

# **Kōrero Mārama**

## **Health Literacy and Māori**

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*Results from the 2006 Adult Literacy and Life Skills Survey*

# Manakotanga: Acknowledgements

This report was led by the Māori Health Research team (Monique Priston and Paula Searle) of Te Kete Hauora (Māori Health Directorate, Ministry of Health).

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# Whakarāpopotanga: Executive Summary

*Kōrero Marama: Health literacy and Māori* describes the health literacy skills of the adult Māori population (aged 16–65 years) compared to the adult non-Māori population (aged 16–65 years). The data in this report draws on the health-related questions from the 2006 Adult Literacy and Life Skills Survey (ALL), which measures the literacy skill level of the New Zealand population. It presents the findings for Māori compared to non-Māori by gender, rural and urban location, age, level of education, labourforce status and household income.

‘Health literacy’ is a widely used term that encompasses a range of ideas and definitions. Broadly speaking, health literacy is ‘the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions’ (Kickbusch et al 2005). International research shows there is a relationship between a person’s level of literacy and their health status (Canadian Council of Learning 2008; Kickbusch et al 2005; Knight 2006; Korhonen 2006; Institute of Medicine 2004; Nutbeam 2008). Poor health literacy is a significant barrier to accessing health care.

Health literacy is measured on a scale of 0 to 500, broken down into five skill levels. People who score at levels 1 and 2 (a score from 0 to 275) are defined in this report as having poor health literacy skills. Level 3 or above (a score between 276 and 500) is recognised as adequate to strong health literacy skills.

The findings in this report show that overall the majority of New Zealanders are limited in their ability to obtain, process and understand basic health information and services in order to make informed and appropriate health decisions. Furthermore, Māori have much poorer health literacy skills compared to non-Māori, regardless of gender, age, level of education, labourforce status, household income, or rural/urban location, and this is likely to have a negative impact on their health status.

Research suggests that people with poor health literacy:

- -are less likely to use prevention services (such as screening)
- have less knowledge of their illness, treatment and medicines
- are less likely to manage their long-term/chronic condition
- are more likely to be hospitalised due to a chronic condition
- are more likely to use emergency services
- are more vulnerable to workplace injury because they do not understand safety precaution messages.

Health literacy could be viewed as an issue for individuals, with an onus put on them to improve their literacy skills to better navigate health services. To really lift health literacy there needs to be a concerted effort from all the sectors that need to be part of the solution from government agencies to schools to the health care system. Building health literacy can be achieved through a range of activities such as clearer communication by health professionals, providing plain-language health information, adult literacy initiatives and raising literacy and numeracy levels in schools are some examples. Improving levels of health literacy may provide the key to containing system-wide costs, preventing illness and chronic disease and reducing rates of accident and death (Canadian Council on Learning 2008).

## Ngā Kitenga Matua: Key Findings

- -On average, New Zealanders have poor health literacy skills, with both Māori and non-Māori males and females scoring on average less than 275, which is the minimum required score for individuals to meet the complex demands of everyday life and work in the emerging knowledge-based economy.<sup>1</sup>
- -Four out of five Māori males and three out of four Māori females have poor health literacy skills.
- -Māori who live in a rural location have on average the poorest health literacy skills, closely followed by Māori who live in an urban location.
- -Māori in the 50–65, 16–18 and 19–24 years age groups have the poorest health literacy compared to the rest of the population. This is particularly concerning because over half of the Māori population (53%) was less than 25 years of age at the 2006 census. Also, older age groups have high levels of health need and are generally high users of health services.
- -Māori and non-Māori with a tertiary education are more likely to have good health literacy skills compared to those with lower levels of education, which is consistent with international evidence.
- -Māori across all labourforce status types have poorer health literacy skills compared to non-Māori, but Māori who are unemployed or looking for work have the poorest health literacy skills of all groups.
- -Māori across all income quintiles have poorer health literacy skills compared to non-Māori.

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<sup>1</sup> As defined in the 2006 ALL survey.

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# Whakamōhiotanga: Introduction

## Background

This report describes the health literacy skills of the adult Māori population (aged 16–65 years) compared to the adult non-Māori population (aged 16–65 years). The data in the report is sourced from the 2006 Adult Literacy and Life Skills Survey (ALL), which measures the literacy skill level of the New Zealand population.

‘Health literacy’ refers to a person’s ability to obtain, process and understand basic health information and services in order to make informed and appropriate health decisions (Kickbusch et al 2005). Knowing and understanding the extent to which people are able to read and comprehend health instructions and messages is an important part of tailoring appropriate population and personal health services. With the increasing call for services – including health services – to empower people and their whānau rather than see them as mere service users, the need to understand current levels of health literacy and how we might improve them is becoming even more important.

## What is health literacy?

The Tertiary Education Commission (2008) defines literacy as the ‘written and oral language people use in their everyday life and work; it includes reading, writing, speaking and listening’. These are the skills people need in order to function at an optimal level in society. Health literacy is a widely used term that encompasses a range of ideas and definitions. Broadly speaking, it is ‘the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions’ (Kickbusch et al 2005).

This definition acknowledges that health literacy operates within a complex group of reading, listening, analytical and decision-making skills and is dependent upon a person’s ability to apply these skills to health situations (Australian Bureau of Statistics 2006). Health literacy is essentially the skills people need to find their way to the right place in hospital, fill out medical and insurance forms, and communicate with their health providers.

## Impact of health literacy

International research shows that there is a relationship between a person’s level of health literacy and their health status. Poor health literacy is linked to poor health status and may also be a strong contributor to health inequalities (Canadian Council of Learning 2008; Kickbusch et al 2005; Knight 2006; Korhonen 2006; Institute of Medicine 2004; Nutbeam 2008).

Health outcomes are influenced by a person’s ability to use a wide range of health-related materials such as package labels on food packages and over-the-counter medicines (Australian Bureau of Statistics 2006). People with poor health literacy:

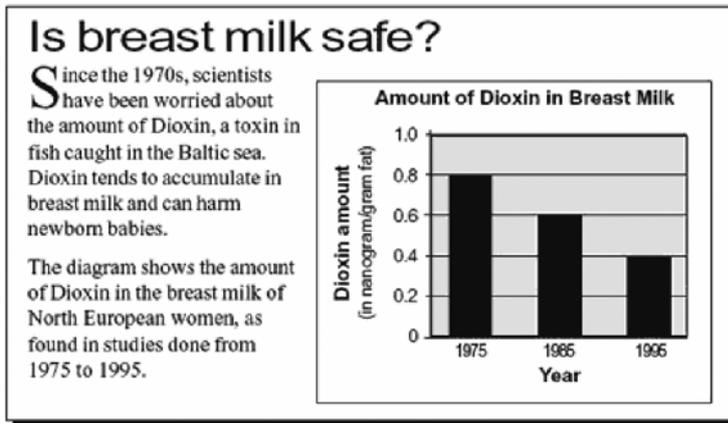
- -are less likely to use prevention services (such as screening)
- -have less knowledge of their illness, treatment and medicines
- are less likely to manage their long-term/chronic condition
- are more likely to be hospitalised due to a chronic condition
- are more likely to use emergency services
- are more vulnerable to workplace injury, because they do not understand safety precaution messages (Kickbusch et al 2005; Knight 2006; Korhonen 2006; Institute of Medicine 2004; Nutbeam 2008).

## Data sources and methods

The data in this report is sourced from the health-related questions in the 2006 Adult Literacy and Life Skills Survey (ALL), which measures the literacy skill level of the New Zealand population.

### 2006 ALL sample questions

The 2006 ALL contained 191 health-related questions across four domains: prose and document literacy, numeracy and problem solving (see Appendix One). Following are two examples of the questions used.



#### Sample numeracy question

Compare the percent of change in the Dioxin level from 1975 to 1985 with the percent of change from 1985 to 1995. Which percent of change is larger? Explain your answer.

#### Sample prose literacy question

**MEDCO ASPIRIN** 500

INDICATIONS: Headaches, muscle pains, rheumatic pains, tooth-aches, earaches. RELIEVES COMMON COLD SYMPTOMS.

DOSAGE: ORAL. 1 or 2 tablets every 6 hours, preferably accompanied by food, for not longer than 7 days. Store in a cool, dry place.

CAUTION: Do not use for gastritis or peptic ulcer. Do not use if taking anticoagulant drugs. Do not use for serious liver illness or bronchial asthma. If taken in large doses and for an extended period, may cause harm to kidneys. Before using this medication for chicken pox or influenza in children, consult with a doctor about Reyes Syndrome, a rare but serious illness. During lactation and pregnancy, consult with a doctor before using this product, especially in the last trimester of pregnancy. If symptoms persist, or in case of an accidental overdose, consult a doctor. Keep out of reach of children.

INGREDIENTS: Each tablet contains  
500 mg acetylsalicylic acid.  
Excipient c.b.p. 1 tablet.  
Reg. No. 88246

Made in Canada by STERLING PRODUCTS, INC.  
1800 Industrial Blvd., Montreal, Quebec H9J 3P1

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List three situations for which you should consult a doctor.

Source: Ministry of Education 2008a.

Each of the health-related questions in the 2006 ALL can be correlated to one of the five following activities:

- health promotion (60 items)
- health protection (64 items)
- disease prevention (18 items)
- health care maintenance (16 items)
- system navigation (32 items).

The five health-related activities were used to code and analyse health tasks such as purchasing food and products, using products at home or at work, interpreting information about air and water quality, using medicine, applying for insurance, and offering informed consent (Australian Bureau of Statistics 2006).

**Table 1: Categories of health activities – selected examples**

Health activity	Focus	Examples of materials	Examples of tasks
Health promotion	Enhance and maintain health	Articles in newspapers, magazines, charts, lists, food and product labels	Purchase food; plan exercise regime
Health protection	Safeguard health of individuals and communities	Articles in newspapers and magazines; postings for health and safety warnings; air and water quality reports	Decide among product options; use or avoid products
Disease prevention	Take preventive measures and engage in early detection	News alerts such as TV, radio, newspapers; postings for inoculations and screening; letters related to test results; graphs and charts	Determine risk; engage in screening or diagnostic tests; follow up
Health care maintenance	Seek care and form a partnership with health care providers	Health history forms; medicine labels; discharge instructions; education booklets and brochures; health information on the Internet	Describe and measure symptoms; follow directions on medicine labels; calculate timing for medicine; collect information on the merits of various treatment regimes for discussion with health professionals
Systems navigation	Access services needed; understand rights	Maps; application forms; statements of rights and responsibilities; informed consent; health benefit packages	Locate facilities; apply for benefits; offer informed consent

Source: Australian Bureau of Statistics 2006

## Measuring health literacy

For each literacy domain<sup>2</sup> in the 2006 ALL proficiency was measured on a scale ranging from 0 to 500, with level 1 being the lowest measured level of literacy and 5 the highest. In this report 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’ (Statistics Canada 2002).

Having a health literacy score within level 1 and 2 means that an individual has insufficient skills to cope with the health literacy demands they typically face. Table 2 provides a description of health literacy levels.

<sup>2</sup> Prose and document literacy, numeracy and problem solving.

**Table 2: Description of health literacy levels**

Level	Description
Level 1: score 0–225	<b>Very poor literacy skills</b> People at this level may, for example, be unable to determine from a package label the correct amount of medicine to give a child.
Level 2: score 226–275	<b>A capacity to deal only with simple, clear material involving uncomplicated tasks</b> People at this level may develop everyday coping skills, but their poor literacy makes it hard to conquer challenges such as learning new job skills.
Level 3: score 276–325	<b>Adequate to cope with the demands of everyday life and work in an advanced society</b> This roughly denotes the skill level required for successful secondary school completion and into tertiary education entry.
Level 4: score 326–375 and level 5: score 376–500	<b>Strong skills</b> An individual at these levels can process information of a complex and demanding nature.

Source: Australian Bureau of Statistics 2006

## Ethnicity

The 2006 ALL sampled sufficient Māori to allow for statistically useful analyses. Prioritised ethnicity was used, whereby a person was classified as Māori if any one of their recorded ethnicities was Māori. The remaining people were determined to be non-Māori (Ministry of Health 2006).

## Confidence intervals

In this report 95% confidence intervals are used to represent the sample error for estimates. A 95% confidence interval means there is a 95% chance that the true value of the estimate (if we were to ask the whole population) lies between the lower and upper confidence interval values. The 95% confidence intervals are presented in this report as error bars in graphs.

Differences between estimates are said to be **statistically significant** when the confidence intervals do not overlap. Sometimes, even when there are overlapping confidence intervals the difference between the groups can be statistically significant. In this report, where we have stated that differences are statistically different a t-test has been completed to confirm the finding.

## How to interpret the results in this report

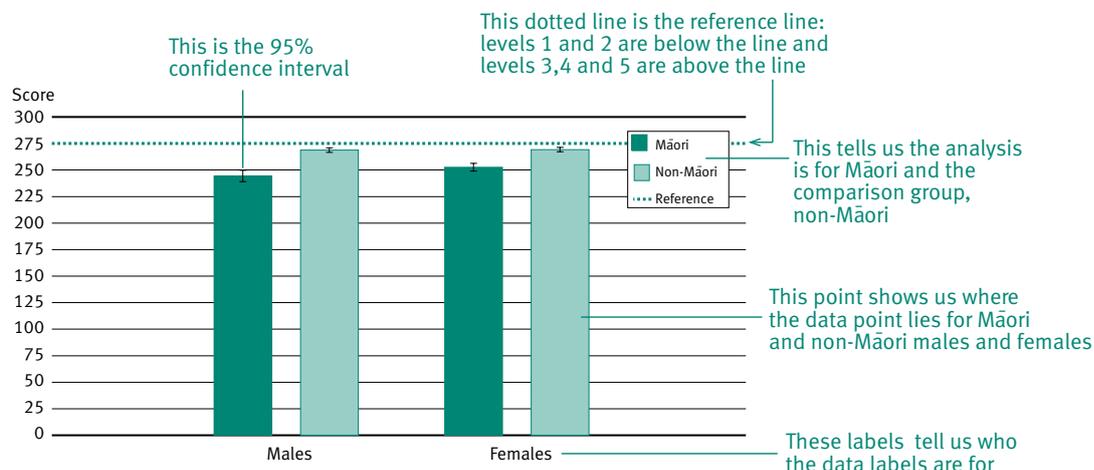
The graphs in this report present the *mean health literacy* and the *distribution of health literacy* from the 2006 ALL.

The mean health literacy graphs present the average score for Māori and non-Māori across literacy levels 1 and 2 compared to levels 3, 4 and 5 combined.

The distribution of health literacy graphs present the proportion of Māori and non-Māori who scored levels 1 and 2 compared to levels 3, 4 and 5 combined, from the 2006 ALL.

A score below level 3 (level 1 and 2 combined is a score between 0 and 275) is defined in this report as a person having poor health literacy skills. A score of level 3 or above in health literacy (levels 3, 4 and 5 combined, which is a score between 276 and 500) is defined as a person who is able to meet the complex demands of everyday life and work in the emerging knowledge-based economy.

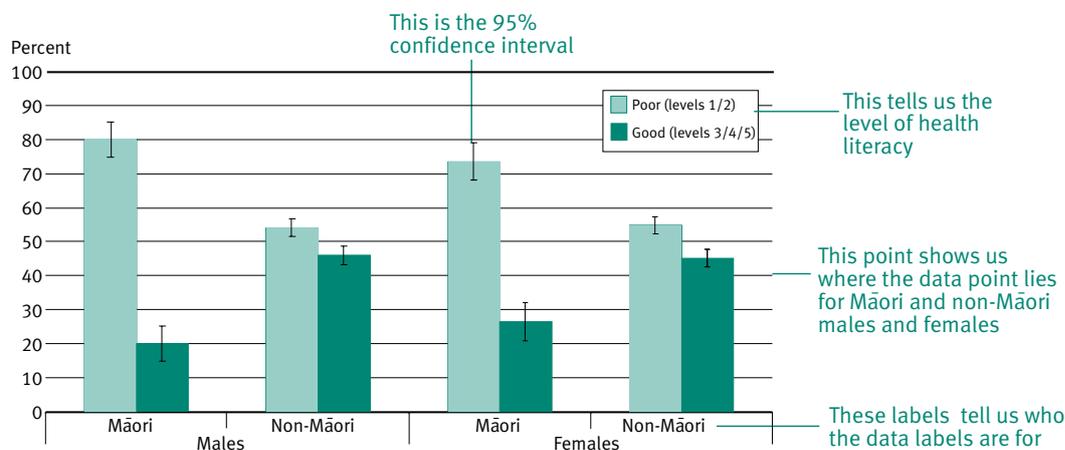
### Example 1: Māori and non-Māori mean health literacy scores, by gender, from the 2006 ALL



Source: 2006 Adult Literacy and Life Skills Survey  
 Note: Prioritised ethnicity has been used.

This note tells us essential information about the graph, such as what type of ethnic group has been used and where the data was from

### Example 2: The distribution of health literacy for Māori and Non-Māori, by gender, from the 2006 ALL



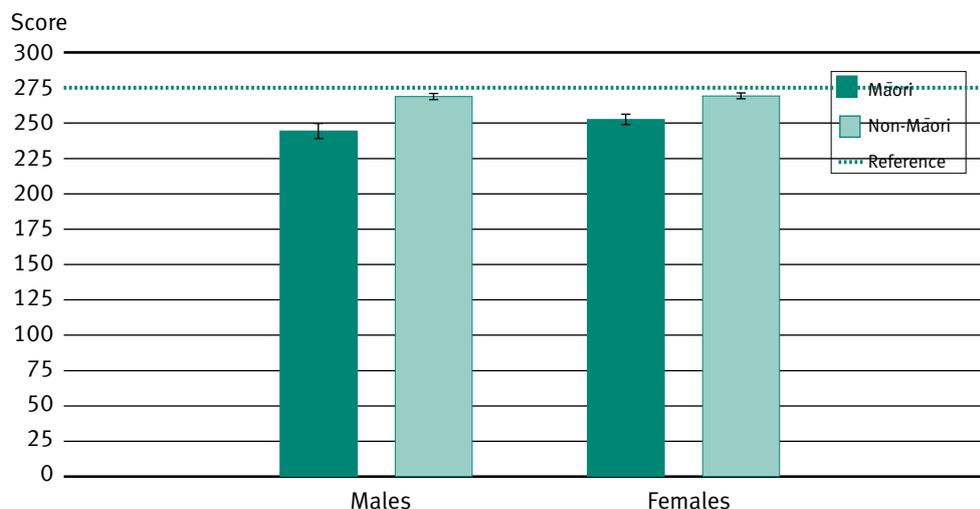
Source: 2006 Adult Literacy and Life Skills Survey  
 Note: Prioritised ethnicity has been used.

This note tells us essential information about the graph, such as what type of ethnic group has been used and where the data was sourced

# Ngā Whakaputanga: The Results

## Sex

Figure 1: Māori and non-Māori mean health literacy scores, by sex, from the 2006 ALL



Source: 2006 Adult Literacy and Life Skills Survey

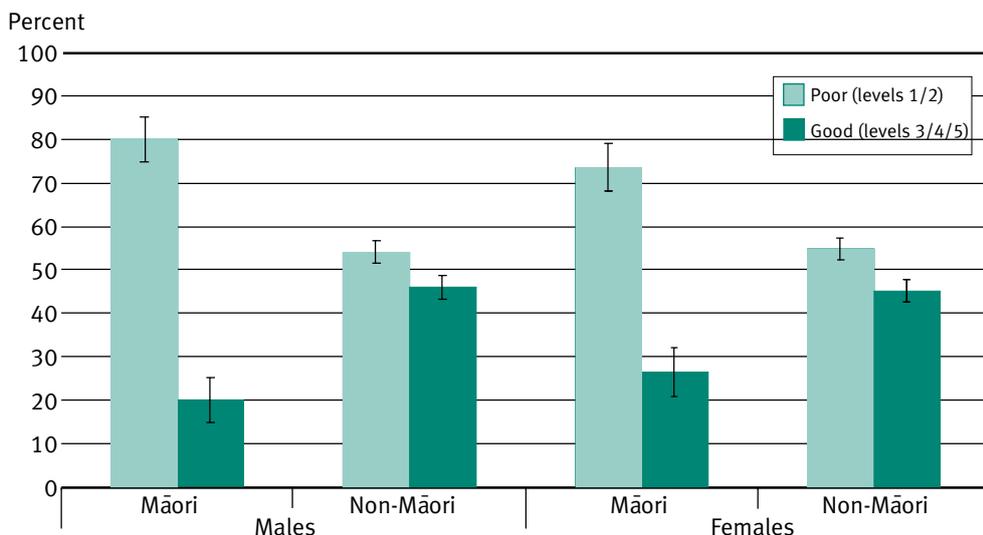
Notes: Prioritised ethnicity has been used.

Figure 1 shows that, on average, New Zealanders have poor health literacy skills, with both Māori and non-Māori males and females scoring on average less than 275, which is the minimum required score for individuals to meet the complex demands of everyday life and work in the emerging knowledge-based economy.

Both non-Māori males and females have significantly higher health literacy skills than Māori.

Māori females have significantly higher health literacy skills than Māori males.

Figure 2: The distribution of health literacy, for Māori and non-Māori, by sex, from the 2006 ALL



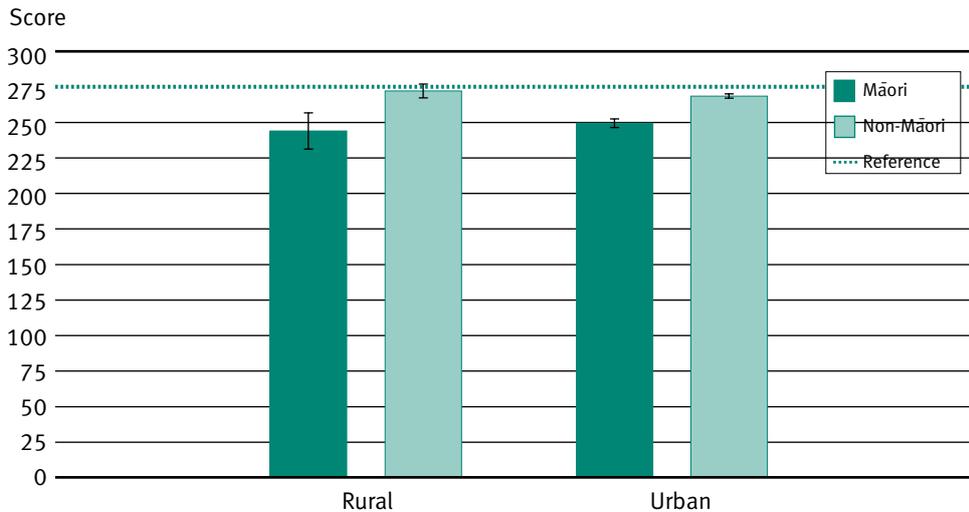
Source: 2006 Adult Literacy and Life Skills Survey

Notes: Prioritised ethnicity has been used.

Figure 2 shows that four out of five Māori males and three out of four Māori females have poor health literacy skills (levels 1 and 2). In comparison, just over half of non-Māori males and females have poor health literacy skills (levels 1 and 2).

## Rural and urban location

**Figure 3: Māori and non-Māori mean health literacy scores, by urban and rural location, from the 2006 ALL**



Source: 2006 Adult Literacy and Life Skills Survey

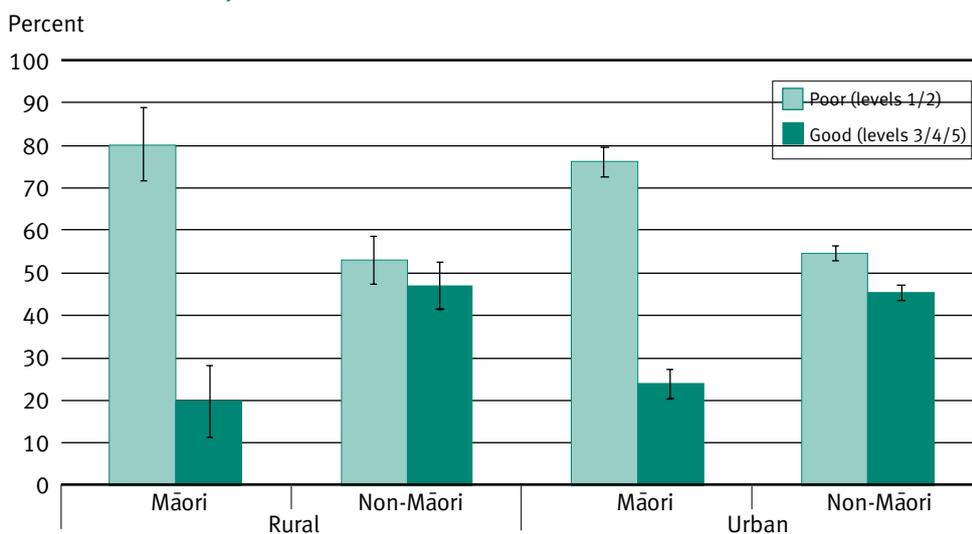
Notes: Prioritised ethnicity has been used.

Figure 3 indicates that, on average, Māori and non-Māori have poor health literacy skills (a score below 275) regardless of whether they live in a rural or urban location.

Māori at both rural and urban locations have significantly poorer health literacy skills than non-Māori.

Māori who live in a rural location have on average the poorest health literacy skills, closely followed by Māori who live in an urban location.

**Figure 4: Distribution of health literacy levels for Māori and non-Māori, by rural and urban location, from the 2006 ALL**



Source: 2006 Adult Literacy and Life Skills Survey

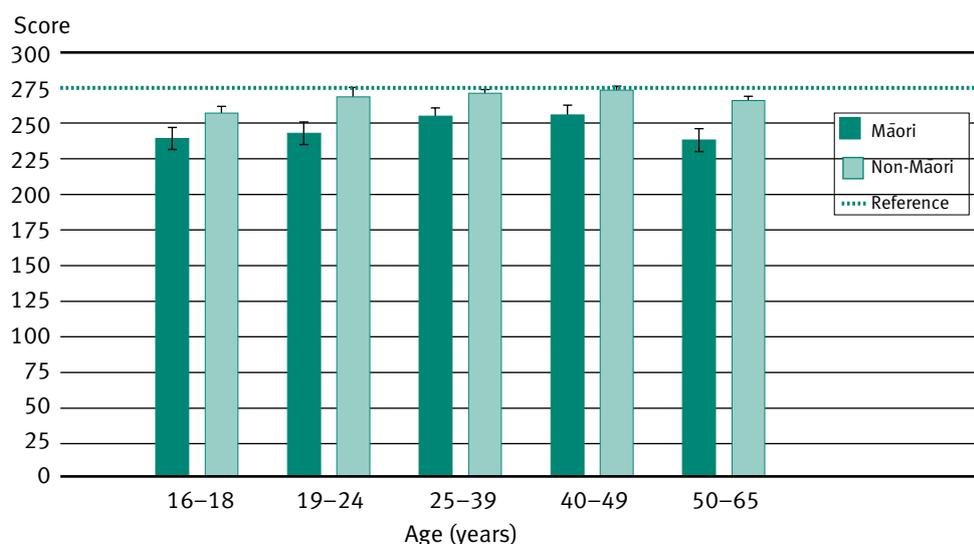
Notes: Prioritised ethnicity has been used.

Four out of five rural Māori and three out of four urban Māori have poor health literacy skills (levels 1 and 2).

In comparison, just over half of rural and urban non-Māori have poor health literacy skills (levels 1 and 2).

# Age

**Figure 5: Māori and non-Māori mean health literacy scores, by age (years), from the 2006 ALL**



Source: 2006 Adult Literacy and Life Skills Survey

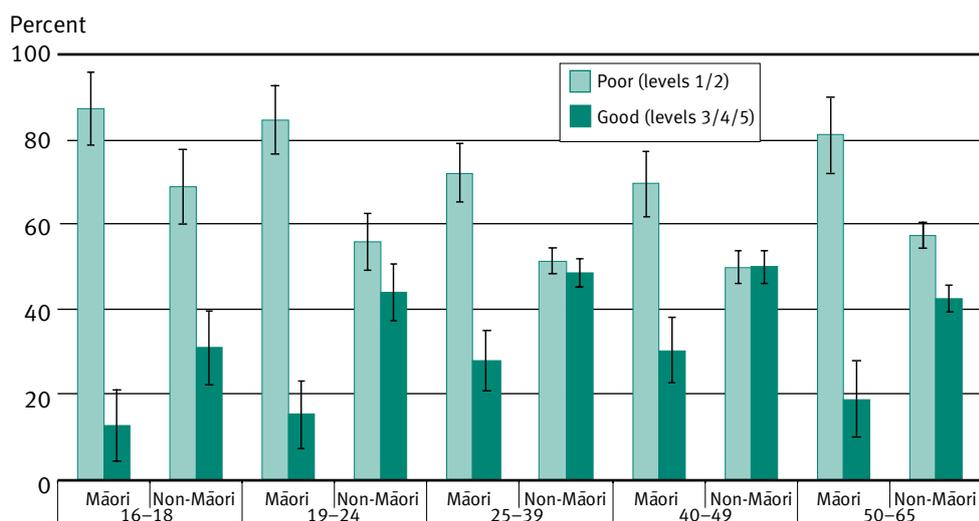
Notes: Prioritised ethnicity has been used. Age groups based on Māori sample size.

Figure 5 shows that, on average, Māori and non-Māori across all age groups have poor health literacy skills, which means they have insufficient skills to cope with the health literacy demands they typically face.

Māori have significantly poorer health literacy scores than non-Māori across all age groups.

Māori in the 50–65 year age group have significantly poorer health literacy skills than Māori in the 25–49 year age groups, and Māori in the 16–24 year age groups have significantly poorer health literacy skills than Māori in the 40–49 year age group.

**Figure 6: The distribution of health literacy for Māori and non-Māori, by age, from the 2006 ALL**



Source: 2006 Adult Literacy and Life Skills Survey

Note: Prioritised ethnicity has been used. Age groups based on Māori sample size.

Figure 6 indicates that good health literacy skills (level 3 and above) for Māori and non-Māori generally increase from the 16–18 years age group up until the 40–49 years age group, then generally decrease in the 50–65 years age group.

Health literacy among young people is particularly poor and of concern: 87.1% of Māori aged 16–18 years have poor health literacy (levels 1 and 2) compared to 69.1% of non-Māori in the same age group.

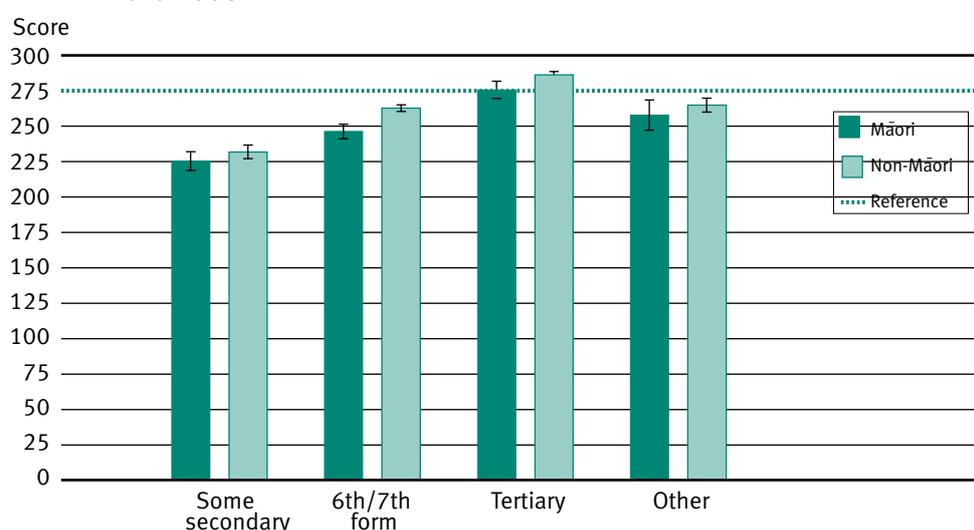
In the 19–24 year age group, four out of five Māori have poor health literacy skills, compared to three out of five non-Māori in the same age group.

In the older age groups, four out of five Māori aged 50–65 years have health literacy in levels 1 and 2, insufficient to cope with the health literacy demands they typically face.

One in three Māori in the 40–49 year age group achieved a skill level of 3 or above compared to one in two for non-Māori. Only one in five Māori aged 50–65 years achieved a skill level of 3 or above in health literacy, compared to two out of five non-Māori.

## Education

**Figure 7: Māori and non-Māori mean health literacy scores, by highest level of education, from the 2006 ALL**



Source: 2006 Adult Literacy and Life Skills Survey

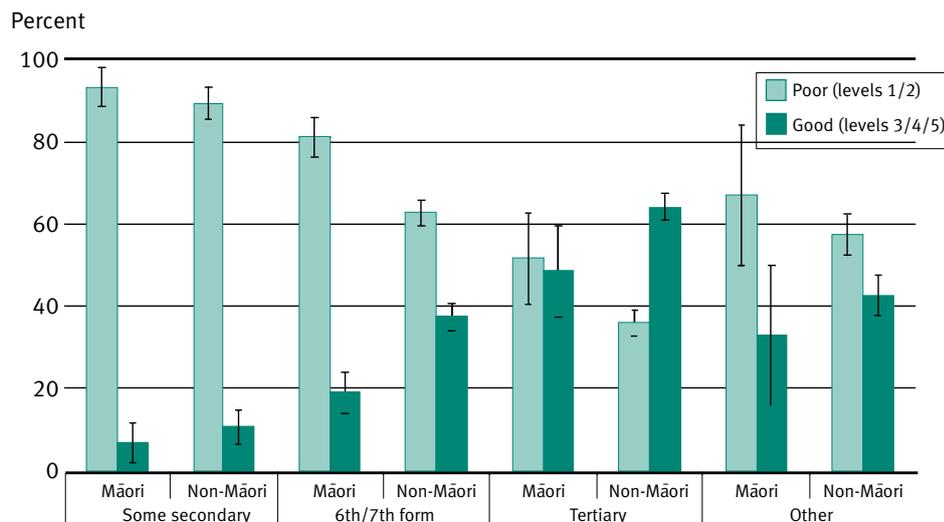
Notes: Prioritised ethnicity has been used. 6th/7th form = Years 12/13. Educational level is coded using the International Standard Classification of Education (ISCED) (Ministry of Education 2008b). Educational participation, as measured by the 2006 ALL, is the highest level of schooling completed by a person. Educational participation is not the same as attainment of qualifications; for example, a person could complete Year 12 (or the equivalent) but not achieve a qualification.

Figure 7 shows that the higher a group’s level of educational participation, the better their health literacy skills. On average, Māori and non-Māori with tertiary education participation were the only group to have health literacy skills above 275 (level 3), sufficient to meet the complex demands of everyday life and work in the emerging knowledge-based economy.

Māori with 6th or 7th form educational participation have significantly poorer health literacy skills than non-Māori with the same education level.

Māori with only some secondary school participation have on average very poor health literacy skills, at level 1 (225). People at this level may, for example, be unable to determine from a package label the correct amount of medicine to give a child.

**Figure 8: The distribution of health literacy for Māori and non-Māori, by the highest level of education, from the 2006 ALL**



Source: 2006 Adult Literacy and Life Skills Survey

Notes: Prioritised ethnicity has been used. 6th/7th form= Years 12/13. Educational level is coded using the International Standard Classification of Education (ISCED) (Ministry of Education 2008b). Educational participation, as measured by the 2006 ALL, is the highest level of schooling completed by a person. Educational participation is not the same as attainment of qualifications; for example, a person could complete Year 11 (or the equivalent) but not achieve a qualification.

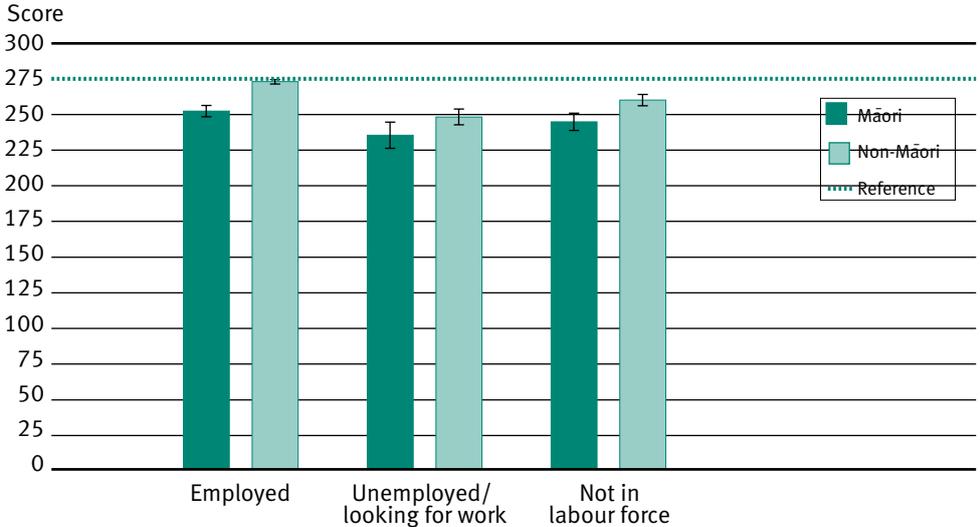
Figure 8 shows that 9 out of 10 Māori and non-Māori with only some secondary school participation have poor health literacy skills, insufficient to cope with the health literacy demands they typically face.

One in two Māori and two out of three non-Māori who have participated in tertiary education have good health literacy skills (level 3 or above).

Four out of five Māori who have participated in 6/7th form education have poor health literacy skills (below level 3), compared to three out of five non-Māori.

# Labour force status

Figure 9: Māori and non-Māori mean health literacy scores, by labourforce status, from the 2006 ALL



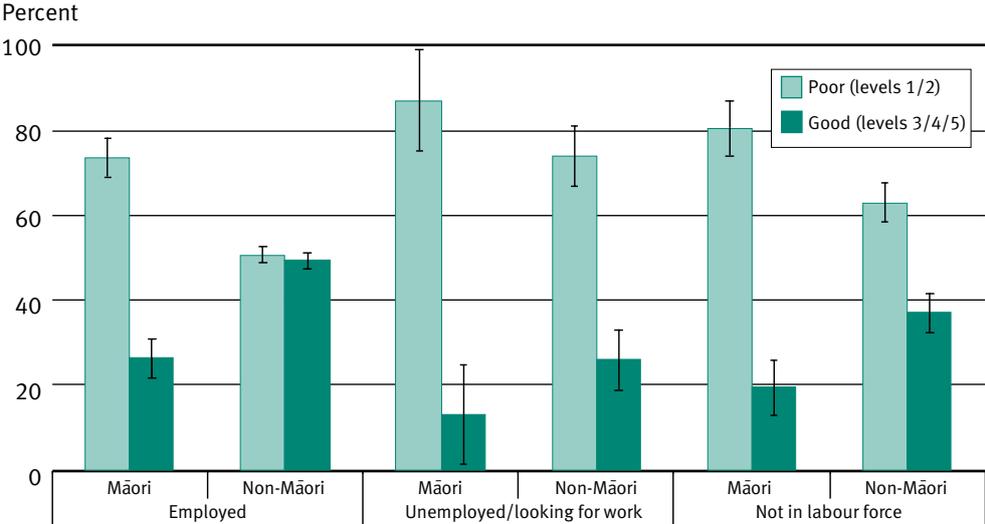
Source: 2006 Adult Literacy and Life Skills Survey  
 Notes: Prioritised ethnicity has been used. See Appendix 2 for classification of labour force status.

Figure 9 shows that out of all the labour force status types, non-Māori who were employed have on average the highest health literacy skills of all groups (273).

Māori across all labour force status types have, on average, poorer health literacy skills compared to non-Māori.

Māori who were unemployed or looking for work have the poorest health literacy skills of all labour force status types (235), closely followed by Māori not in the labour force (245).

**Figure 10: The distribution of health literacy levels for Māori and non-Māori, by labour force status, from the 2006 ALL**



Source: 2006 Adult Literacy and Life Skills Survey  
 Notes: Prioritised ethnicity has been used. See Appendix 1 for classification of labourforce status.

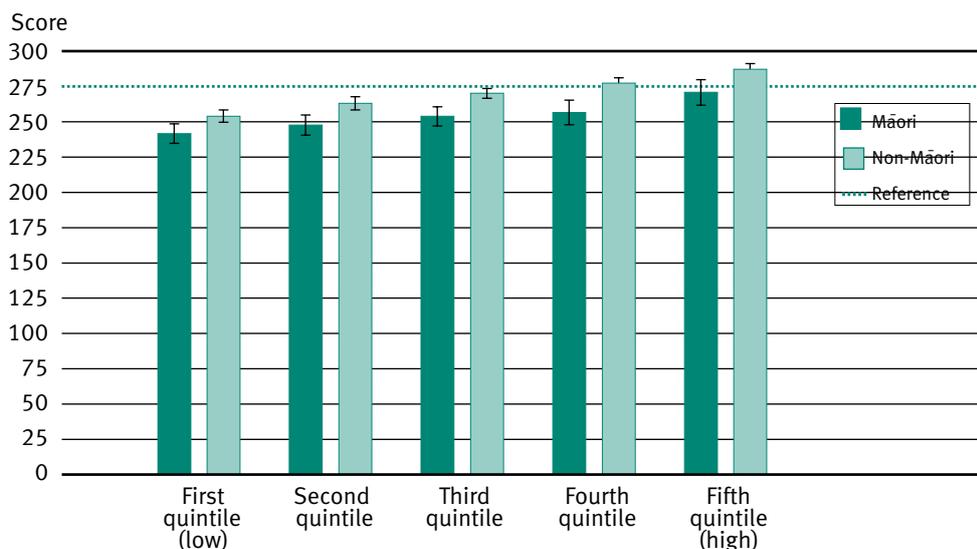
Figure 10 shows that 86 percent of unemployed Māori and 81 percent of Māori not in the labour force have poor health literacy skills.

One out of two non-Māori who were employed have good health literacy skills (level 3 or above), compared to one out of four Māori who were employed.

Of Māori not in the labour force, four out of five have poor health literacy skills compared to three out of five non-Māori.

# Household income

Figure 11: Māori and non-Māori mean health literacy scores, by household income, from the 2006 ALL



Source: 2006 Adult Literacy and Life Skills Survey

Notes: Prioritised ethnicity has been used. Quintile ranges for the whole population are as follows:

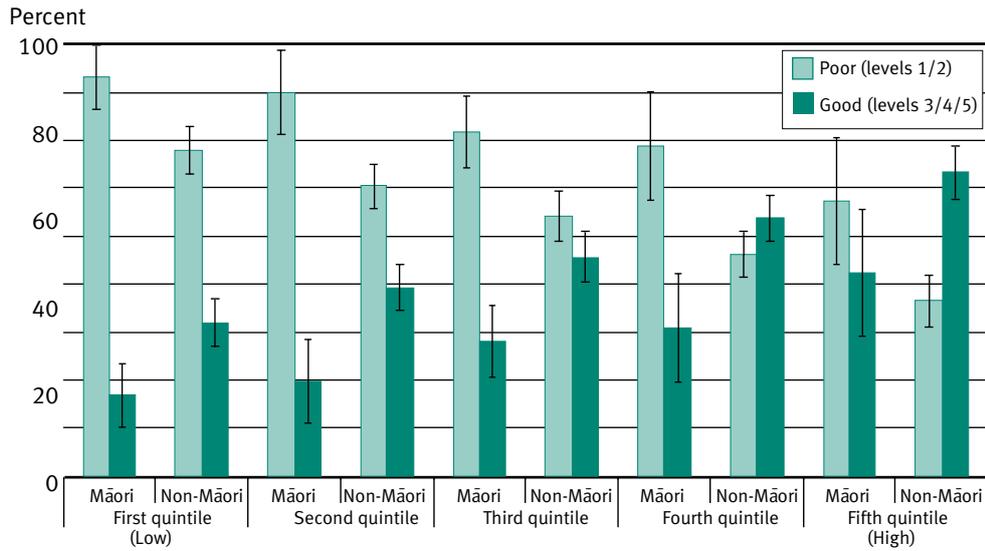
- quintile 1: \$0–\$34,000
- quintile 2: \$34,000.01–\$55,000
- quintile 3: \$55,000.01–\$75,000
- quintile 4: \$75,000.01–\$100,000
- quintile 5: \$100,000.00 plus.

Figure 11 shows that the higher a person’s income, the better their health literacy skills. Non-Māori in the fourth and fifth quintiles (highest) by household income are the only income groups to have good health literacy (a score above 275).

Across all household income levels, Māori on average have poorer health literacy skills than non-Māori.

Māori at the highest household income group (quintile five) have significantly higher health literacy skills than Māori at other household income groups.

**Figure 12: The distribution of health literacy level for Māori and non-Māori, by household income, from the 2006 ALL**



Source: 2006 Adult Literacy and Life Skills Survey

Notes: Prioritised ethnicity has been used. Quintile ranges for the whole population are as follows:

- quintile 1: \$0–\$34,000
- quintile 2: \$34,000.01–\$55,000
- quintile 3: \$55,000.01–\$75,000
- quintile 4: \$75,000.01–\$100,000
- quintile 5: \$100,000 plus.

Figure 12 shows that Māori and non-Māori with lower household incomes are more likely to have poorer health literacy skills (below level 3) and less likely to have good health literacy than those with higher household incomes.

Four out of five Māori in quintile 1 (lowest household income) have poor health literacy skills. Across all income quintiles, Māori have poorer health literacy skills compared to non-Māori.

# Appendix 1:

## Adult Literacy and Life Skills Survey 2006 (ALL)

The ALL survey builds on the 1996 International Adult Literacy Survey (IALS) and involves 12 Organisation for Economic Co-operation and Development (OECD) countries. In New Zealand, it used a nationally representative sample of 7000 adults aged 16–65 years. The ALL survey examined the following skills:

- prose literacy – the knowledge and skills needed to understand and use information from texts such as editorials, news stories, poems and fiction
- document literacy – the knowledge and skills required to locate and use information contained in various formats such as tables, forms, graphs and diagrams
- numeracy – the knowledge and skills required to effectively manage the mathematical demands of diverse situations
- problem solving – the ability to solve problems by clarifying the nature of the problem and developing and applying appropriate solution strategies.

## Appendix 2: Labour force status classifications

The labour force classifications used in this report are based on the categories in the Statistics New Zealand Household Labour force Survey (HLFS).

Please note the results for labour force status in this report is not directly comparable to the HLFS or the 2006 ALL Survey. The 2006 ALL Survey measures labour force status by a person's current work situation. The 2006 ALL Survey question used is:

What is your current work situation? Are you:

- employed or self-employed
- not working and looking for work
- retired
- a student
- doing unpaid household work
- other.

**Employed:** All persons in the working-age population who, during the reference week, worked for one hour or more for pay or profit in the context of an employee–employer relationship or self-employment; or worked without pay for one hour or more in work which contributed directly to the operation of a farm, business or professional practice owned or operated by a relative; or had a job but were not at work due to: own illness or injury, personal or family responsibilities, bad weather or mechanical breakdown, direct involvement in an industrial dispute, or leave or holiday.

**Unemployed:** All persons in the working-age population who, during the reference week, were without a paid job, available for work and had either actively sought work in the past four weeks ending with the reference week, or had a new job to start within the next four weeks.

**Not in the labour force:** Any person in the working-age population who is neither employed nor unemployed. For example, this residual category includes persons who: are retired, have personal or family responsibilities such as unpaid housework and child care, attend educational institutions, are permanently unable to work due to physical or mental disabilities, were temporarily unavailable for work in the survey reference week, are not actively seeking work.

(Household Labour Force Survey [www.stats.govt.nz](http://www.stats.govt.nz))

# Appendix 3: Data from the 2006 ALL

**Table A1: Mean health literacy scores, Māori and non-Māori, by sex**

Ethnicity	Source	Sex	Score	Standard Error	Sample size
Māori	2006 ALL	Females	252.53	1.83	731
		Males	244.27	2.65	473
Non-Māori	2006 ALL	Females	269.17	1.03	3345
		Males	268.65	1.10	2582

**Table A2: Distribution of health literacy scores Māori and non-Māori, by sex**

Ethnicity	Source	Sex	Score level	Proportion	Standard error	Sample size
Māori	2006 ALL	Females	1	0.23	0.03	731
			2	0.51	0.03	731
			3/4/5	0.26	0.03	731
		Males	1	0.32	0.04	473
			2	0.48	0.04	473
			3/4/5	0.20	0.03	473
Non-Māori	2006 ALL	Females	1	0.12	0.01	3345
			2	0.42	0.01	3345
			3/4/5	0.45	0.01	3345
		Males	1	0.15	0.01	2582
			2	0.39	0.01	2582
			3/4/5	0.46	0.01	2582

**Table A3: Mean health literacy scores, Māori and non-Māori, by rural and urban location**

Ethnicity	Source	Location	Score	Standard error	Sample size
Māori	2006 ALL	Rural	243.79	6.38	134
		Urban	249.28	1.49	1070
Non-Māori	2006 ALL	Rural	272.04	2.40	810
		Urban	268.42	0.73	5117

**Table A4: Distribution of health literacy scores, Māori and non-Māori, by rural and urban location**

Ethnicity	Source	Location	Score level	Proportion	Standard error	Sample size
Māori	2006 ALL	Rural	1	0.36	0.10	134
			2	0.44	0.09	134
			3/4/5	0.20	0.04	134
		Urban	1	0.26	0.02	1070
			2	0.50	0.02	1070
			3/4/5	0.24	0.02	1070
Non-Māori	2006 ALL	Rural	1	0.10	0.02	810
			2	0.43	0.02	810
			3/4/5	0.47	0.03	810
		Urban	1	0.14	0.01	5117
			2	0.40	0.01	5117
			3/4/5	0.45	0.01	5117

**Table A5: Mean health literacy scores, Māori and non-Māori, by age**

Ethnicity	Source	Age (years)	Score	Standard error	Sample size
Māori	2006 ALL	16–18	239.10	3.87	95
		19–24	242.71	3.99	156
		25–39	254.88	2.84	490
		40–49	255.67	3.47	267
		50–65	237.91	4.04	196
Non-Māori	2006 ALL	16–18	256.96	2.42	278
		19–24	268.48	3.33	553
		25–39	271.09	1.26	1963
		40–49	273.29	1.32	1392
		50–65	265.86	1.48	1738

**Table A6: Distribution of health literacy scores, Māori and non-Māori, by age**

Ethnicity	Source	Age (years)	Score level	Proportion	Standard error	Sample size
Māori	2006 ALL	16–18	1	0.32	0.06	95
			2	0.55	0.08	95
			3/4/5	0.13	0.04	95
		19–24	1	0.32	0.06	156
			2	0.52	0.07	156
			3/4/5	0.15	0.04	156
		25–39	1	0.22	0.04	490
			2	0.50	0.04	490
			3/4/5	0.28	0.03	490
		40–49	1	0.20	0.04	267
			2	0.50	0.06	267
			3/4/5	0.30	0.04	267
		50–65	1	0.40	0.06	196
			2	0.41	0.07	196
			3/4/5	0.19	0.04	196
Non-Māori	2006 ALL	16–18	1	0.17	0.04	278
			2	0.52	0.06	278
			3/4/5	0.31	0.04	278
		19–24	1	0.15	0.02	553
			2	0.41	0.03	553
			3/4/5	0.44	0.03	553
		25–39	1	0.13	0.01	1963
			2	0.39	0.02	1963
			3/4/5	0.48	0.02	1963
		40–49	1	0.11	0.01	1392
			2	0.39	0.02	1392
			3/4/5	0.50	0.02	1392
		50–65	1	0.15	0.01	1738
			2	0.43	0.02	1738
			3/4/5	0.43	0.02	1738

**Table A7: Mean health literacy scores, Māori and non-Māori, by highest level of education**

Ethnicity	Source	Education	Score	Standard error	Sample size
Māori	2006 ALL	Some secondary	225.20	3.30	221
		6th/7th form	246.12	2.54	638
		Tertiary	275.53	3.02	229
		Other	257.67	5.30	115
Non-Māori	2006 ALL	Some secondary	231.67	2.42	552
		6th/7th form	262.55	1.166	2667
		Tertiary	286.15	1.14	2125
		Other	264.70	2.44	580

**Table A8: Distribution of health literacy scores, Māori and non-Māori, by highest level of education**

Ethnicity	Source	Education	Score level	Proportion	Standard error	Sample size
Māori	2006 ALL	Some secondary	1	0.52	0.06	221
			2	0.41	0.06	221
			3/4/5	0.07	0.02	221
		6th/7th form	1	0.28	0.03	638
			2	0.53	0.03	638
			3/4/5	0.19	0.02	638
		Tertiary	1	0.06	0.02	229
			2	0.46	0.06	229
			3/4/5	0.48	0.06	229
		Other	1	0.18	0.05	115
			2	0.49	0.08	115
			3/4/5	0.33	0.09	115
Non-Māori	2006 ALL	Some secondary	1	0.39	0.03	552
			2	0.51	0.04	552
			3/4/5	0.11	0.02	552
		6th/7th form	1	0.15	0.01	2667
			2	0.47	0.02	2667
			3/4/5	0.37	0.02	2667
		Tertiary	1	0.06	0.01	2125
			2	0.30	0.02	2125
			3/4/5	0.64	0.02	2125
		Other	1	0.14	0.02	580
			2	0.44	0.03	580
			3/4/5	0.43	0.02	580

**Table A9: Mean health literacy scores, Māori and non-Māori, by labourforce status**

Ethnicity	Source	Work status	Score	Standard error	Sample size
Māori	2006 ALL	Employed	252.18	1.96	774
		Unemployed / looking for work	235.16	4.60	111
		Not in labourforce	244.61	3.03	319
Non-Māori	2006 ALL	Employed	272.89	0.78	4302
		Unemployed / looking for work	248.07	2.78	303
		Not in labourforce	259.98	1.97	1322

**Table A10: Distribution of health literacy scores, Māori and non-Māori, by labourforce status**

Ethnicity	Source	Work status	Score level	Proportion	Standard error	Sample size
Māori	2006 ALL	Employed	1	0.25	0.03	774
			2	0.49	0.04	774
			3/4/5	0.26	0.02	774
		Unemployed/ looking for work	1	0.39	0.07	111
			2	0.47	0.08	111
			3/4/5	0.13	0.06	111
		Not in labourforce	1	0.30	0.04	319
			2	0.51	0.05	319
			3/4/5	0.19	0.033	319
Non-Māori	2006 ALL	Employed	1	0.11	0.01	4302
			2	0.39	0.01	4302
			3/4/5	0.49	0.01	4302
		Unemployed/ looking for work	1	0.27	0.04	303
			2	0.47	0.05	303
			3/4/5	0.26	0.04	303
		Not in labourforce	1	0.19	0.02	1322
			2	0.44	0.03	1322
			3/4/5	0.37	0.02	1322

**Table A11: Mean health literacy scores, Māori and non-Māori, by household income**

Ethnicity	Source	Household income	Score	Standard error	Sample size
Māori	2006 ALL	First quintile (low)	241.46	3.48	257
		Second quintile	247.47	3.60	203
		Third quintile	253.72	3.42	153
		Fourth quintile	256.42	4.36	142
		Fifth quintile (high)	270.66	4.49	98
Non-Māori	2006 ALL	First quintile (low)	253.79	2.19	741
		Second quintile	262.92	2.34	870
		Third quintile	270.01	1.72	771
		Fourth quintile	277.26	1.92	828
		Fifth quintile (high)	287.08	2.04	868

Notes: Quintile ranges are as follows:  
 quintile 1: \$0–\$34,000  
 quintile 2: \$34,000.01–\$55,000  
 quintile 3: \$55,000.01–\$75,000  
 quintile 4: \$75,000.01–\$100,000  
 quintile 5: \$100,000 plus.

**Table A12: Distribution of health literacy scores, Māori and non-Māori, by household income**

Ethnicity	Source	Household income	Score level	Proportion	Standard error	Sample size
Māori	2006 ALL	First quintile (low)	1	0.34	0.06	257
			2	0.49	0.05	257
			3/4/5	0.17	0.03	257
		Second quintile	1	0.28	0.04	203
			2	0.52	0.05	203
			3/4/5	0.20	0.04	203
		Third quintile	1	0.21	0.05	153
			2	0.51	0.07	153
			3/4/5	0.28	0.04	153
		Fourth quintile	1	0.19	0.04	142
			2	0.50	0.06	142
			3/4/5	0.31	0.06	142
		Fifth quintile (high)	1	0.10	0.05	98
			2	0.47	0.08	98
			3/4/5	0.43	0.07	98
Non-Māori	2006 ALL	First quintile (low)	1	0.23	0.02	741
			2	0.45	0.03	741
			3/4/5	0.32	0.02	741
		Second quintile	1	0.17	0.02	870
			2	0.44	0.02	870
			3/4/5	0.39	0.02	870
		Third quintile	1	0.12	0.02	771
			2	0.43	0.03	771
			3/4/5	0.46	0.03	771
		Fourth quintile	1	0.09	0.02	828
			2	0.38	0.02	828
			3/4/5	0.54	0.02	828
		Fifth quintile (high)	1	0.03	0.01	868
			2	0.33	0.03	868
			3/4/5	0.63	0.03	868

Notes: Quintile ranges are as follows:  
 quintile 1: \$0–\$34,000.00  
 quintile 2: \$34,000.01–\$55,000  
 quintile 3: \$55,000.01–\$75,000  
 quintile 4: \$75,000.01–\$100,000  
 quintile 5: \$100,000 plus.

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