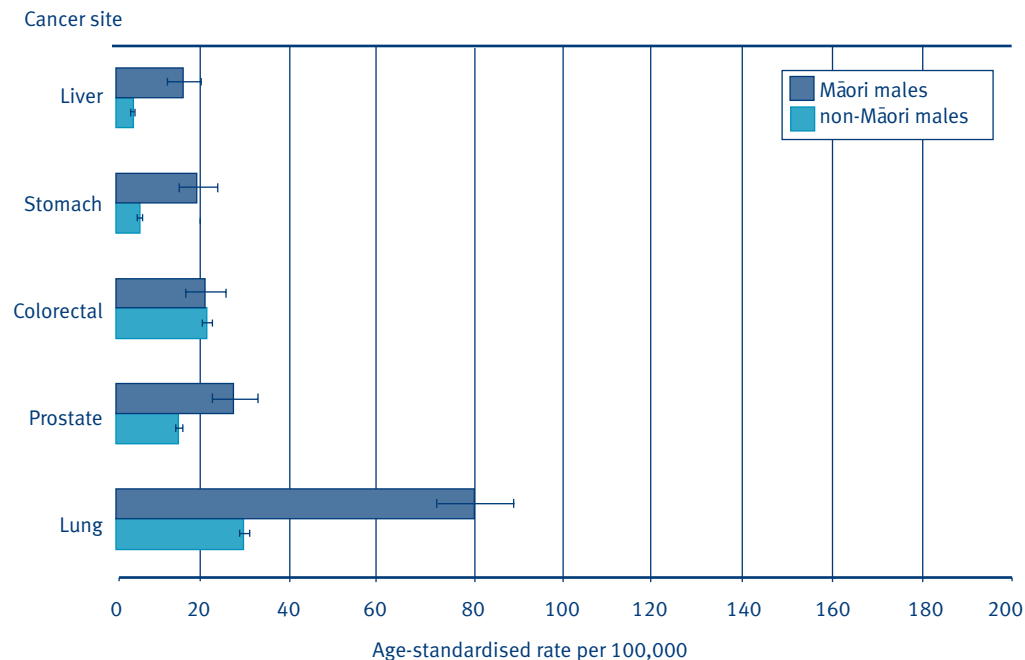


Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Source: Ministry of Health

Figure 11b: Male cancer mortality rates (2004–2006), by site, 25+ years



Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Source: Ministry of Health

The most common cancer registration sites and causes of cancer death for adult Māori males (in descending order of prevalence) were lung, prostate, colorectal, stomach and liver (Figures 11a and 11b).

Māori male lung cancer registration and mortality rates were almost three times those of non-Māori males (RR 2.92, CI 2.55–3.36 for registration; RR 2.76, CI 2.46–3.10 for mortality).

Both the registration rates and the mortality rates for colorectal cancer were similar for Māori and non-Māori males (RR 0.84, CI 0.69–1.01 for registration; RR 0.97, CI 0.78–1.21 for mortality).

For Māori males, the liver cancer registration rate was three times that of non-Māori males (RR 3.00, CI 2.21–4.07), and the liver cancer mortality rate was over three-and-a-half times that of non-Māori males (RR 3.66, CI 2.78–4.83).

Prostate cancer registration was significantly lower for Māori males than for non-Māori males (RR 0.83, CI 0.72–0.95). However, Māori males had a prostate cancer mortality rate almost twice that of non-Māori males (RR 1.83, CI 1.50–2.22).

The rate of stomach cancer registration was almost three times higher for Māori males than that for non-Māori males (RR 2.79, CI 2.10–3.71). Likewise, the rate of stomach cancer mortality in Māori males was over three times higher than that in non-Māori males (RR 3.27, CI 2.55–4.20).

For many cancers, the case-mortality rate for Māori is higher than for non-Māori. This suggests that Māori with cancer have a higher risk of dying from their cancer than non-Māori (for further information, see Robson and Harris 2007; Jeffreys et al 2005).

Respiratory disease

Table 18: Asthma indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Asthma hospitalisation, 5–34 years, 2006-08, rate per 100,000 ^{1,3,*}	216.3 (200.2–233.7)	269.6 (252.6–287.7)	245.1 (233.2–257.6)	122.2 (114.6–130.5)	129.7 (121.9–138.0)	126.4 (120.8–132.2)
Diagnosed asthma, 15–45 years, (self-reported) 2006/07, percent ^{1,2,**}	24.4 (20.4–28.5)	29.6 (26.4–32.9)	27.2 (24.7–29.7)	18.4 (16.3–20.5)	20.8 (18.9–22.8)	19.7 (18.3–21.0)

Notes:

1. Age standardised to 2001 Census total Māori population.
2. Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
3. Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Sources:

* Ministry of Health

** 2006/07 New Zealand Health Survey

Table 18 shows that, among people aged 5–34 years, Māori were twice as likely to be hospitalised for asthma as non-Māori (RR 1.94, CI 1.84–2.04). Māori aged 15–45 years reported an asthma prevalence rate almost one-and-a-half times that of non-Māori in the same age group (RR 1.38, CI 1.22–1.55).

Table 19: Chronic obstructive pulmonary disease (COPD) indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
COPD hospitalisation, 45+ years, 2006–08, rate per 100,000 ^{1,3}	1800.7 (1683.6–1925.9)	2217.6 (2095.9–2346.4)	2021.7 (1936.3–2110.9)	549.8 (532.1–568.1)	439.3 (422.6–456.7)	484.1 (471.9–496.5)
COPD mortality, 45+ years, 2004–06, rate per 100,000 ^{1,2}	126.3 (109.3–145.2)	134.0 (118.0–151.5)	129.6 (117.9–142.2)	55.9 (53.6–58.2)	39.2 (37.5–41.0)	46.0 (44.7–47.4)

Notes:

1. Age standardised to 2001 Census total Māori population.
2. Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
3. Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

Māori aged 45 years and over had a COPD hospitalisation rate over four times that of non-Māori in the same age group (RR 4.18, CI 4.01–4.35). The relative disparity was greatest for females: Māori females had a COPD hospitalisation rate five times that of non-Māori females (RR 5.05, CI 4.79–5.32).

COPD mortality rates were almost three times higher for Māori aged 45 years and over than for non-Māori in the same age group (RR 2.82, CI 2.55–3.11). Again, the disparity was greatest for females.

Diabetes

Table 20: Diabetes indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Diagnosed diabetes prevalence (self-reported), 15+ years, 2006/07, percent ^{1, 2, 4, **}	6.2 (4.9–7.5)	4.4 (3.5–5.4)	5.2 (4.4–6.1)	5.6 (4.9–6.2)	4.3 (3.8–4.9)	4.9 (4.5–5.4)
Diabetes complications – renal failure with concurrent diabetes, 15+ years, 2006-08, rate per 100,000 ^{1,3, *}	139.5 (124.0–156.9)	86.7 (74.9–100.3)	111.0 (101.3–121.6)	14.0 (12.0–16.3)	11.5 (9.8–13.5)	12.6 (11.3–14.1)
Diabetes complications – lower limb amputation with concurrent diabetes, 15+ years, 2006-08, rate per 100,000 ^{1,3, *}	52.2 (43.3–63.1)	28.3 (22.4–35.6)	39.4 (34.1–45.6)	12.2 (10.7–13.9)	5.0 (4.1–6.2)	8.4 (7.5–9.4)

Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 3 Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 4 Includes Type 1 and Type 2 diabetes.

Sources:

- * Ministry of Health
- ** 2006/07 New Zealand Health Survey

The self-reported prevalence of diabetes was similar for Māori and non-Māori populations (RR 1.06, CI 0.85–1.27).⁸ However, Table 20 shows that there are very high disparities between Māori and non-Māori for diabetes complications (renal failure and lower limb amputations).

Population rates of renal failure with concurrent diabetes (aged 15+) were over eight-and-a-half times higher in Māori compared with non-Māori (RR 8.78, CI 7.88–9.79). Because the self-reported prevalence of diabetes is similar for Māori and non-Māori, the significantly higher rate of renal failure with concurrent diabetes would suggest that, among people with diabetes, Māori may be up to 8.8 times more likely than non-Māori to go on to develop renal failure (one of the complications of diabetes).

Similarly, population rates of lower limb amputation with concurrent diabetes were over four-and-a-half times higher for Māori compared with non-Māori (RR 4.70, CI 4.01–5.52). Therefore, among people with diabetes, lower limb amputations for Māori can be estimated as being up to 4.7 times more likely than for non-Māori.

⁸ Note that self-reported diabetes underestimates the true prevalence because some people living with type 2 diabetes have not yet been diagnosed.

Table 21: Get Checked programme indicator

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Had Diabetes Get Checked (self-reported) in past 12 months, 2006/07, percent ^{1, 2}	69.3 (58.0–80.6)	73.4 (63.0–83.8)	71.2 (63.6–78.8)	67.8 (61.2–74.4)	67.5 (60.8–74.3)	67.7 (62.8–72.5)

Notes:

1 Age standardised to 2001 Census total Māori population.

2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

The Get Checked programme has been in place since June 2000 with the aim of improving the health of people with diabetes by encouraging regular free checks of the person’s physical health, lifestyle and management of the disease.

The 2006/07 New Zealand Health Survey showed that among Māori and non-Māori with diabetes, the self-reported prevalence of having accessed the Get Checked programme was similar (RR 1.05, CI 0.93–1.18).

Infectious disease

Table 22: Meningococcal disease notification rates, by age group

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Meningococcal disease notifications, all age groups, 2006–08, rate per 100,000 ¹	9.0 (7.1–11.3)	5.5 (4.0–7.4)	7.3 (6.0–8.7)	4.0 (3.3–4.7)	3.2 (2.7–3.8)	3.6 (3.2–4.0)
Meningococcal disease notifications, 0–4 years, 2006–08, rate per 100,000 ²	45.1 (33.0–60.1)	35.2 (24.3–49.1)	40.3 (31.9–50.1)	15.2 (11.2–20.1)	9.9 (6.7–14.1)	12.6 (10.0–15.7)
Meningococcal disease notifications, 5–19 years, 2006–08, rate per 100,000 ²	7.0 (4.4–10.7)	2.4 (1.0–5.0)	4.8 (3.2–6.9)	4.0 (2.9–5.4)	3.7 (2.6–5.0)	3.8 (3.0–4.8)

Notes:

1. Age standardised to 2001 Census total Māori population.
2. Crude age-specific rate.

Source: Environmental Science and Research Ltd

Overall, meningococcal disease notifications were twice as high for Māori compared with non-Māori (RR 2.03, CI 1.62–2.54). Table 22 shows that meningococcal disease notifications for infants and toddlers aged 0–4 years were over three times as high for Māori compared with non-Māori (RR 3.20, CI 2.35–4.36). Notifications in the 5–19 years age group were similar for Māori and non-Māori (RR 1.25, CI 0.81–1.92).

Table 23: Other infectious disease indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Tuberculosis notifications, 2006–08, rate per 100,000 ¹	10.3 (8.3–12.7)	6.8 (5.2–8.6)	8.5 (7.2–9.9)	6.3 (5.7–7.0)	7.0 (6.3–7.7)	6.7 (6.2–7.1)
Rheumatic fever notifications, 2006–2008, rate per 100,000 ¹	13.2 (10.9–15.9)	10.6 (8.5–13.0)	11.9 (10.3–13.7)	2.3 (1.8–2.8)	2.0 (1.5–2.5)	2.1 (1.8–2.5)

Note:

1. Age standardised to 2001 Census total Māori population.

Source: Environmental Science and Research Ltd

Table 23 shows that tuberculosis notifications were over one-and-a-half times higher for Māori males than non-Māori males (RR 1.63, CI 1.28–2.07). There was no significant difference between Māori and non-Māori females.

Rheumatic fever notifications were over five-and-a-half times higher for Māori than for non-Māori (RR 5.61, CI 4.51–6.99). As noted previously, hospitalisations and mortality for rheumatic heart disease were also higher for Māori than for non-Māori (see ‘Cardiovascular Disease’ section).

Childhood immunisation coverage information from the National Immunisation Register (NIR) shows that at the age of 2 years, 73.2 percent of Māori children had completed age-appropriate immunisations compared to 82.5 percent of non-Māori children.⁹

Another source of information is the 2005 National Childhood Immunisation Survey, which examined immunisation coverage of the primary series of vaccinations up to the age of 2 years (see <http://www.moh.govt.nz/moh.nsf/indexmh/national-childhood-immunisation-survey-2005>).

⁹ Further data are available from the National Immunisation Register (NIR) see www.moh.govt.nz/moh.nsf/indexmh/immunisation-coverage-data#spreadsheets

Suicide and intentional self-harm

Table 24: Intentional self-harm indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Intentional self-harm hospitalisation, all age groups, 2006–08, rate per 100,000 ^{1,2}	117.2 (108.9–126.1)	187.8 (177.7–198.5)	153.5 (146.9–160.4)	81.2 (78.0–84.5)	172.5 (167.9–177.3)	127.2 (124.3–130.0)
Intentional self-harm hospitalisation, 15–24 years, 2006–08, rate per 100,000 ^{1,2}	239.1 (212.8–268.7)	420.7 (384.5–460.4)	331.4 (308.6–355.9)	152.3 (140.9–164.6)	409.4 (391.0–428.8)	279.1 (268.2–290.4)
Intentional self-harm hospitalisation, 25–44 years, 2006–08, rate per 100,000 ^{1,2}	209.4 (189.5–231.5)	287.7 (265.7–311.6)	251.8 (236.6–268.0)	138.6 (130.9–146.8)	236.0 (226.6–245.8)	189.4 (183.3–195.8)
Intentional self-harm hospitalisation, 45–64 years, 2006–08, rate per 100,000 ^{1,2}	68.8 (55.4–85.5)	119.0 (101.7–139.2)	95.3 (83.9–108.2)	72.2 (67.2–77.6)	146.3 (139.2–153.8)	110.2 (105.8–114.8)

Notes:
 1 Age standardised to 2001 Census total Māori population.
 2 Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

Overall, Māori were significantly more likely than non-Māori to be hospitalised for intentional self-harm (RR 1.21, CI 1.16–1.26). Table 24 shows that the disparity is greatest in males, with Māori males being almost one-and-a-half times more likely to be hospitalised for intentional self-harm than non-Māori males (RR 1.44, CI 1.34–1.56). Table 24 also shows that overall women are more likely to be hospitalised for intentional self-harm than men.

In both the 15–24 years and 25–44 years age groups, Māori males had significantly higher rates of hospitalisation for intentional self-harm than non-Māori males. For both populations, young people in the 15–24 years age group had the highest rate of hospitalisation for intentional self-harm.

Table 25: Suicide indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Suicide mortality, all age groups, 2004–06, rate per 100,000 ^{1, 2}	29.1 (25.5–33.1)	9.6 (7.7–11.9)	18.8 (16.8–20.9)	14.9 (13.9–15.8)	4.4 (3.9–4.9)	9.5 (9.0–10.0)
Suicide mortality, 15–24 years, 2004–06, rate per 100,000 ^{1, 2}	58.6 (46.8–72.3)	19.9 (13.5–28.2)	38.6 (31.9–46.3)	24.8 (21.2–28.7)	6.8 (5.0–9.0)	15.9 (13.8–18.1)
Suicide mortality, 25–44 years, 2004–06, rate per 100,000 ^{1, 2}	55.7 (46.2–66.5)	16.4 (11.8–22.2)	34.5 (29.4–40.3)	24.6 (22.1–27.4)	7.4 (6.1–8.9)	15.7 (14.3–17.2)
Suicide mortality, 45–64 years, 2004–06, rate per 100,000 ^{1, 2}	17.3 (10.9–26.2)	4.2 (1.5–9.1)	10.4 (6.9–15.1)	21.5 (19.1–24.2)	6.2 (5.0–7.7)	13.8 (12.4–15.2)

Notes:

1 Age standardised to 2001 Census total Māori population.

2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

Māori had suicide mortality rates twice that of non-Māori (RR 1.98, CI 1.74–2.24), and males overall had significantly higher suicide mortality rates than their female counterparts. For both Māori and non-Māori, people aged 15–44 years had the highest suicide rate.

Mental health

Table 26: Mental health indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
High or very high probability of anxiety or depressive disorder ¹ , 15+ years, 2006/07, rate per 100,000 ^{2, 3}	9.1 (7.2–11.0)	13.0 (11.1–14.9)	11.2 (9.8–12.6)	5.3 (4.5–6.1)	6.7 (5.9–7.5)	6.0 (5.4–6.6)
Notes:						
1 A Keesler-10 (K10) score of 12 or more.						
2 Age standardised to 2001 Census total Māori population.						
3 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.						

Source: 2006/07 New Zealand Health Survey

Table 26 shows that Māori adults were nearly twice as likely as non-Māori adults to report they had a high or very high probability of anxiety or depressive disorder (RR 1.86, CI 1.59–2.13).

Te Rau Hinengaro: The New Zealand Mental Health Survey (Oakley Browne et al 2006) provides the most up-to-date information on the prevalence of mental disorders and their patterns of onset and impact for the total New Zealand population and Māori and Pacific populations.

Although the differences are not statistically significant, this survey found the 12-month prevalence rate of any mental disorder for Māori males is 24.9 percent compared with 19.5 percent for non-Māori males and 33.2 percent for Māori females compared with 26.3 percent for non-Māori females.

For further information and a detailed analysis of Māori mental health, refer to *Māori Mental Health Needs Profile: A review of the evidence* (Baxter 2008).

Interpersonal violence

Table 27: Interpersonal violence indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Assault and homicide mortality, 2004–06, rate per 100,000 ^{1, 2}	5.5 (4.0–7.4)	3.1 (2.1–4.6)	4.3 (3.3–5.4)	1.2 (1.0–1.6)	0.8 (0.6–1.1)	1.0 (0.8–1.2)
Assault and attempted homicide hospitalisations, 2006-08, rate per 100,000 ^{1, 3}	309.4 (295.2–324.2)	137.5 (129.2–146.4)	218.8 (210.8–227.2)	102.2 (97.6–107.0)	20.7 (18.1–23.6)	61.0 (58.4–63.8)

Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 3 Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

Māori adults were more likely than non-Māori adults to suffer adverse health effects as the victims of violence. Mortality rates from assault and homicide were more than four times higher for Māori than for non-Māori (RR 4.19, CI 3.07–5.73).

Māori hospitalisation rates as the result of assault or attempted homicide were also higher than those for non-Māori. The disparity was largest for females: Māori females had an assault and attempted homicide hospitalisation rate over six-and-a-half times higher than that of non-Māori females (RR 6.65, CI 6.09–7.28).

Youth’07 (Clark et al 2009) presents the most recent data on the health and wellbeing of young people in New Zealand and includes indicators that look at violence. Survey information and a copy of the report, including specific results for Māori young people, can be found at: <http://www.youth2000.ac.nz/publications/reports-1142.htm>

Oral health

Table 28: Dental visit indicator

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Been to dentist in previous year (self-reported), 15+ years, 2006/07, percent ^{1,2}	32.4 (28.8–35.9)	42.5 (39.6–45.3)	37.7 (35.3–40.2)	49.0 (46.9–51.0)	56.2 (54.4–58.0)	52.7 (51.2–54.2)

Notes:

1 Age standardised to 2001 Census total Māori population.

2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

Māori adults were less likely than non-Māori adults to have visited a dentist in the previous year (RR 0.72, CI 0.67–0.77).

Table 29: Dental treatment indicators

Indicator	Māori		non-Māori	
	Fluoridated supply	Non-fluoridated supply	Fluoridated supply	Non-fluoridated supply
Mean number of missing or filled teeth at 5 years of age, 2008 ¹	2.9	4.2	1.5	1.6
Caries-free at 5 years of age, 2008, percent ¹	40.0	32.0	63.7	62.2
Mean number of missing or filled teeth at school Year 8, 2008 ¹	1.7	2.7	1.0	1.4
Caries-free at school Year 8, 2008, percent ¹	44.2	30.8	59.0	49.1

Note:

1 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: School Dental Services

At school entry (5 years of age), Māori children had a higher mean number of missing or filled teeth than non-Māori children and were less likely to be caries-free. This is the case for both fluoridated and non-fluoridated water supplies.

There was some reduction in disparity by school Year 8, although Māori children still had a higher mean number of missing and filled teeth than non-Māori and were less likely to be caries-free.

Infant health

Table 30: Infant health indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Low birthweight, 2005-07, rate per 1000 live births ^{1, 2, *}	68.5 (65.5–71.7)	75.2 (71.9–78.6)	71.8 (69.5–74.1)	56.7 (54.9–58.6)	65.3 (63.3–67.3)	60.9 (59.5–62.2)
Infant mortality rate, 2004-06, rate per 1000 live births ^{1, 3, *}	7.6 (6.6–8.7)	6.7 (5.7–7.8)	7.1 (6.4–7.9)	5.2 (4.6–5.7)	4.0 (3.6–4.6)	4.6 (4.2–5.0)
Sudden infant death syndrome (SIDS) mortality, 2004-06, rate per 1000 live births ^{1 *}	1.7 (1.3–2.3)	1.8 (1.3–2.4)	1.8 (1.4–2.2)	0.4 (0.3–0.6)	0.3 (0.2–0.5)	0.3 (0.2–0.5)
Breastfeeding (exclusive) at 3 months, 2006/07, percent ^{1, 4, **}	53.2 (47.2–59.2)	54.4 (47.2–61.6)	53.8 (48.9–58.6)	54.5 (48.4–60.6)	58.2 (52.3–64.2)	56.3 (51.9–60.8)
Breastfeeding (exclusive) at 6 months, 2006/07, percent ^{1, 4, **}	8.3 (5.4–12.2)	8.1 (4.5–13.1)	8.2 (5.3–11.1)	7.5 (4.4–10.6)	7.1 (4.3–9.8)	7.3 (5.3–9.2)

Notes:

- 1 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 2 Low birthweight is defined as less than 2500 grams.
- 3 ‘Infant mortality’ includes early neonatal deaths, late neonatal deaths, and post-neonatal deaths.
- 4 Exclusive breastfeeding means the infant has not been given any liquids or solids (other than prescription medicines) other than breast milk.

Sources:

- * Ministry of Health
- ** 2006/07 New Zealand Health Survey

The prevalence of low birthweight was slightly higher for Māori than non-Māori (RR 1.18, CI 1.13–1.23). Table 30 shows that the Māori infant mortality rate was one-and-a-half times that of non-Māori (RR 1.55, CI 1.36–1.77).

The sudden infant death syndrome (SIDS) mortality rate was five times higher in Māori infants than in non-Māori infants (RR 5.14, CI 3.58–7.39). This disparity was greatest for female infants, where the SIDS mortality rate was six times higher in Māori than in non-Māori (RR 6.13, CI 3.55–10.58).

Breastfeeding rates at 3 and 6 months of age were similar for Māori and non-Māori babies.

Unintentional injury

Table 31: Unintentional injury indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
All unintentional injury hospitalisation, 0–14 years, 2006–08, rate per 100,000 ^{1,3}	2011.4 (1903.6–2125.3)	1459.4 (1373.7–1550.5)	1743.6 (1673.7–1816.4)	1537.8 (1493.7–1583.1)	1056.0 (1019.9–1093.4)	1302.2 (1273.5–1331.6)
All unintentional injury hospitalisation, 2006–08, 15–64 years, rate per 100,000 ^{1,3}	2592.2 (2521.2–2665.1)	1071.4 (1036.8–1107.1)	1788.0 (1749.6–1827.2)	1582.2 (1561–1603.8)	643.5 (631.3–655.9)	1104.5 (1092.3–1116.9)
All unintentional injury hospitalisation, 65+ years, 2006–08, rate per 100,000 ^{1,3}	2264.5 (2052.3–2498.7)	2186.4 (1993.4–2398.1)	2244.1 (2098.1–2400.2)	1882.1 (1836.3–1929.0)	1864.6 (1824.0–1906.1)	1889.5 (1859.0–1920.5)
All unintentional injury mortality, 0–14 years, 2004–06, rate per 100,000 ^{1,2}	21.6 (16.8–27.4)	15.4 (11.3–20.5)	18.6 (15.3–22.3)	6.4 (4.9–8.1)	4.4 (3.2–5.9)	5.4 (4.4–6.5)
All unintentional injury mortality, 15–64 years, 2004–06, rate per 100,000 ^{1,2}	66.8 (59.8–74.4)	21.4 (17.7–25.6)	42.8 (38.9–47.0)	29.4 (27.5–31.3)	8.4 (7.5–9.4)	18.7 (17.7–19.7)
All unintentional injury mortality, 65+ years, 2004–06, rate per 100,000 ^{1,2}	131.8 (94.5–178.7)	57.2 (37.0–84.5)	90.3 (69.8–114.9)	63.7 (58.6–69.2)	38.8 (35.9–42.0)	50.1 (47.3–52.9)

Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 3 Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

Table 31 shows that Māori children (0–14 years of age) had an unintentional injury hospitalisation rate 30 percent higher than non-Māori children (RR 1.34, CI 1.31–1.37) and an unintentional injury mortality rate nearly three-and-a-half times that of non-Māori children (RR 3.44, CI 2.64–4.47).

Māori adults aged 15–64 years had an unintentional injury hospitalisation rate over one-and-a-half times that of non-Māori adults (RR 1.62, CI 1.59–1.65). The unintentional injury mortality rate for Māori in this age group was more than twice that for non-Māori in the same age group (RR 2.29, CI 2.05–2.56).

For older adults aged 65 years or over, Māori had higher unintentional injury hospitalisation rates than that of non-Māori (RR 1.19, CI 1.12–1.26). Moreover, Māori had an unintentional mortality rate over one-and-a-half times the non-Māori rate (RR 1.80, CI 1.40–2.32).

Table 32: Top three unintentional injury mortality categories, by age group, ranked by counts, 2000–2002

	Māori	non-Māori	
Males	0–14 years Suffocation/accidental threats to breathing Motor vehicle traffic Pedestrian injured in transport accident	0–14 years Motor vehicle traffic Suffocation/accidental threats to breathing Drowning and submersion	
	15–64 years Motor vehicle traffic All other transport Pedestrian injured in transport accident	15–64 years Motor vehicle traffic All other transport Falls	
	65+ years Falls Motor vehicle traffic Suffocation/accidental threats to breathing	65+ years Falls Motor vehicle traffic Pedestrian injured in transport accident	
	Females	0–14 years Suffocation/accidental threats to breathing Motor vehicle traffic Pedestrian injured in transport accident	0–14 years Suffocation/accidental threats to breathing Motor vehicle traffic Drowning and submersion
		15–64 years Motor vehicle traffic Poisoning Falls	15–64 years Motor vehicle traffic Poisoning Falls
		65+ years Falls Motor vehicle traffic Fire/hot object or substance = Machinery	65+ years Falls Motor vehicle traffic Accidental exposure to other factors = Fire/hot object or substance

Note: Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

Table 32 shows that the three most common causes of unintentional injury mortality differ by age group, gender and ethnicity. Motor vehicle traffic was a common cause of unintentional injury causing death for all groups. For older people (65 years and over), falls were the most common cause of death regardless of ethnicity and gender.

Ngā Ratonga Hauora Kua Mahia: Health Service Utilisation

This section presents indicators that look at the utilisation of health services with a focus on primary health care providers. Primary health care providers are a person’s first point of contact with the health system. The indicators presented here are based around usual health practitioners, general practitioners (GPs) and Māori health providers, and the section includes an indicator on prescriptions.

Usual health practitioners

Table 33: Primary health care utilisation indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Having a usual health practitioner (self-reported), 15+ years, percent ^{1, 2}	90.4 (88.2–92.6)	94.3 (93.0–95.6)	92.5 (91.3–93.7)	92.4 (91.5–93.2)	95.5 (94.8–96.2)	94.0 (93.4–94.5)
Among people with a usual health practitioner – practitioner is a GP (self-reported), 15+ years, percent ^{1, 2}	97.1 (95.9–98.2)	97.1 (95.9–98.4)	97.1 (96.2–97.9)	97.0 (96.2–97.8)	97.3 (96.6–98.0)	97.1 (96.6–97.7)

Notes:
 1 Age standardised to 2001 Census total Māori population.
 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

Māori adults were equally as likely as non-Māori adults to report having a usual health practitioner (RR 0.98, CI 0.97–1.00). Among those with a usual health practitioner, for both Māori and non-Māori, the most common type was a GP. Other types of health practitioner are not presented here because the numbers of people with other usual health practitioners were too small to produce reliable estimates.

General practitioners

Table 34: General practitioner indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Seen a GP in the last 12 months (self-reported), 15+ years, percent ^{1,2}	74.0 (70.8–77.1)	82.7 (80.6–84.9)	78.7 (76.6–80.7)	78.6 (77.1–80.0)	84.4 (83.2–85.6)	81.6 (80.6–82.6)
Unmet need for GP in last 12 months, for any reason (self-reported), 15+ years, percent ^{1,2}	9.3 (7.2–11.5)	15.3 (13.0–17.6)	12.5 (11.0–14.1)	4.8 (4.1–5.6)	6.3 (5.5–7.1)	5.6 (5.0–6.1)

Notes:

1 Age standardised to 2001 Census total Māori population.

2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

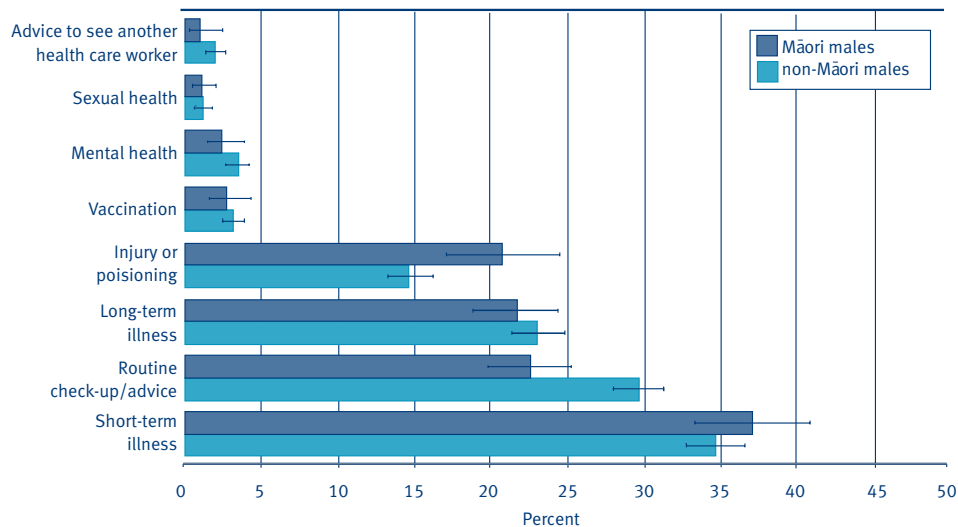
Source: 2006/07 New Zealand Health Survey

Māori males were slightly less likely to have seen a GP in the last 12 months than non-Māori males (RR 0.94, CI 0.90–0.99). Māori and non-Māori males were significantly less likely to have seen a GP than females of either population group.

Māori females were nearly two-and-a-half times more likely to report an unmet need for a GP in the last 12 months than non-Māori females (RR 2.45, CI 1.96–2.93).¹⁰

10 In the 2006/07 New Zealand Health Survey, participants were asked if there had been any time in the previous 12 months when they had needed to see a GP but could not – that is they had an unmet need for a GP (Ministry of Health 2008).

Figure 12: Top eight reasons for visiting GP in last 12 months, males, Māori and non-Māori, 15+ years

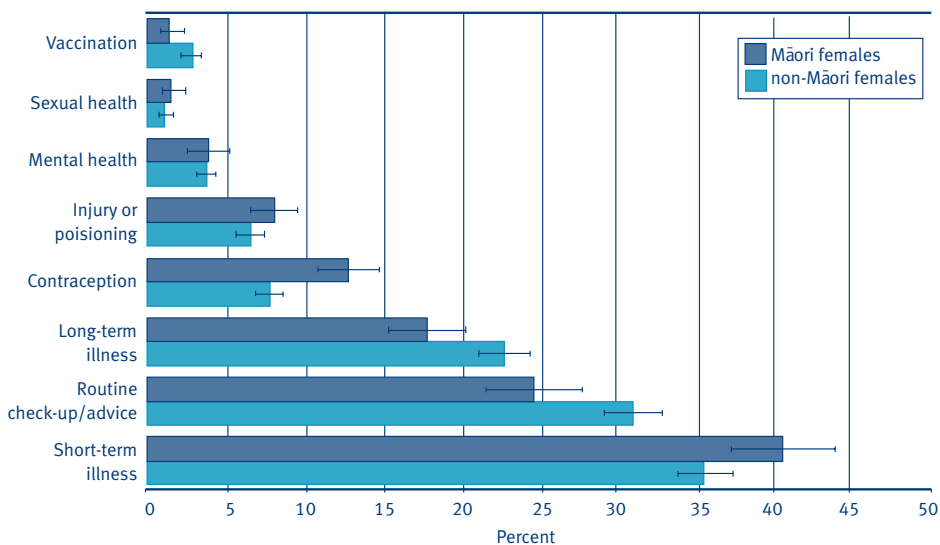


Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

Figure 13: Top eight reasons for visiting GP in last 12 months, females, Māori and non-Māori, 15+ years



Notes:

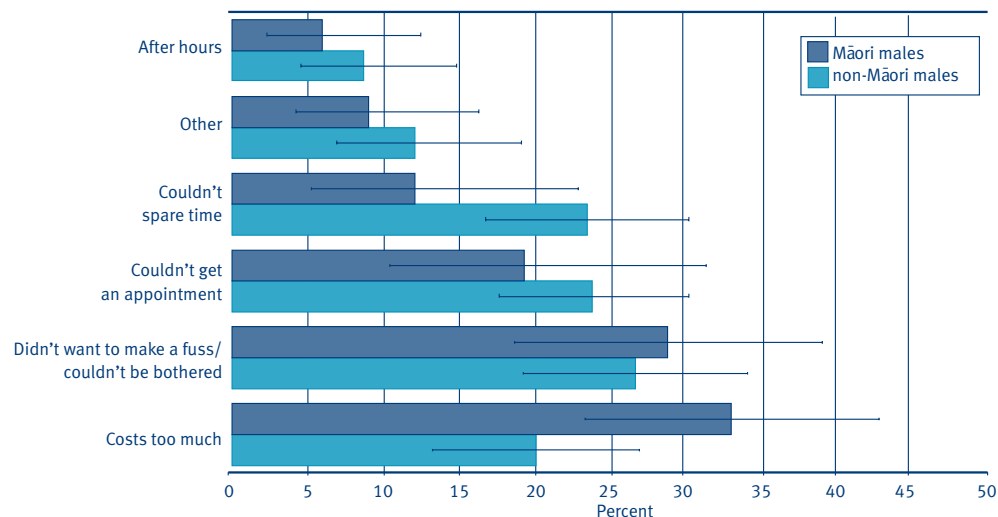
- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

For both Māori and non-Māori males and females, the most common reasons for visiting a GP were short-term illness, routine check-up and long-term illness (see Figures 12 and 13). However, Māori males and females were less likely to see a GP for a routine check-up than non-Māori males and females.

Māori males were significantly more likely to see a GP for injury or poisoning than non-Māori males (Figure 12). Māori females were more likely to see a GP for short-term illness and contraception, and they were less likely to see a GP for long-term illness than non-Māori females (Figure 13).

Figure 14: Top six reasons for not seeing a GP when needing to, males, Māori and non-Māori, 15+ years

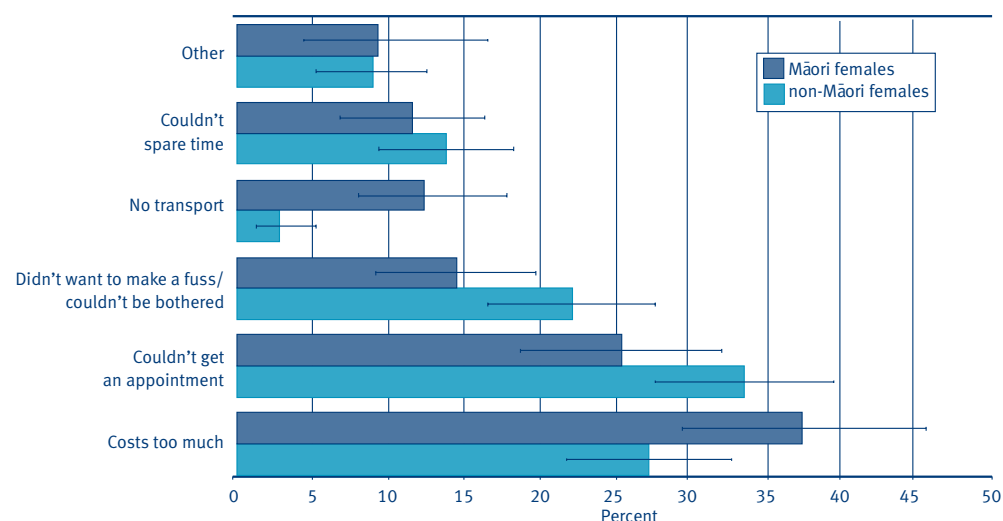


Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Source: 2006/07 New Zealand Health Survey

Figure 15: Top six reasons for not seeing a GP when needing to, females, Māori and non-Māori, 15+ years



Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Source: 2006/07 New Zealand Health Survey

Cost was the main reason given by Māori males and females for not visiting a GP when they needed to (Figures 14 and 15).

Lack of transport was significantly more likely to be a barrier to accessing GP care for Māori females than for non-Māori females (Figure 15).

Māori health providers

Table 35: Māori health provider indicators

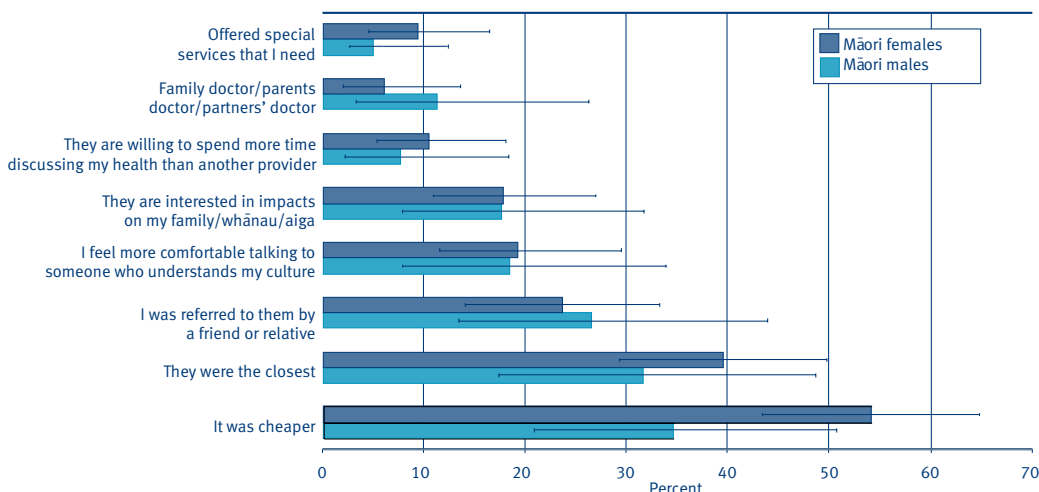
Indicator	Māori		
	Males	Females	Total
Usually goes to a Māori primary health care provider first when feeling unwell or injured, 15+ years, percent (self-reported) ^{1, 2}	6.4 (4.6–8.2)	7.8 (6.2–9.3)	7.1 (5.9–8.4)
Seen any Māori health care provider in past 12 months (among those who had a Māori primary health care provider), 15+ years, percent (self-reported) ^{1, 2}	79.7 (68.5–90.9)	85.1 (79.2–91.1)	82.9 (77.4–88.5)
Notes:			
1 Crude rate.			
2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.			

Source: 2006/07 New Zealand Health Survey

Seven percent of Māori adults reported usually going to a Māori health provider first when unwell or injured. Māori females were more likely than Māori males to have seen a Māori health provider; however, this difference was not significant. Among Māori who have a Māori health care provider, 83 percent had seen their provider within the past 12 months.

Among Māori males and females who had visited a Māori health care provider in the last 12 months, the most common reason for their visit was because it was cheaper (Figure 16). This was particularly evident for Māori females. The next most common reasons included: the provider was the closest, a friend of relative had referred them and feeling more comfortable talking to someone who understands their culture.

Figure 16: Top eight reasons for visiting a Māori health provider, for those Māori who had visited a Māori health care provider in the last 12 months, 15+ years



Notes:

- 1 Crude rate.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: 2006/07 New Zealand Health Survey

Prescriptions

Table 36: Prescription indicator

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Uncollected prescriptions in past 12 months (self-reported), 15+ years, percent ^{1, 2}	11.8 (8.9–14.7)	16.9 (14.3–19.5)	14.7 (12.8–16.7)	9.0 (7.7–10.3)	11.2 (10.0–12.3)	10.2 (9.3–11.1)
Notes:						
1 Age standardised to 2001 Census total Māori population.						
2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.						

Source: 2006/07 New Zealand Health Survey

Māori adults were almost one-and-a-half times more likely to have had uncollected prescriptions in the last 12 months than non-Māori adults (RR 1.45, CI 1.22–1.67). Both Māori and non-Māori females were more likely to have had uncollected prescriptions than their male counterparts.

Ngā Pūnaha Hauora Tūtohu: Health System Indicators

These indicators are measures of the performance of the health system. Avoidable mortality captures risks of dying from conditions (diseases and injuries) that are either preventable or treatable. Similarly, avoidable hospitalisations are either preventable or (in the case of ambulatory-sensitive hospitalisations) responsive to treatment in a primary health care setting. Note that the boundaries of the health system are set wide so as to include intersectoral advocacy and action as well as collective and personal health services. Much of ‘preventable’ mortality and morbidity involves actions beyond the health care system.

Avoidable mortality and hospitalisation

Avoidable mortality includes deaths occurring to those less than 75 years old that could potentially have been avoided through population-based interventions or through preventive and curative interventions at an individual level. Amenable mortality is a subset of avoidable mortality and is restricted to deaths from conditions that are amenable to health care (Ministry of Health 1999).

Avoidable hospitalisations are hospitalisations of people less than 75 years old that fall into three sub-categories:

- Preventable hospitalisations: hospitalisations resulting from diseases preventable through population-based health promotion strategies
- Ambulatory-sensitive hospitalisations: hospitalisations resulting from diseases sensitive to prophylactic or therapeutic interventions that are deliverable in a primary health care setting
- Injury-preventable hospitalisations: hospitalisations avoidable through injury prevention.

ICD code lists for these categories are described in Appendix 1.

Table 37: Health system indicators

Indicator	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
Avoidable mortality, 0–74 years, rate, 2004–06, rate per 100,000 ^{1,2}	213.7 (204.2–223.5)	143.0 (135.7–150.6)	176.7 (170.7–182.7)	84.4 (82.5–86.3)	52.6 (51.2–54.1)	68.1 (67.0–69.3)
Amenable mortality, 0–74 years, rate, 2004–06, rate per 100,000 ^{1,2}	73.2 (67.7–79.0)	63.3 (58.4–68.4)	68.2 (64.5–72.0)	32.1 (31.0–33.3)	29.4 (28.3–30.5)	30.8 (30.0–31.6)
Avoidable hospitalisation, 0–74 years, rate, 2006–08, rate per 100,000 ^{1,3}	6031.6 (5873.0–6194.4)	5867.8 (5721.8–6017.6)	5955.7 (5847.3–6066.1)	3643.8 (3596.8–3691.4)	3077.1 (3035.0–3119.8)	3357.6 (3325.9–3389.6)
Ambulatory-sensitive hospitalisation rate, 0–74 years, adjusted rate, 2006–08, rate per 100,000 ^{1,3}	4925.4 (4789.3–5065.4)	4853.6 (4729.4–4981.1)	4896.9 (4804.2–4991.3)	2914.8 (2873.9–2956.4)	2492.0 (2455.5–2529.0)	2701.5 (2673.9–2729.3)

Notes:

- 1 Age standardised to 2001 Census total Māori population.
- 2 Prioritised Māori ethnic group – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.
- 3 Ethnicity adjusted rate – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

Source: Ministry of Health

Avoidable mortality rates were over two-and-a-half times higher for Māori than for non-Māori (RR 2.59, CI 2.49–2.70). Amenable mortality rates were more than two times higher for Māori than for non-Māori (RR 2.22, CI 2.08–2.36).

Māori avoidable and ambulatory-sensitive hospitalisation rates were over one-and-a-half times higher than those for non-Māori (RR 1.77, CI 1.76–1.79 for avoidable hospitalisation; RR 1.81, CI 1.80–1.83 for ambulatory-sensitive hospitalisation).

The Ministry of Health will be releasing a report in 2010 about amenable mortality in New Zealand (1996–2006), which will include analyses comparing Māori with non-Māori.

Tāpiritanga: Appendices

Appendix 1: ICD-10 codes

Table A1.1: Avoidable mortality codes

Condition	ICD-10-AM
Tuberculosis*	A15–A19, B90
Selected invasive bacterial and protozoal infection*	A38–A41, A46, A48.1 B50–B54, G00, G03, J02.0, J13–J15, J18, L03
HIV/AIDS	B20–B24
Hepatitis	B15–B19
Viral pneumonia and influenza	J10, J12, J17.1, J21
Lip, oral cavity and pharynx cancers	C00–C14
Oesophagael cancer	C15
Stomach cancer	C16
Colorectal cancer*	C18–C21
Liver cancer	C22
Lung cancer	C33–C34
Melanoma of skin*	C43
Nonmelanotic skin*	C44
Breast cancer (female only)*	C50
Uterine cancer*	C54–C55
Cervical cancer*	C53
Bladder cancer*	C67
Thyroid cancer*	C73
Hodgkin’s disease*	C81
Leukaemia*	C91.0, C91.1
Benign tumours*	D10–D36
Thyroid disorders*	E00–E07
Diabetes*	E10–E14
Alcohol-related diseases	F10, I42.6, K29.2, K70
Illicit drug use disorders	F11–F16, F18–F19
Epilepsy*	G40–G41
Rheumatic and other valvular heart diseases*	I01–I09
Hypertensive heart disease*	I11
Ischaemic heart disease*	I20–I25
Cerebrovascular diseases*	I60–I69

Condition	ICD-10-AM
Aortic aneurysm	I71
Nephritis and nephrosis*	I12–I13, N00–N09, N17–N19
Obstructive uropathy and prostatic hyperplasia*	N13, N20–N21, N35, N40, N99.1
DVT with pulmonary embolism	I26, I80.2
COPD	J40–J44
Asthma*	J45–J46
Peptic ulcer disease*	K25–K28
Acute abdomen, appendicitis, intestinal obstruction, cholecystitis/lithiasis, pancreatitis, hernia*	K35–K38, K40–K46, K80–K83, K85–K86, K91.5
Chronic liver disease (excluding alcohol related disease)	K73, K74
Birth defects*	H31.1, P00, P04, Q00–Q99
Complications of perinatal period*	P03, P05–P95
Motor vehicle accidents	V01–V04, V06, V09–V80, V87, V89, V99
Accidental poisonings	X40–X49
Falls	W00–W19
Fires, burns	X00–X09
Drownings (swimming)	W65–W74
Suicide and self-inflicted injuries	X60–X84, Y87.0
Violence	X85–Y09, Y87.1

* These conditions are amenable to health care.

Table A1.2: Avoidable hospitalisation codes

Condition	ICD-10-AM
Tuberculosis*	A150–A158, A160–A165, A178–A188, B900–B902, A167, A168, A170, A171, A192, A198, A199, B908, B909, H750, K230, K930, N740, N741
HIV/AIDS*	B24
Skin cancers*	C000–C006, C430–C449, C008
Oral cancers*	C020–C024, C028–C031, C039–C041, C048–C052, C059–C062, C099–C103, C130–C132, C138–C140, C320–C323, C068, C069, C090, C091, C108, C109, C142, C148, C328, C329, C01, C12
Colorectal cancer*	C18–C20, C210, C211, C218
Lung cancer*	C340–C343, C348, C349, C33
Breast cancer (female only)*	C500–C506, C508–C509
Nutrition*	D508–D510, D529–D531, E500–E509, D500, D513, D538, D539, E440, E441, E511, E518, E530, E531, E538, E539, E550, E559, E561, E568, E569, E618, E638, E639, E643, E40, E41, E43, E45, E46, E52, E54, M8389
Alcohol-related conditions*	F100, F102, I426, K292, K700, K701, K703, K709, F104–F107
Ischaemic heart disease*	I210–I214, I241, I252
Gastroenteritis*	A009–A014, A020–A022, A028–A033, A038–A053, A058–A062, A064–A073, A078–A083, A000, A001, A085, K528, P929, A09, R11
Other infections*	A230–A233, A238, A239, A269, A280, A288, A289, A329, B508, B509, B519, B529, B530, B538, J020, P239, P351, P375, P378, P390, P391, P398, A38, A46, B54, P38
Immunisation preventable*	A360–A363, A368–A371, B058–B060, B260–B263, A378, A379, A803, A804, A809, B050, B052, B053, B068, B069, B268, B269, G000, G630, I410, K678, K770, P350, A33, A35, M0149
Hepatitis and liver cancer*	B159–B162, B169–B172, B180–B182, B150, B178, B190, B199, C220, C221, C229
Sexually-transmitted diseases*	A500–A507, A509–A515, A520–A522, A527–A530, A542–A546, A560–A564, I390–I393, K670–K672, N709–N711, O000–O002, A539, A540, A548, A568, A638, H190, H192, H220, H320, H480, H940, I320, I398, I520, I607, I790, I791, L998, N290, N302, N338, N510, N511, N518, N700, N701, N719, N730, N731, N733, N734, N738, N739, N743, N750, N751, N760, N764, N766, N768, N771, N778, O008, O009, R591, A55, A57, A58, A64, G01, N72, M0239, M6309, M9019
Cervical cancer*	C530, C531, C538, C539
Thyroid disease*	E038–E042, E049–E053, E031, E032, E058, E059, E890
Diabetes*	E1000, E1001, E1010, E1011, E1020, E1021, E1030, E1031, E1040, E1041, E1050, E1051, E1060, E1061, E1080, E1081, E1090, E1091, E1100, E1101, E1110, E1111, E1120, E1121, E1130, E1131, E1140, E1141, E1150, E1151, E1160, E1161, E1180, E1181, E1190, E1091, E15, E162
Dehydration*	E86, E870
Epilepsy*	G403–G405, G408–G412, G401, R560, R568
ENT infections*	H650–H654, H659–H664, H669, H678, H680, H681, H690, H708, H709, H950, H951, J018, J019, J029, J039, J312H698–H702, J010–J013
Rheumatic fever/heart disease*	I010–I012, I018–I020, I050–I052, I060–I062, I090–I092, I029, I058, I068, I079, I080, I098, I099, I00

Condition	ICD-10-AM
Hypertensive disease*	I129–I132, E876, I110, I119, I120, I139, I150, I151, I158, I674, I10
Angina	I200, I201, I208, I209, I240, R071–R074
Congestive heart failure*	J81, I500, I501, I509
Stroke*	I63–I64, I677–I679, I629, I672, I675, I676, I61
Respiratory infections*	J00–J06, J10–J18, J20, J22
CORD*	J40, J41, J42, J44, J47, J438
Asthma*	J448, J450, J451, J459, J46
Dental conditions*	K029–K056, K080–K083, K120–K122, K060, K089, K130, K132, K135, K137, A690, K0881, K0888
Peptic ulcer*	K250–K257, K259–K267, K269–K277, K279–K287, K289
Ruptured appendix*	K350, K351, K359
Obstructed hernia*	K4000, K4001, K4010, K4011, K4030, K4031, K4040, K4041, K410, K411, K413, K414, K420, K421, K430, K431, K440, K441, K450, K451, K460, K461
Kidney/urinary infection*	N118, N119, N151, N390, N10, N12
Cellulitis*	L010, L028, L029, L032, L033, L038, L039, L049, L050, L059, L080, L088, L089, L98, L020–L024, L0301, L0302, L0310, L0311
Failure to thrive*	R629, R633
Gangrene*	R02
Burns and scalds	X00–X09
Drownings	W65, W66, W69, W70, W73, W74
Falls from playground equipment	W09
Indeterminately caused injuries	Y10–Y34
Poisonings	X40–X49
Road traffic injuries	V10–V82
Sports injuries	Y930
Swimming pool accidents	W67–W68
Suicide	X60–X84

* These conditions are ambulatory sensitive.

Table A1.3: ICD-10 codes used in this report

Condition	ICD-10-AM
Asthma	J45–J46
Total cardiovascular disease	I00–I99
Ischaemic heart disease	I20–I25
Other forms of heart disease	I30–I52
Total stroke	I60–I69
Heart failure	I50
Chronic obstructive pulmonary disease (COPD)	J40–J44
Rheumatic heart disease	I05–I09
All revascularisation (CABG and angioplasty) heart disease procedures	3530400, 3850500, 9022100, 3530500, 3531000, 3531002, 3849700, 3849701, 3849702, 3849703, 3850000, 3850300, 3849704
Diabetes	E10–E14
Diabetes complications with renal failure	E102, E112, E122, E132, E142
Lower limb amputation with concurrent diabetes	E10–E14 together with 4433800, 4435800, 9055700, 4436100, 4436400, 4436401, 4436101, 4437000, 5023600, 4437300, 5023300, 4436700, 5023602, 4436701, 4436702
All cancers	C00–C97
Stomach cancer	C16
Colorectal cancer	C18–C21
Liver cancer	C22
Lung cancer	C33–C34
Prostate cancer	C61
Breast cancer (female only)	C50
Uterine cancer	C54–C55
Cervical cancer	C53
All injuries	V01–V99
Motor vehicle traffic	V20–V29
All other transport	V60–V99
Poisonings	X40–X49
Falls	W00–W19
Fires/hot objects or substances	X00–X19
Drownings and submersions	W65–W74
Suicide and self-harm	X60–X84
Assault and homicide	X85–Y09
Firearms	S20, T09
Machinery	W20–W64
Suffocation	W75–W84
Accidental exposure to other and unspecified factors	X58–X59
Unintentional injuries	V01–X59

Appendix 2: 2001 Census total Māori population

Table A2.1: 2001 Census total Māori population

Age group (Years)	2001 Census total Māori population	Weighting
0–4	67,404	12.81
5–9	66,186	12.58
10–14	62,838	11.94
15–19	49,587	9.42
20–24	42,153	8.01
25–29	40,218	7.64
30–34	39,231	7.46
35–39	38,412	7.30
40–44	32,832	6.24
45–49	25,101	4.77
50–54	19,335	3.67
55–59	13,740	2.61
60–64	11,424	2.17
65–69	8043	1.53
70–74	5046	0.96
75–79	2736	0.52
80–84	1251	0.24
85+	699	0.13

Appendix 3: Years of life lost

Using the ‘remaining life expectancy’ method, years of life lost (YLL) is defined as the gap between the age at death and the life expectancy remaining at that age (YLL_e). All YLL are valued equally, and life expectancy does not decline to zero at any age. However, to reflect society’s preference for present benefits, health losses that occur in the future have been discounted (3 percent discount rate) relative to those that occur in the past.

The model life table West level 26 (female), selected for monitoring YLL_e in New Zealand, provides a life expectancy at birth of 82.5 years. The same standard is used for all population groups, regardless of gender and ethnicity, in order to enhance comparability and because using different standard life tables on the basis of gender and ethnicity would imply different goals for different population groups and so would be incompatible with the values of most New Zealanders (Ministry of Health 1999).

Appendix 4: Ethnicity: Adjusters for the analysis of hospitalisation data

Background

This appendix describes the method used to create the adjusters used in the analysis of hospital discharge data.¹¹

High-quality ethnicity data are essential for monitoring health trends by ethnicity. Such data are also needed to provide Māori with quality information about Māori health and disparities for planning, development and evaluation of policies and interventions (Cormack and Harris 2009). However, official health data sets have still been shown to undercount Māori in cancer registrations and hospital admissions. There is a need to improve ethnicity data in health information systems – the Ministry has ethnicity data protocols for the health and disability sector that outline the procedures that are to be used for the standardised collection, recording and output of ethnicity data for the sector (see Ministry of Health 2004).

According to previous research findings from the New Zealand Census Mortality Study (NZCMS), the ethnicity records in the death registrations for the years 2001–2004 showed no net undercount of Māori deaths (Fawcett 2008). However, cancer registration data sets in the years 1981–2004 have been shown to undercount Māori cancer registrations (Harris et al 2007; Shaw et al 2009).

In 2009, the methodology used to assign ethnicity to cancer registrations changed. Ethnicity is assigned to cancer registrations by looking at the ethnicity recorded on each of the corresponding death registrations, hospitalisation records and national health indexes (NHIs). A cancer registration is automatically assigned the ethnicity(s) on death registrations and NHIs (unless the ethnicity is not stated or identified as ‘Other’). In addition, if a particular ethnicity is recorded on at least 20 percent of hospitalisation records, the ethnicity is assigned to the cancer registration. This means that when there are different ethnic groups on the different source datasets, multiple ethnicities are recorded on the cancer register. This chart book does not adjust for an undercount, so cancer registration rates for Māori could still be underestimated. Further information about the current methodology used to assign ethnicity to cancer registrations can be sourced from the Ministry of Health by emailing data-enquiries@moh.govt.nz.

The ‘ever Māori’ method of ethnicity classification was used in the previous edition of *Tatau Kahukura* to adjust for the undercount in death records, cancer registration and hospitalisation data.¹² However, concerns with potential over-counting using this method for more recent time periods has prompted the recommendation that new ethnicity adjusters be developed to address the continued undercount of Māori in hospital discharge data (Harris et al 2007).

Method

Death registration ethnicity was assumed to be a reliable count of Māori ethnicity data. Using encrypted NHIs, public hospital event records were linked to death registrations among those people who had both been admitted to hospital and died in the period 2003–2006. Death records were only available up to 2006 whereas hospitalisation data was available up to 2008. The time

11 This linkage method was developed in *Hauora: Māori Standards of Health IV* (Robson and Harris 2007), and we would like to acknowledge the authors’ contribution to this report.

12 For information on the ‘ever Māori’ method, please see Appendix 3 in the first edition of *Tatau Kahukura: Māori Health Chart Book* (Ministry of Health 2006).

period 2003–2006 was chosen because it was the closest period to the period of interest for hospitalisations (2006–2008), and it was wide enough to provide enough data to calculate reliable adjusters. The number of Māori hospitalisations using hospital event ethnicity was compared to the number of Māori hospitalisations using death registration ethnicity. Anyone recorded as Māori (either alone or in combination with another ethnic group or groups) was classified as Māori. Everyone else was classified as non-Māori.

Ratios of Māori hospitalisations (death ethnicity/hospital event ethnicity) by age are presented in Table A4.1 below. A ratio greater than 1 indicates more Māori hospitalisations using death ethnicity for that age group compared with Māori hospitalisations using hospital event ethnicity and therefore suggests an undercount of Māori in the hospitalisation data. Undercounting of Māori tends to be higher in younger and older age groups. However, the data in younger age groups may be less reliable due to the smaller numbers of deaths and therefore less linkages.

Age-specific smoothed hospital adjusters were created using local regression with the LOESS procedure in SAS (version 9.1, SAS Institute Inc, Cary NC). Smoothing the ratios accounts for the effect of low numbers in younger age groups and the potential unreliability. The smoothed ratios (adjusters) are all above 1 and increase with age.

Table A4.1: Final ethnicity adjusters (gender combined)

Age group (in years)	Māori recorded at 2003–2006 death registration	Māori recorded at 2003–2006 public filtered hospital admission	Ratio (death/hospital)	Smoothed ratio*	Linked hospital and mortality data 2000–2004 (from Hauora IV)**
0–4	955	864	1.105	1.027	1.144
5–9	95	128	0.742	1.032	1.084
10–14	272	230	1.183	1.037	1.309
15–19	428	429	0.998	1.041	1.192
20–24	423	376	1.125	1.045	1.132
25–29	350	308	1.136	1.049	1.167
30–34	649	581	1.117	1.053	1.059
35–39	935	919	1.017	1.058	0.999
40–44	1505	1499	1.004	1.064	1.009
45–49	2119	2009	1.055	1.069	1.084
50–54	2769	2605	1.063	1.073	1.068
55–59	3104	2951	1.052	1.078	1.048
60–64	4266	3992	1.069	1.086	1.046
65–69	4121	3939	1.046	1.094	1.040
70–74	3725	3498	1.065	1.102	1.125
75–79	2864	2552	1.122	1.110	1.137
80–84	1760	1578	1.115	1.120	1.153
85+	1161	951	1.221	1.129	1.161

Notes:
 * The ratios were smoothed using local regression with LOESS procedure in SAS.
 ** Robson and Harris 2007

Table A4.1 shows the public hospital adjusters developed for *Hauora IV* (Robson and Harris 2007) for comparison. The pattern and magnitude of the ratios for this edition of *Tatau Kahukura* are generally similar to that found in *Hauora IV* (Robson and Harris 2007).

The standard error on the smoothed adjusters was also calculated. This standard error was incorporated in to the 95 percent CIs for the hospitalisation rates and ratios.

Summary

For the purposes of this chart book, these hospital adjusters are likely to improve the counts for Māori hospitalisations, assuming that death registration data records ethnicity data accurately.

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