

Tatau Kura Tangata:

Health of Older Māori

Chart Book 2011

Manakotanga: Acknowledgements

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

The authors would like to acknowledge the numerous people who provided data and advice and the assistance of Edward Griffin (Health and Disability Intelligence) in creating the map.

The peer reviewers are also gratefully acknowledged: Pearl Carre, Cilla Corlett, Roy Costilla, Lynne Cousins, Rohan Currey, Yvonne Galloway, Ricci Harris, Matire Harwood, Vivienne Jenner, Raukura Maxwell, Chas McCarthy, Annette Paul, Mathew Powell, Martin Tobias, Scott Ussher, Teresa Wall and Jacob White.

The title of this publication, *Tatau Kura Tangata*, is derived from the saying ‘He kura te tangata’ meaning ‘the human being is precious’. Just like the people they represent, data are precious, because they are the building blocks of the high-quality statistical information presented in this publication. The term ‘Tatau’ emphasises that this is a statistical report linked to *Tatau Kahukura: Māori Health Chart Book 2010*.

Cover acknowledgement

Our thanks and acknowledgements to Erenora Puketapu-Hetet for permission to use on the cover her creation of a korowai taonga.

Citation: Ministry of Health. 2011. *Tatau Kura Tangata: Health of Older Māori Chart Book 2011*. Wellington: Ministry of Health.

Published in March 2011 by the Ministry of Health
PO Box 5013, Wellington 6145, New Zealand
ISBN 978-0-478-37436-0 (Print)
ISBN 978-0-478-37437-7 (Online)
HP 5299

This document is available on the Ministry of Health’s website:
<http://www.moh.govt.nz>



Ihirangi: Contents

Manakotanga: Acknowledgements	ii
Whakamōhiotanga: Introduction	1
The New Zealand health and disability system	1
Indicator selection and presentation	2
Information limitations.....	2
Useful information and resources.....	3
Ngā Tapuae me ngā Raraunga: Methods and Data Sources	5
Data.....	5
Statistical methods	6
How to interpret results: tables	9
How to interpret results: figures	10
Tatauranga Taupori: Demographics	11
Population	11
Population by DHB	14
Ngā Awe o te Hauora: Socioeconomic Determinants of Health	16
Neighbourhood deprivation	16
Socioeconomic indicators	18
Health literacy.....	19
Ngā Tauwehe Tūpono me te Marumaru: Risk and Protective Factors	20
Tobacco smoking	20
Alcohol and drug use	21
Nutrition	22
Body size	23
Physical activity	25
Ngā Mana Hauora Tūtohu: Health Status Indicators	26
Life expectancy	26
Disability	27
Major causes of death.....	28
Self-rated health	29
Cardiovascular disease	32
Cancer	36
Respiratory disease.....	43
Diabetes	45

Arthritis, spinal disorders and osteoporosis	47
Infectious disease.....	48
Suicide and intentional self-harm.....	49
Mental health	50
Dementia	51
Oral health.....	52
Unintentional injury	53
Ngā Ratonga Hauora Kua Mahia: Health Service Utilisation	54
Usual health practitioners.....	54
General practitioners.....	55
Māori health providers	56
Prescriptions.....	57
Ngā Pūnaha Hauora Tūtohu: Health System Indicators	58
Amenable mortality and ambulatory-sensitive hospitalisations	58
Tāpiritanga: Appendices	60
Appendix 1: ICD-10 codes	60
Appendix 2: 2001 Census total Māori population	63
Appendix 3: Ethnicity: Adjusters for the analysis of hospitalisation data.....	64

Rārangi tatau: List of figures

Figure 1: Age distribution of the Māori population, by gender.....	12
Figure 2: Age distribution of the non-Māori population, by gender.....	12
Figure 3: Proportion of the older DHB population that is Māori	15
Figure 4: Neighbourhood deprivation distribution (NZDep 2006), Māori and non-Māori aged 50+ years, 2006	17
Figure 5: The distribution of health literacy, Māori and non-Māori, aged 50–65 years, 2006.....	19
Figure 6: Life expectancy at age 50, Māori and non-Māori, by gender, 1951–2006.....	26
Figure 7: Mean SF-36 scores, Māori and non-Māori, males, 50–64 years, 2006/07	29
Figure 8: Mean SF-36 scores, Māori and non-Māori, males, 65+ years, 2006/07	30
Figure 9: Mean SF-36 scores, Māori and non-Māori, females, 50–64 years, 2006/07	30
Figure 10: Mean SF-36 scores, Māori and non-Māori, females, 65+ years, 2006/07	31
Figure 11: Female cancer registration rates, Māori and non-Māori aged 50–64 years, by site, 2005–07	37

Figure 12: Female cancer mortality rates, Māori and non-Māori aged 50–64 years, by site, 2005–07	37
Figure 13: Female cancer registration rates, Māori and non-Māori aged 65+ years, by site, 2005–07	38
Figure 14: Female cancer mortality rates, Māori and non-Māori aged 65+ years, by site, 2005–07	39
Figure 15: Male cancer registration rates, Māori and non-Māori aged 50–64 years, by site, 2005–07	40
Figure 16: Male cancer mortality rates, Māori and non-Māori aged 50–64 years, by site, 2005–07	40
Figure 17: Male cancer registration rates, Māori and non-Māori aged 65+ years, by site, 2005–07	41
Figure 18: Male cancer mortality rates, Māori and non-Māori aged 65+ years, by site, 2005–07	42

Rārangi Kauwhata toro: List of tables

Table 1: Data sources for numerators	5
Table 2: Census population, Māori and non-Māori, by age group and gender, 2006	11
Table 3: Population estimates, Māori and non-Māori, by age group and gender, 2010	13
Table 4: Projected populations, Māori and non-Māori aged 50+ years, by gender, 2011–2026 ...	13
Table 5: DHB age group populations, Māori and non-Māori, 2006	14
Table 6: Neighbourhood deprivation decile (NZDep 2006), Māori and non-Māori aged 50+ years, 2006	16
Table 7: Socioeconomic indicators for older people: percentage of each ethnic group, Māori and non-Māori, by gender, 2006	18
Table 8: Tobacco smoking indicators, Māori and non-Māori, aged 50–64 years, by gender, 2009	20
Table 9: Alcohol and drug use indicators, Māori and non-Māori aged 50–64 years, by gender, 2007/08	21
Table 10: Nutrition indicators, Māori and non-Māori, by gender, 2006/07	22
Table 11: International BMI cut-off points for adults aged 18 years and over	23
Table 12: Body size indicators, Māori and non-Māori, by gender, 2006/07	24
Table 13: Physical activity indicators, Māori and non-Māori, by gender, 2006/07	25
Table 14: Disability indicators: type of main disability, Māori and non-Māori, 2006	27
Table 15: Major causes of death, ranked by age-standardised mortality rates, Māori and non-Māori, by gender, 2005–2007	28

Table 16: Blood pressure and blood cholesterol indicators, Māori and non-Māori, by gender, 2006/07.....	32
Table 17: Cardiovascular disease indicators, Māori and non-Māori, by gender	33
Table 18: Ischaemic heart disease indicators, Māori and non-Māori, by gender.....	34
Table 19: Cancer indicators, Māori and non-Māori, by gender, 2005–2007	36
Table 20: Chronic obstructive pulmonary disease (COPD) indicators, Māori and non-Māori, by gender.....	43
Table 21: Pneumonia indicators, Māori and non-Māori, by gender	44
Table 22: Diabetes indicators, Māori and non-Māori, by gender	45
Table 23: Get Checked programme indicator, Māori and non-Māori, by gender, 2006/07	46
Table 24: Arthritis prevalence, Māori and non-Māori, by gender, 2006/07.....	47
Table 25: Spinal disorder prevalence, Māori and non-Māori, by gender, 2006/07	47
Table 26: Osteoporosis prevalence, Māori and non-Māori, by gender, 2006/07	47
Table 27: Infectious disease indicators, Māori and non-Māori, by gender, 2006–2008.....	48
Table 28: Intentional self-harm and suicide indicators, Māori and non-Māori, by gender	49
Table 29: Mental health indicators, Māori and non-Māori, by gender, 2006/07	50
Table 30: Dementia indicators, Māori and non-Māori, by gender, 2005–2007	51
Table 31: Dental visit indicator, Māori and non-Māori, by gender, 2006/07	52
Table 32: Unintentional injury indicators, Māori and non-Māori, by gender	53
Table 33: Top three unintentional injury mortality categories, ranked by age-standardised rates, Māori and non-Māori, aged 50+ years, by gender, 2005–2007	53
Table 34: Primary health care utilisation indicators, Māori and non-Māori, by gender, 2006/07.....	54
Table 35: General practitioner indicators, Māori and non-Māori, by gender, 2006/07.....	55
Table 36: Reason for last visit to GP, Māori and non-Māori, by gender, 2006/07	55
Table 37: Māori health provider indicators, Māori and non-Māori, by gender, 2006/07	56
Table 38: Prescription indicators, Māori and non-Māori, by gender, 2006/07	57
Table 39: Health system indicators, Māori and non-Māori, by gender	58
Table A1.1: Amenable mortality codes	60
Table A1.2: Ambulatory-sensitive hospitalisation codes.....	61
Table A1.3: ICD-10 codes used in this report	62
Table A2.1: 2001 Census Māori population	63
Table A3.1: Final ethnicity adjusters (gender combined).....	65

Whakamōhiotanga: Introduction

Tatau Kura Tangata: Health of Older Māori Chart Book 2011 presents a snapshot of the health of Māori aged 50 years and over in New Zealand, and provides key indicators for the socioeconomic determinants of health, the risk and protective factors for health, health status, health service utilisation, and the health and disability system.

Analytical reports about older people usually look at those aged 65 years and over, but because Māori continue to have a lower life expectancy than non-Māori and they are the focus of this analysis, this chart book looks at New Zealanders aged 50 years and over.

In the next 15 years the proportion of the Māori population aged 50 and over is projected to increase by 7.1 percent, compared to 3.3 percent for the non-Māori population. This increase will be particularly influenced by the growth of the Māori population aged 65 and over. As the demographic balance in New Zealand changes, the Government will be required to spend an increasing proportion of the health budget on older New Zealanders. It is therefore becoming increasingly important for the health sector to plan for an ageing population.

An increase in health service demand and Māori health service needs is expected, particularly given that Māori over the age of 50 have poorer health outcomes and a higher burden of chronic illness than non-Māori of the same age. However, conditions that influence health in early life, such as diet and access to medical care, have an impact on later life morbidity and mortality. This highlights the need to continue efforts to improve Māori health status and reduce inequalities.

Access to robust and accurate data is essential for any policy or planning process within the health and disability system. It is anticipated that the recent and easy-to-use statistical information provided in this publication, *Tatau Kura Tangata: Health of Older People Chart Book 2011*, will help to increase the understanding of the health of older Māori and inform future evidence-based policies and programmes.

This publication is a companion document to *Tatau Kahukura: Māori Health Chart Book 2010, 2nd Edition* (Ministry of Health 2010d), which presents a snapshot of Māori health in the mid to late 2000s. Both publications are available on the Ministry of Health website www.moh.govt.nz and the Māori Health website www.maorihealth.govt.nz

The New Zealand health and disability system

New Zealand's health and disability system is faced with the challenge of meeting the different health and disability needs associated with an increasingly older population over the next 10 to 20 years.

People in New Zealand are living longer and are generally healthier than in previous decades. However, Māori and non-Māori continue to experience different health outcomes (eg, in high-level indicators such as life expectancy). Māori aged 50 and over have higher rates across many health conditions and chronic diseases than non-Māori of the same age group. This includes rates of cancer, diabetes and cardiovascular disease. 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 all 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, but most of the day-to-day business is administered by District Health Boards (DHBs). DHBs plan, manage, provide and purchase services for the population in their district. This includes funding for primary care, public health services, aged care, and services provided by other non-government health providers. (For more detailed information about the 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. The community health services include 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 2009). However, in 2008/09 the 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 funding going to mainstream providers.¹

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 aims to present summary information through graphs and tables, with short explanations of the 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 indicator criteria relating to their ability to: signal wider health concerns, focus on salient health issues, be reliably and validly monitored, and be responsive to change. The indicators align with those already used in annual monitoring at a national level.

Information limitations

Data on areas such as residential care and dementia prevalence are important indicators for older people. Unfortunately, however, due to either the unavailability of data or the lack of reliable data, these indicators could not be included in this report. Their exclusion represents a significant gap in information about the health of older people that needs to be filled.

1. Source: Ministry of Health unpublished data, 2010

Useful information and resources

Ministry of Health web resources

The main Ministry of Health website is at: <http://www.moh.govt.nz>. Other more specialised websites relevant to this area include:

Health of Older People website: <http://www.moh.govt.nz/olderpeople>

Māori Health website: <http://www.maorihealth.govt.nz>

Māori health statistics, including tables of all the data presented in this report, can be found at: <http://www.maorihealth.govt.nz/moh.nsf/menuma/Statistics>

For general Ministry data and statistics, go to: <http://www.moh.govt.nz/dataandstatistics>. This web page is a central access point for New Zealand health data and statistics collected and produced by the Ministry and the wider health sector. Information provided includes:

- what, how and why data are collected
- how the data are analysed and used
- links to the results of data analysis and reports
- guidance on how to access and use the data.

The Ministry receives data from different parts of the health sector through information on the utilisation of health services or mandatory reporting via national collections, and 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). National collections and systems provide valuable health information to support decision-making in policy development and funding, and at the point of care. See: <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, the New Zealand Health Survey). At the web page below you can find information about these surveys, as well as the data and publications resulting from them. See: <http://www.moh.govt.nz/moh.nsf/indexmh/dataandstatistics-survey>

Ministry of Health publications

- Ministry of Health. 2010. *Shifting Māori Health Needs: Māori population trends, health service needs, and medical workforce requirements – Issues arising*. Wellington: Ministry of Health.
- Ministry of Health. 2010. *Tatau Kahukura: Māori Health Chart Book 2010, 2nd Edition*. Wellington: Ministry of Health.
- 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. 2008. *A Portrait of Health: Key results of the 2006/07 New Zealand Health Survey*. Wellington: Ministry of Health.
- Ministry of Health. 2007. *Older People's Health Chart Book 2006*. 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.Maorihealth.govt.nz/moh.nsf/menuma/Media+and+Publications>

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

Other resources

- Hauora: Māori Standards of Health, a website presenting information about the Hauora series on Māori health statistics: <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 relating to 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 (MORT) – mortality	2005–2007	National collection
	National Minimum Dataset (Hospital Events) (NMDS) – hospitalisations	2007–2009	National collection
	New Zealand Cancer Registry (NZCR) – cancer registrations	2005–2007	National collection
Statistics New Zealand	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
Alcohol and Drug Use Survey (ADUS)	Alcohol and drug use rates	2007/08	Survey
Tobacco Use Survey (TUS)	Smoking rates	2009	Survey
Te Rau Hinengaro: The Mental Health Survey	Mental Health	2006	Survey

Full details of ICD-10 codes used for the 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 used.

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. Although age standardisation is often not necessary when comparing age groups, due to the significantly different distribution of ages between Māori and non-Māori in these older age groups it was necessary to age standardise to preserve comparability.

Most of the indicators are presented as age-standardised rates and are expressed as a rate per 100 (percentage), or per 100,000. Direct age standardisation was used in this report, with most rates (unless noted otherwise) standardised to the 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 fewer than 5 in data from national collections, or where the population group being analysed (denominator) was less than 30 in data from surveys.

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 their comparability.

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

All indicators compare Māori with non-Māori. In general, prioritised ethnicity was used when people identified with more than one ethnic group. A person was classified as Māori if any one of their recorded ethnicities was Māori; all other people were recorded as non-Māori. For example, a person recorded as both Māori and NZ European was counted as Māori. 'Unknown' or missing ethnicity was counted as non-Māori.

For this chart book, 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, such that there is no net undercount of Māori deaths (Fawcett et al 2008).

Since 2009 the Ministry of Health has used an algorithm to assign ethnicity to cancer registrations by looking at the ethnicity recorded on each of the corresponding death registrations, hospitalisation records and National Health Index (NHI)². A cancer registration is automatically assigned the ethnicities on death registrations and the NHI (unless not stated or 'Other' on the

2 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 their hospital identity bracelet.

NHI). In addition, if a particular ethnicity is recorded on at least 20 percent of hospitalisation records, that ethnicity is assigned to the cancer registration. Up to three ethnicities are recorded on the cancer register. Further information about the current methodology used to assign ethnicity to cancer registrations can be obtained from the Ministry by emailing data-enquiries@moh.govt.nz.

Although the new ethnicity algorithm has increased the count of Māori registrations, research suggests there is still a substantial undercount of Māori cancer registrations (Robson et al 2010). The undercount of cancer registrations in the period 2002–2006 was assessed to be between 2 percent and 22 percent depending on age, where the undercount increased with increasing age (Robson et al 2010). This chart book has not adjusted for the undercount of Māori cancer registrations, so readers should note that the cancer registration rates presented here will underestimate the true burden of cancer on the older Māori population (see Robson et al 2010 for further information).

Hospitalisation statistics continue to undercount Māori (Harris et al 2007; Cormack and Harris 2009; Ministry of Health 2010d). Therefore, to improve the Māori hospitalisation estimates, the Māori adjusters calculated for *Tatau Kahukura: Māori Health Chart Book 2010, 2nd Edition* 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 into the 95 percent confidence intervals (CIs) for the hospitalisation rates and ratios (see Appendix 3 for further details).

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

Age groups

This chart book is focused on the health of older Māori people. ‘Older’ is usually defined as 65 years of age and above, but because Māori are at the centre of this analysis and continue to have a lower life expectancy than non-Māori, ‘older’ has been defined as 50 years and above (Ministry of Health 2007). Therefore, in this chart book, the terms ‘older Māori’ and ‘older non-Māori’ refer to Māori aged 50+ years and non-Māori aged 50+ years, respectively. For most indicators the health of Māori aged 50–64 and 65+ years is described and compared with non-Māori of the same ages. For some survey indicators only the 50–64 years age group is analysed because the sample population did not include older ages.

For all indicators, the relevant age group is given in the table or figure.

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 (see page 10), the rate of lung cancer for Māori females is significantly higher than that for non-Māori females, 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 was undertaken to confirm the finding.

Unless otherwise stated, all differences noted in the main text of this chart book are statistically significant. Due to space limitations not all statistically significant differences were able to be discussed in the text.

Readers should also note that even when there is no statistically significant difference between Māori and non-Māori in a sample, there still may be a difference in the population. This can occur when there are large sample errors created when the sample only has a small number of people of interest in it.

Rate ratios

Age-standardised ratios are used to compare the age-standardised rates for 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 main 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

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

The title indicates what the table is about.

The column headings provide information about the indicator, including gender, age group, and ethnicity.

This number gives the rate or prevalence for the indicator.

Table X: Cancer indicators, Māori and non-Māori, by age group and gender, 2005–07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
All cancer registrations, 2005–07, rate per 100,000	908.5 (843.6–977.1)	766.2 (748.9–783.7)	2604.7 (2441.6–2775.8)	2276.9 (2242.7–2311.4)	1145.2 (1075.8–1217.8)	681.7 (665.6–698.1)	1990.4 (1856.2–2131.6)	1366.1 (1342.5–1390.0)
All cancer mortality, 2005–07, rate per 100,000	507.5 (459.2–559.5)	225.2 (215.9–234.8)	1709.0 (1569.6–1857.4)	1112.3 (1089.1–1135.9)	512.5 (466.2–562.2)	202.9 (194.2–212.0)	1284.1 (1176.4–1399.0)	734.8 (718.3–751.6)

Notes:

Age standardised to 2001 Census total Māori population.

Prioritised ethnicity has been used- see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

Sources:

New Zealand Cancer Registry (NZCR), Ministry of Health

Mortality Collection (MORT), Ministry of Health

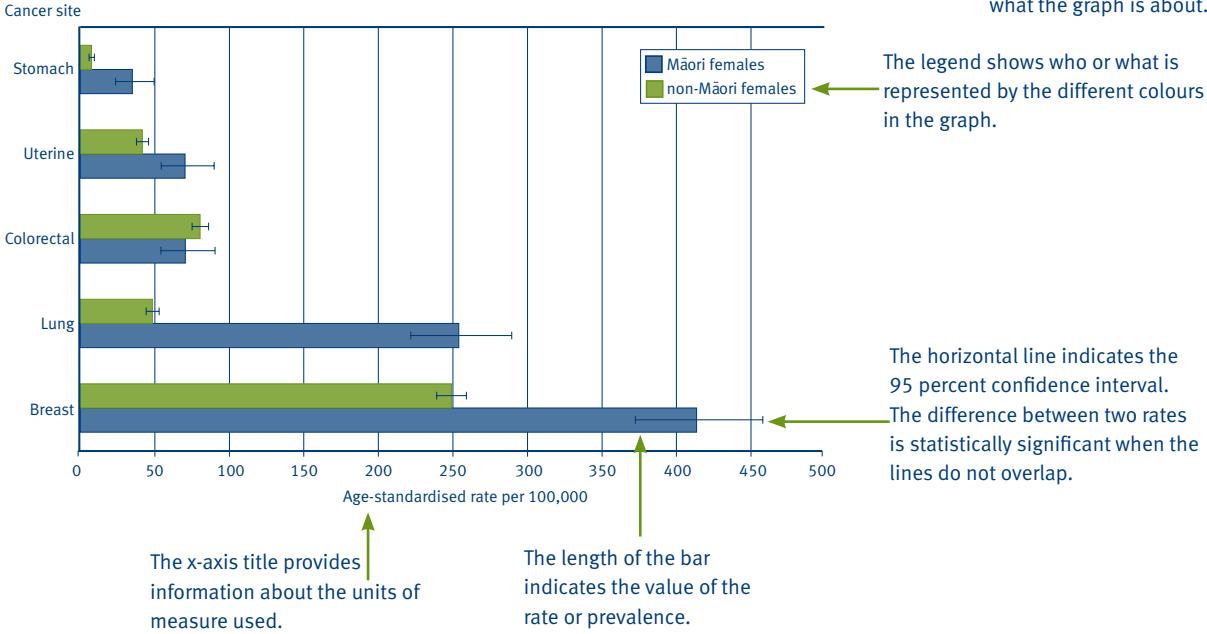
The source sits under the notes and acknowledges where the data for each indicator have been sourced from.

The notes provide extra information about the indicators.

The numbers in brackets show the 95 percent confidence interval, indicating the range of values that have a 95 percent probability of enclosing the true value.

How to interpret results: figures

Figure Y: Female cancer registration rates, Māori and non-Māori aged 50–64 years, by site, 2005–2007



Tatauranga Taupori: Demographics

Population

Age structure

Table 2: Census population, Māori and non-Māori, by age group and gender, 2006

Age group (years)	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
0–14	102,648	97,278	199,926	341,382	326,271	667,650
15–24	49,368	51,936	101,304	238,155	231,714	469,872
25–49	85,806	99,534	185,343	599,250	643,089	1,242,333
50–64	26,559	29,076	55,638	301,308	308,970	610,284
65+	10,479	12,654	23,127	210,663	261,810	472,479
Total	274,860	290,469	565,326	1,690,761	1,771,857	3,462,621

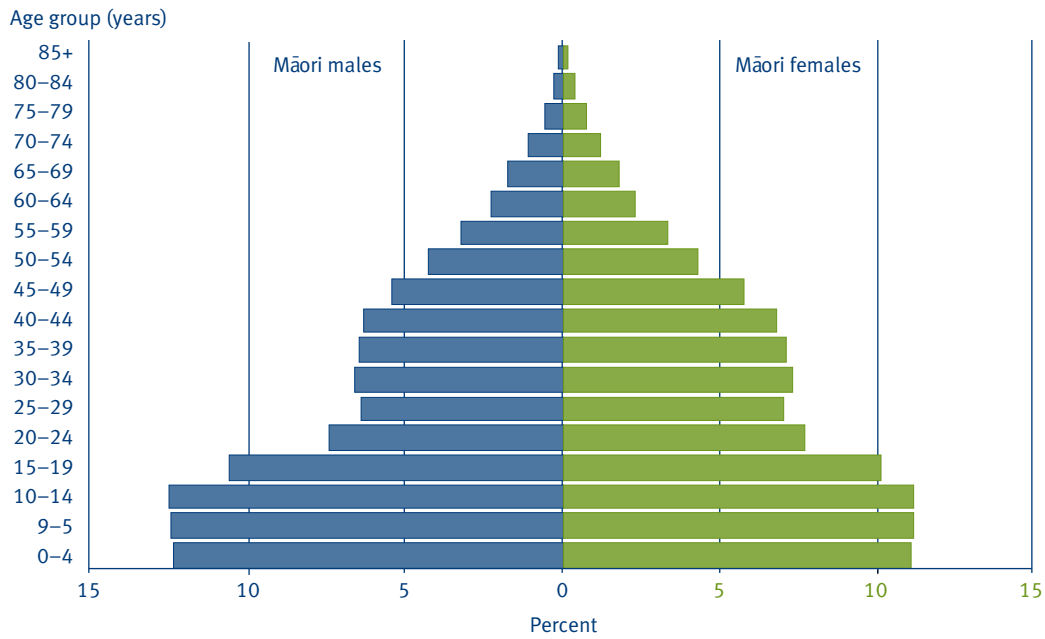
Note:
Due to rounding, individual figures in this table do not sum to give the stated totals and may differ slightly from other published figures.

Source: 2006 Census of Population and Dwellings, Statistics New Zealand

According to the 2006 Census, there were approximately 1,161,500 people aged 50 years or above in New Zealand. Older people represented almost 30 percent of the total usually resident population and Māori made up 6.8 percent of the older people’s population.

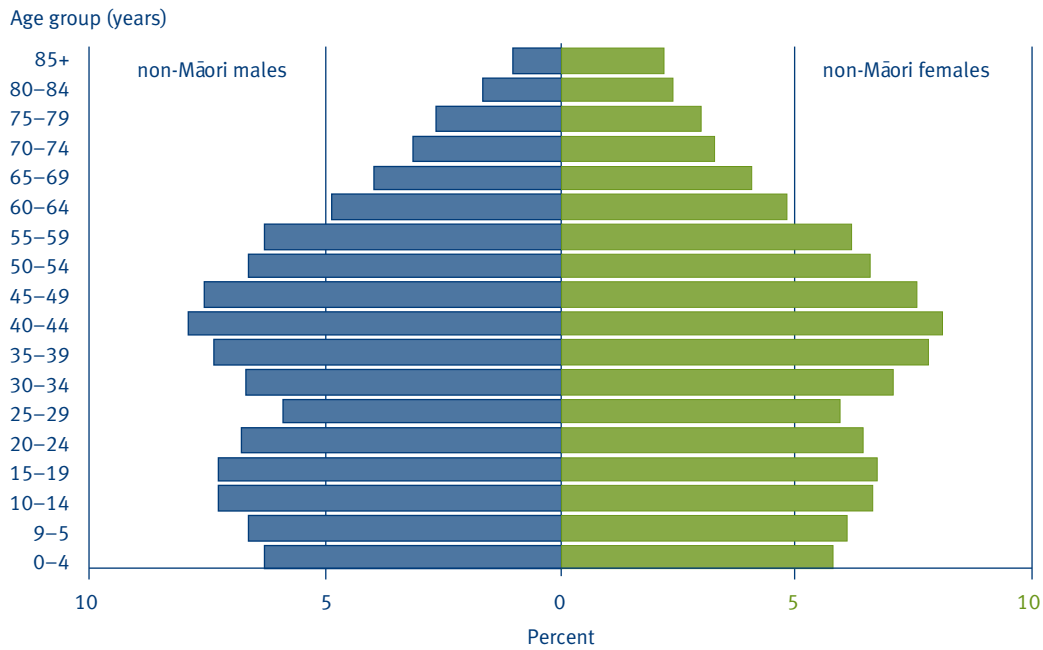
Figure 1 and Figure 2 show that in comparison with non-Māori, Māori constitute a very youthful population. In 2006, 13.5 percent of Māori males were aged 50+ years (Figure 1) compared with 30.3 percent of non-Māori males (Figure 2). Similarly, 14.4 percent of Māori females were aged 50+ years, whereas 32.2 percent of non-Māori females were in this older age group.

Figure 1: Age distribution of the Māori population, by gender, 2006



Source: 2006 Census of Population and Dwellings, Statistics New Zealand

Figure 2: Age distribution of the non-Māori population, by gender, 2006



Source: 2006 Census of Population and Dwellings, Statistics New Zealand

Population estimates

The following table shows the 2010 population estimates.

Table 3: Population estimates, Māori and non-Māori, by age group and gender, 2010

Age group (years)	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
0–14	117,050	110,610	227,670	341,450	325,350	666,780
15–24	62,810	61,720	124,530	264,080	249,000	513,080
25–49	96,900	109,610	206,520	624,080	662,830	1,286,910
50–64	35,310	38,910	74,220	343,850	355,070	698,910
65+	14,080	16,860	30,950	244,990	293,220	538,200
Total	326,200	337,700	663,900	1,818,400	1,885,500	3,703,900

Note:
Due to rounding, individual figures in this table do not sum to give the stated totals and may differ slightly from other published figures.

Source: Estimated resident population, Statistics New Zealand

In 2010 the older population had grown by 15.6 percent to an estimated 1,342,280 (Table 3) since 2006. The proportion of older people that are Māori was estimated to be 7.8 percent.

Population projections

Table 4: Projected populations, Māori and non-Māori aged 50+ years, by gender, 2011–2026

Year	Māori			non-Māori		
	Males	Females	Total	Males	Females	Total
2011	51,360	58,690	110,050	606,660	667,740	1,274,400
2016	62,040	72,260	134,300	682,020	751,330	1,433,350
2021	71,860	85,440	157,300	747,345	830,360	1,577,705
2026	80,470	97,430	177,900	797,970	896,380	1,694,350

Notes:
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.
Due to rounding, individual figures in this table do not sum to give the stated totals and may differ slightly from other published figures.

Source: National ethnic population projections, Statistics New Zealand

Between 2011 and 2026, the older Māori population is predicted to grow by 7.1 percent (Table 4), whereas the older non-Māori population is predicted to grow by only 3.3 percent. The increase in the older Māori population is driven by growth in the 65+ years age group, among whom the number of Māori is predicted to increase by 121.8 percent, compared to an increase of 60.3 percent for non-Māori aged 65+ years.

This means that in 2026 Māori are predicted to comprise 9.5 percent of the older people's population – up from 6.8 percent in 2006.

Population by DHB

Table 5 shows the Māori and non-Māori populations of each DHB, by age group. A map showing the proportion of each DHB's older population that is Māori follows as Figure 3.

Table 5: DHB age group populations, Māori and non-Māori, 2006

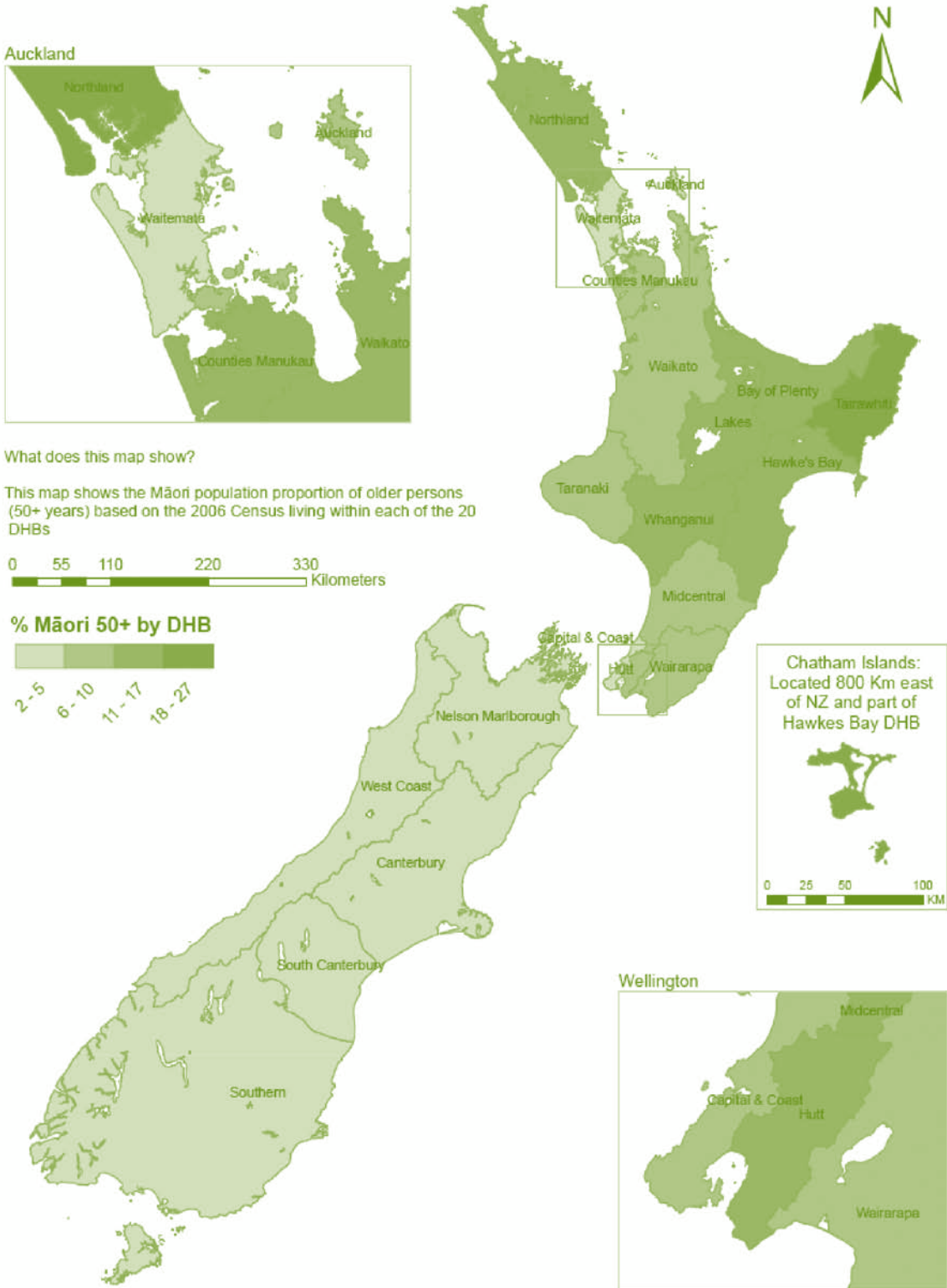
DHB	50–64 years			65+ years		
	Māori	non-Māori	Māori % of 50–64 years population	Māori	non-Māori	Māori % of 65+ years population
Northland	4884	23,226	17.4	2670	18,789	12.4
Waitemata	3711	73,524	4.8	1251	51,690	2.4
Auckland	2997	55,173	5.2	1167	37,602	3.0
Counties Manukau	6141	57,588	9.6	1944	36,204	5.1
Waikato	6633	49,437	11.8	2820	39,900	6.6
Lakes	3204	13,164	19.6	1458	10,251	12.5
Bay of Plenty	4980	29,733	14.3	2346	28,554	7.6
Tairāwhiti	2271	4986	31.3	1176	4158	22.0
Taranaki	1548	16,653	8.5	738	14,697	4.8
Hawke's Bay	3597	22,887	13.6	1533	19,005	7.5
Whanganui	1527	9435	13.9	720	9069	7.4
Midcentral	2337	24,093	8.8	1008	21,336	4.5
Hutt	1974	19,989	9.0	597	14,853	3.9
Capital and Coast	2382	38,031	5.9	810	27,294	2.9
Wairarapa	579	7251	7.4	276	6048	4.4
Nelson Marlborough	1128	24,678	4.4	426	18,756	2.2
West Coast	303	5862	4.9	120	4215	2.8
Canterbury	3036	76,467	3.8	1071	61,617	1.7
South Canterbury	312	10,368	2.9	135	9582	1.4
Southern*	2088	47,595	4.2	879	38,787	2.2

Notes:
 Due to rounding, individual figures in this table may differ slightly from other published figures.
 Prioritised ethnicity has been used - see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.
 * Southern DHB combines Otago and Southland DHBs. This merger occurred on 1 May 2010.

Source: 2006 Census of Population and Dwellings, Statistics New Zealand

Table 5 and Figure 3 show that in Tairāwhiti DHB, Māori make up 31.3 percent of the DHB's 50–64 years population and 22.0 percent of the 65+ years population. Following Tairāwhiti DHB (in descending order) are Lakes, Northland and Bay of Plenty DHBs.

Figure 3: Proportion of the older DHB population that is Māori



Source: Ministry of Health

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 a lifetime (Robson and Harris 2007). In this section, deprivation is presented as an area-based measure of socioeconomic position, and is followed by some specific socioeconomic indicators.

Neighbourhood deprivation

NZDep2006 is a small-area-based deprivation index that combines 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; that is, the general socioeconomic deprivation of an area. It does not describe the deprivation of an individual.

Table 6 presents the older Māori and older non-Māori populations by deprivation decile.

Table 6: Neighbourhood deprivation decile (NZDep 2006), Māori and non-Māori aged 50+ years, 2006

NZDep2006 decile	Māori		non-Māori	
	Population	Percentage	Population	Percentage
1 (least deprived)	2610	3.0%	108,740	9.7%
2	3910	4.5%	118,460	10.6%
3	3890	4.4%	112,860	10.1%
4	5380	6.1%	111,080	9.9%
5	6450	7.4%	125,940	11.3%
6	7990	9.1%	117,240	10.5%
7	8730	10.0%	121,330	10.9%
8	11,740	13.4%	126,350	11.3%
9	14,910	17.0%	100,760	9.0%
10 (most deprived)	21,960	25.1%	74,210	6.6%
Unknown	35	0%	380	0.0%
Total	87,605	100.0%	1,117,350	100.0%

Notes:

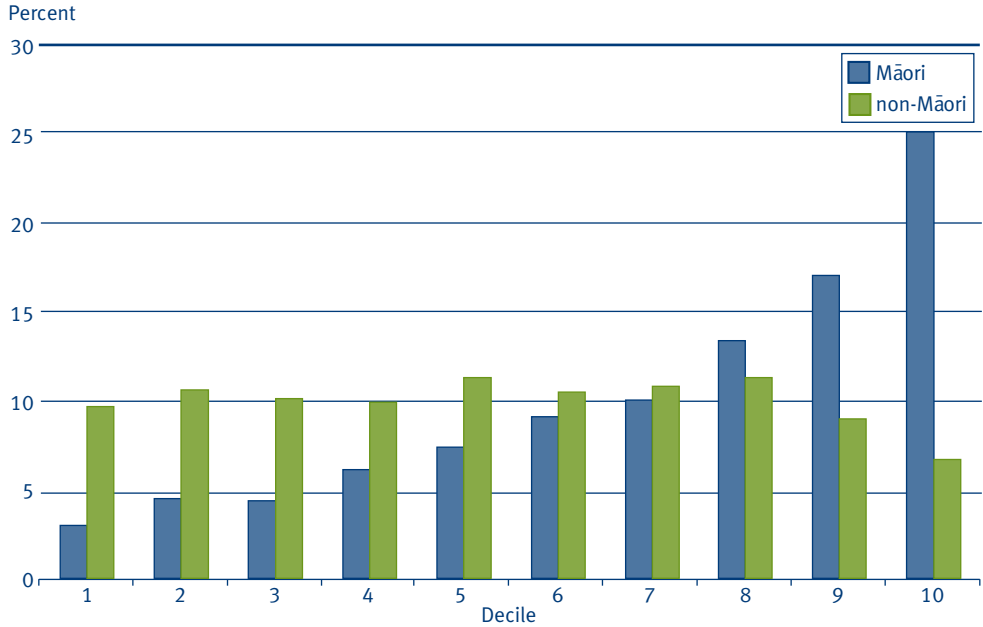
'Unknown' refers to the population for whom an NZDep2006 score was not ascertained.

Due to rounding, stated totals may differ slightly from other published figures, including 50+ years total population figures published in this chart book.

Source: Customised data request, Statistics New Zealand, 2009

Table 6 and Figure 4 show that higher proportions of older Māori live in areas with the highest (most deprived) NZDep2006 scores. In 2006, 25.1 percent of Māori aged 50+ years lived in decile 10 areas (compared with 6.6 percent of non-Māori), while only 3.0 percent of Māori lived in decile 1 areas (compared with 9.7 percent of non-Māori).

Figure 4: Neighbourhood deprivation distribution (NZDep 2006), Māori and non-Māori aged 50+ years, 2006



Source: Customised data request, Statistics New Zealand, 2009

Socioeconomic indicators

Table 7 presents information on various socioeconomic indicators. It uses crude rates rather than age-standardised rates, and so caution should be exercised when comparing Māori and non-Māori results. Crude rates accurately portray the situation within each population but make comparisons difficult because they do not take into account different age distributions in each of the populations.

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

Table 7: Socioeconomic indicators for older people: percentage of each ethnic group, Māori and non-Māori, by gender, 2006

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
School completion (Level 2 Certificate or higher), 2006, percent	35.9	62.0	28.1	52.7	34.5	52.8	24.4	39.9
Unemployed, 2006, percent	3.4	1.8	1.1	0.3	3.6	1.6	0.6	0.1
Total personal income less than \$10,000, 2006, percent	13.9	9.4	17.5	11.5	22.9	20.8	18.7	13.6
Receiving means-tested benefit, 2006, percent	23.8	10.8	6.0	3.2	29.3	12.9	4.9	2.7
Living in household without telephone access, 2006, percent	5.9	1.3	4.9	1.3	4.5	0.7	3.2	0.6
Living in household without motor vehicle access, 2006, percent	7.7	2.9	10.8	6.5	10.2	3.6	21.9	17.9
Not living in own home, 2006, percent	44.1	21.8	38.0	20.4	45.1	20.1	41.5	25.1
Household crowding, 2006, percent	11.7	3.7	8.8	2.1	14.1	3.7	10.0	2.4
Voluntary work (through organisation, group or marae), 2006, percent	18.0	14.9	17.2	15.0	22.7	17.7	17.2	16.2

Notes:

Crude rates have been used.

Prioritised ethnicity has been used – see ‘Ngā Tapuae me ngā Raraunga: Methods and Data Sources’ for further information.

‘Means-tested benefit’ includes the unemployment benefit, sickness benefit, domestic purposes benefit, invalid’s benefit and student allowance.

‘Not living in own home’ is based on the ‘tenure holder’ variable which records whether the person owns the dwelling they live in.

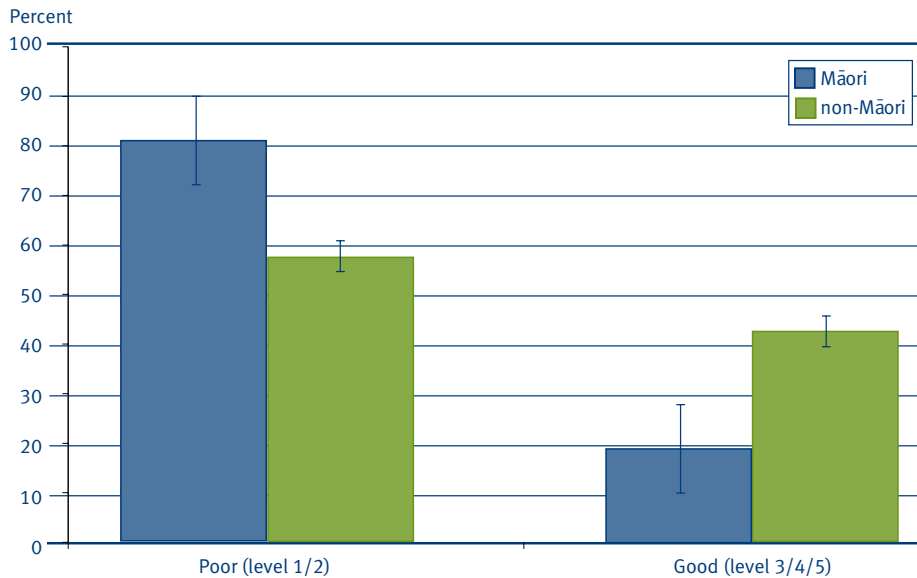
‘Household crowding’ is based on the Canadian National Crowding Index. A required number of bedrooms is calculated for each household (based on the age, sex and number of people living in the dwelling), which is compared with the actual number of bedrooms. A household is considered crowded when there are fewer bedrooms than required.

Source: 2006 Census of Population and Dwellings, 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, Māori and non-Māori, aged 50–65 years, 2006



Note:

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006 Adult Literacy and Life Skills Survey

Figure 5 shows that Māori aged 50–65 years have significantly lower health literacy skills than non-Māori (males and females). Having a health literacy score at level 1 or 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 *Kōrero Mārama: Health Literacy and Māori – Results from the 2006 Adult Literacy and Life Skills Survey* (Ministry of Health 2010b).

Ngā Tauwehe Tūpono me te Marumaru: Risk and Protective Factors

The indicators in this section relate to individual risk and protective factors. Note that socioeconomic determinants are linked to risk and protective factors, which in turn affect 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 8: Tobacco smoking indicators, Māori and non-Māori, aged 50–64 years, by gender, 2009

Indicator	Males		Females	
	Māori	non-Māori	Māori	non-Māori
Current smoking (self-reported), 2009, percent	30.5 (17.2–46.6)	15.1 (11.7–18.5)	36.5 (25.7–47.4)	11.2 (8.5–13.8)
Non-smokers' exposure to secondhand smoke in their home or in the car, 2009, percent	16.7 (8.3–28.6)	6.9 (4.4–10.3)	12.5 (5.3–24.0)	5.8 (3.9–7.7)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used - see 'Ngā Tapuae me ngā Raraunga: Methods and Data Sources' for further information.

'Current smoking' is defined as a person who has smoked more than 100 cigarettes in their lifetime and currently smokes at least monthly.

'Non-smokers' exposure' 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 past week.

Source: New Zealand Tobacco Use Survey 2009, Ministry of Health

Table 8 shows that the self-reported prevalence of current smoking is over 3 times higher for Māori females aged 50–64 years compared with non-Māori females the same age (RR 3.27, CI 2.01–4.53). There were no significant differences in the exposure of non-smokers to secondhand smoke.

For more results from the 2009 Tobacco Use survey, refer to *Tobacco Use in New Zealand: Key findings from the 2009 New Zealand Tobacco Use Survey* (Ministry of Health 2010e).

Alcohol and drug use

Table 9: Alcohol and drug use indicators, Māori and non-Māori aged 50–64 years, by gender, 2007/08

Indicator	Males		Females	
	Māori	non-Māori	Māori	non-Māori
Consumed alcohol in the past 12 months, 2007/08, percent	73.0 (63.3–82.6)	88.2 (84.8–91.6)	70.1 (60.4–79.8)	80.7 (77.5–83.8)
Drinking alcohol daily in the past 12 months (past-year drinkers), 2007/08, percent	16.5 (8.8–26.9)	17.4 (12.8–22.1)	6.6 (3.1–12.1)	12.0 (9.1–14.8)
Drinking large amounts of alcohol at least weekly in the past 12 months (past-year drinkers), 2007/08, percent	16.1 (9.8–24.2)	10.5 (7.0–14.0)	6.6 (3.1–12.3)	5.4 (3.1–7.8)
Using cannabis in the past 12 months, 2007/08, percent	13.6 (8.0–21.2)	7.2 (4.6–9.9)	6.3 (2.1–14.1)	2.3 (1.3–3.7)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

‘Drinking large amounts 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, Ministry of Health

According to Table 9, in 2007/08 Māori males aged 50–64 years were significantly less likely than non-Māori males the same age to have consumed alcohol in the previous 12 months (RR 0.83, CI 0.72–0.94). However, of those males in this age group who had drunk alcohol in the past year, Māori were equally as likely as non-Māori to have drunk alcohol daily (RR 0.94, CI 0.46–1.43).

Table 9 also shows there was no significant difference in the drinking habits of Māori females aged 50–64 years compared to those of non-Māori females across the same indicators.

Similarly, there were no significant differences in the prevalence of having used cannabis in the past year between Māori and non-Māori males and females.

Nutrition

Table 10: Nutrition indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
3 or more servings of vegetables per day (self-reported), 2006/07, percent	60.1 (49.6–70.6)	64.2 (60.0–68.5)	65.0 (53.8–76.2)	69.9 (66.4–73.4)	65.2 (58.1–72.3)	78.0 (74.9–81.1)	68.0 (59.0–77.0)	76.7 (74.0–79.5)
2 or more servings of fruit per day (self-reported), 2006/07, percent	44.1 (34.8–53.4)	55.0 (51.6–58.4)	51.9 (39.6–64.3)	57.4 (53.5–61.3)	65.5 (58.5–72.6)	74.3 (71.5–77.2)	63.7 (55.1–72.2)	75.6 (72.7–78.5)
3 or more servings of vegetables and 2 or more of fruit per day (self-reported), 2006/07, percent	30.9 (21.3–40.6)	38.8 (35.1–42.5)	36.8 (25.8–47.7)	44.2 (40.3–48.2)	49.5 (41.7–57.2)	61.1 (57.8–64.4)	45.0 (36.4–53.7)	61.4 (58.4–64.5)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

The *Food and Nutrition Guidelines for Healthy Older People* recommend that along with three other food groups³, older people should eat at least three servings of vegetables and at least two servings of fruit per day (Ministry of Health 2010a). 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).

Although the proportions of older Māori consuming adequate vegetables and fruit are an improvement on those recorded for the whole population (see Ministry of Health 2010d), there was still a substantial proportion of this older population who did not meet the minimum recommended vegetable and fruit intake.

Disparities between Māori and non-Māori in both the 50–64 years and 65+ years age groups were consistently observed among females, where Māori were significantly less likely than non-Māori to have had three or more servings of vegetables and/or two or more servings of fruit per day.

There were no significant differences in vegetable and fruit intake between older Māori males and older non-Māori males.

³ The three other recommended food groups for health older people are: breads and cereals; milk and milk products; lean meat, poultry, seafood, eggs, nuts and seeds, and legumes.

Body size

A healthy body size is recognised as being 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/m²). BMI is used internationally to classify underweight, overweight and obese.

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 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 publication should not be compared with those presented in the first edition of *Tatau Kahukura: Māori Health Chart Book*, which used ethnic-specific cut-off points to analyse body size (Ministry of Health 2006).

Table 11: International BMI 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: This table only includes health conditions associated with increasing BMI.

Source: Ministry of Health 2008

Table 12: Body size indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Underweight, 2006/07, percent	–	0.3 (0.1–1.0)	–	0.8 (0.2–1.9)	0.4 (0.0–1.5)	0.7 (0.3–1.5)	6.9 (2.1–15.7)	0.9 (0.5–1.6)
Overweight, 2006/07, percent	32.7 (24.2–41.1)	44.1 (40.4–47.8)	36.1 (24.6–47.6)	50.9 (46.5–55.3)	25.6 (19.2–32.0)	35.7 (31.9–39.5)	30.6 (21.2–40.1)	38.1 (35.1–41.0)
Obese, 2006/07, percent	61.7 (52.5–70.8)	32.9 (29.6–36.3)	55.5 (42.4–68.6)	25.0 (21.7–28.3)	57.4 (50.0–64.8)	31.9 (28.4–35.4)	48.9 (39.1–58.8)	28.3 (25.3–31.3)
Overweight or obese, 2006/07, percent	94.3 (90.8–97.9)	77.0 (73.9–80.2)	91.6 (84.7–98.5)	75.9 (72.4–79.3)	83.0 (77.7–88.4)	67.6 (64.5–70.7)	79.6 (71.5–87.7)	66.3 (63.3–69.4)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

A dash (–) indicates that data were unavailable due to low counts.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Table 12 shows that older Māori of both genders and age groups are significantly more likely than non-Māori of the same gender and age to be overweight or obese. However, the table also shows that both Māori males and females are less likely to be overweight (although the difference is not statistically significant), whereas they are significantly more likely to be obese compared with non-Māori of the same age and gender.

Māori males aged 65+ years are twice as likely as non-Māori males of the same age to be obese (RR 2.22, CI 1.62–2.82). Māori females in this age group are more than 1.5 times more likely than non-Māori to be obese (RR 1.73, CI 1.34–2.12).

Physical activity

Table 13: Physical activity indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Regular physical activity (self-reported), 2006/07, percent	46.8 (37.2–56.4)	51.4 (48.0–54.8)	42.2 (28.1–56.2)	48.5 (44.6–52.4)	50.7 (44.2–57.2)	52.2 (48.4–56.1)	37.5 (27.9–47.2)	39.3 (36.5–42.2)
Sedentary behaviour (self-reported), 2006/07, percent	12.1 (7.7–17.8)	8.3 (6.5–10.2)	21.6 (11.7–34.6)	17.4 (14.7–20.1)	17.3 (10.0–24.6)	9.3 (7.5–11.2)	19.7 (11.6–27.7)	25.4 (22.7–28.2)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

'Regular physical activity' is defined as at least 30 minutes of physical activity per day on five or more days of the week.

'Sedentary behavior' is defined as less than 30 minutes of physical activity in the week.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

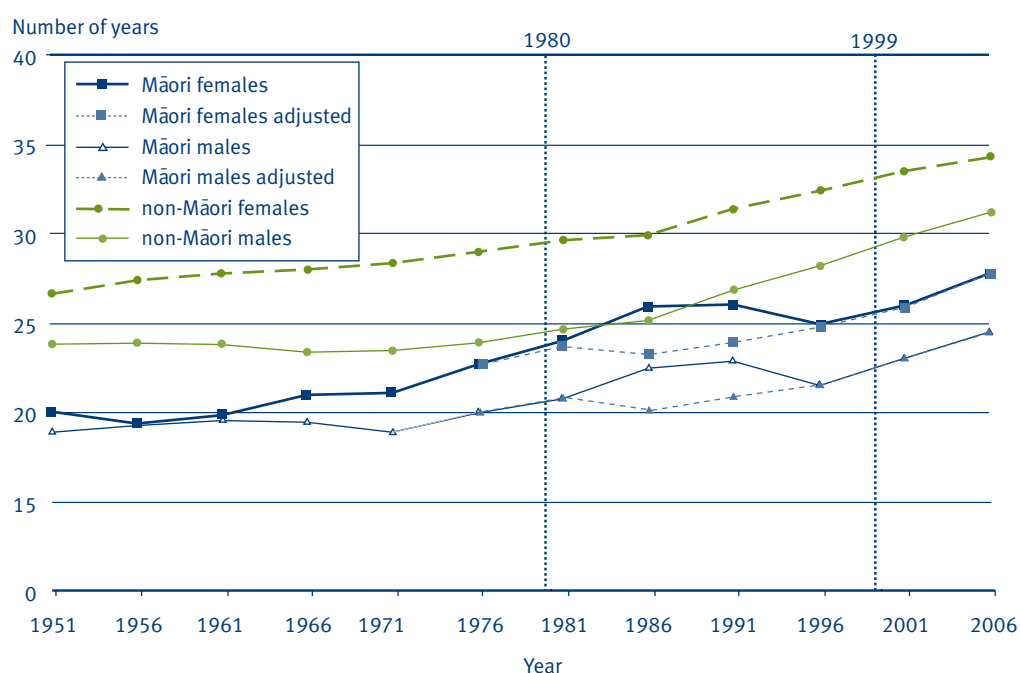
According to the 2006/07 New Zealand Health Survey there were no statistically significant differences in regular physical activity or sedentary behaviour between Māori and non-Māori older people (Table 13).

Ngā Mana Hauora Tūtohu: Health Status Indicators

This section presents a range of indicators relating to health status. The indicators 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 and unintentional injury.

Life expectancy

Figure 6: Life expectancy at age 50, Māori and non-Māori, by gender, 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 age 50 was a further 24.6 years for Māori males (to 74.6 years of age) and a further 27.8 years for Māori females (to 77.8 years of age), while life expectancy at age 50 for non-Māori males was 31.2 years and for non-Māori females 34.4 years (to 81.2 and 84.4 years of age, respectively) (Figure 6). Overall, in 2006, Māori life expectancy at age 50 was at least six 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 6 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).

For life expectancy at birth for Māori and non-Māori over this same period, see *Tatau Kahukura* (Ministry of Health 2010d).

Disability

The 2006 New Zealand Household Disability Survey estimated that 27,500 Māori (35.1 percent) aged 50 years or above living in New Zealand households were living with a disability.⁴ This compares to 327,900 non-Māori (29.8 percent) in the same age group living with a disability.

Table 14: Disability indicators: type of main disability, Māori and non-Māori, 2006

Indicator	50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori
Type of main disability (level 2): Mobility (self-reported), 2006, percent	10.5	6.6	24.7	18.8
Type of main disability (level 2): Agility (self-reported), 2006, percent	5.4	3.8	8.1	6.7
Type of main disability (level 2): Hearing (self-reported), 2006, percent	4.8	5.6	6.3	7.7

Notes:

Percent = percentage of all adults (in the relevant age group) living in households.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

‘Mobility’ includes people who have difficulty with or cannot: walk about 350 metres without resting; walk up or down a flight of stairs; carry an object as heavy as 5 kilograms for a 10 metre distance; move from room to room; or stand for periods longer than 20 minutes.

‘Agility’ includes people who have difficulty with or cannot: bend over to pick something up off the floor; dress or undress themselves; cut their own toe-nails; grasp or handle small objects like scissors; reach in any direction; cut their own food; or get themselves in or out of bed.

‘Hearing’ includes people who have difficulty hearing or cannot hear what is said in a conversation with one other person and/or in a conversation with at least three other people.

Source: 2006 New Zealand Household Disability Survey, Statistics New Zealand

According to the 2006 Disability Survey, the most common types of main disability⁵ (at level 2) for both older Māori and older non-Māori were mobility, agility and hearing (Table 14). The rates of mobility and agility disability were higher for older Māori in both age groups compared with older non-Māori.

Refer to *Disability and Māori in New Zealand in 2006* (Office for Disability Issues and Statistics New Zealand 2010) for more information about Māori with disabilities in New Zealand.

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 ‘Main disability’ is the disability the respondent considered limited their everyday activities most.

Major causes of death

The major causes of death for older Māori and non-Māori, by gender, are presented in this chart book. Causes of death have been ranked by age-standardised mortality rates (Table 15).

Table 15: Major causes of death, ranked by age-standardised mortality rates, Māori and non-Māori, by gender, 2005–2007

	50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori
Males	Ischaemic heart disease	Ischaemic heart disease	Ischaemic heart disease	Ischaemic heart disease
	Lung cancer	Lung cancer	Lung cancer	Stroke
	Diabetes	Colorectal cancer	Diabetes	Lung cancer
	Other forms of heart disease	Stroke	Chronic obstructive pulmonary disease	Chronic obstructive pulmonary disease
	Chronic obstructive pulmonary disease	Suicide and self-inflicted injury	Other forms of heart disease	Colorectal cancer
Females	Lung cancer	Breast cancer	Ischaemic heart disease	Ischaemic heart disease
	Ischaemic heart disease	Lung cancer	Lung cancer	Stroke
	Breast cancer	Colorectal cancer	Chronic obstructive pulmonary disease	Chronic obstructive pulmonary disease
	Diabetes	Ischaemic heart disease	Stroke	Colorectal cancer
	Chronic obstructive pulmonary disease	Stroke	Diabetes	Lung cancer

Notes:
 Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.
 Age standardised to the 2001 Census total Māori population.

Source: Mortality collection (MORT), Ministry of Health

Table 15 shows that, for males, ischaemic heart disease was the leading cause of death for Māori and non-Māori in both age groups. For females, the leading causes of death were: ischaemic heart disease for both Māori and non-Māori 65+ years of age; lung cancer for Māori aged 50–64 years; and breast cancer for non-Māori aged 50–64 years.

In general, lung cancer ranked higher for Māori than for non-Māori, except for males aged 50–64 years, among whom it was the second leading cause of death for both Māori and non-Māori.

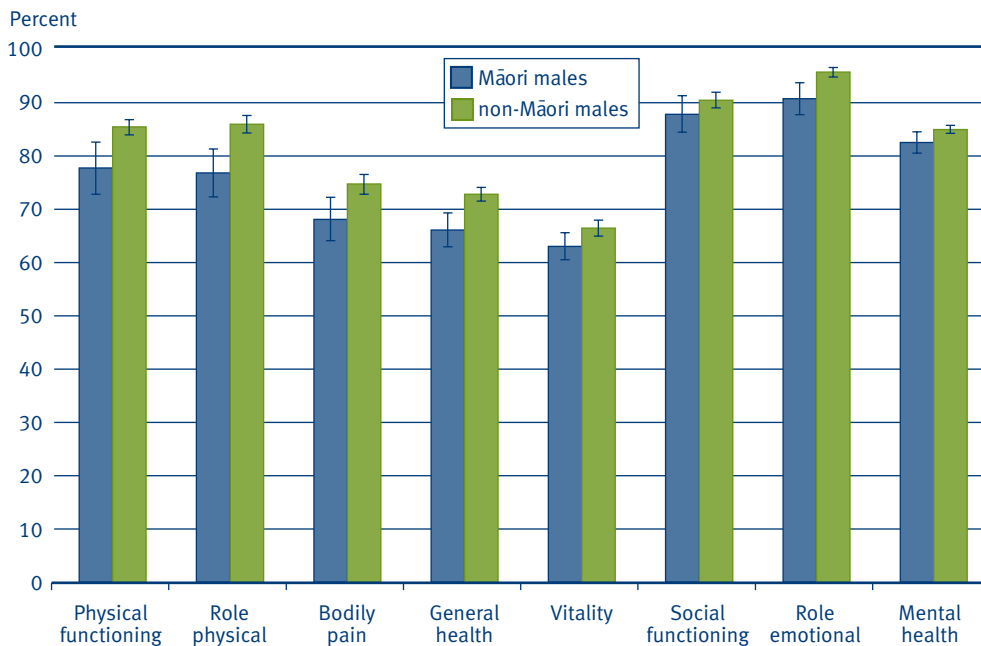
In the 65+ years age group chronic obstructive pulmonary disease (COPD) was the third leading cause of death for Māori and non-Māori females, and the fourth leading cause of death for Māori and non-Māori males. It was also the fifth leading cause of death for both Māori males and Māori females aged 50–64 years, but it was not in the top five causes of death for non-Māori in the same age group.

Diabetes featured in the top five causes of death for Māori males and females in each age group but did not feature in the top five for non-Māori of either gender.

Self-rated health

The Short Form (36) Health Survey, or 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 7: Mean SF-36 scores, Māori and non-Māori, males, 50–64 years, 2006/07



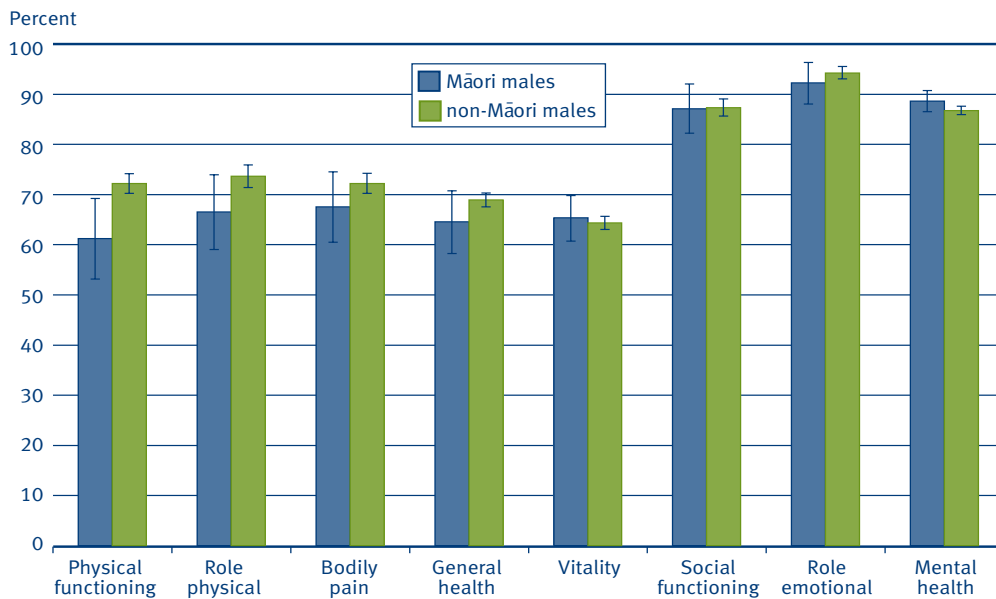
Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raranga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Figure 8: Mean SF-36 scores, Māori and non-Māori, males, 65+ years, 2006/07



Notes:

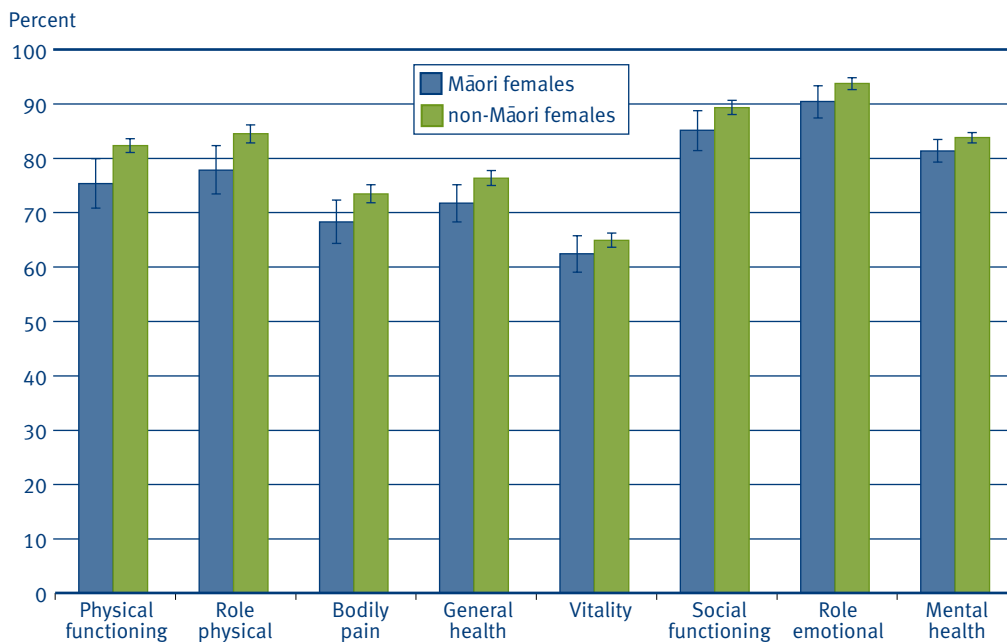
Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Māori males aged 50–64 years rated their health slightly lower than non-Māori males of the same age on all scales. All the differences were significant except for social functioning, where there was no significant difference (Figure 7). There were no significant differences in the 65+ years age group except for physical functioning, where Māori men rated themselves significantly lower than non-Māori men (Figure 8).

Figure 9: Mean SF-36 scores, Māori and non-Māori, females, 50–64 years, 2006/07



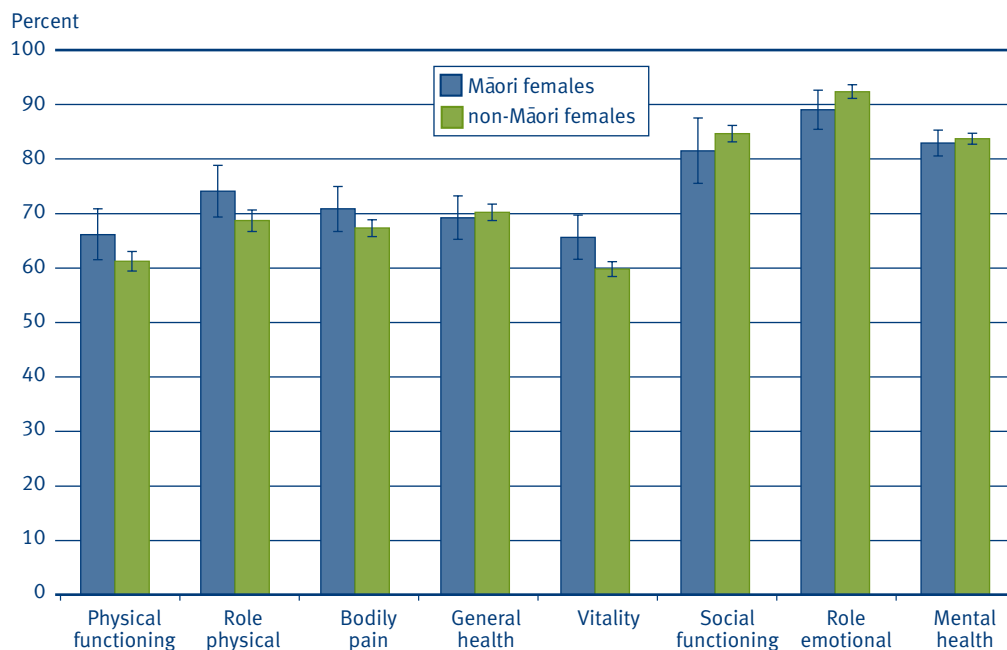
Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Figure 10: Mean SF-36 scores, Māori and non-Māori, females, 65+ years, 2006/07



Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

There were slightly different patterns in self-rated health in older women. Although Māori females aged 50–64 years rated their health lower than non-Māori females the same age across all scales, Māori women aged 65+ years rated themselves higher in four of the eight scales.

In the 50–64 years age group, Māori females rated themselves significantly lower in all scales except vitality (energy/fatigue) where there was no significant difference (Figure 9). In the 65+ years age group there were two significant differences: Māori females rated themselves significantly higher than non-Māori females in both role limitation (physical) and vitality (energy/fatigue) (Figure 10).

Cardiovascular disease

Table 16: Blood pressure and blood cholesterol indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Ever diagnosed high blood pressure (self-reported), 2006/07, percent	43.2 (34.8–51.6)	30.9 (27.5–34.3)	54.7 (42.4–67.1)	48.1 (44.1–52.1)	41.9 (34.5–49.3)	31.6 (28.4–34.8)	60.7 (51.3–70.1)	54.0 (50.8–57.3)
Currently taking pills for high blood pressure (self-reported), 2006/07, percent	33.7 (25.5–41.9)	20.7 (17.7–23.6)	45.2 (33.5–56.9)	42.6 (38.7–46.4)	28.5 (21.8–35.3)	22.4 (19.8–25.0)	53.5 (43.5–63.4)	45.4 (41.9–48.8)
Ever diagnosed high blood cholesterol (self-reported), 2006/07, percent	33.5 (24.4–42.5)	37.3 (33.4–41.1)	38.4 (26.7–50.0)	37.4 (33.6–41.3)	25.8 (19.6–32.0)	29.6 (26.7–32.4)	31.6 (21.1–42.1)	38.7 (35.7–41.7)
Currently taking pills for high blood cholesterol (self-reported), 2006/07, percent	17.7 (11.1–24.3)	19.2 (16.3–22.0)	28.3 (17.3–39.3)	24.5 (21.1–27.9)	12.7 (7.8–17.6)	13.0 (10.8–15.1)	24.4 (13.3–35.5)	23.5 (20.9–26.2)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

According to Table 16, Māori males and females aged 50–64 years were significantly more likely than non-Māori to report they had been diagnosed with high blood pressure (RR 1.40, CI 1.08–1.72 for males, RR 1.33, CI 1.06–1.60 for females). Māori males aged 50–64 years were significantly more likely than non-Māori males to report taking pills for high blood pressure (RR 1.63, CI 1.15–2.11), but there was no significant difference between Māori and non-Māori females of this age (RR 1.28, CI 0.94–1.61).

For the 65+ years age group, there were no significant differences in any of the blood pressure or blood cholesterol indicators between Māori and non-Māori.

Table 17: Cardiovascular disease indicators, Māori and non-Māori, by gender

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Total cardiovascular disease mortality, 2005–07, rate per 100,000	637.8 (583.9–695.2)	159.7 (151.8–167.8)	2427.5 (2259.3–2605.0)	1220.9 (1198.6–1243.4)	280.5 (246.4–317.9)	55.9 (51.3–60.7)	1741.7 (1618.9–1871.4)	829.2 (815.9–842.7)
Total cardiovascular disease hospitalisation, 2007–09, rate per 100,000	5573.1 (5345.4–5810.4)	2569.8 (2531.2–2609.0)	10249.2 (9655.2–10879.8)	6605.3 (6504.1–6708.0)	3988.4 (3814.2–4170.6)	1166.6 (1138.8–1195.0)	8197.3 (7719.5–8704.6)	3881.5 (3805.9–3958.7)
Stroke mortality, 2005–07, rate per 100,000	56.1 (40.9–75.1)	21.3 (18.5–24.4)	289.7 (233.2–355.6)	253.8 (244.0–264.0)	41.3 (28.9–57.2)	17.3 (14.8–20.1)	377.1 (321.7–439.2)	248.0 (240.8–255.3)
Stroke hospitalisation, 2007–09, rate per 100,000	392.3 (348.6–441.5)	184.7 (175.1–194.8)	922.8 (800.7–1063.6)	612.6 (584.7–641.8)	428.3 (384.6–477.1)	119.5 (111.2–128.4)	935.4 (819.7–1067.3)	387.1 (365.1–410.3)
Heart failure mortality, 2005–07, rate per 100,000	7.3 (2.7–16.0)	–	62.3 (36.9–98.5)	22.3 (19.7–25.1)	–	0.6 (0.2–1.3)	42.2 (25.8–65.1)	24.8 (22.9–26.8)
Heart failure hospitalisation, 2007–09, rate per 100,000	951.6 (879.3–1029.8)	108.2 (98.4–119.1)	2519.9 (2299.3–2761.7)	532.5 (502.0–564.8)	513.9 (464.5–568.6)	55.0 (48.1–62.9)	1555.5 (1401.9–1725.8)	320.6 (298.8–343.9)
Rheumatic heart disease mortality, 2005–07, rate per 100,000	19.3 (10.8–31.8)	2.8 (1.9–4.1)	71.3 (45.2–106.9)	12.9 (10.7–15.3)	33.6 (22.7–48.0)	2.7 (1.8–3.9)	72.3 (48.0–104.4)	16.5 (14.4–18.8)
Rheumatic heart disease hospitalisation, 2007–09, rate per 100,000	72.7 (55.9–94.5)	10.6 (8.0–14.1)	120.3 (78.8–183.5)	37.9 (30.3–47.4)	136.7 (113.5–164.5)	11.8 (8.5–16.3)	126.0 (86.8–182.8)	37.9 (30.7–46.9)

Notes:

Age standardised to the 2001 Census total Māori population.

Hospitalisations are ethnicity-adjusted rates; all other rates use prioritised ethnicity – see *Ngā Tapuāe me ngā Raraunga: Methods and Data Sources* for further information.

A dash (–) indicates the data were unavailable due to low counts.

Sources:

Mortality Collection (MORT), Ministry of Health

National Minimum Dataset (Hospital Events) (NMDS), Ministry of Health

Table 17 shows that Māori of both genders and age groups had significantly higher mortality and hospitalisation rates for total cardiovascular disease than non-Māori. The greatest disparity was in the 50–64 years age group, where Māori females were 5 times more likely to die of a cardiovascular disease than non-Māori females the same age (RR 5.02, CI 4.32–5.83). Māori females aged 50–64 years were almost 3.5 times more likely to be hospitalised for cardiovascular disease than non-Māori females of this age (RR 3.42, CI 3.30–3.55).

Stroke mortality and stroke hospitalisation were higher for Māori across both genders and age groups compared with non-Māori, except for stroke mortality for males aged 65+ years, where there was no significant difference.

The heart failure mortality rate for Māori aged 65+ years was significantly higher than for non-Māori, among both males and females (RR 2.80, CI 1.73–4.54 for males; RR 1.70, CI 1.09–2.66 for females). Both Māori males and Māori females of this age were almost 5 times more likely to be hospitalised for heart failure than non-Māori (RR 4.73, CI 4.33–5.17 for males; RR 4.85, CI 4.37–5.38 for females).

Rheumatic heart disease mortality in the 50–64 years age group was almost 7 times higher in Māori males than in non-Māori males (RR 6.86, CI 3.64–12.92), and for females this age the rate of rheumatic heart disease mortality was over 12 times higher in Māori than in non-Māori (RR 12.34, CI 7.36–20.69). The rheumatic heart disease hospitalisation rate was nearly 7 times higher in Māori males aged 50–64 years than in non-Māori of the same gender and age (RR 6.85, CI 4.99–9.39), while the rheumatic heart disease hospitalisation rate for Māori females this age was 11.5 times higher than for non-Māori (RR 11.60, CI 9.04–14.90). Rheumatic heart disease mortality and hospitalisation rates in the 65+ years age group showed that the disparity between Māori and non-Māori continues into the oldest age group.

Table 18: Ischaemic heart disease indicators, Māori and non-Māori, by gender

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Ischaemic heart disease mortality, 2005–07, rate per 100,000	441.0 (396.4–489.2)	112.0 (105.4–118.8)	1540.5 (1407.3–1683.0)	739.7 (722.3–757.5)	144.1 (120.1–171.6)	24.8 (21.9–28.1)	945.7 (855.5–1042.9)	407.3 (398.0–416.7)
Ischaemic heart disease hospitalisation, 2007–09, rate per 100,000	2054.6 (1939.9–2176.1)	1291.5 (1266.2–1317.3)	3134.0 (2871.1–3421.0)	3002.9 (2938.6–3068.6)	1412.3 (1324.5–1505.9)	425.4 (409.5–441.9)	2694.6 (2468.8–2941.0)	1435.6 (1391.7–1480.9)
All re-vascularisation (CABG* and angioplasty) heart disease procedures, 2007–09, rate per 100,000	396.9 (353.2–446.1)	326.0 (313.9–338.5)	516.0 (422.9–629.5)	680.8 (650.3–712.7)	196.2 (167.8–229.5)	69.4 (63.5–75.9)	303.1 (237.4–387.0)	228.3 (211.2–246.8)

Notes:

Age standardised to the 2001 Census total Māori population.

Hospitalisations and procedures are ethnicity-adjusted rates; all other rates use prioritised ethnicity – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

* Coronary artery bypass graft.

Sources:

Mortality Collection (MORT), Ministry of Health

National Minimum Dataset (Hospital Events) (NMDS), Ministry of Health

Although the risk of ischaemic heart disease were higher among males in both age groups, relative differences were greater between Māori and non-Māori females than between Māori and non-Māori males.

Table 18 shows that among those aged 50–64 years of age, the ischaemic heart disease mortality rate was almost 6 times higher for Māori females than for non-Māori females (RR 5.80, CI 4.68–7.19). Māori females aged 50–64 years were over 3 times more likely than non-Māori to be hospitalised for ischaemic heart disease (RR 3.32, CI 3.12–3.53). Re-vascularisation procedures in this age group were almost 3 times higher for Māori females than for non-Māori females (RR 2.83, CI 2.40–3.33).

For males in the 65+ years age group, ischaemic heart disease mortality was twice as high for Māori as for non-Māori (RR 2.08, CI 1.90–2.28). However, there was no significant difference in the prevalence of ischaemic heart disease hospitalisation (RR 1.04, CI 0.97–1.12). Furthermore, the re-vascularisation procedure rates for Māori males were significantly lower than for non-Māori males (RR 0.76, CI 0.63–0.92).

Cancer

Table 19: Cancer indicators, Māori and non-Māori, by gender, 2005–2007

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
All cancer registrations, 2005–07, rate per 100,000	908.5 (843.6–977.1)	766.2 (748.9–783.7)	2604.7 (2441.6–2775.8)	2276.9 (2242.7–2311.4)	1145.2 (1075.8–1217.8)	681.7 (665.6–698.1)	1990.4 (1856.2–2131.6)	1366.1 (1342.5–1390.0)
All cancer mortality, 2005–07, rate per 100,000	507.5 (459.2–559.5)	225.2 (215.9–234.8)	1709.0 (1569.6–1857.4)	1112.3 (1089.1–1135.9)	512.5 (466.2–562.2)	202.9 (194.2–212.0)	1284.1 (1176.4–1399.0)	734.8 (718.3–751.6)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Sources:

New Zealand Cancer Registry (NZCR), Ministry of Health

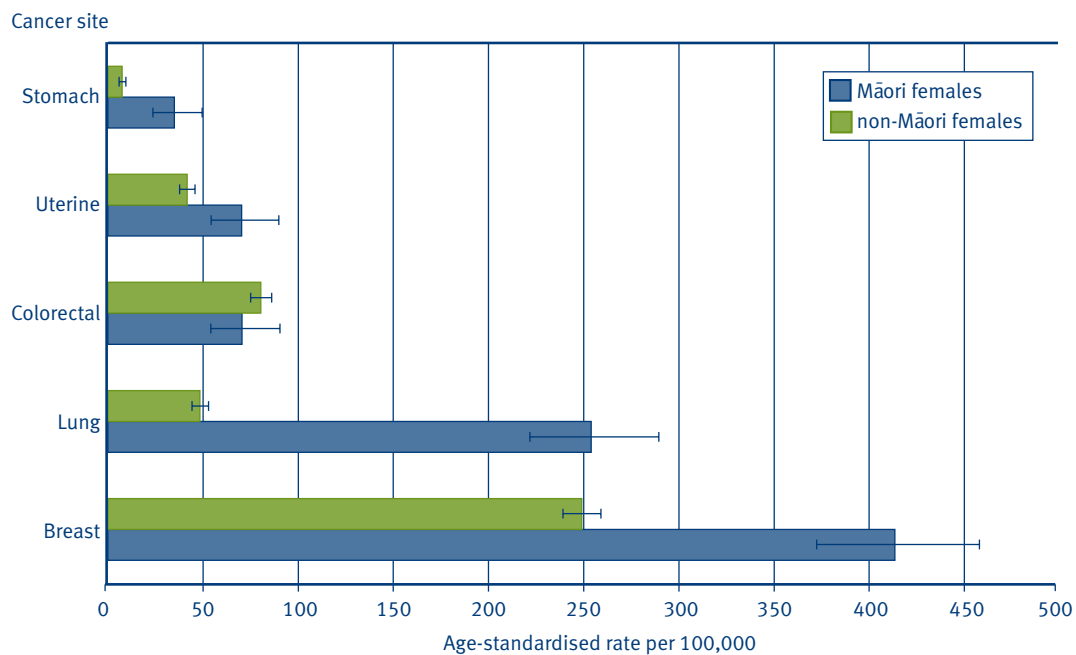
Mortality Collection (MORT), Ministry of Health

Older Māori adults had significantly higher cancer registration rates than older non-Māori adults for all cancers (Table 19). Although the cancer registration rate for Māori males aged 50-64 years was significantly higher than for non-Māori (RR 1.19, CI 1.10–1.28), the disparity was greatest for Māori females, who had a cancer registration rate over 1.5 times that of non-Māori females the same age (RR 1.68, CI 1.57–1.79). Similar patterns were observed in cancer registrations of the 65+ years age group, with significantly higher rates for Māori compared with non-Māori (RR 1.14, CI 1.05–1.24 for males; RR 1.46, CI 1.33–1.59 for females).

In the 50–64 years age group, all-cancer mortality rates for Māori of both genders were over twice those of non-Māori (RR 2.25, CI 2.03–2.51 for males; RR 2.53, CI 2.28–2.80 for females). For the 65+ years age group, the all-cancer mortality rate was 1.5 times higher for Māori males compared to non-Māori males of the same age (RR 1.54, CI 1.41–1.67) and for females the disparity was even greater (RR 1.75, CI 1.60–1.91).

Across all cancer types, the disparities between Māori and non-Māori were generally greater in cancer mortality than in cancer registration.

Figure 11: Female cancer registration rates, Māori and non-Māori aged 50–64 years, by site, 2005–07



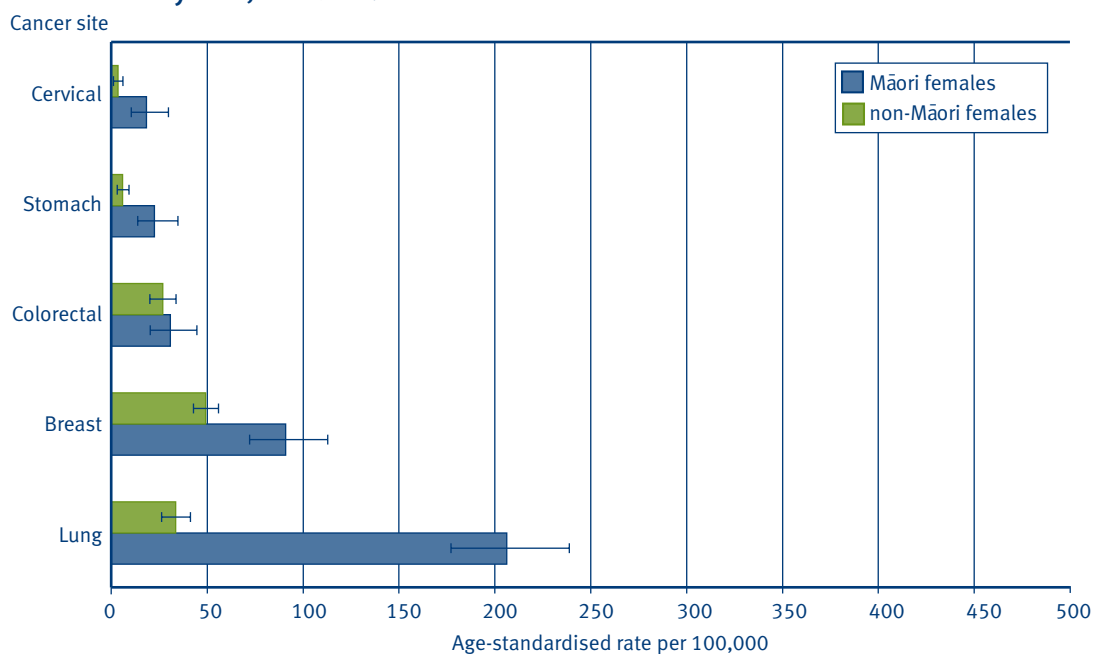
Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: New Zealand Cancer Registry (NZCR), Ministry of Health

Figure 12: Female cancer mortality rates, Māori and non-Māori aged 50–64 years, by site, 2005–07



Notes:

Age standardised to the 2001 Census total Māori population.

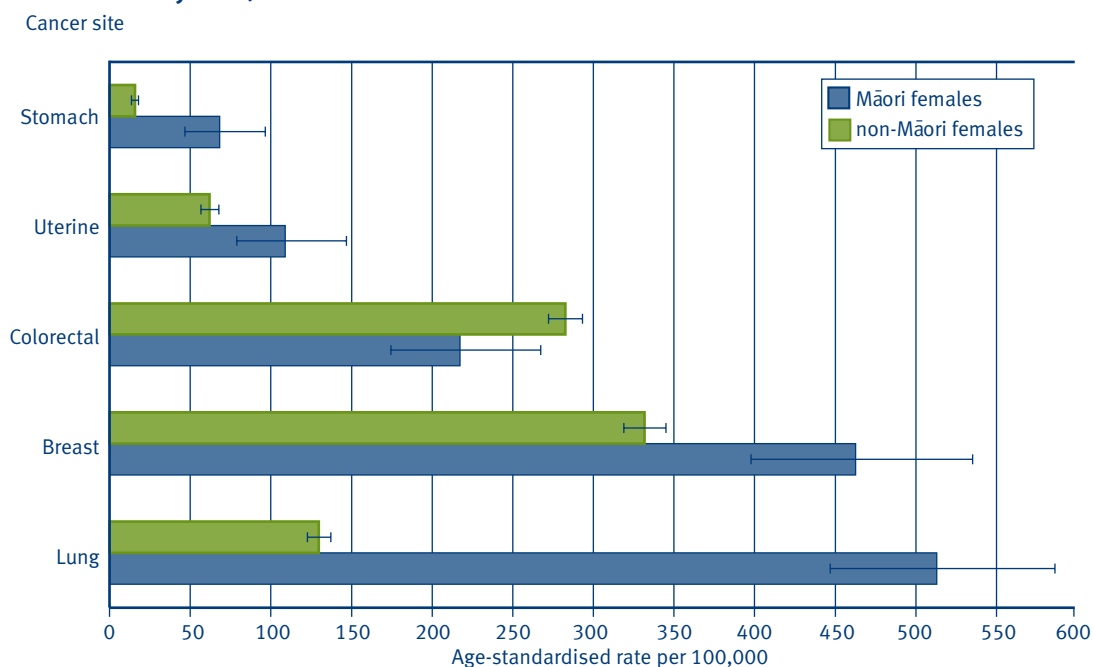
Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: Mortality Collection (MORT), Ministry of Health

The most common cancers registered for Māori females aged 50–64 years were breast, lung, colorectal, uterine and stomach⁶ (Figure 11). The leading causes of cancer death for Māori females were lung, breast, colorectal, stomach and cervical (Figure 12).

As shown in Figure 11, the greatest disparity in female cancer registrations for the 50–64 years age group occurred in lung cancer, where Māori females were 5 times more likely than non-Māori females to register for lung cancer (RR 5.25, CI 4.48–6.15). However, lung cancer mortality was 6 times higher for Māori females aged 50–64 years than for non-Māori females of the same age (RR 6.12, CI 5.11–7.34) (Figure 12). For breast cancer the disparities between Māori and non-Māori were significant in both registration and mortality (RR 1.66, CI 1.49–1.85 for breast cancer registrations; RR 1.84, CI 1.46–2.33 for breast cancer mortality). Cervical cancer registrations were over 3 times higher for Māori than for non-Māori (RR 3.34, CI 2.17–5.14), whereas the Māori cervical cancer mortality rate was more than 5 times that of non-Māori (RR 5.18, CI 2.86–9.39).

Figure 13: Female cancer registration rates, Māori and non-Māori aged 65+ years, by site, 2005–07



Notes:

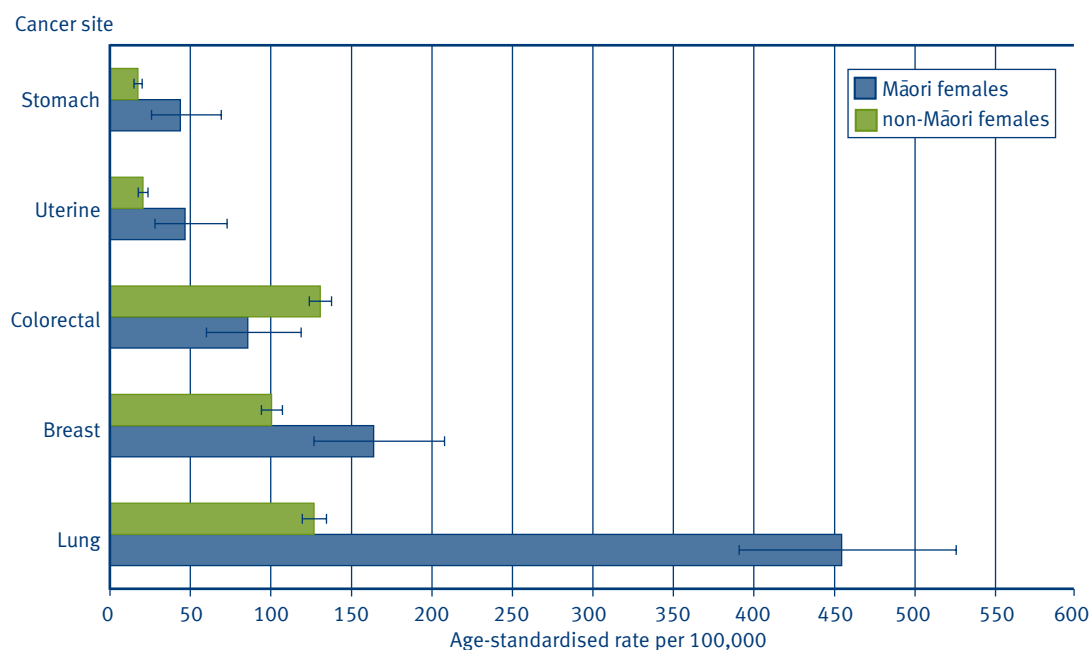
Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: New Zealand Cancer Registry (NZCR), Ministry of Health

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

Figure 14: Female cancer mortality rates, Māori and non-Māori aged 65+ years, by site, 2005–07



Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

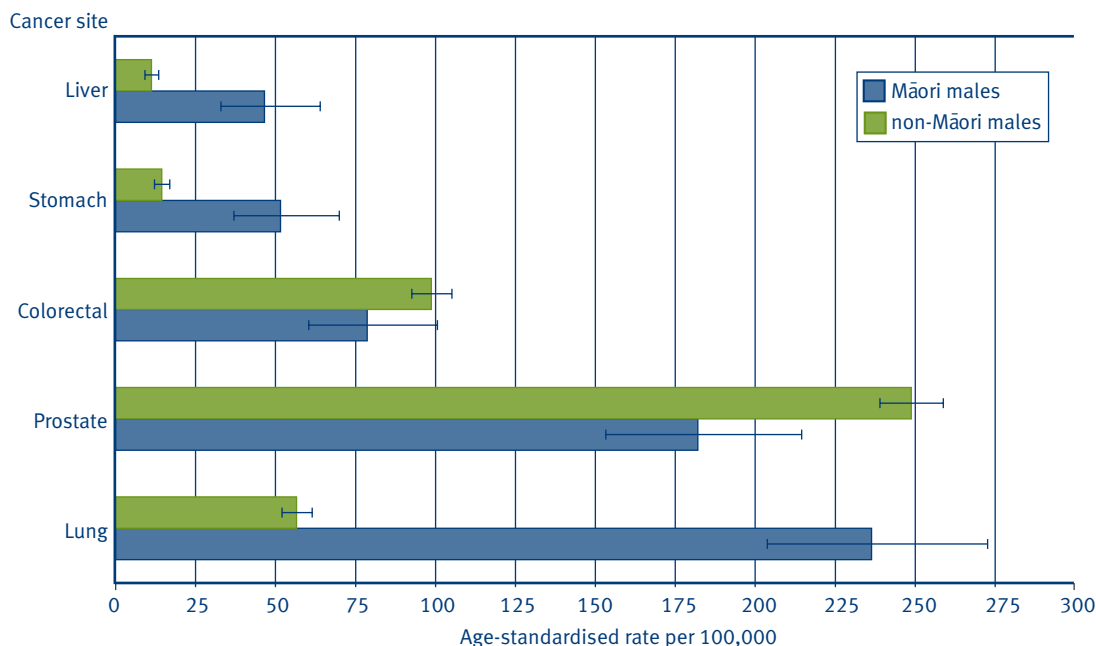
Source: Mortality Collection (MORT), Ministry of Health

For Māori females aged 65+ years, the most common cancer registration and cancer mortality sites were lung, breast, colorectal, uterine and stomach (Figure 13 and Figure 14).

Figure 13 shows that Māori females aged 65+ years had a lung cancer registration rate almost 4 times that of non-Māori females of the same age (RR 3.95, CI 3.27–4.77). The relative disparity between Māori and non-Māori females of this age was similar for lung cancer mortality (Figure 14), with Māori female lung cancer mortality approximately 3.5 times that of non-Māori females (RR 3.58, CI 3.05–4.21). Differences in breast cancer registration and mortality rates were significantly higher for Māori females of this age compared to non-Māori (RR 1.39, CI 1.16–1.68 for breast cancer registration; RR 1.63, CI 1.27–2.10 for breast cancer mortality).

For colorectal cancer, registration and mortality rates for Māori females aged 65+ years were significantly lower than for non-Māori (RR 0.77, CI 0.59–1.00 for registration; RR 0.66, CI 0.47–0.92). The uterine cancer registration rate for Māori females aged 65+ years was over 1.7 times that for non-Māori females (RR 1.76, CI 1.19–2.60), while the mortality rate for this cancer was twice as high for Māori in this group compared to non-Māori (RR 2.28, CI 1.41–3.69).

Figure 15: Male cancer registration rates, Māori and non-Māori aged 50–64 years, by site, 2005–07



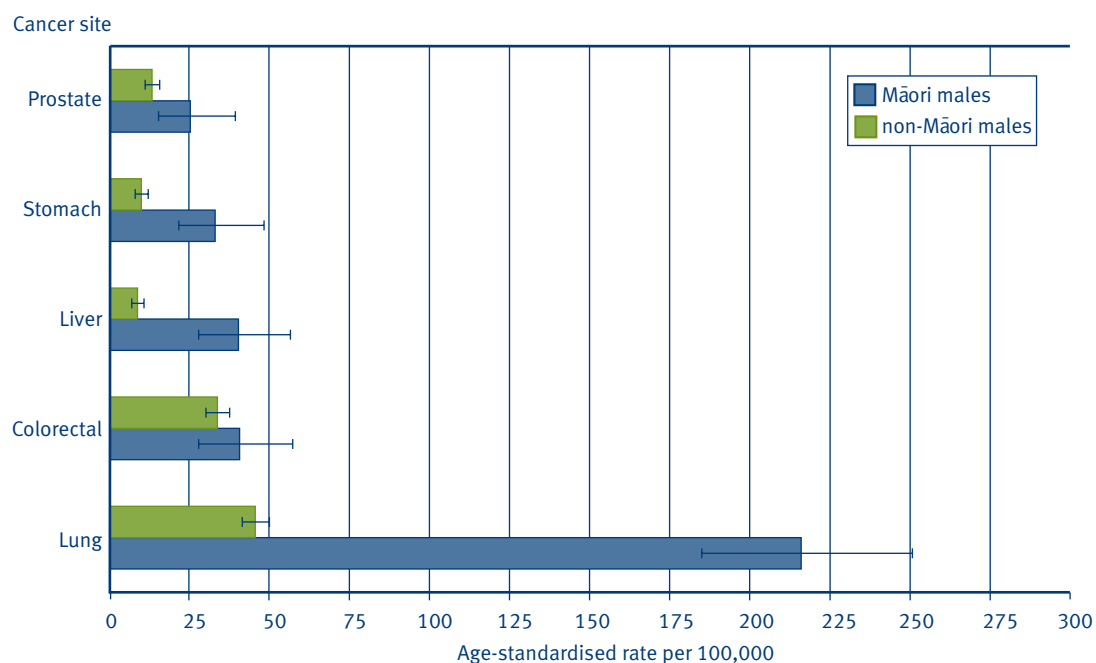
Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: New Zealand Cancer Registry (NZCR), Ministry of Health

Figure 16: Male cancer mortality rates, Māori and non-Māori aged 50–64 years, by site, 2005–07



Notes:

Age standardised to the 2001 Census total Māori population.

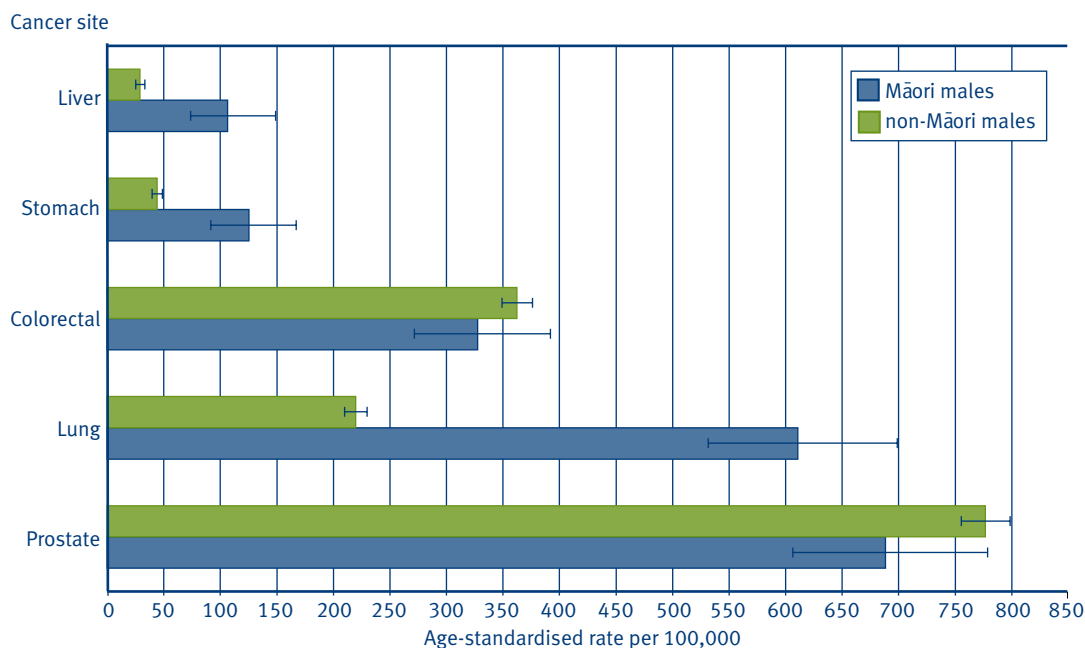
Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: Mortality Collection (MORT), Ministry of Health

The most common cancer registration and cancer mortality sites for Māori males aged 50–64 years were lung, prostate, colorectal, stomach and liver (Figure 15 and Figure 16).

Lung cancer registration rates for Māori males aged 50–64 years were 4 times higher than for non-Māori males the same age (RR 4.17, CI 3.54–4.93) (Figure 15), whereas lung cancer mortality rates for Māori in this group were over 4.5 times those of non-Māori (RR 4.76, CI 3.99–5.68) (Figure 16). Prostate cancer registrations were significantly lower for Māori aged 50–64 years compared with non-Māori (RR 0.73, CI 0.62–0.87), but Māori this age were almost twice as likely to die from prostate cancer as non-Māori (RR 1.92, CI 1.18–3.11).

Figure 17: Male cancer registration rates, Māori and non-Māori aged 65+ years, by site, 2005–07



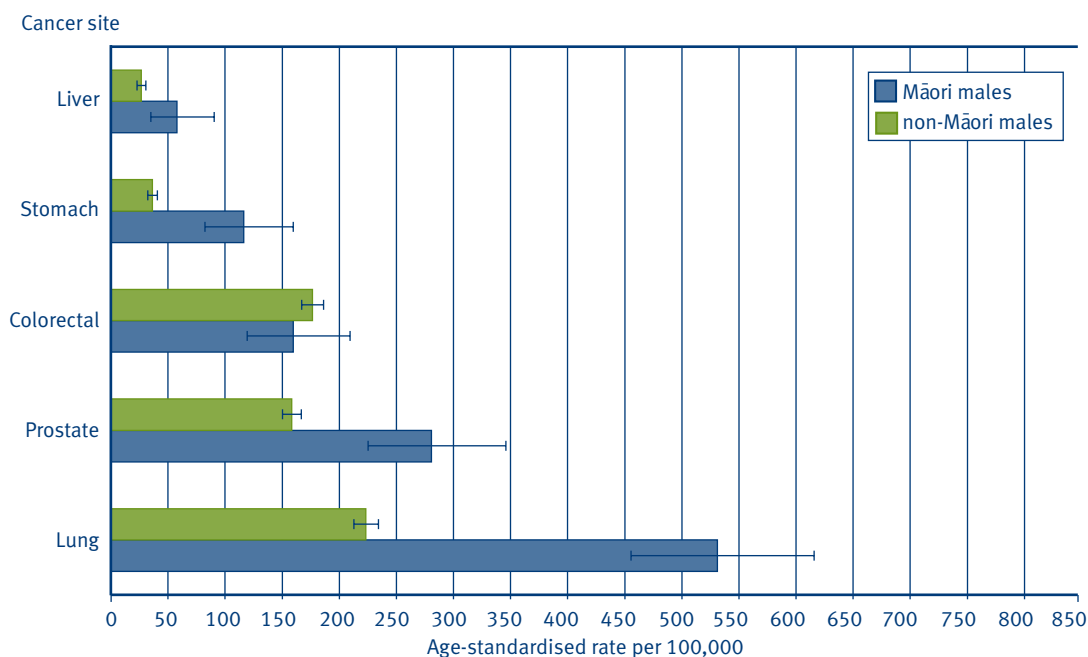
Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: New Zealand Cancer Registry (NZCR), Ministry of Health

Figure 18: Male cancer mortality rates, Māori and non-Māori aged 65+ years, by site, 2005–07



Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: Mortality Collection (MORT), Ministry of Health

Māori males in the 65+ years age group were most likely to be registered with and die from prostate, lung, colorectal, stomach and liver cancers (Figure 17 and Figure 18).

As shown in Figure 17, there was no significant difference between the prostate cancer registration rate of Māori and non-Māori aged 65+ years (RR 0.89, CI 0.75–1.04). However, as was observed in the 50–64 years age group, the likelihood of dying of prostate cancer is significantly higher for Māori compared with non-Māori (RR 1.77, CI 1.43–2.20). In the 65+ years age group, the lung cancer registration rate for Māori males is over 2.5 times that of non-Māori males (RR 2.78, CI 2.33–3.32) and the mortality rate for lung cancer is just under 2.5 times higher for Māori compared with non-Māori (RR 2.38, CI 2.03–2.78).

The case mortality rate is the ratio of the number of deaths caused by a specific disease to the number of diagnosed cancers of that disease. For some cancers, the case mortality rate for older Māori was higher than for non-Māori, which suggests that Māori with these cancers have a higher risk of dying from their cancer than non-Māori (for further information see Robson et al 2010; Cormack et al 2007; Jeffreys et al 2005).

Information about cancer trends can also be found in *Unequal Impact II: Māori and non-Māori cancer statistics by deprivation and rural–urban status, 2002–2006* (Robson et al 2010).

Respiratory disease

Table 20: Chronic obstructive pulmonary disease (COPD) indicators, Māori and non-Māori, by gender

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
COPD hospitalisation, 2007–09, rate per 100,000	991.8 (916.7–1073.0)	201.6 (190.0–213.8)	3333.9 (3074.4–3615.4)	1010.1 (969.4–1052.5)	1560.6 (1466.6–1660.7)	232.3 (218.5–246.9)	3823.0 (3542.6–4125.6)	803.2 (764.2–844.2)
COPD mortality, 2005–07, rate per 100,000	62.6 (46.3–82.7)	13.6 (11.4–16.1)	492.7 (418.9–575.8)	215.8 (206.4–225.4)	76.3 (58.9–97.3)	14.4 (12.2–16.9)	430.7 (369.6–499.0)	140.6 (134.1–147.3)

Notes:

Age standardised to the 2001 Census total Māori population.

Hospitalisations are ethnicity-adjusted rates; all other rates use prioritised ethnicity – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Sources:

National Minimum Dataset (Hospital Events) (MNMDs), Ministry of Health

Mortality Collection (MORT), Ministry of Health

Table 20 shows that in the 50–64 years age group, Māori males were almost 5 times more likely to be hospitalised for COPD compared with non-Māori males the same age (RR 4.92, CI 4.53–5.34) and 4.5 times more likely than non-Māori to die from COPD (RR 4.60, CI 3.31–6.38). For females in this age group, the COPD hospitalisation rate was almost 7 times that of non-Māori females (RR 6.72, CI 6.29–7.17), and the COPD mortality rate was just over 5 times higher than that of non-Māori (RR 5.30, CI 3.96–7.11).

COPD hospitalisation and mortality rates for Māori males aged 65+ years were significantly higher than for non-Māori males of this age (RR 3.30, CI 3.07–3.55 for COPD hospitalisation; RR 2.28, CI 1.94–2.69 for COPD mortality). However, as with the 50–64 years age group, there were greater disparities for females. Māori females in the 65+ years age group had a COPD hospitalisation rate almost 5 times higher than non-Māori (RR 4.76, CI 4.44–5.10), while the COPD mortality rate was 3 times higher (RR 3.06, CI 2.61–3.59).

Table 21: Pneumonia indicators, Māori and non-Māori, by gender

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Pneumonia hospitalisation, 2007–09, rate per 100,000	706.2 (645.2–772.9)	192.6 (181.8–204.0)	1683.1 (1514.6–1870.2)	669.9 (639.4–701.8)	686.8 (629.4–749.5)	158.0 (148.0–168.6)	1399.3 (1254.1–1561.4)	433.3 (408.5–459.7)
Pneumonia mortality, 2005–07, rate per 100,000	9.5 (4.1–18.7)	1.6 (0.9–2.6)	43.5 (23.2–74.4)	32.3 (29.1–35.7)	–	1.4 (0.8–2.4)	40.4 (24.3–63.1)	31.7 (29.5–34.1)

Notes:

Age standardised to the 2001 Census total Māori population.

Hospitalisations are ethnicity-adjusted rates; all other rates use prioritised ethnicity – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

A dash (–) indicates that the data were unavailable due to low counts.

Sources:

National Minimum Dataset (Hospital Events) (MNMDS), Ministry of Health

Mortality Collection (MORT), Ministry of Health

For Māori males aged 50–64 years, pneumonia hospitalisation was over 3.5 times that of non-Māori (RR 3.67, CI 3.34–4.02) (Table 21). However, the pneumonia mortality rate was 6 times higher for Māori compared with non-Māori in this group (RR 6.01, CI 2.54–14.21).

Table 21 also shows that in the 65+ years age group, Māori females have a pneumonia hospitalisation rate 3 times higher than non-Māori females (RR 3.23, CI 2.90–3.60), although there is no significant difference in the pneumonia mortality rate between the two groups.

Diabetes

Table 22: Diabetes indicators, Māori and non-Māori, by gender

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Diagnosed diabetes prevalence (self-reported), 2006/07, percent	17.7 (11.4–24.0)	8.7 (6.7–10.7)	28.4 (17.9–40.9)	14.9 (12.3–17.4)	8.2 (4.8–11.7)	5.8 (4.5–7.2)	22.9 (14.3–31.5)	11.8 (9.2–14.3)
Diabetes complications – renal failure with concurrent diabetes, 2007–09, rate per 100,000	347.5 (306.7–393.8)	28.9 (23.6–35.4)	639.4 (538.1–759.8)	65.3 (52.8–80.9)	201.2 (172.3–234.8)	21.3 (17.2–26.5)	433.8 (355.4–529.6)	51.0 (40.6–64.0)
Diabetes complications – lower limb amputation with concurrent diabetes, 2007–09, rate per 100,000	141.5 (116.5–171.8)	20.7 (16.9–25.4)	245.9 (185.2–326.4)	64.9 (54.7–76.9)	68.7 (52.9–89.2)	6.4 (4.3–9.6)	123.7 (86.7–176.3)	18.9 (13.6–26.2)

Notes:

Age standardised to the 2001 Census total Māori population.

Hospitalisations and procedures are ethnicity-adjusted rates; all other rates use prioritised ethnicity – see *Ngā Tapuāe me ngā Raraunga: Methods and Data Sources* for further information.

Diagnosed diabetes includes Type 1 and Type 2 diabetes.

Sources:

2006/07 New Zealand Health Survey, Ministry of Health

National Minimum Dataset (Hospital Events) (MNMDS), Ministry of Health

In the 50–64 years age group, the self-reported prevalence of diabetes⁷ was not significantly different for Māori and non-Māori females (RR 1.41, CI 0.68–2.13), but for Māori males it was twice as high as for non-Māori males (RR 2.03, CI 1.18–2.88). In the 65+ years age group, both Māori males and Māori females were twice as likely to report having diabetes compared with non-Māori males and females (RR 1.91, CI 1.10–2.72 for males; RR 1.94, CI 1.13–2.76 for females). Table 22 shows that there are very large disparities between Māori and non-Māori in terms of diabetes complications (renal failure and lower limb amputations).

The rate of renal failure with concurrent diabetes (aged 50–64 years) was 12 times higher in Māori males (RR 12.01, CI 10.19–14.14) and 9.4 times higher in Māori females (RR 9.43, CI 7.75–11.48) when compared with non-Māori males and non-Māori females of the same age, respectively. Disparities between Māori and non-Māori in renal failure with concurrent diabetes were also observed in the 65+ years age group (RR 9.79, CI 7.97–12.02 for males; RR 8.51, CI 6.72–10.78 for females).

⁷ Note that self-reported diabetes underestimates the true prevalence because some people living with type 2 diabetes have not yet been diagnosed.

Although some of these disparities can be attributed to the higher prevalence of diabetes among Māori, the disproportionately higher rates would suggest that Māori with diabetes are more likely to go on to develop renal failure. For example, among males aged 50–64 years who have diabetes, Māori are almost 6 times (ie, 12.01 / 2.03) more likely to develop renal failure than non-Māori. For females this age, the likelihood is even higher for Māori because the self-reported prevalence of diabetes in this group is similar for Māori and non-Māori. So, among females aged 50–64 years who have diabetes, Māori are 9.4 times more likely to develop renal failure.

Similarly, there were large disparities in the rates of lower limb amputation with concurrent diabetes in both age groups, with the greatest disparity in females. Table 22 shows that the rate of lower limb amputation with concurrent diabetes for Māori females aged 50–64 years was over 10 times higher than for non-Māori females the same age (RR 10.70, CI 7.58–15.11). So, among females aged 50–64 years who have diabetes, Māori are 10.7 times more likely to have a lower limb amputated.

In the 65+ years age group, the rate of lower limb amputation with concurrent diabetes for Māori females is over 6 times higher than for non-Māori (RR 6.55, CI 4.37–9.80). Therefore, among females aged 65+ years who have diabetes, Māori are 6.6 times more likely to undergo lower limb amputation than non-Māori.

Table 23: Get Checked programme indicator, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Had Diabetes Get Checked (self-reported) in past 12 months, 2006/07, percent	81.5 (63.6–93.0)	59.7 (47.1–72.3)	–	78.9 (71.2–86.6)	77.3 (56.7–91.3)	67.2 (54.6–79.9)	86.0 (67.5–96.2)	74.5 (66.4–82.7)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

A dash (–) indicates that the data were unavailable due to low counts.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

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 their physical health, lifestyle and management of the disease.

The 2006/07 New Zealand Health Survey showed that among those who had self-reported having diabetes, Māori in both age groups were equally as likely as non-Māori of the same age to report having accessed the Get Checked programme.

Arthritis, spinal disorders and osteoporosis

Table 24: Arthritis prevalence, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Arthritis (self-reported) in past 12 months, 2006/07, percent	29.9 (20.8–39.0)	21.6 (19.0–24.2)	42.5 (28.9–56.0)	34.2 (30.7–37.8)	24.8 (18.7–30.9)	24.9 (22.1–27.7)	42.2 (34.2–50.2)	49.6 (46.5–52.6)

Notes:
Age standardised to the 2001 Census total Māori population.
Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Table 24 presents the self-reported prevalence of diagnosed arthritis. There were no statistically significant differences between Māori and non-Māori.

Table 25: Spinal disorder prevalence, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Spinal disorders (self-reported) in past 12 months, 2006/07, percent	38.3 (27.9–48.6)	32.0 (28.3–35.7)	43.4 (31.9–55.0)	36.2 (32.2–40.3)	28.4 (21.6–35.3)	33.2 (30.2–36.2)	26.6 (17.7–35.6)	36.0 (32.8–39.1)

Notes:
Age standardised to the 2001 Census total Māori population.
Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

There were also no statistically significant differences between Māori and non-Māori in the self-reported prevalence of a diagnosed spinal disorder (Table 25).

Table 26: Osteoporosis prevalence, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Osteoporosis (self-reported) in past 12 months, 2006/07, percent	0.9 (0.2–2.8)	1.0 (0.4–2.1)	12.4 (5.9–22.3)	2.7 (1.6–4.2)	5.1 (2.8–8.4)	7.0 (5.2–8.9)	10.1 (4.5–18.9)	18.4 (15.8–20.9)

Notes:
Age standardised to the 2001 Census total Māori population.
Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.
These estimates should be treated with caution as very few respondents reported having been diagnosed with osteoporosis in the survey.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Table 26 shows the self-reported prevalence of diagnosed osteoporosis. The only statistically significant difference was in the 65+ years age group, where the prevalence was 4.5 times higher for Māori males than for non-Māori males (RR 4.65, CI 1.11–8.20).

Infectious disease

Table 27: Infectious disease indicators, Māori and non-Māori, by gender, 2006–2008

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Tuberculosis notifications, 2006–08, rate per 100,000	19.1 (10.7–31.6)	5.2 (3.9–6.9)	55.0 (32.6–86.9)	10.6 (8.3–13.4)	16.0 (8.8–26.9)	6.1 (4.6–7.9)	31.9 (17.0–54.6)	6.5 (4.9–8.5)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: Environmental Science and Research Ltd

Table 27 shows that tuberculosis notifications were over 3.5 times higher for Māori males aged 50–64 years than for non-Māori males of the same age (RR 3.68, CI 2.06–6.57). For females in this age group, the Māori/non-Māori disparity was just over 2.5 times (RR 2.63, CI 1.47–4.72). Disparities in the 65+ years age groups were apparent for Māori of both genders: tuberculosis notifications were around 5 times higher for both Māori males and females compared to non-Māori males and females of this age (RR 5.18, CI 3.07–8.75 for males; RR 4.92, CI 2.63–9.22 for females).

Suicide and intentional self-harm

Table 28: Intentional self-harm and suicide indicators, Māori and non-Māori, by gender

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Intentional self-harm hospitalisation, 2007–09, rate per 100,000	73.7 (56.6–95.8)	65.8 (60.4–71.7)	31.8 (15.2–66.5)	32.5 (26.5–39.9)	99.0 (79.8–122.9)	104.7 (97.9–111.9)	38.5 (19.0–78.0)	36.2 (29.8–44.1)
Suicide mortality, 2005–07, rate per 100,000	17.1 (9.4–28.8)	21.1 (18.3–24.2)	–	15.1 (12.3–18.3)	5.5 (1.8–12.9)	7.2 (5.6–9.1)	–	4.6 (3.3–6.2)

Notes:

Age standardised to the 2001 Census total Māori population.

Hospitalisations are ethnicity-adjusted rates; all other rates use prioritised ethnicity – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

A dash (–) indicates that the data were unavailable due to low counts.

Sources:

National Minimum Dataset (Hospital Events)(MNMDs), Ministry of Health

Mortality Collection (MORT), Ministry of Health

There were no significant differences in the intentional self-harm hospitalisation rates when comparing Māori with non-Māori of the same sex and age (Table 28). Suicide mortality rates were also similar between Māori and non-Māori in the 50–64 years age group (RR 0.81, CI 0.47–1.40 for males; RR 0.77, CI 0.31–1.91 for females). In the 65+ years age group, Māori suicide mortality rates cannot be determined due to low numbers.

Mental health

Table 29: Mental health indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
High or very high probability of anxiety or depressive disorder, 2006/07, percent	6.4 (3.1–11.3)	3.7 (2.7–4.8)	7.3 (2.0–17.5)	6.0 (4.3–7.8)	8.6 (4.7–14.1)	4.7 (3.5–6.0)	8.2 (4.6–13.4)	6.6 (4.8–8.5)

Notes:

High or very high probability of anxiety or depressive disorder is indicated by the respondent scoring a Kessler-10 (K10) score of 12 or more.

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

For Māori and non-Māori in the 50–64 years and 65+ years groups, there were no statistically significant differences in reporting a high or very high probability of anxiety or depressive disorder between genders (Table 29). There was a significant difference in the 50–64 years age group when pooling genders, with Māori in this age group significantly more likely to report a high or very high probability of having an anxiety or depressive disorder compared to non-Māori (RR 1.78, CI 1.02–2.54) (data not shown).

Te Rau Hinengaro: The New Zealand Mental Health Survey (Oakley Browne et al 2006) also provides recent 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 age-standardised prevalence of any mental disorder for Māori males aged 50+ years to be 16.1 percent, compared with 11.0 percent for non-Māori. For females in this age group the prevalence of any mental disorder was 29.3 percent for Māori, compared with 17.8 percent for non-Māori.

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).

Dementia

Table 30: Dementia indicators, Māori and non-Māori, by gender, 2005–2007

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Dementia (including Alzheimer’s) mortality, 2005–07, rate per 100,000	–	1.8 (1.1–2.9)	56.2 (32.7–90.0)	74.6 (69.5–80.0)	–	2.6 (1.7–3.8)	74.6 (51.7–104.3)	67.7 (64.1–71.4)

Notes:
 Age standardised to the 2001 Census total Māori population.
 Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.
 A dash (–) indicates that the data were unavailable due to low counts.

Source: Mortality Collection (MORT), Ministry of Health

Table 30 shows there were no significant differences in dementia (including Alzheimer’s) mortality between Māori and non-Māori, males and females, aged 65+ years.

Dementia prevalence is also important however this could not be included in this chart book due to the lack of reliable data.

Oral health

Table 31: Dental visit indicator, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Been to dentist (self-reported), in past 12 months, 2006/07, percent	29.8 (20.9–38.7)	60.3 (56.5–64.2)	33.1 (19.2–49.6)	52.8 (48.6–57.0)	40.0 (30.6–49.4)	64.0 (60.7–67.4)	31.2 (18.4–46.4)	56.9 (52.5–61.3)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Table 31 shows that Māori males aged 50–64 years were significantly less likely than non-Māori males of the same age to have visited a dentist in the previous year (RR 0.49, CI 0.34–0.65). Similarly, Māori females in this age group were less likely to have visited a dentist in the previous year compared with non-Māori females (RR 0.62, CI 0.47–0.78). The same disparities were observed in males and females in the 65+ years age group (RR 0.63, CI 0.36–0.90 for males; RR 0.55, CI 0.32–0.78 for females).

Unintentional injury

Table 32: Unintentional injury indicators, Māori and non-Māori, by gender

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
All unintentional injury hospitalisation, 2007–09, rate per 100,000	1846.2 (1739.6–1959.3)	1150.1 (1125.8–1175.0)	2171.9 (1972.3–2391.6)	1627.5 (1581.2–1675.2)	1183.5 (1105.3–1267.1)	742.0 (723.1–761.3)	1874.3 (1700.9–2065.5)	1551.4 (1509.6–1594.4)
All unintentional injury mortality, 2005–07, rate per 100,000	53.1 (38.6–71.2)	25.1 (22.0–28.5)	129.8 (93.2–176.1)	64.7 (59.6–70.1)	24.2 (15.2–36.6)	9.6 (7.8–11.8)	57.1 (36.9–84.3)	40.9 (37.9–44.0)

Notes:

Age standardised to the 2001 Census total Māori population.

Hospitalisations are ethnicity-adjusted rates; all other rates use prioritised ethnicity – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Sources:

National Minimum Dataset (Hospital Events)(MNMDs), Ministry of Health

Mortality Collection (MORT), Ministry of Health

Unintentional injury hospitalisations were significantly higher for Māori of both genders and age groups. Māori males in the 50–64 years age group were over 1.5 times more likely than non-Māori to be hospitalised for an unintentional injury (RR 1.61, CI 1.52–1.69). There was a similar disparity in females of this age (RR 1.60, CI 1.50–1.70).

Unintentional injury mortality rates were also higher for Māori in this age group, with Māori males twice as likely to die from an unintentional injury compared with non-Māori males (RR 2.12, CI 1.53–2.92), and Māori females 2.5 times more likely than non-Māori females to die from this cause (RR 2.51, CI 1.58–4.00). The comparisons in the 65+ years age group showed similar disparities between Māori and non-Māori.

Table 33: Top three unintentional injury mortality categories, ranked by age-standardised rates, Māori and non-Māori, aged 50+ years, by gender, 2005–2007

	50+ years	
	Māori	non-Māori
Males	Falls Motor vehicle traffic accidents Drowning	Falls Motor vehicle traffic accidents All other transport accidents
Females	Motor vehicle traffic accidents Falls –	Falls Motor vehicle traffic accidents Poisoning

Notes:

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

A dash (–) indicates that the data were unavailable due to low counts.

Source: Mortality Collection (MORT), Ministry of Health

Table 33 shows the three most common causes of death from unintentional injury for those aged 50 years and over, by gender and ethnicity. Falls and motor vehicle traffic accidents were the top two causes of unintentional injury death for all older people. Death by drowning was the third most common cause of death for older Māori males while all other transport accidents and poisoning were the third most common causes of unintentional injury death for non-Māori males and females respectively.

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 on usual health practitioners, general practitioners (GPs) and Māori health providers, and the section includes an indicator for prescriptions.

Usual health practitioners

Table 34: Primary health care utilisation indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Having a usual health practitioner (self-reported), 2006/07, percent	99.0 (97.3–99.8)	96.9 (95.8–98.0)	96.4 (88.2–99.5)	98.9 (98.2–99.6)	98.0 (93.9–99.6)	98.0 (97.1–99.0)	96.0 (92.2–99.9)	98.8 (98.1–99.5)
Among people with a usual health practitioner – practitioner is a GP (self-reported), 2006/07, percent	99.3 (97.2–99.9)	99.5 (98.9–100.0)	98.2 (94.3–99.7)	99.6 (98.7–99.9)	98.0 (96.0–100.0)	99.3 (98.9–99.7)	99.5 (97.3–100.0)	99.5 (98.6–99.9)

Notes:
 Age standardised to the 2001 Census total Māori population.
 Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Older Māori were equally as likely as older non-Māori to report having a usual health practitioner regardless of their age or gender. Among those aged 50+ years with a usual health practitioner, for both Māori and non-Māori the most common type was a GP.

General practitioners

Table 35: General practitioner indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Seen a GP in the last 12 months (self-reported), 2006/07, percent	87.0 (81.5–92.5)	85.8 (83.5–88.1)	95.2 (91.8–98.6)	94.2 (92.4–96.0)	82.1 (76.7–87.5)	84.9 (82.0–87.7)	94.4 (90.6–98.2)	95.4 (94.2–96.6)
Unmet need for GP in last 12 months, for any reason (self-reported), 2006/07, percent	5.4 (2.3–10.8)	2.9 (1.8–4.1)	1.3 (0.2–3.9)	2.0 (1.1–3.3)	11.8 (7.0–18.2)	5.5 (4.0–6.9)	6.7 (2.8–12.9)	2.2 (1.4–3.0)

Notes:
Age standardised to the 2001 Census total Māori population.
Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

There were no significant differences between older Māori and non-Māori in reporting having seen a GP in the last 12 months, or in unmet need for a GP in the last 12 months.

Table 36: Reason for last visit to GP, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Routine check-up or advice (self-reported), 2006/07, percent	44.5 (36.1–53.0)	39.5 (35.7–43.4)	35.6 (24.7–46.5)	44.6 (40.6–48.7)	37.5 (28.9–46.1)	34.1 (30.7–37.5)	41.4 (30.5–52.2)	43.7 (40.7–46.8)
Long-term illness (self-reported), 2006/07, percent	36.2 (26.0–46.4)	27.0 (23.4–30.5)	47.5 (35.9–59.1)	34.8 (31.2–38.5)	25.3 (18.4–32.2)	29.2 (26.0–32.4)	28.7 (20.7–36.7)	38.5 (35.0–42.0)
Short-term illness (self-reported), 2006/07, percent	24.2 (14.9–33.6)	28.6 (24.5–32.6)	25.2 (15.2–37.6)	20.8 (18.1–23.6)	38.2 (29.8–46.6)	33.8 (30.4–37.3)	29.1 (19.4–38.9)	20.7 (17.6–23.7)
Injury or poisoning (self-reported), 2006/07, percent	6.2 (3.2–10.6)	10.8 (8.3–13.4)	0.2 (0.0–1.8)	5.7 (3.9–7.5)	6.2 (3.6–9.9)	5.8 (4.2–7.4)	4.7 (1.1–12.2)	4.8 (3.4–6.2)
Vaccination (self-reported), 2006/07, percent	4.6 (1.2–11.5)	3.2 (2.0–4.9)	2.9 (0.4–9.5)	4.5 (2.8–6.3)	0.7 (0.2–2.0)	3.7 (2.3–5.1)	2.5 (0.8–5.6)	3.8 (2.4–5.3)
Mental health (self-reported), 2006/07, percent	3.7 (0.8–10.2)	2.6 (1.6–4.0)	–	0.6 (0.2–1.4)	0.6 (0.1–1.6)	3.5 (2.2–4.9)	–	0.6 (0.2–1.3)

Notes:
Age standardised to the 2001 Census total Māori population.
Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.
A dash (–) indicates that the data were unavailable due to low counts.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Table 36 presents the self-reported reasons for last visit to a GP. The most common reasons for visiting a GP were routine check-up, long-term illness and short-term illness. Māori females aged 65+ years were less likely than non-Māori females of the same age to visit a GP for a long-term illness (RR 0.74, CI 0.53–0.96). Māori females aged 50–64 years were significantly less likely to visit their GP for a vaccination compared with non-Māori females in the same age group (RR 0.19, CI 0.00–0.40).

Māori health providers

Table 37: Māori health provider indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Usually goes to a Māori primary health care provider first when feeling unwell or injured (self-reported), 2006/07, percent	7.3 (3.8–12.5)	1.7 (0.9–3.0)	5.8 (1.1–16.8)	1.9 (1.0–3.1)	5.9 (3.4–9.5)	1.3 (0.7–2.2)	4.1 (1.9–7.8)	1.0 (0.5–1.8)
Notes:								
Age standardised to the 2001 Census total Māori population.								
Prioritised ethnicity has been used – see <i>Ngā Tapuāe me ngā Raraunga: Methods and Data Sources</i> for further information.								

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Older Māori in general were more likely than older non-Māori to report usually going to a Māori primary health care provider first when feeling unwell or injured. However, the only significant difference was observed for females (Table 37). Māori females aged 50–64 years were over 4.5 times more likely than non-Māori females of this age to visit a Māori primary health care provider (RR 4.67, CI 1.13–8.21).

Due to small numbers, the reasons for visiting a Māori health provider are unable to be reported here.

Prescriptions

Table 38: Prescription indicators, Māori and non-Māori, by gender, 2006/07

Indicator	Males				Females			
	50–64 years		65+ years		50–64 years		65+ years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Uncollected prescriptions in past 12 months (self-reported), 2006/07, percent	5.1 (2.0–10.3)	6.3 (4.3–8.3)	2.1 (0.2–8.8)	2.8 (1.8–4.2)	15.4 (9.0–21.8)	6.7 (4.7–8.6)	7.0 (2.8–14.1)	4.3 (2.8–5.7)

Notes:

Age standardised to the 2001 Census total Māori population.

Prioritised ethnicity has been used – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Source: 2006/07 New Zealand Health Survey, Ministry of Health

Table 38 shows that Māori females aged 50–64 years were significantly more likely than non-Māori females of the same age to have had uncollected prescriptions in the past 12 months (RR 2.30, CI 1.17–3.44).

Ngā Pūnaha Hauora Tūtohu: Health System Indicators

The indicators in this section are measures of the performance of the health system.

Amenable mortality and ambulatory-sensitive hospitalisations

The Ministry of Health has recently redefined *amenable mortality* as ‘deaths from those conditions for which variation in mortality rates (over time and across populations) reflects variation in the coverage and quality of health care (preventative or therapeutic services) delivered to individuals’ (Ministry of Health 2010c). Amenable mortality includes deaths (as defined above) occurring in those less than 75 years of age.

Ambulatory-sensitive hospitalisations are defined as hospitalisations of people less than 75 years old resulting from diseases sensitive to prophylactic or therapeutic interventions that are deliverable in a primary health care setting.

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

Table 39: Health system indicators, Māori and non-Māori, by gender

Indicator	Males				Females			
	50–64 years		65–74 years		50–64 years		65–74 years	
	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori
Amenable mortality, 2004–06, rate per 100,000	806.1 (744.9–870.9)	249.8 (239.8–260.0)	1722.0 (1583.3–1869.6)	644.8 (623.0–667.1)	511.1 (464.7–560.9)	151.5 (143.9–159.5)	1079.9 (976.4–1191.3)	361.0 (345.4–377.2)
Ambulatory-sensitive hospitalisation, 2007–09, rate per 100,000	6315.8 (6066.4–6575.4)	2191.3 (2153.1–2230.3)	10677.7 (9994.4–11407.7)	4565.8 (4464.3–4669.6)	5577.8 (5355.9–5808.9)	1650.2 (1616.2–1685.0)	9483.0 (8876.1–10131.3)	3375.9 (3289.3–3464.9)

Notes:

Age standardised to the 2001 Census total Māori population.

Hospitalisations are ethnicity-adjusted rates; all other rates use prioritised ethnicity – see *Ngā Tapuae me ngā Raraunga: Methods and Data Sources* for further information.

Sources:

Mortality Collection (MORT), Ministry of Health

National Minimum Dataset (Hospital Events) (MNMDs), Ministry of Health

Table 39 shows that older Māori had significantly higher amenable mortality rates than older non-Māori. Māori males and Māori females aged 50–64 years had amenable mortality rates that were over 3 times higher than those for non-Māori males and females the same age (RR 3.23, CI 2.96–3.52 for males; RR 3.37, CI 3.03–3.75 for females). In the 65–74 years age group, Māori amenable mortality rates were over 2.5 times higher than non-Māori rates (RR 2.67, CI 2.45–2.92 for males; RR 2.99, CI 2.69–3.33 for females).

Disparities in ambulatory-sensitive hospitalisation rates were similar in both the 50–64 years and 65–74 years age groups but were highest for females aged 50–64 years. Ambulatory-sensitive hospitalisation rates were over 3 times higher for Māori females aged 50–64 years compared with non-Māori females in this age group (RR 3.38, CI 3.28–3.49).

For more information about amenable mortality, including an in-depth inequality analysis, refer to the 2010 Ministry of Health report *Saving Lives: Amenable mortality in New Zealand* (Ministry of Health 2010c).

Tāpiritanga: Appendices

Appendix 1: ICD-10 codes

Table A1.1: Amenable mortality codes

Condition	ICD-10
Pulmonary tuberculosis	A15
Meningococcal disease	A39
Pneumococcal disease	J13, A40.3, G00.1
HIV/AIDS	B20–B24
Cancer	
Stomach	C16
Rectum	C19–C21
Melanoma	C43
Female breast	C50
Cervix	C53
Testis	C62
Prostate	C61
Thyroid	C73
Bone and cartilage	C40–C41
Hodgkins	C81
Acute lymphocytic leukaemia	C91.0
Complications of pregnancy	O01–O99
Complications of the perinatal period	P02–P94
Congenital heart disease (subset)	Q21
Diabetes	E10–E14
Valvular heart disease	I01, I05–I09, I33–I37
Hypertensive diseases	I10–I15
Coronary disease	I20–I25
Heart failure	I50
Cerebrovascular diseases	I60–I69
Renal failure	N17–N18
Pulmonary embolism	I26
COPD	J42
Asthma	J45–J46
Peptic ulcer disease	K25–K26
Cholelithiasis	K80
Suicide	X60–X84
Road traffic accidents	V01–V79, V87, V89, V99
Falls (#NOF)	S72
Burns	T20–T31
Adverse health care events (subset)	T80–T88

fractured neck of femur

Table A1.2: Ambulatory-sensitive hospitalisation codes

Condition	ICD-10
Angina and chest pain	I20, R07.2–R07.4
Asthma	J45–J46
Bronchiectasis	J47
Cellulitis	H00.0, H01.0, J34.0, L01–L04, L08, L98.0
Cervical cancer	C53
Congestive heart failure	I50, J81
Constipation	K59.0
Dental conditions	K02, K04, K05
Dermatitis & eczema	L20–L30
Diabetes	E10–E14, E162
Epilepsy	G40–G41, O15, R56.0, R56.8
Gastroenteritis/dehydration	A02–A09, R11
GORD (Gastro-oesophageal reflux disease)	K21
Hypertensive disease	I10–I15, I67.4
Kidney/urinary infection	N10, N12, N13.6, N30.9, N39.0
Myocardial infarction	I21–I23, I24.1
Nutrition deficiency and anaemia	D50–D53, E40–E46, E50–E64, M83.3*
Other ischaemic heart disease	I24.0, I24.8, I24.9, I25
Peptic ulcer	K25–K28
Respiratory infections - Pneumonia	J13–J16, J18
Rheumatic fever/heart disease	I00–I02, I05–I09
Sexually transmitted Infections	A50–A59, A60, A63, A64, I98.0, M02.3, M03.1, M73.0, M73.1, N29.0, N34.1
Stroke	I61, I63–I66
Upper respiratory tract and ENT infections	J00–J04, J06, H65–H67
Vaccine-preventable disease - Meningitis, Whooping cough, Hepatitis B, Pneumococcal disease, Other	A33–A37, A40.3, A80, B16, B18
Vaccine-preventable disease - MMR	B05, B06, B26, M01.4, P35.0**

*Adult only (15+ years)

**All ages

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

Condition	ICD-10-AM
Total cardiovascular disease	I00–I99
Ischaemic heart disease	I20–I25
Other forms of heart disease	I30–I52
Heart failure	I50
Total stroke	I60–I69
Rheumatic heart disease	I05–I09
Pneumonia	J12–J18
Chronic obstructive pulmonary disease (COPD)	J40–J44
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	E10.2, E11.2, E12.2, E13.2, E14.2
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–Y98
Unintentional injuries (Accidents)	V01–X59
Motor vehicle traffic accidents	V20–V59
All other transport accidents	V60–V99
Falls	W00–W19
Machinery	W28–W31
Firearms	W32–W34
Drownings and submersions	W65–W74
Suffocation	W75–W84
Fires/hot objects or substances	X00–X19
Poisonings	X40–X49
Suicide and self-harm	X60–X84
Assault and homicide	X85–Y09

Appendix 2: 2001 Census total Māori population

Table A2.1: 2001 Census Māori population

Age group (Years)	Number	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: 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.⁸ These ethnicity adjusters were created and used to calculate hospitalisation rates in *Tatau Kahukura: Māori Health Chart Book 2010, 2nd edition* (Ministry of Health 2010d).

High-quality ethnicity data are essential for monitoring health trends by ethnicity. Such data are also needed to provide Māori with high-quality information about Māori health and disparities for planning, for the development and evaluation of policies, and for interventions (Cormack and Harris 2009). However, official health data sets have still been shown to undercount Māori in cancer registrations and hospital admissions, and there is a need to improve ethnicity data in health information systems. The Ministry of Health 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 is 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 data sets, 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 obtained 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.⁹ 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).

8 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.

9 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).

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 were available up to 2008. The time 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 A3.1 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 fewer 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 A3.1: 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

* The ratios were smoothed using local regression with LOESS procedure in SAS.

** Robson and Harris 2007.

Table A3.1 shows the public hospital adjusters developed for Hauora IV for comparison. The pattern and magnitude of the ratios for this edition of Tatau Kahukura are generally similar to those found in Hauora IV.

The standard error for the smoothed adjusters was also calculated. This standard error was incorporated into 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 for Māori.

Pūtea Kōrero: References

- Ajwani S, Blakely T, Robson B, et al. 2003. *Decades of Disparity: Ethnic mortality trends in New Zealand 1980–1999*. Wellington: Ministry of Health and University of Otago.
- Baxter J. 2008. *Māori Mental Health Needs Profile: A review of the evidence*. Palmerston North: Te Rau Matatini.
- Blakely T, Tobias M, Atkinson J, et al. 2007. *Tracking Disparity: Trends in ethnic and socioeconomic inequalities in mortality, 1981–2004*. Wellington: Ministry of Health.
- Cormack D, Harris R. 2009. *Issues in Monitoring Māori Health and Ethnic Disparities: An update*. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare.
- Cormack D, Purdie G, Robson B. 2007. Cancer. In: B Robson, R Harris (eds). *Hauora: Māori Standards of Health IV: A study of the years 2000–2005* (pp. 103–119). Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare.
- Fawcett J, Atkinson J, Herd P, et al. 2008. *Record Linkage of Census and Mortality 2001–04 Records: New Zealand Census – Mortality technical report No. 6*. Wellington: Department of Public Health, University of Otago.
- Harris R, Purdie G, Robson B, et al. 2007. Estimating Māori hospitalisations and cancer registrations. In: B Robson, R Harris R (eds). *Hauora: Māori Standards of Health IV: A study of the years 2000–2005*. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare.
- Jefferys M, Stevanovic V, Tobias M, et al. 2005. Ethnic inequalities in cancer survival in New Zealand: linkage study. *American Journal of Public Health* 85(5): 834–7.
- Ministry of Health. 2006 *Tatau Kahukura: Māori Health Chart Book*. Public Health Intelligence monitoring report no. 5. Wellington: Ministry of Health.
- Ministry of Health. 2007. *Older People's Health Chart Book 2006*. 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.
- Ministry of Health. 2009. *Kia Tika Ka Ora: The Māori Health Provider Work Programme 2009–2010*. Wellington: Ministry of Health.
- Ministry of Health. 2010a. *Food and Nutrition Guidelines for Healthy Older People: A background paper*. Wellington: Ministry of Health.
- Ministry of Health. 2010b. *Kōrero Mārama: Health Literacy and Māori – Results from the 2006 Adult Literacy and Life Skills Survey*. Wellington: Ministry of Health.
- Ministry of Health. 2010c. *Saving Lives: Amenable mortality in New Zealand, 1996–2006*. Wellington: Ministry of Health.
- Ministry of Health. 2010d. *Tatau Kahukura: Māori Health Chart Book 2010, 2nd Edition*. Wellington: Ministry of Health.
- Ministry of Health. 2010e. *Tobacco Use in New Zealand: Key findings from the 2009 New Zealand Tobacco Use Survey*. Wellington: Ministry of Health.
- Oakley Brown MA, Wells JE, Scott KM (eds). 2006. *Te Rau Hinengaro: The New Zealand Mental Health Survey*. Wellington: Ministry of Health.
- Office for Disability Issues, Statistics New Zealand. 2010. *Disability and Māori in New Zealand in 2006: Results from the New Zealand Disability Survey*. Wellington: Statistics New Zealand.
- Robson B, Purdie G, Cormack, D. 2010. *Unequal Impact II: Māori and non-Māori cancer statistics by deprivation and rural–urban status, 2002–2006*. Wellington: Ministry of Health.
- Robson B, Harris R (eds). 2007. *Hauora: Māori Standards of Health IV. A Study of the Years 2000–2005*. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare.
- World Health Organization. 2008. *Obesity: Prevention and managing the global epidemic: Report of a WHO consultation*. WHO Technical Report Series, No. 894. Geneva: World Health Organization.