Urban–Rural Health Comparisons

Key results of the 2002/03 New Zealand Health Survey

Public Health Intelligence
Occasional Bulletin No. 41

Citation: Ministry of Health. 2007. *Urban–Rural Health Comparisons: Key results of the 2002/03 New Zealand Health Survey*. Wellington: Ministry of Health.

Published in February 2007 by the
Ministry of Health
PO Box 5013, Wellington, New Zealand

ISBN 978-0-478-30742-9 (Book)
ISBN 978-0-478-30743-6 (Internet)
HP 4355

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

Foreword

The New Zealand Health Strategy highlights the need to provide accessible and appropriate health services for all New Zealanders, including people living in rural areas, and to reduce health inequalities in the New Zealand population.

Public Health Intelligence (PHI), the epidemiology group of the Ministry of Health, monitors the health of the New Zealand population. The 2002/03 New Zealand Health Survey, part of the New Zealand Health Monitor, is a key tool in carrying out this monitoring.

This report, *Urban–Rural Health Comparisons: Key results of the 2002/03 New Zealand Health Survey*, compares the health of people living in urban and rural areas using the 2002/03 New Zealand Health Survey. This survey involved approximately 13,000 face-to-face interviews with New Zealanders who were randomly selected from throughout the country.

The purpose of the report is to provide information on differences in health status between people living in urban areas and people living in rural areas. In particular, this report compares the prevalence of selected chronic diseases, risk and protective factors, the use of health services and self-reported health status for urban and rural dwellers.

We welcome any feedback on the content, relevance and direction of this report and how its findings might be translated into policy and improved health for New Zealanders. Please direct any comments to Public Health Intelligence, Ministry of Health, PO Box 5013, Wellington.

Barry Borman
Manager (Epidemiologist)
Public Health Intelligence

Acknowledgements

This report was written by Sue Triggs and prepared for publication by Kylie Mason and Barry Borman (Public Health Intelligence, Ministry of Health). The authors are grateful to Niki Stefanogiannis (Public Health Intelligence, Ministry of Health) and Elisabeth Wells (Christchurch School of Medicine and Health Sciences, University of Otago) for reviewing this report and providing useful feedback.

We are grateful to the participants of the survey, who freely gave their time to take part.

Contents

List of Tables

List of Figures

Executive Summary

Introduction

This report compares the health of New Zealanders aged 15 years and over living in urban and rural areas using data from the 2002/03 New Zealand Health Survey (NZHS). The 2002/03 NZHS is part of the New Zealand Health Monitor (Ministry of Health 2002), a programme of population health surveys used by the Ministry of Health to monitor New Zealanders' health.

As well as comparing the health status of people living in urban and rural areas, this report also looks at health status across socioeconomic deprivation levels, and across five area types: main urban areas, secondary urban areas, minor urban areas, rural centres, and true rural areas. In some comparisons between area types, each urban type (main, secondary, minor urban) is compared with the overall rural total, and each rural type (rural centre, true rural) is compared with the overall urban total.

Key results

Chronic diseases

- Urban dwellers were significantly more likely to have been diagnosed with heart disease than rural dwellers, for both males and females.
- There were no significant differences in the prevalence of diabetes between urban and rural dwellers. However, in urban areas the prevalence of diabetes was significantly higher in areas of high socioeconomic deprivation than in areas of low or medium deprivation, for both males and females.
- For females aged 45 or less, the prevalence of asthma was significantly higher in urban dwellers than in rural dwellers.
- For females, the prevalence of diagnosed arthritis and osteoporosis was significantly higher in urban areas than in rural areas. The prevalence of arthritis was particularly high for females in secondary and minor urban areas.
- For males, the prevalence of spinal disorders was significantly higher in rural areas than in urban areas. This difference was particularly marked between true rural areas and main urban areas.

Risk and protective factors

- Urban females were significantly less likely than rural females to eat the recommended two or more servings of fruit a day. For urban females, the rate of adequate fruit consumption decreased with increasing socioeconomic deprivation.
- People who live in main urban areas were significantly less likely than rural people to eat the recommended three or more servings of vegetables a day, for both males and females.
- Urban dwellers were significantly less likely than rural people to be physically active, for both males and females.
- Urban females were significantly more likely to be underweight than rural females.

- Females living in minor urban towns and rural centres were significantly more likely to be current smokers than females living in either main urban centres or true rural areas.
- In urban areas, but not rural areas, the prevalence of current smoking increased significantly with deprivation, for both males and females.
- Both males and females in urban areas were significantly more likely than rural dwellers to have not drunk alcohol in the last year. The rate of alcohol abstention increased with increasing deprivation.
- Urban females in the least deprived areas had a significantly lower prevalence of potentially hazardous drinking than urban females in the most deprived areas, but otherwise, the prevalence of potentially hazardous drinking did not differ between areas.
- Males and females from secondary urban and minor urban areas tended to have a higher prevalence of high blood pressure and high cholesterol than people living in main urban areas or true rural areas, although the difference was only statistically significant for females from minor urban areas compared to main urban and true rural areas.

Health service utilisation

- Rural females were significantly less likely to have seen a general practitioner (GP) in the last year compared to urban females.
- At their last GP visit, urban females were significantly more likely than rural females to have seen a GP for an immunisation or vaccination. Rural males were significantly more likely than urban males to have seen a GP due to injury or poisoning.
- Urban females were significantly more likely than rural females to have paid more than $40 for their last GP visit.
- Females in main urban areas were significantly more likely to have had unmet need for a GP in the last year than females in true rural areas. Unmet need for GP services increased with level of deprivation in urban areas, but not rural areas.
- Females and males from true rural areas were significantly more likely to have seen a dentist or dental therapist in the last year compared to people from urban areas.
- Females from true rural areas were significantly more likely to have seen an alternative or complementary provider in the last year than females from rural centres or urban areas.
- The use of opticians or optometrists decreased with increasing levels of deprivation, and urban females were significantly more likely to have seen an optician or optometrist in the last year than rural females at each deprivation level.
- The use of public and private hospitals did not differ significantly between urban and rural areas overall, for either sex. However, females in rural centres had a significantly higher rate of using public hospitals in the last year compared to all other people.
- Females in urban areas were significantly more likely to have received a prescription at their last doctor's visit than females in rural areas.

- People in the most deprived urban areas were significantly more likely to have received a prescription at their last doctor's visit than those in the least deprived urban areas, but the same trend did not occur in rural areas.
- Among females, rural dwellers were significantly more likely to have had no prescription items in the last year than urban dwellers.

Self-rated health status

- For 15 out of the 16 urban–rural comparisons between mean SF-36 scores (ie, eight scales for two sexes), rural people had the higher average score. However, for most of the scales the differences were small and not statistically significant.
- Rural females had significantly higher average scores than urban females on the Physical Functioning and Role Emotional scales.
- Rural males had significantly higher average scores than urban males on the General Health and Mental Health scales.

Chapter 1: Introduction and Methodology

Introduction

This report compares the health of adult New Zealanders living in urban and rural areas using data from the 2002/03 New Zealand Health Survey (NZHS). This chapter provides an overview of the aims and methodology underlining the study.

Aims

The aims of the 2002/03 NZHS were to measure the:

- health status of New Zealand adults, including their self-reported physical and mental health status, and the prevalence of selected health conditions
- prevalence of risk and protective factors associated with these health conditions
- use of health services, including barriers to accessing health services.

The aims of this report were to compare these measures between adult New Zealanders living in urban and rural areas, and to examine differences between sub-groups of these populations (as defined by sex, type of rural or urban area and the New Zealand Index of Deprivation 2001).

Comparisons between males and females, and between age groups and ethnic groups, are not included in this report because they were covered in detail in *A Portrait of Health* (Ministry of Health 2004).

Background

The 2002/03 NZHS was the third national health survey of New Zealanders aged 15 years and over. All people aged 15 years and over who were usually resident within permanent private dwellings were eligible for selection in the 2002/03 NZHS. The survey involved face-to-face interviews with 12,929 adults, and had a response rate of 72 percent.

The 2002/03 NZHS has four health-related modules and a sociodemographic module (see Table 1).

Table 1: Content of the 2002/03 New Zealand Health Survey

Module	Topics	Details
Chronic disease	Heart disease, stroke, diabetes, asthma, chronic obstructive pulmonary disease, arthritis, spinal disorders, osteoporosis, cancer, other long-term illnesses	Prevalence, age at diagnosis, treatments
Health service use	Māori health providers, Pacific health providers, general practitioners, medical specialists, nurses, pharmacists and prescriptions, complementary and alternative medicine providers, other health providers, telephone and internet help lines, hospitals	Frequency of contact, reasons for visit, satisfaction levels and reasons for dissatisfaction, unmet need and barriers to access
Risk and protective factors	High blood pressure, high blood cholesterol, overweight and obesity, physical activity, tobacco smoking, marijuana smoking, vegetable and fruit intake, alcohol use, gambling	Prevalence
Self-reported health status	General health, vision, hearing, digestion, breathing, pain, mental health, sleep, energy and vitality, understanding and remembering, communicating, physical functioning, self-care, usual activities, social functioning	SF-36 Health Status Questionnaire embedded within the World Health Organization Long Form Health Status Questionnaire
Sociodemographic	Age, sex, ethnicity and responses to ethnicity, country of birth, household characteristics, education, income support, employment, income, medical insurance, NZDep2001 (from meshblock)	

Methodology and analysis

Survey method

Details of the methodology of the NZHS are described in detail in *A Portrait of Health* (Ministry of Health 2004), including population and frame, sample design and selection, questionnaire design, testing and data collection, coding and quality control. A copy of the 2002/03 NZHS questionnaire is available on the Ministry of Health's website at http://www.moh.govt.nz/phi.

The analysis in this report on urban–rural comparisons used the Confidentialised Unit Record File (CURF) version of the 2002/03 NZHS data set. This version of the data set did not include the respondents from the Chatham Islands due to confidentiality reasons, although the data set was weighted to include these respondents in the total population. The sample size was 12,529 respondents for this data set. The sample sizes for urban and rural categories are provided in Appendix 1.

Data analysis

Weighting estimation

The survey was conducted on only a sample of respondents, so each person represented a number of other people in the population. Therefore, each respondent has a weight that indicates how many population units they represented.

Survey weights allow a sample to be used to produce estimates for the entire population. The 2002/03 NZHS was benchmarked to the 2001 Census population. Full details of the weighting procedure are given in *A Portrait of Health* (Ministry of Health 2004).

Calculation of sample error

The unit record data contains replicate survey weights to enable confidence intervals to be calculated easily.

The Ministry of Health calculated sampling errors for survey estimates using a replication method, called the Delete-a-Group (DAG) jack-knife method (Kott 1998). The idea behind the replication approach was to divide the sample into G random groups, and then estimate the variance of the full sample survey estimate. For the 2002/03 NZHS, 100 random groups were chosen (G = 100).

In summary, the formulae for calculating the variance of an estimate, y, using this method are:

$$\text{Variance}(y) = \frac{(G-1)}{G} \times \sum_g \left(y_g - y\right)^2$$

where:

y = weighted estimate from the full sample

y_g = weighted estimate, having applied the weights for replicate group g

G = 100 (the number of replicate groups)

g = 1, 2, ..., G.

For the 95 percent confidence interval of an estimate, y, the following formulae were used:

$$\text{Sampling error}(y) = 1.96 \times \sqrt{\text{variance}(y)}$$

$$\text{Confidence interval}(y) = y \pm \text{sampling error}(y)$$

The precision of each survey result is indicated by the 95 percent confidence interval (CI). If multiple survey samples were obtained, even at the same time, they would provide results that differed. The 95 percent CI is the interval that would be expected to contain the true population value 95 percent of the time if many samples were taken.

Age-standardised weights

Age is an important determinant of health status. Therefore, when making comparisons between sub-groups of the population, the different age distribution of the comparison population must be taken into account. Age-standardisation was performed by the direct method using the WHO world population age distributions (Ahmad et al 2000), applied to population counts from the 2001 Census. In addition to the New Zealand population survey weight, an age-standardised weight exists.

All results presented by sex, area type and deprivation level (NZDep2001) in the body of this report have been age-standardised. This is to allow comparisons between population sub-groups without differences in the age distribution of the comparison populations influencing results. Therefore, use the age-standardised estimates to compare one population with another. However, note that age-standardised estimates have no meaning by themselves: they are meaningful only when compared with other age-standardised estimates.

If you want to know the actual burden experienced by the population of interest (eg, the prevalence of obesity or diabetes in urban males or rural females), use the crude results shown in the summary tables at the end of the relevant chapter.

Definition of urban/rural areas

Results in this report have been presented at two different levels of urban/rural classification. These were based on the 2001 Census classifications, and defined according to Statistics New Zealand definitions (Department of Statistics 1992).

The first level of classification is a broad categorisation of areas as either *urban* or *rural*. Urban areas are defined as those cities and towns with a population of at least 1000 people.

The second level of classification is a more detailed categorisation of areas by area type. This includes three types of urban areas (*main urban areas, secondary urban areas,* and *minor urban areas*) and two types of rural areas (*rural centres* and *true rural areas*). The term *true rural areas* has been used to differentiate truly rural areas from rural centres and from the more general rural classification, which includes both rural centres and truly rural areas (see Table 2).

The definitions for these five area types were based on the 2001 Census populations, and are given in Table 2.

Table 2: Definition of urban and rural areas

Urban/rural classification	Area type	Definition
Urban	Main urban	Towns and cities with a minimum population of 30,000 people
	Secondary urban	Towns with a population between 10,000 and 29,999 people
	Minor urban	Towns with a population between 1000 and 9999 people
Rural	Rural centre	Population between 300 and 999 people

	True rural	Population less than 300 people

Socioeconomic deprivation

The New Zealand Deprivation Index 2001 (NZDep2001) was used as the key indicator of socioeconomic status (Salmond and Crampton 2002). It is an area-based index of deprivation that measures the level of deprivation for each meshblock, according to a combination of Census 2001 variables: income, transport (access to car), living space, home ownership, employment status, qualifications, support (sole-parent families) and access to a telephone.

There are 10 NZDep2001 categories (deciles), with decile 1 representing the least deprived 10 percent of small areas, and decile 10 representing the most deprived 10 percent of small areas. For this report, NZDep2001 deciles were collapsed into three groups:

- low deprivation: NZDep2001 deciles 1–3
- medium deprivation: NZDep2001 deciles 4–7
- high deprivation: NZDep2001 deciles 8–10.

Prevalence of chronic disease

The prevalence rates for chronic diseases presented in this report are lifetime prevalence rates. In this survey, the prevalence of chronic diseases was determined by asking participants if a doctor had ever told them they had any of the selected chronic diseases. This will underestimate the true prevalence of most chronic diseases, because not all people with the disease will have been diagnosed.

Liability

Care and diligence have been taken to ensure the information in this document is accurate and up to date. However, the Ministry of Health accepts no liability for the accuracy of the information, its use or the reliance placed on it.

Presentation of results in this report

This survey provides a cross-sectional picture of the New Zealand population by describing the situation at one point in time. As such, it merely describes associations and cannot distinguish between causality and selection. For example, it cannot determine if an environment causes a particular outcome, or if the association results from selection, such as people with chronic diseases moving from rural areas to urban areas because their health does not permit them to work in rural areas any longer.

All results presented in the body of this report are weighted, age-standardised estimates with 95 percent confidence intervals. Crude weighted estimates are shown at the end of each chapter.

When an unweighted individual cell contained a value of less than 10, results were suppressed for reasons of reliability and confidentiality. All rate calculations excluded the very small proportion of respondents who said they didn't know or refused to answer.

Ninety-five percent confidence intervals

The rates in this report have been given with 95 percent confidence intervals, which give an indication of the sampling error. The confidence interval is influenced by the sample size of the group. When the sample size is small, the confidence interval becomes wider.

When the confidence intervals of two groups do not overlap, the difference in rates between the groups is statistically significant. The word 'significant' is used throughout this report to refer to the 5 percent significance level.

However, in some cases when the confidence intervals of two groups overlap, there may still be a statistically significant difference in rates. In these cases, the differences in rates have been tested with a t test. It should be noted that with such a large number of comparisons, a few significant results are likely to occur by chance.

Cross-tabulation categories and comparisons

Three types of cross-tabulation are presented in this report:[1]

- sex by rural/urban: tables of prevalence rates with 95 percent confidence intervals (in brackets), for each of the survey questions analysed
- sex by area type (main urban, secondary urban, minor urban, rural centre, true rural): graphs of prevalence rates with 95 percent confidence error bars, for selected questions
- sex by rural/urban by NZDep2001: graphs of prevalence rates with 95 percent confidence error bars, for selected questions.

This report comments only on findings that are statistically significant at the 5 percent level.

Because rural–urban differences are the main focus of this report, statistical comparisons in the text are generally made between rural and urban areas of the same type. For example, rural females in areas of high deprivation are compared to urban females in areas of high deprivation.

For comparisons of area types, each urban type (main, secondary, minor urban) is compared with the overall rural total, and each rural type (rural centre, true rural) is compared with the overall urban total.

However, other comparisons of interest may also be noted, such as a significant difference between main urban and secondary urban areas.

[1] Results are also available in spreadsheet format for (i) sex by rural/urban by life-cycle age group; (ii) sex by rural/urban by Māori/non-Māori ethnicity.

How to interpret results – tables

Tells us what the table is about

Prevalence or other rate (eg, proportion of rural male population at a given time with the disease or condition)

Table X: Prevalence of diagnosed* chronic diseases, by sex and rural/urban, percent (age-standardised rate), 2002/03

Indicator	Females		Males	
	Urban	Rural	Urban	Rural
Heart disease	9.0 (8.0, 10.0)	4.8 (2.6, 6.9)	10.1 (8.8, 11.4)	7.1 (5.0, 9.2)
Stroke	1.5 (1.2, 1.9)	1.4 (0.5, 2.3)	1.9 (1.5, 2.4)	1.6 (0.5, 2.7)
Diabetes	3.9 (3.2, 4.6)	2.4 (1.0, 3.9)	4.7 (3.9, 5.5)	3.5 (1.6, 5.3)
Asthma (ages 45 and under only)	24.8 (22.6, 27.0)	18.8 (13.5, 24.1)	20.2 (16.8, 23.6)	13.4 (7.5, 19.3)
COPD (ages 46+ only)	38.8 (31.8, 45.8)	35.4 (17.4, 53.4)	38.0 (28.7, 47.3)	30.2 (12.6, 47.8)

Tells us about the indicator

* 'Have you ever been told by a doctor that you have ...'

Note: COPD = chronic obstructive pulmonary disease.

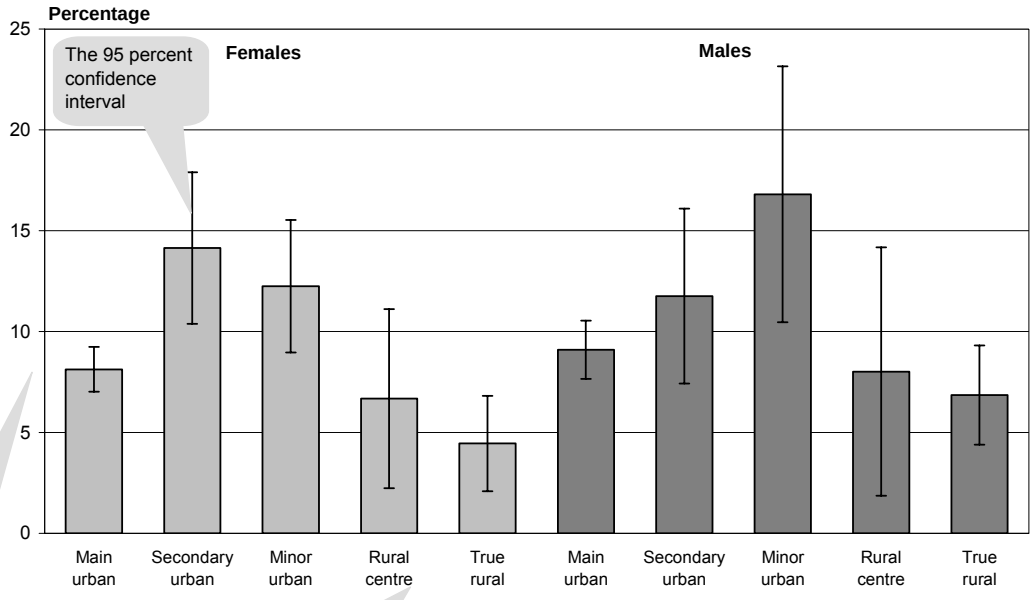
Tells us information about the indicators

The 95 percent confidence interval

How to interpret results – figures

Tells us what the graph is about

Figure Y: Prevalence of heart disease, by sex and area type (age-standardised)



The 95 percent confidence interval

The scale of the prevalence (y) axis is generally 0–100%, but for sections in which the prevalence is very small, smaller axes are used (eg, 0–25%).

Tells us the groups that the prevalence rates are for

How to interpret results – text

In the text, comments are made about the statistical significance of comparisons. For comparisons of area types, specific urban area types are compared with the overall rural total. Similarly, specific rural area types are compared with the overall urban total.

Refers to the rate in a specific rural area type – 'true rural areas' (given in Figure Y)

'People living in true rural areas were significantly less likely to have been diagnosed with heart disease compared to urban dwellers, for both males and females (Figure Y, Table X).'

Refers to the overall rate for urban areas (given in Table X)

Shows where the data is given for the comparisons – the rate for true rural areas is given in Figure Y, and the rate for urban areas is given in Table X

Chapter 2: Chronic Diseases

Introduction

A chronic disease is a physical or mental illness that has lasted, or is expected to last, for more than six months. The symptoms may come and go or be present all the time.

This section of the report presents the lifetime prevalence rates of chronic diseases. In this survey, the prevalence rates of chronic diseases were determined by asking participants if a doctor had ever told them they had any of the selected chronic diseases. This will underestimate the true prevalence of most chronic diseases, because not all people with the disease will have been diagnosed. The proportion of people who are not diagnosed will vary by disease depending on several factors, such as the presence and severity of symptoms.

All results presented by sex, area type and NZDep2001 in the body of this report have been age-standardised by the direct method using the WHO world population as the standard population. This is to allow comparisons between population sub-groups without differences in the age distribution of the comparison populations influencing results. However, age-standardised estimates have no meaning by themselves; they are meaningful only when compared with other age-standardised estimates. Therefore, only those age-standardised estimates should be used to compare one population sub-group with another.

If you want to know the actual burden experienced by the population of interest (eg, the prevalence of diabetes in rural males), use the crude (unadjusted) estimates shown in the summary tables at the end of this chapter.

In this report, comparisons are made between urban areas and rural areas. In addition to this, for comparisons of area types, each urban type (main, secondary, minor urban) is compared with the overall rural total, and each rural type (rural centre, true rural) is compared with the overall urban total.

Comments are also made in the text on comparisons between urban and rural areas of the same deprivation level, and on any other comparisons of interest.

Ninety-five percent confidence intervals are presented for all descriptive results, following the estimate in the table or as error bars in graphs.

Results

Key points

- Urban dwellers were significantly more likely to have been diagnosed with heart disease than rural dwellers, for both males and females.
- There were no significant differences in the prevalence of diabetes between urban and rural dwellers. However, in urban areas, the prevalence of diabetes was significantly higher in the most deprived areas, compared to areas of low or medium deprivation, for both males and females.

- For females aged 45 or less, the prevalence of asthma was significantly higher in urban dwellers than in rural dwellers.
- For females, the prevalence of diagnosed arthritis and osteoporosis was significantly higher in urban areas than in rural areas. The prevalence of arthritis was particularly high for females in secondary and minor urban areas.
- For males, the prevalence of spinal disorders was significantly higher in rural areas than in urban areas. This difference was particularly marked between true rural areas and main urban areas.
- The prevalence of diagnosed stroke, chronic obstructive pulmonary disease, cancer, migraine and serious mental health disorders did not differ significantly between urban and rural people.

Prevalence of chronic diseases

The lifetime prevalence rates of diagnosed chronic diseases are shown in Table 3.

Table 3: Prevalence of diagnosed* chronic diseases, by sex and rural/urban, percent (age-standardised rate), 2002/03

Indicator	Females		Males	
	Urban	Rural	Urban	Rural
Heart disease	9.0 (8.0, 10.0)	4.8 (2.6, 6.9)	10.1 (8.8, 11.4)	7.1 (5.0, 9.2)
Stroke	1.5 (1.2, 1.9)	1.4 (0.5, 2.3)	1.9 (1.5, 2.4)	1.6 (0.5, 2.7)
Diabetes	3.9 (3.2, 4.6)	2.4 (1.0, 3.9)	4.7 (3.9, 5.5)	3.5 (1.6, 5.3)
Asthma (ages 45 and under only)	24.8 (22.6, 27.0)	18.8 (13.5, 24.1)	20.2 (16.8, 23.6)	13.4 (7.5, 19.3)
COPD (ages 46+ only)	38.8 (31.8, 45.8)	35.4 (17.4, 53.4)	38.0 (28.7, 47.3)	30.2 (12.6, 47.8)
Cancer	6.8 (6.0, 7.6)	5.8 (4.0, 7.5)	4.8 (4.0, 5.6)	5.2 (3.3, 7.1)
Arthritis	14.8 (13.8, 15.9)	11.7 (9.0, 14.3)	12.3 (11.2, 13.4)	12.7 (9.5, 15.9)
Spinal disorders (neck or back problem)	22.7 (21.0, 24.4)	23.4 (18.7, 28.1)	23.4 (21.5, 25.4)	32.5 (26.8, 38.1)
Osteoporosis	3.0 (2.5, 3.6)	1.9 (1.0, 2.7)	0.8 (0.4, 1.1)	0.6 (0.0, 1.3)
Migraine	8.0 (6.7, 9.2)	8.1 (4.5, 11.8)	4.1 (3.1, 5.1)	2.5 (1.0, 4.1)
Serious mental health (bipolar disorder, schizophrenia or depression)	3.3 (2.5, 4.0)	2.4 (1.1, 3.6)	2.1 (1.4, 2.9)	1.6 (0.1, 3.1)

* 'Have you ever been told by a doctor that you have ...'

Note: COPD = chronic obstructive pulmonary disease.

Heart disease

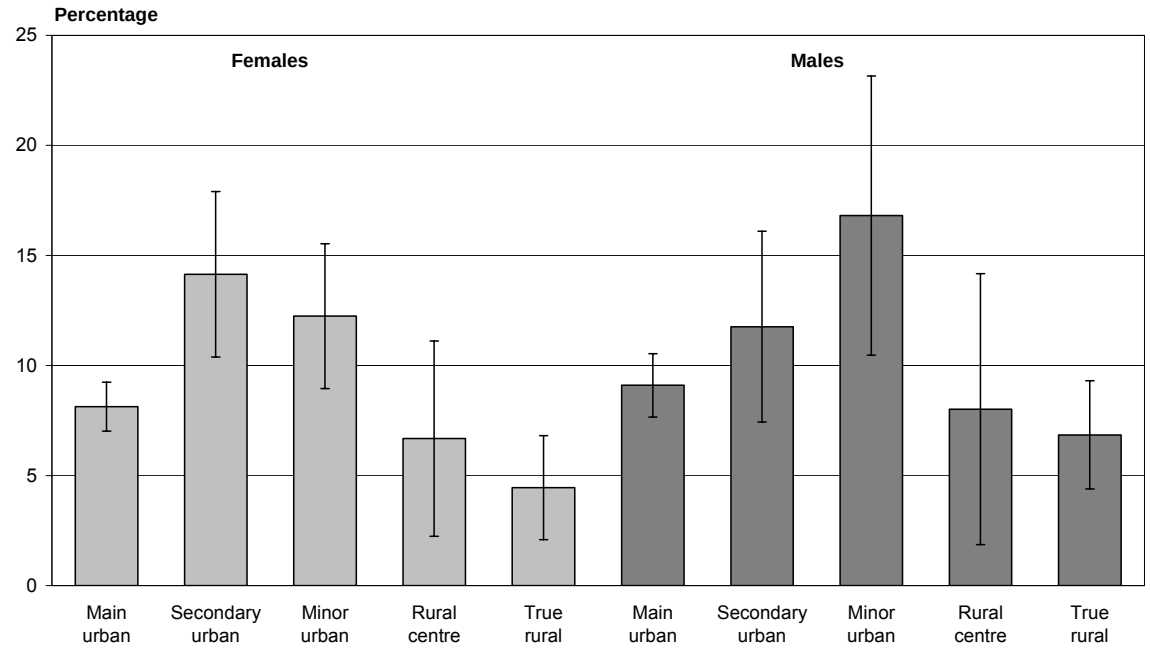
Heart disease includes heart attack, angina, abnormal heart rhythm and heart failure.

Urban dwellers were significantly more likely to have been diagnosed with heart disease than rural dwellers, for both males and females (Table 3).

Females in all three types of urban areas had significantly higher rates of diagnosed heart disease compared to females in rural areas (Figure 1, Table 3). Males in minor urban areas had significantly higher rates of heart disease than males in rural areas.

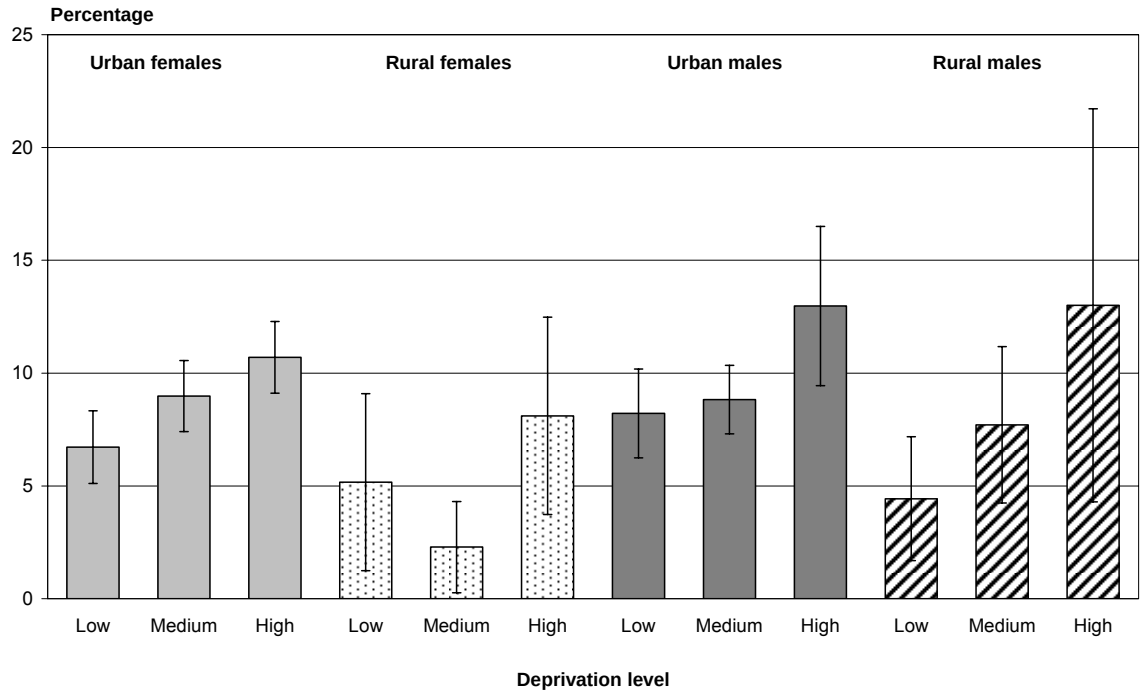
People living in true rural areas were significantly less likely to have been diagnosed with heart disease compared to urban dwellers, for both males and females.

Figure 1: Prevalence of heart disease, by sex and area type (age-standardised)



The urban–rural difference in the prevalence of diagnosed heart disease was significant for females in areas of medium deprivation and for males in areas of low deprivation, with rural people having lower prevalence of heart disease than urban dwellers (Figure 2). The prevalence of heart disease tended to increase with increasing levels of deprivation in both urban and rural areas.

Figure 2: Prevalence of heart disease, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Stroke

Stroke refers to the sudden interruption of the blood supply to the brain that can cause permanent or temporary damage. This kind of interruption of the blood supply can be caused by either blood clots (ischaemic stroke) or bleeding in the brain (haemorrhagic stroke).

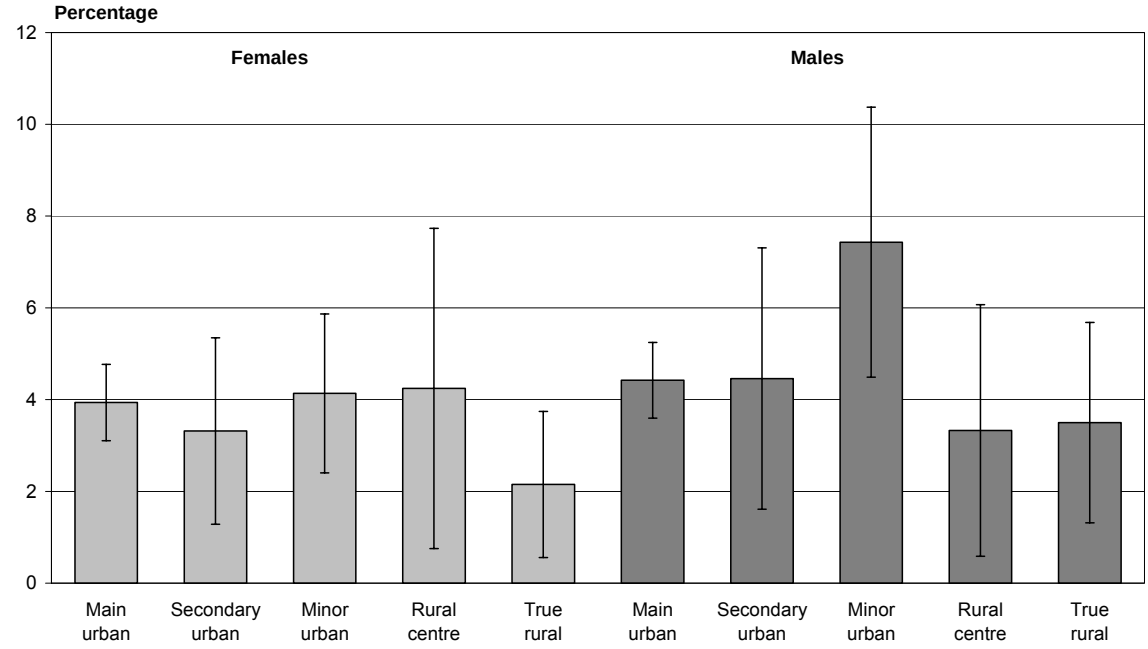
The prevalence of stroke did not differ significantly between urban and rural dwellers, for either males or females (Table 3), for any area type or deprivation level.

Diabetes

Diabetes is characterised by raised blood glucose due to insulin deficiency, insulin resistance or both.

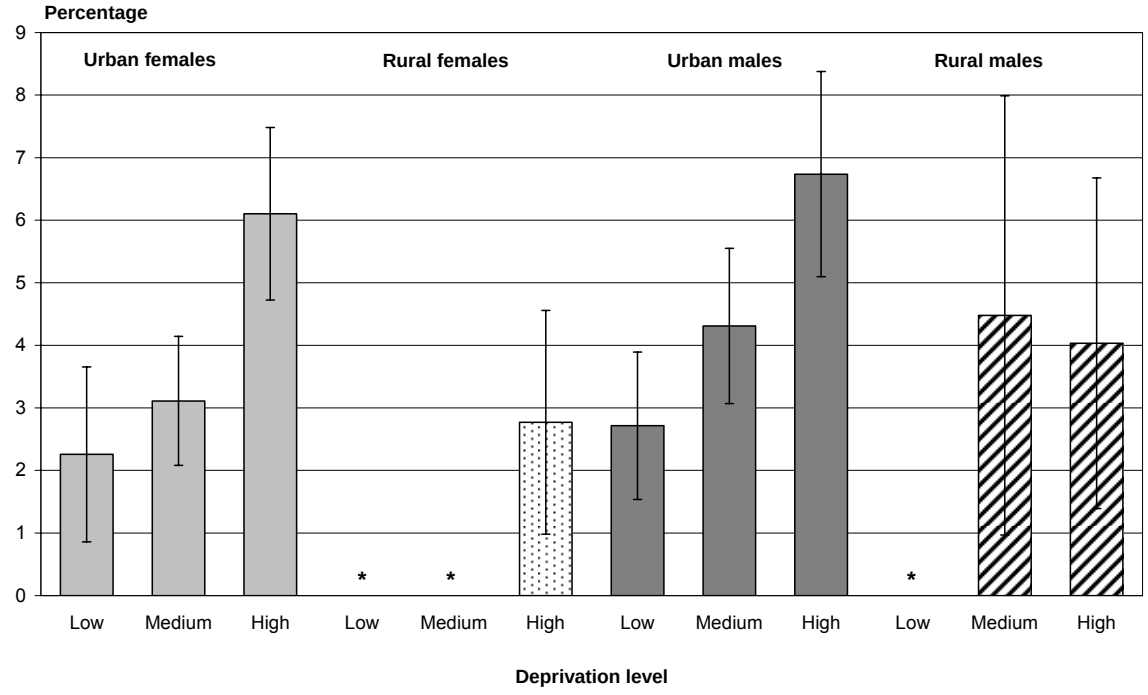
There were no significant differences in prevalence rates of diabetes between urban and rural dwellers (Table 3). However, males in minor urban areas had significantly higher rates of diabetes compared to males in rural areas (Figure 3, Table 3).

Figure 3: Prevalence of diabetes, by sex and area type (age-standardised)



For urban dwellers, the prevalence of diabetes was significantly higher in areas of high deprivation compared to areas of low and medium deprivation, for both males and females (Figure 4).

Figure 4: Prevalence of diabetes, by sex, rural/urban and deprivation level (age-standardised)



* Numbers were too low for reliable estimation.

Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Asthma

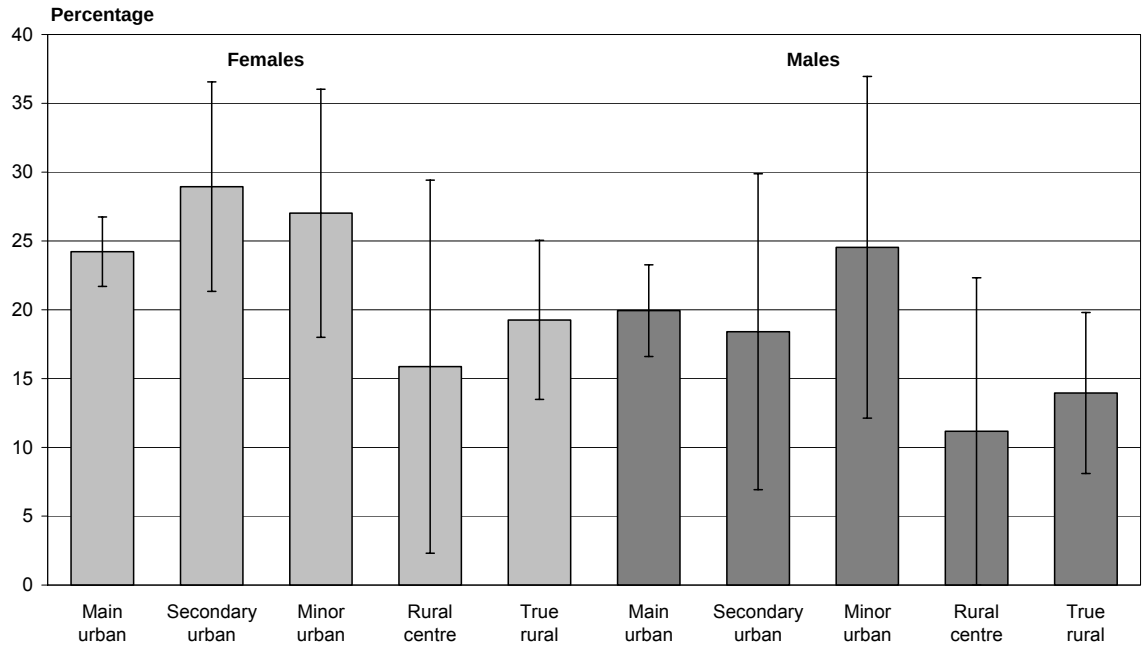
Asthma is an inflammatory disorder of the airways that causes air flow in to and out of the lungs to be restricted. It is characterised by periodic attacks of wheezing, breathlessness and coughing and is reversible with appropriate treatment.

About half of people with asthma develop it before age 10, and most develop it before age 30. In this survey, adults aged 15–45 years were asked if a doctor had ever told them they have asthma.

For females aged 45 or less, urban dwellers were significantly more likely to have been diagnosed with asthma than rural dwellers (Table 3).

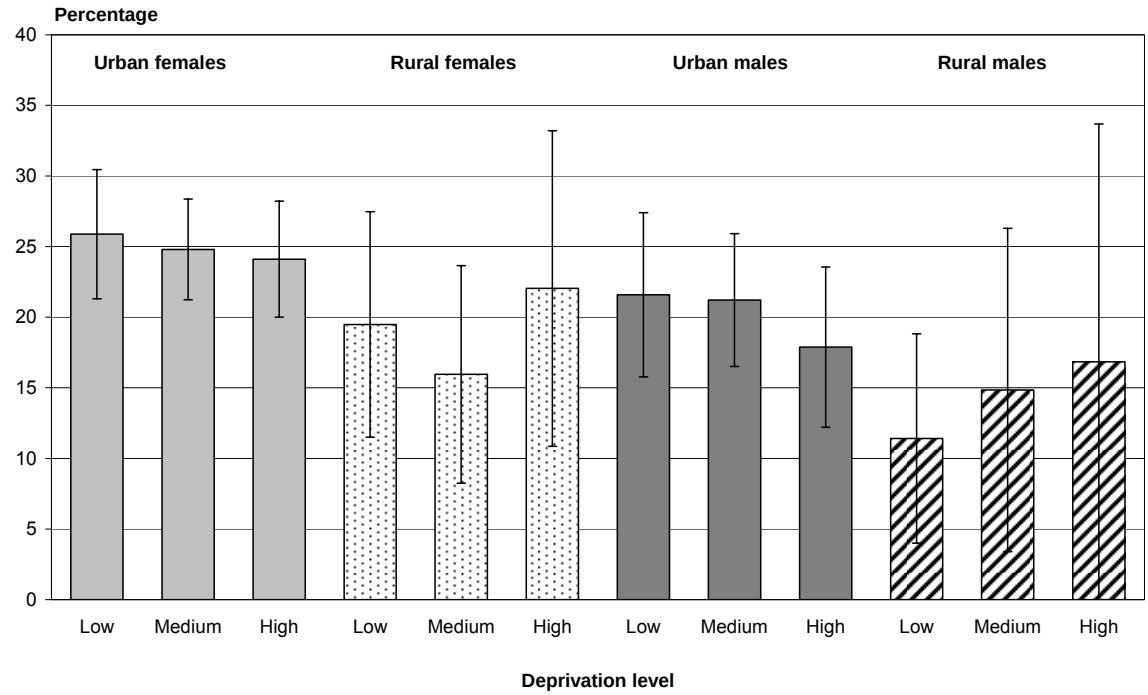
The higher prevalence of asthma in urban areas tended to occur in all types of urban areas compared to rural areas (Figure 5, Table 3), with females living in secondary urban areas significantly more likely to have been diagnosed with asthma compared to female rural dwellers.

Figure 5: Prevalence of asthma (ages 15–45), by sex and area type (age-standardised)



The higher prevalence of asthma in urban areas than rural areas was significant only for areas of medium deprivation for females and low deprivation for males (Figure 6).

Figure 6: Prevalence of asthma (ages 15–45), by sex, rural/urban, and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) refers to several chronic lung disorders that are characterised by non-reversible airflow restriction into and out of the lungs. Emphysema and chronic bronchitis are the most common forms of COPD.

In this survey, adults aged over 45 years were asked if a doctor had ever told them they have chronic bronchitis or emphysema. Asthma has not been included in our definition of COPD (which is permanent), as it is reversible.

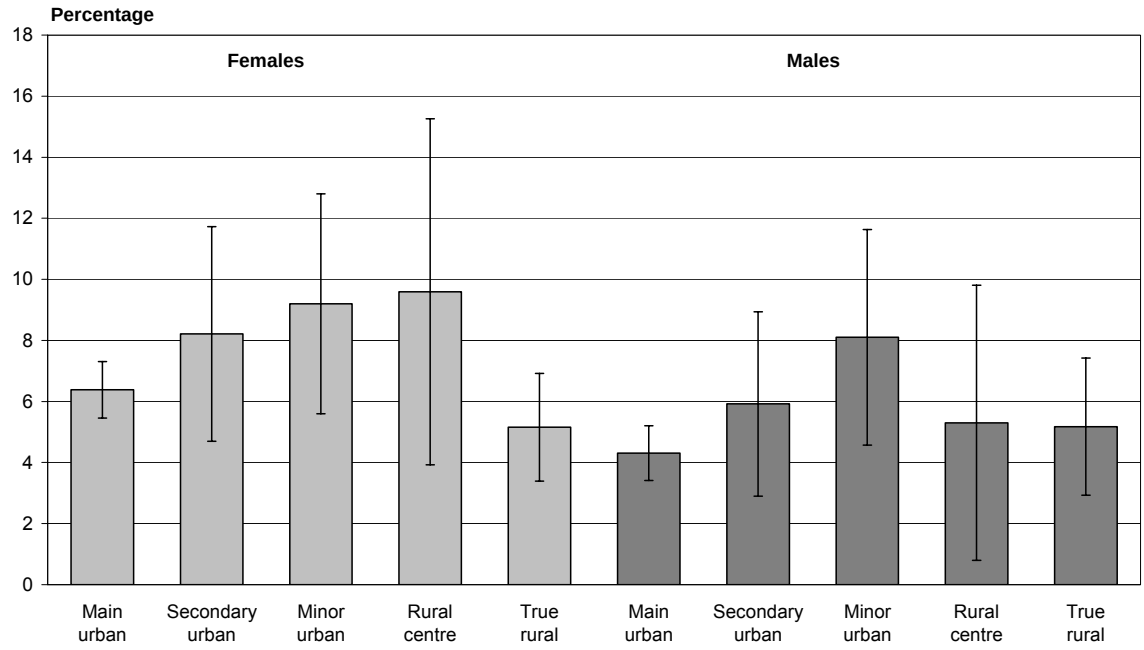
The prevalence of COPD did not differ significantly between urban and rural dwellers, for either males or females (Table 3), for any area type or deprivation level.

Cancer

Cancer involves the uncontrolled growth of cells, which can prevent the normal functioning of vital organs. There are at least 200 different kinds of cancer and they can develop in almost any organ or tissue. The following results are for the lifetime diagnosis of all cancers, not differentiated by site.

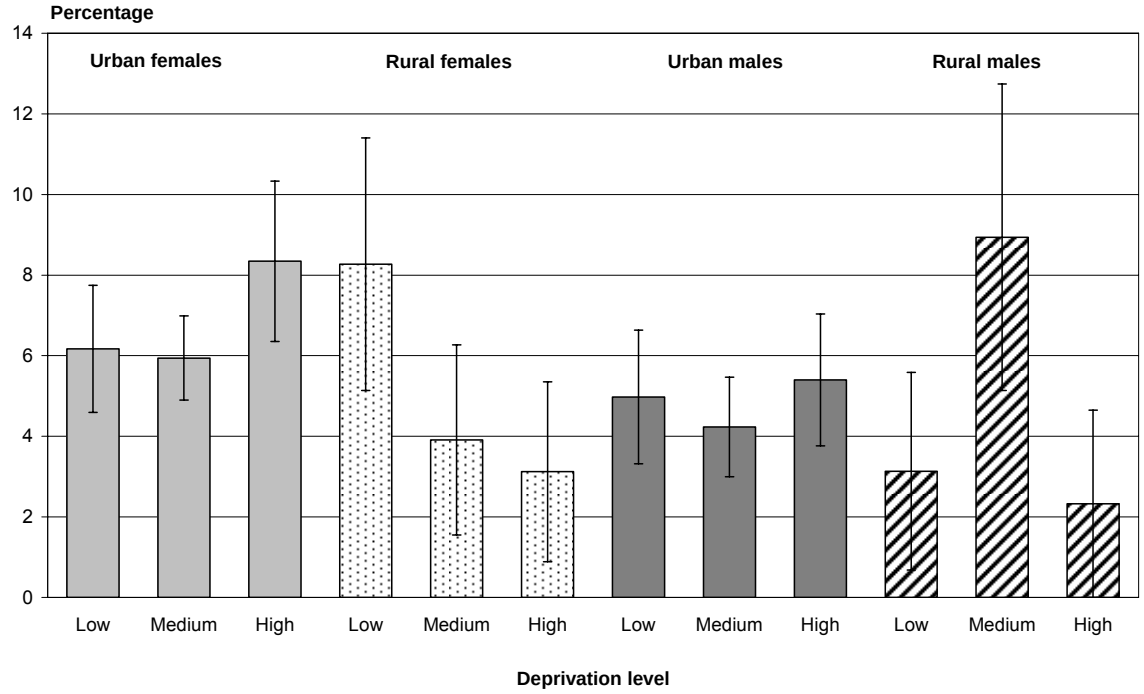
The prevalence of cancer did not differ significantly between urban and rural dwellers, for either males or females (Table 3) or for any area type (Figure 7).

Figure 7: Prevalence of cancer, by sex and area type (age-standardised)



For people in the most deprived areas, the prevalence of cancer was significantly higher for urban dwellers than rural people, for both females and males (Figure 8). In contrast, for males in areas of medium deprivation, the prevalence of cancer was significantly higher in rural areas than in urban areas.

Figure 8: Prevalence of cancer, by sex, rural/urban and deprivation level (age-standardised)



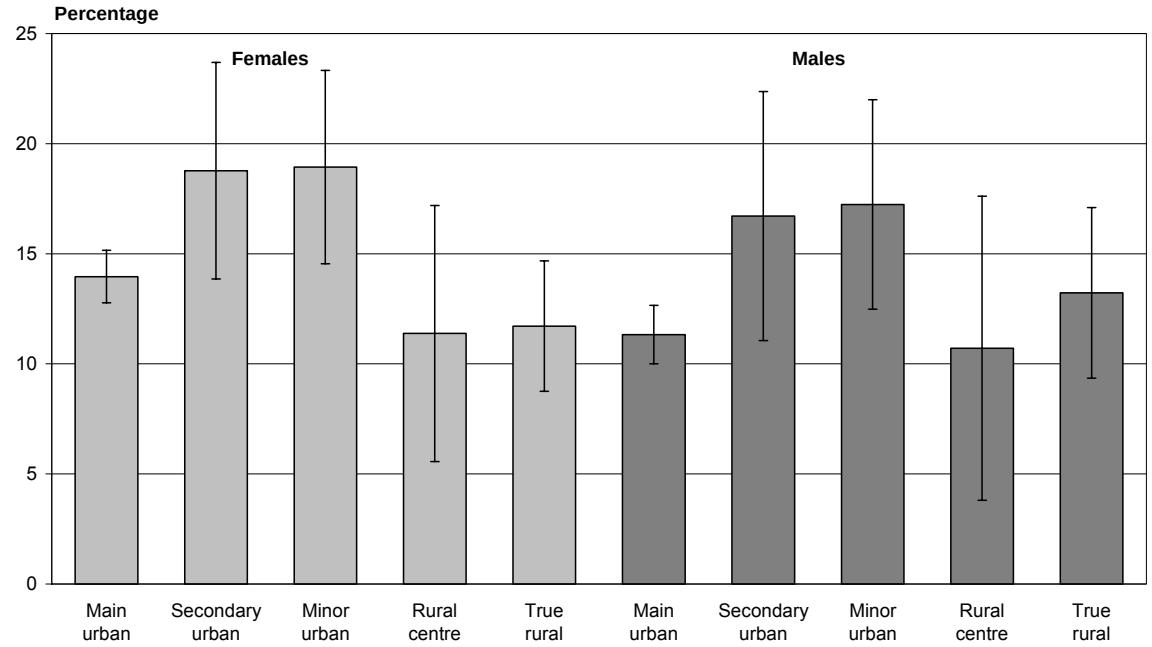
Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Arthritis

Arthritis is a group of diseases that involve inflammation of one or more joints.

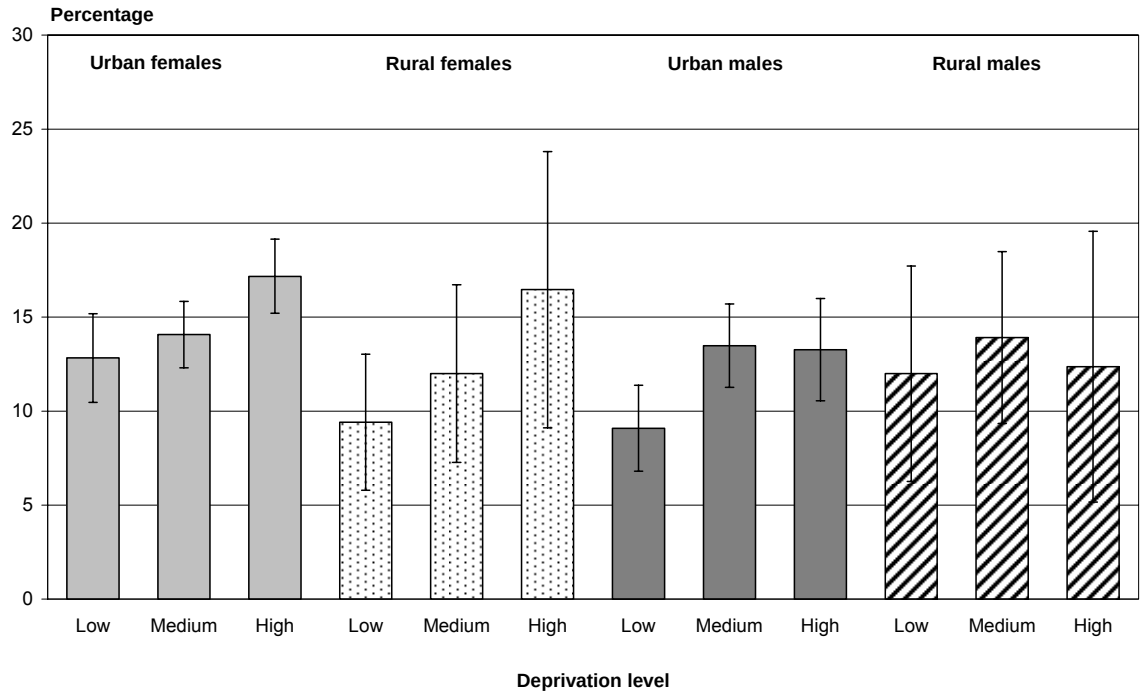
The prevalence of arthritis was significantly higher in urban areas than rural areas for females (Table 3). In particular, females in secondary and minor urban areas were significantly more likely to have arthritis than females in rural areas (Figure 9, Table 3).

Figure 9: Prevalence of arthritis, by sex and area type (age-standardised)



In urban areas, the prevalence of arthritis was significantly higher in the most deprived areas compared to the least deprived areas, for both males and females (Figure 10). There were no significant differences between rural and urban areas of equivalent deprivation levels.

Figure 10: Prevalence of arthritis, by sex, rural/urban and deprivation level (age-standardised)



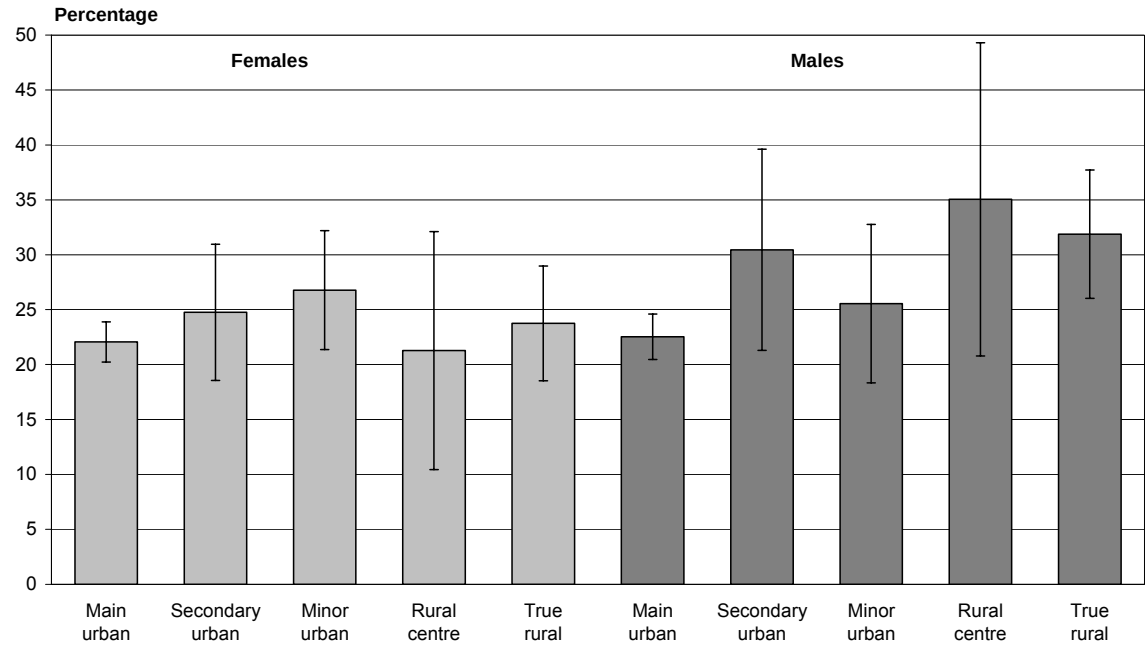
Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Spinal disorders

Spinal disorders include disorders of the back or neck (eg, lumbago, sciatica, chronic back or neck pain, and vertebrae or disc problems). Spinal disorders are usually caused by injury, overuse, muscle disorders, pressure on a nerve or poor posture.

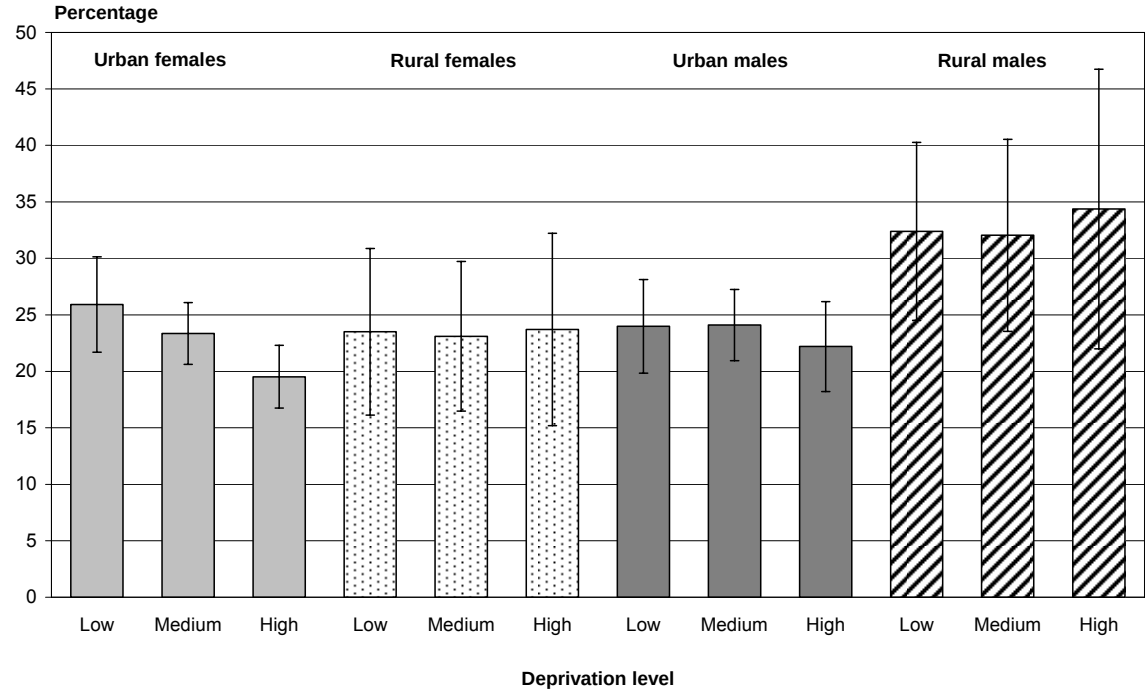
For males, the prevalence of spinal disorders was significantly higher in rural areas than urban areas (Table 3). In particular, males in true rural areas had significantly higher rates of spinal disorders than males in main urban areas (Figure 11).

Figure 11: Prevalence of spinal disorders, by sex and area type (age-standardised)



Among urban females, the prevalence of spinal disorders was significantly higher in low deprivation areas compared to high deprivation areas (Figure 12).

Figure 12: Prevalence of spinal disorders, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

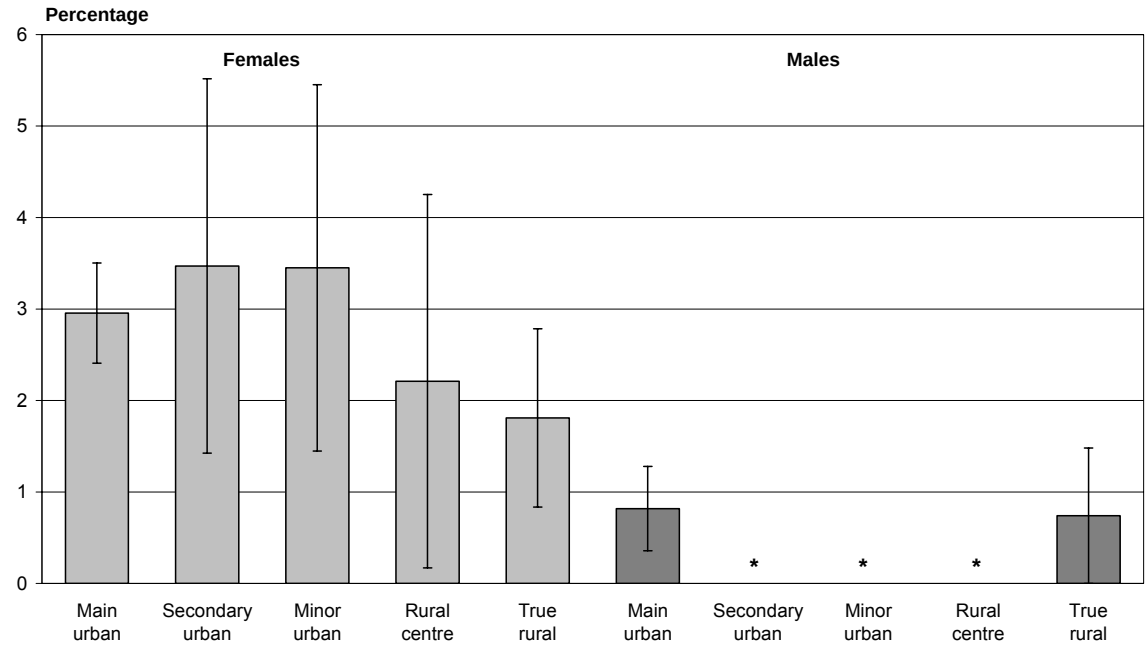
Osteoporosis

Osteoporosis is the thinning of bones resulting in a loss of bone density. It occurs when not enough new bone is formed, too much bone is reabsorbed, or both.

The prevalence of osteoporosis was significantly higher in urban areas than in rural areas for females (Table 3).

Females in main urban areas were significantly more likely to have a higher rate of osteoporosis than females in rural areas (Figure 13, Table 3). Males have low rates of osteoporosis, and the numbers were too low to present prevalence rates by deprivation level.

Figure 13: Prevalence of osteoporosis, by sex and area type (age-standardised)



* Numbers were too low for reliable estimation.

Migraine

Migraine headaches occur repeatedly in some people. They are different from other headaches because they typically occur with nausea, vomiting or sensitivity to light.

The prevalence of migraine did not differ significantly between rural and urban areas for either sex (Table 3), or by area type or deprivation level.

Serious mental disorders

Serious mental disorders include depressive disorder, bipolar disorder and schizophrenia. Depressive disorders affect the way a person feels about themselves and how they think about things, and is associated with feelings of sadness, hopelessness and helplessness. Bipolar disorder (manic depression) is characterised by periods of excitability (mania) alternating with periods of depression, often with abrupt changes between the two moods. Schizophrenia is a serious disorder of thinking and feeling, typically including auditory hallucinations.

The prevalence of serious mental health disorders did not differ significantly between rural and urban areas for either sex (Table 3), or by area type or deprivation level.

Summary tables of crude rates

Table 4 (females) and Table 5 (males) summarise the crude prevalence rates of selected chronic diseases for rural and urban areas. Use these crude estimates if you want to know the actual burden experienced by the population of interest. However, differences in crude rates may arise from differences in age distributions, which is why age-standardised rates have been used in the body of the report.

Table 4: Prevalence of diagnosed chronic diseases, females, by area type, percent (crude rate), 2002/03

Indicator	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
Heart disease	10.5 (9.5, 11.5)	5.5 (3.3, 7.8)	9.4 (8.3, 10.6)	16.8 (12.4, 21.1)	14.3 (10.6, 18.1)	8.4 (3.2, 13.7)	5.0 (2.6, 7.4)
Stroke	1.9 (1.5, 2.4)	1.6 (0.5, 2.6)	1.7 (1.2, 2.1)	3.3 (1.4, 5.2)	3.1 (1.1, 5.1)	2.7 (0.0, 5.9)	1.3 (0.2, 2.5)
Diabetes	4.0 (3.3, 4.7)	2.6 (1.2, 4.0)	3.9 (3.1, 4.7)	3.9 (1.7, 6.2)	4.8 (2.5, 7.0)	5.2 (0.7, 9.7)	2.1 (0.6, 3.6)
Asthma (ages 45 and under only)	23.1 (21.2, 24.9)	19.0 (13.8, 24.2)	22.3 (20.2, 24.5)	28.0 (21.1, 34.9)	25.8 (18.0, 33.7)	16.0 (3.7, 28.4)	19.6 (13.9, 25.2)
COPD (ages 46+ only)	40.5 (34.2 46.7)	37.1 (18.5, 55.7)	40.7 (33.3, 48.2)	48.6 (29.5, 67.6)	30.2 (15.3, 45.1)	36.8 (0.0, 81.2)	37.1 (17.8, 56.5)
Cancer	7.9 (7.1, 8.8)	7.0 (5.0, 9.1)	7.5 (6.5, 8.5)	9.1 (5.8, 12.5)	11.0 (7.2, 14.7)	11.3 (4.4, 18.2)	6.2 (4.1, 8.3)
Arthritis	17.9 (16.8, 19.0)	13.6 (10.6, 16.5)	16.8 (15.6, 18.1)	23.0 (17.8, 28.3)	22.7 (17.8, 27.7)	14.8 (7.4, 22.2)	13.3 (10.2, 16.5)
Spinal disorders	23.9 (22.4, 25.5)	24.5 (19.8, 29.2)	23.2 (21.6, 24.9)	27.0 (21.0, 33.0)	27.3 (22.7, 32.0)	22.4 (12.8, 31.9)	24.9 (19.6, 30.3)
Osteoporosis	4.1 (3.5, 4.7)	2.3 (1.2, 3.3)	4.0 (3.3, 4.7)	4.8 (2.0, 7.5)	4.7 (2.3, 7.0)	2.7 (0.1, 5.3)	2.2 (1.1, 3.4)
Migraine	7.8 (6.7, 8.9)	7.8 (4.4, 11.2)	7.8 (6.6, 8.9)	7.7 (3.9, 11.5)	7.6 (4.4, 10.9)	9.6 (1.1, 18.1)	7.4 (3.6, 11.2)
Serious mental health (bipolar disorder, depression, schizophrenia)	3.1 (2.5, 3.7)	2.5 (1.2, 3.7)	3.0 (2.2, 3.7)	4.2 (1.6, 6.9)	3.2 (1.3, 5.1)	–	2.3 (0.9, 3.6)

Notes: A dash (–) indicates that numbers were too low for reliable estimation; COPD = chronic obstructive pulmonary disease.

Table 5: Prevalence of diagnosed chronic diseases, males, by area type, percent (crude rate), 2002/03

Indicator	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
Heart disease	11.4 (10.1, 12.6)	8.2 (5.7, 10.7)	10.3 (9.0, 11.6)	14.9 (9.5, 20.3)	17.6 (11.8, 23.3)	8.7 (2.5, 14.8)	8.1 (5.3, 11.0)
Stroke	2.4 (1.8, 3.0)	2.0 (0.6, 3.4)	2.3 (1.6, 3.0)	–	3.5 (1.0, 6.0)	3.6 (0.0, 9.6)	1.7 (0.4, 3.0)
Diabetes	5.0 (4.1, 5.9)	3.2 (1.7, 4.8)	4.5 (3.7, 5.4)	5.5 (2.1, 8.9)	8.2 (4.8, 11.5)	3.5 (0.9, 6.1)	3.2 (1.5, 4.9)
Asthma (ages 45 and under only)	19.0 (16.0, 22.0)	12.0 (7.3, 16.8)	18.7 (15.7, 21.6)	17.0 (7.5, 26.4)	24.0 (14.0, 34.1)	10.3 (0.0, 22.1)	12.4 (7.4, 17.4)
COPD (ages 46+ only)	40.9 (31.1, 50.6)	30.5 (11.7, 49.3)	39.2 (28.8, 49.7)	–	53.8 (31.0, 76.6)	–	28.8 (7.8, 49.7)
Cancer	5.9 (5.1, 6.8)	6.2 (3.8, 8.6)	5.2 (4.3, 6.2)	7.6 (3.7, 11.5)	10.7 (6.3, 15.1)	6.5 (0.3, 12.7)	6.2 (3.5, 8.9)
Arthritis	13.8 (12.6, 14.9)	15.0 (11.2, 18.9)	12.4 (11.1, 13.7)	20.3 (14.5, 26.2)	19.7 (14.7, 24.6)	12.0 (4.0, 20.0)	15.6 (11.2, 19.9)
Spinal disorders	24.6 (22.8, 26.3)	34.2 (28.7, 39.6)	23.7 (21.8, 25.7)	29.5 (21.7, 37.4)	27.1 (20.3, 34.0)	36.1 (22.4, 49.7)	33.8 (28.1, 39.5)
Osteoporosis	0.8 (0.4, 1.2)	0.8 (0.0, 1.7)	0.9 (0.4, 1.3)	–	–	–	0.9 (0.0, 2.0)
Migraine	3.9 (3.0, 4.9)	3.0 (1.1, 4.9)	3.7 (2.7, 4.7)	5.8 (2.1, 9.5)	4.6 (1.1, 8.1)	–	3.2 (1.0, 5.5)
Serious mental health (bipolar disorder, depression, schizophrenia)	2.0 (1.4, 2.6)	1.7 (0.2, 3.3)	2.2 (1.5, 3.0)	–	0.5 (0.0, 1.4)	–	2.0 (0.2, 3.8)

Notes: A dash (–) indicates that numbers were too low for reliable estimation; COPD = chronic obstructive pulmonary disease.

Chapter 3: Risk and Protective Factors

Introduction

Risk and protective factors are biological factors (eg, blood pressure) or behavioural factors (eg, physical activity) that are causally associated with health outcomes.

The accurate and objective measurement of biological risk factors is difficult, and generally involves physical measurements that are beyond the scope of this survey (except body weight, height and waist circumference). Similarly, for behavioural factors observation of behaviour is difficult. Instead, this survey uses a series of questions to determine the prevalence of self-reported risk and protective factors in adults.

This approach tends to either underestimate or overestimate the true prevalence of these risk or protective factors, with the direction of the bias related to whether the behaviour is harmful or beneficial to health. In general, when asked about behaviours that are harmful to health (eg, smoking), people tend to underestimate their exposure. In contrast, when asked about behaviours that are beneficial to health (eg, physical activity), people tend to overestimate their participation.

All results presented by sex, area type and NZDep2001 in the body of this report have been age-standardised by the direct method using the WHO world population as the standard population. This is to allow comparisons between population sub-groups without differences in the age distribution of the comparison populations influencing results. However, age-standardised estimates have no meaning by themselves; they are meaningful only when compared with other age-standardised estimates. Therefore, only use these age-standardised estimates to compare one population sub-group with another.

If you want to know the actual burden experienced by the population of interest (eg, the prevalence of obesity in urban females), use the crude (unadjusted) estimates shown in the summary tables at the end of this chapter.

In this report, comparisons are made between urban areas and rural areas. In addition to this, for comparisons of area types, each urban type (main, secondary, minor urban) is compared with the overall rural total, and each rural type (rural centre, true rural) is compared with the overall urban total.

Comments are also made in the text on comparisons between urban and rural areas of the same deprivation level, and on any other comparisons of interest.

Ninety-five percent confidence intervals are presented for all descriptive results, following the estimate in the table or as error bars in graphs.

Results

Key points

- Urban females were significantly less likely than rural females to eat the recommended two or more servings of fruit a day. For urban females, the rate of adequate fruit consumption decreased with increasing deprivation.
- People who live in main urban areas were significantly less likely than rural people to eat the recommended three or more servings of vegetables a day, for both males and females.
- Urban dwellers were significantly less likely than rural people to be physically active, for both males and females.
- Urban females were significantly more likely to be underweight than rural females.
- Urban females in low deprivation areas were significantly less likely to be overweight or obese than urban females in the most deprived areas and rural females from areas of low or medium deprivation.
- Females living in minor urban towns and rural centres were significantly more likely to be current smokers than females living in either main urban centres or true rural areas.
- In urban areas, but not rural areas, the prevalence of smoking increased significantly with deprivation, for both males and females.
- Both males and females in urban areas were significantly more likely than rural dwellers to have not drunk alcohol in the last year. The rate of alcohol abstention increased with increasing deprivation.
- Urban females in the least deprived areas had a significantly lower prevalence of potentially hazardous drinking than urban females in the most deprived areas, but otherwise the prevalence of potentially hazardous drinking did not differ between areas.
- Males and females from secondary urban and minor urban areas tended to have a higher prevalence of high blood pressure and high cholesterol than people living in main urban areas or true rural areas, although the difference was only statistically significant for females from minor urban areas, compared to main urban and true rural areas.

Protective factors

Protective factors in the survey included fruit and vegetable consumption and physical activity. The prevalence of protective factors is shown in Table 6.

Table 6: Protective factors, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

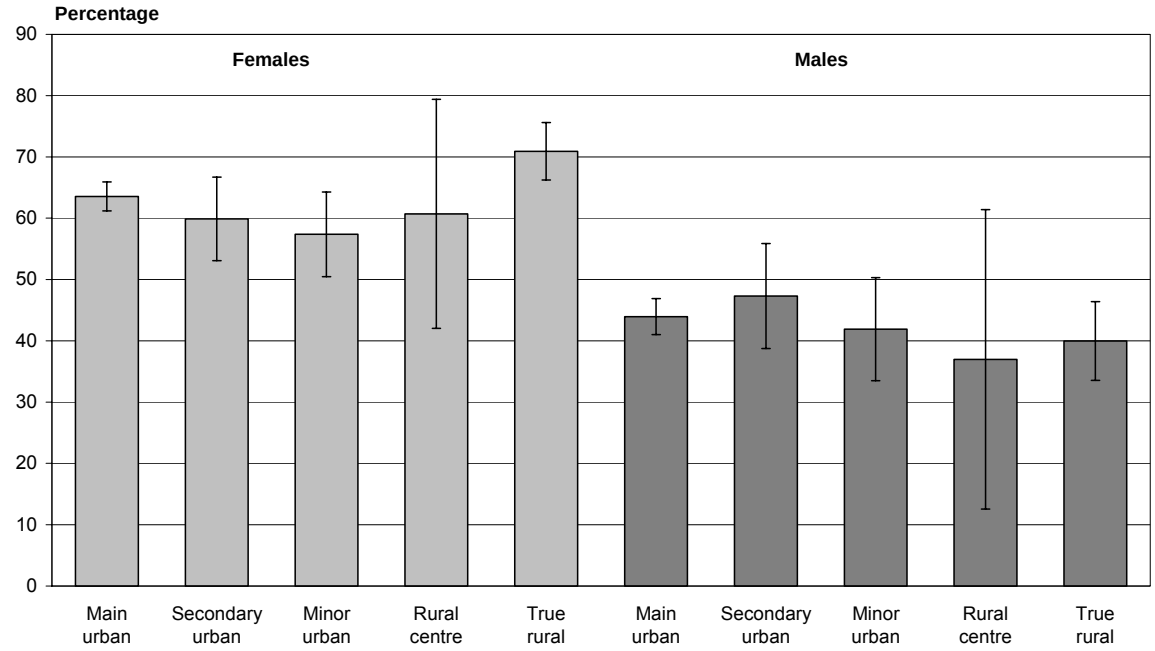
Indicator	Females		Males	
	Urban	Rural	Urban	Rural
2+ servings of fruit per day	62.7 (60.8, 64.6)	69.5 (64.7,74.3)	44.0 (41.5, 46.5)	39.4 (32.7, 46.1)
3+ servings of vegetables per day	69.6 (67.4, 71.8)	80.5 (76.5, 84.5)	62.2 (59.5, 65.0)	69.7 (63.7, 75.7)
Physically active (at least 2.5 hours in last week)	68.4 (66.1, 70.7)	79.3 (75.2, 83.5)	76.6 (74.7, 78.5)	89.0 (85.5, 92.5)
Regularly physically active (2.5 hours activity and active 5+ days in last week)	47.2 (44.9, 49.4)	57.3 (52.3, 62.3)	53.3 (51.1, 55.6)	76.9 (71.5, 82.3)

Fruit consumption

Vegetables and fruit are highly nutritious and have been shown to protect against a range of chronic diseases, including heart disease, stroke and many cancers. In New Zealand, it is recommended that adults eat at least two servings of fruit and at least three servings of vegetables each day (Ministry of Health 2003).

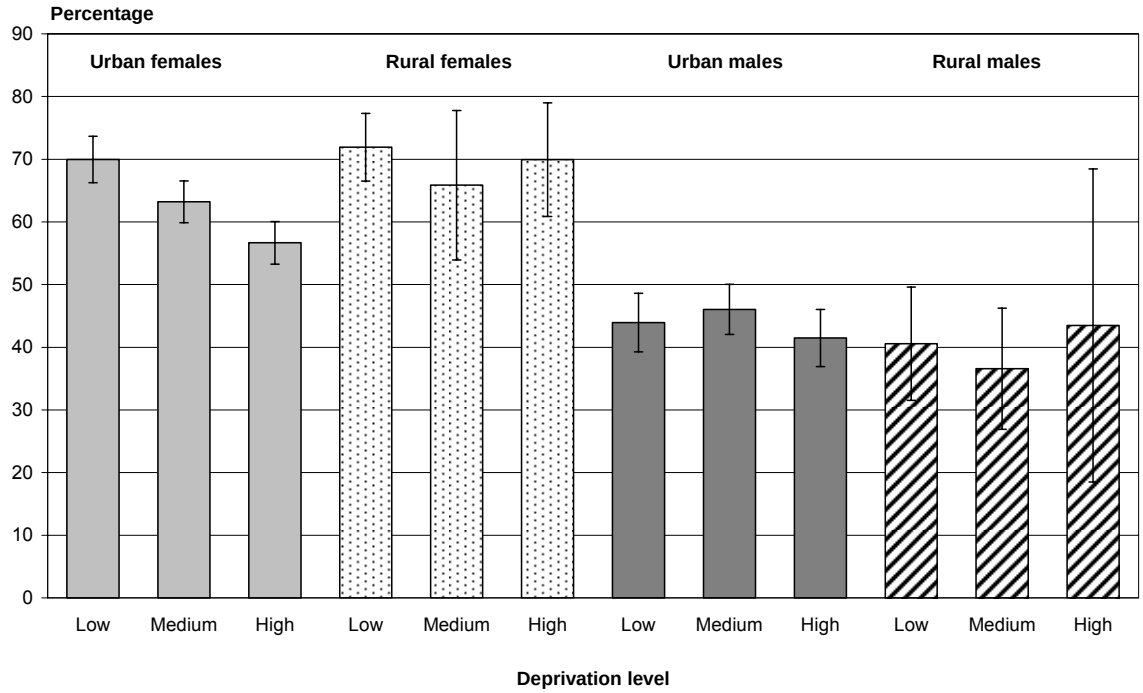
Urban females were significantly less likely than rural females to eat the recommended two or more servings of fruit a day, both overall (Table 6) and for each urban area type (Figure 14, Table 6).

Figure 14: Fruit intake (two or more servings a day), by sex and area type (age-standardised)



For urban females, but not other groups, the rate of adequate fruit consumption decreased with increasing deprivation (Figure 15). For females in the most deprived areas, urban dwellers were significantly less likely to have two or more servings of fruit a day, compared to rural dwellers.

Figure 15: Fruit intake (two or more servings a day), by sex, rural/urban and deprivation level (age-standardised)



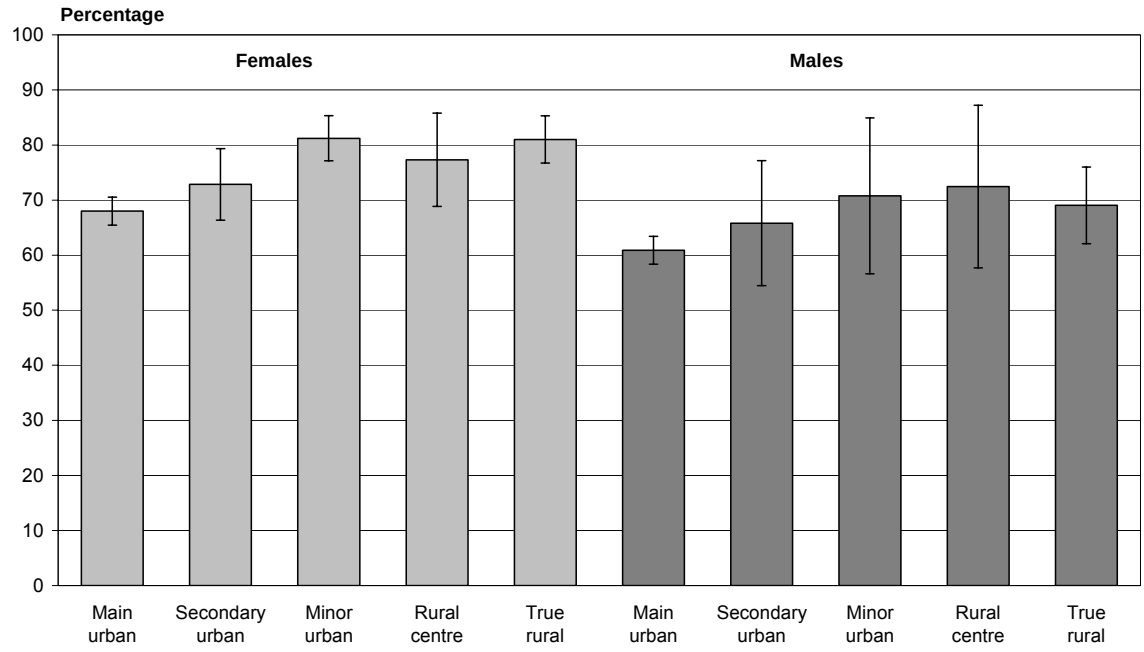
Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Vegetable consumption

Overall, urban dwellers were significantly less likely than rural people to eat the recommended three or more servings of vegetables a day, for both males and females (Table 6).

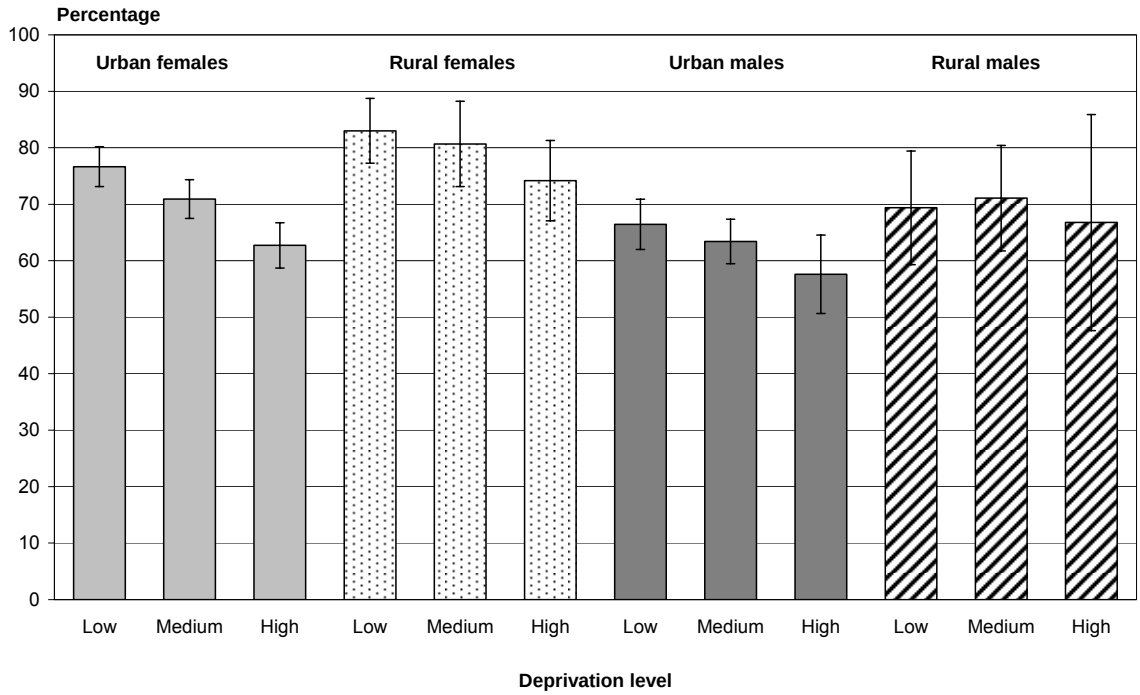
This difference was accounted for by people living in main urban areas, who were significantly less likely than rural dwellers to have adequate consumption of vegetables, for both males and females (Figure 16, Table 6). People living in minor urban areas had a similar level of vegetable consumption to rural people.

Figure 16: Vegetable intake (three or more servings a day), by sex and area type (age-standardised)



People living in areas of higher deprivation tended to be less likely to consume three or more servings of vegetables a day than people living in areas of low deprivation, although this difference was statistically significant only for urban females (Figure 17). In areas of medium and high deprivation, urban females were significantly less likely to have an adequate vegetable intake than rural females.

Figure 17: Vegetable intake (three or more servings a day), by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Physical activity

Physical activity is protective against chronic diseases such as heart disease, stroke, certain cancers and type 2 diabetes. Physical activity also helps lower risk factors for these diseases, such as high blood pressure and high cholesterol. Sport and Recreation New Zealand recommends that adults do at least 30 minutes of moderate-intensity physical activity (equivalent to brisk walking) on most (at least five), if not all, days of the week (Hillary Commission 2001). It is also recommended that, when possible, vigorous exercise be added for extra fitness and health benefits.

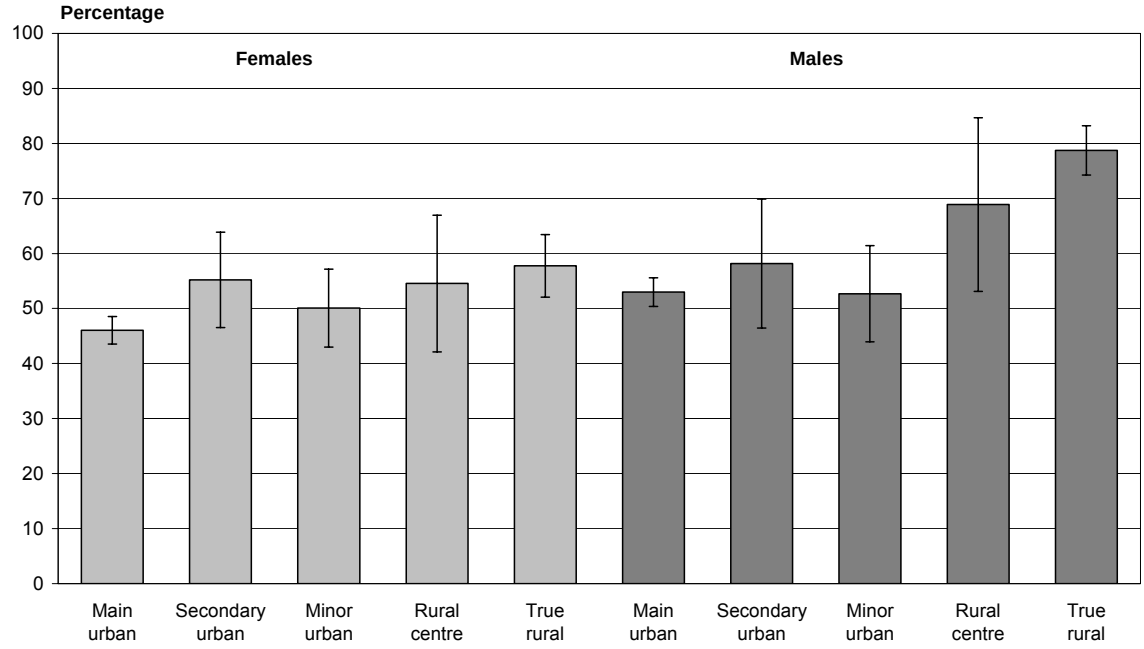
In this survey, physical activity was measured by asking participants how much physical activity they had done in the last seven days, with separate questions for brisk walking, moderate activity and vigorous activity. Total physical activity (minutes per week) was calculated as: minutes of brisk walking + minutes of moderate activity + (minutes of vigorous activity x two) (ie, one minute of vigorous activity is equivalent to two minutes of moderate intensity activity). Participants were also asked on how many of the last seven days they were active.

In this analysis, being physically active was defined as having done at least 2.5 hours of physical activity in the last week. Being regularly physically active was defined as having done at least 2.5 hours activity in the last week, and having been active five or more days in the last week.

Urban dwellers were significantly less likely to be physically active or regularly physically active than rural people, for both males and females (Table 6).

For females, only main urban females had significantly lower levels of regular physical activity than rural females. In contrast, males from all types of urban areas were significantly less likely to be regularly physical active than rural males (Figure 18, Table 6).

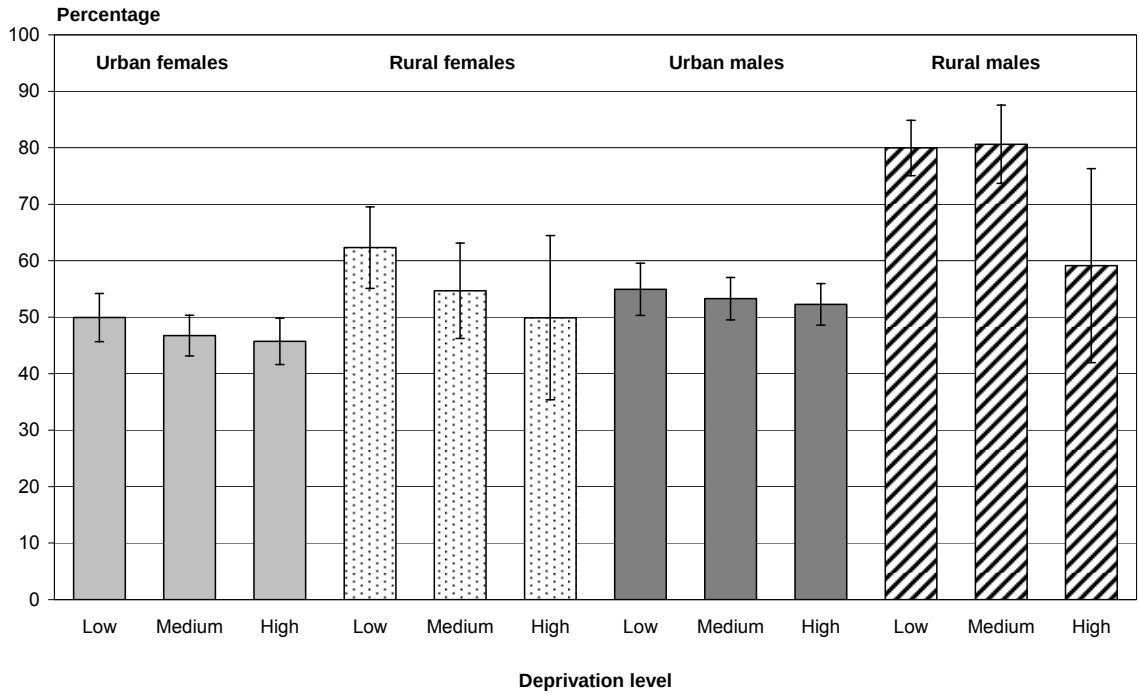
Figure 18: Regularly physically active, by sex and area type (age-standardised)



In areas of low deprivation, rural dwellers were significantly more likely to be regularly physically active than urban dwellers, for both males and females (Figure 19). For males in areas of medium deprivation, rural dwellers were also significantly more likely to be regularly physically active compared to urban dwellers.

Rural males in high deprivation areas were significantly less likely to be regularly physically active compared to rural males in low and medium deprivation areas.

Figure 19: Regularly physically active, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Risk factors

Risk factors in the survey included body weight (underweight or overweight), tobacco smoking, alcohol consumption, high blood pressure and high cholesterol. The prevalence of risk factors is shown in Table 7.

Table 7: Risk factors, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

Indicator	Females		Males	
	Urban	Rural	Urban	Rural
Underweight*	4.1 (3.2, 4.9)	1.3 (0.1, 2.5)	2.3 (1.5, 3.1)	2.8 (0.6, 4.9)
Overweight*	26.8 (25.1, 28.5)	31.8 (27.1, 36.5)	40.7 (38.2, 43.3)	39.4 (34.6, 44.2)
Obese*	20.7 (19.2, 22.3)	22.6 (19.0, 26.2)	18.8 (17.3, 20.4)	21.1 (16.7, 25.5)
Overweight or obese*	47.5 (45.4, 49.6)	54.4 (49.4, 59.4)	59.6 (57.3, 61.9)	60.5 (55.1, 66.0)
Adult weight gain (gained > 10 kg since age 18, ages 19+ only)	53.7 (51.9, 55.5)	56.6 (51.3, 61.9)	56.8 (54.4, 59.2)	56.4 (49.6, 63.2)
Current smoker (daily)	23.1 (21.6, 24.6)	21.4 (17.2, 25.6)	23.8 (21.8, 25.8)	25.2 (18.6, 31.8)
Have not drunk alcohol in last year	20.8 (19.3, 22.3)	13.0 (9.8, 16.3)	12.2 (10.9, 13.4)	7.8 (5.1, 10.5)
Potentially hazardous drinking (AUDIT score of 8+)	11.5 (9.9, 13.0)	11.0 (7.5, 14.5)	26.8 (24.3, 29.3)	28.7 (23.5, 33.9)
High blood pressure	19.6 (18.3, 21.0)	16.9 (13.3, 20.6)	17.8 (16.5, 19.2)	18.9 (15.0, 22.8)
High cholesterol	13.1 (12.2, 14.1)	11.6 (8.9, 14.2)	14.5 (13.3, 15.6)	14.4 (10.9, 17.9)

* Measured by body mass index (BMI). Underweight was defined as a BMI of 18.5 or less. Overweight was defined as a BMI of 25.0–29.9 (26.0–31.9 for Māori and Pacific peoples). Obese was defined as a BMI of 30.0+ (32.0+ for Māori and Pacific peoples). Higher BMI cut-offs were used to classify Māori and Pacific peoples as overweight and obese to account for differences in muscle mass (Swinburn 1998). Caution: almost one in ten respondents had a missing BMI value. These people were excluded from the rate calculations.

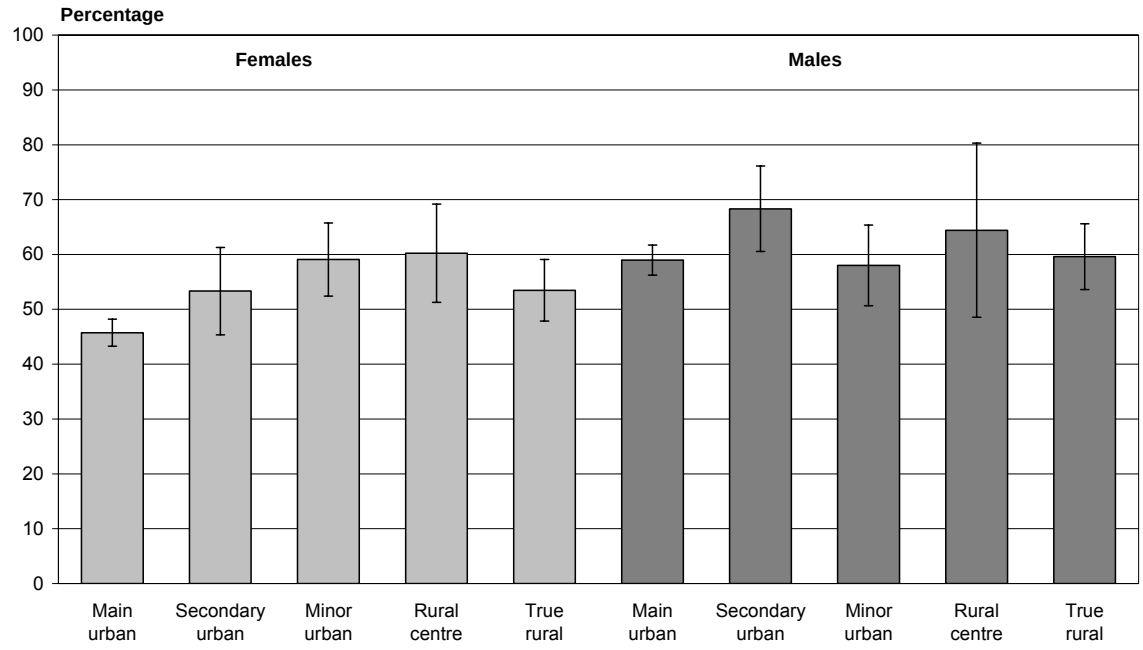
Body weight

Overweight and obesity are important risk factors for several diseases, including type 2 diabetes, ischaemic heart disease, ischaemic stroke and several common cancers. This section of the survey included measurements of height, weight and waist circumference using standardised equipment and techniques. Body mass index (BMI) was calculated by dividing weight in kilograms by height in metres squared (kg/m^2). Participants were also asked whether they had gained more than 10 kg since age 18 years (adult weight gain).

Urban females were significantly more likely to be underweight than rural females (Table 7). The number of people who were underweight was too low to estimate rates by area type or deprivation level.

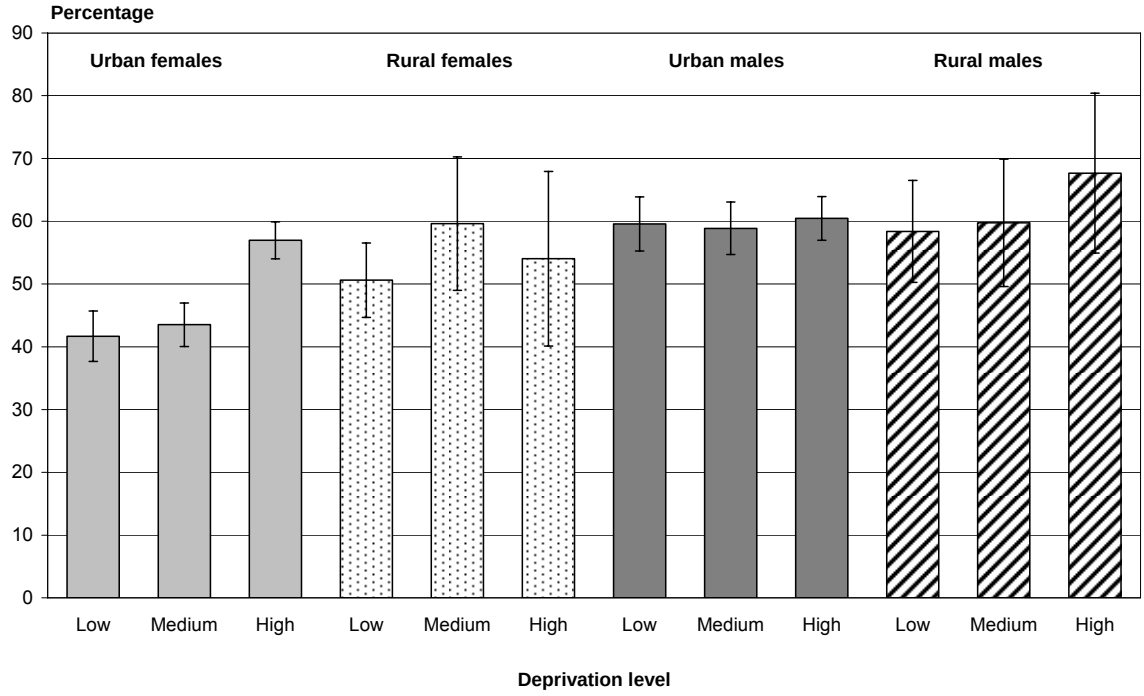
The prevalence rates of having adult weight gain, being overweight and being obese did not differ significantly between rural and urban dwellers of either sex (Table 7). However, combining the prevalence of overweight and obesity, rural females were significantly more likely to be overweight or obese than urban females (Table 7). In particular, females in main urban areas were significantly less likely to be overweight or obese compared to females in minor urban areas, rural centres and true rural areas (Figure 20).

Figure 20: Prevalence of overweight or obesity, by sex and area type (age-standardised)



Urban females in the least deprived areas were significantly less likely to be overweight or obese than urban females in most deprived areas and rural females in areas of low or medium deprivation (Figure 21).

Figure 21: Prevalence of overweight or obesity, by sex, rural/urban and deprivation level (age-standardised)



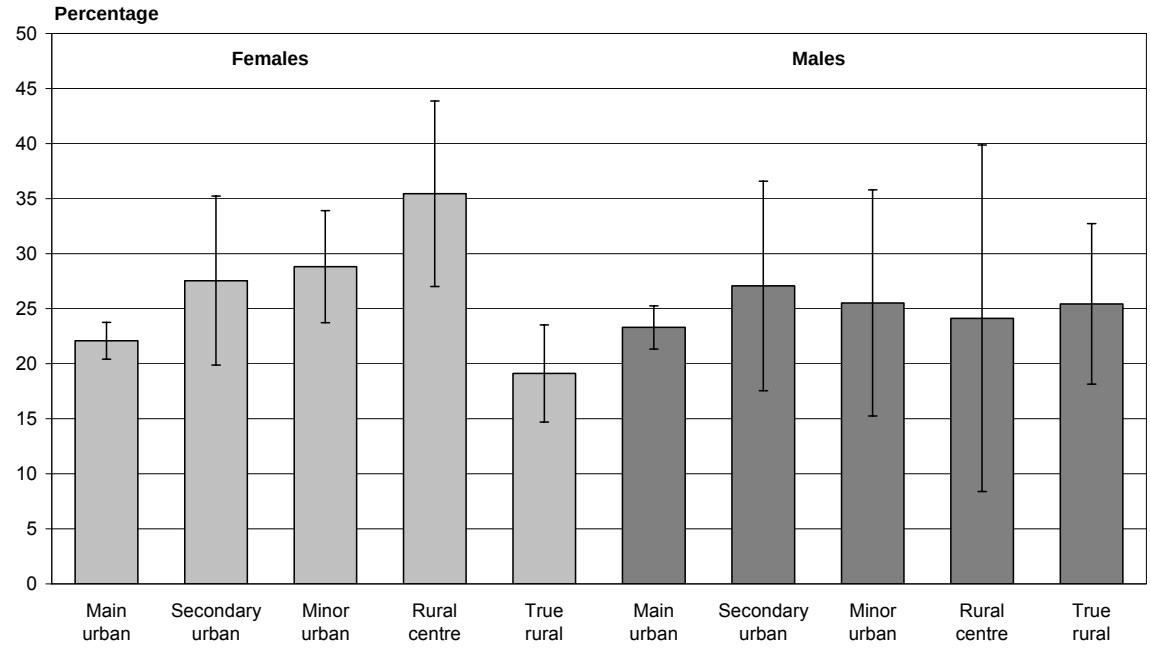
Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Tobacco smoking

Tobacco smoking has long been known to be a major cause of death and ill health. Smoking is a risk factor for cancers of the lung, mouth, pharynx, oesophagus, larynx, pancreas and kidney. Smoking also increases the risk of heart disease, stroke and chronic respiratory diseases.

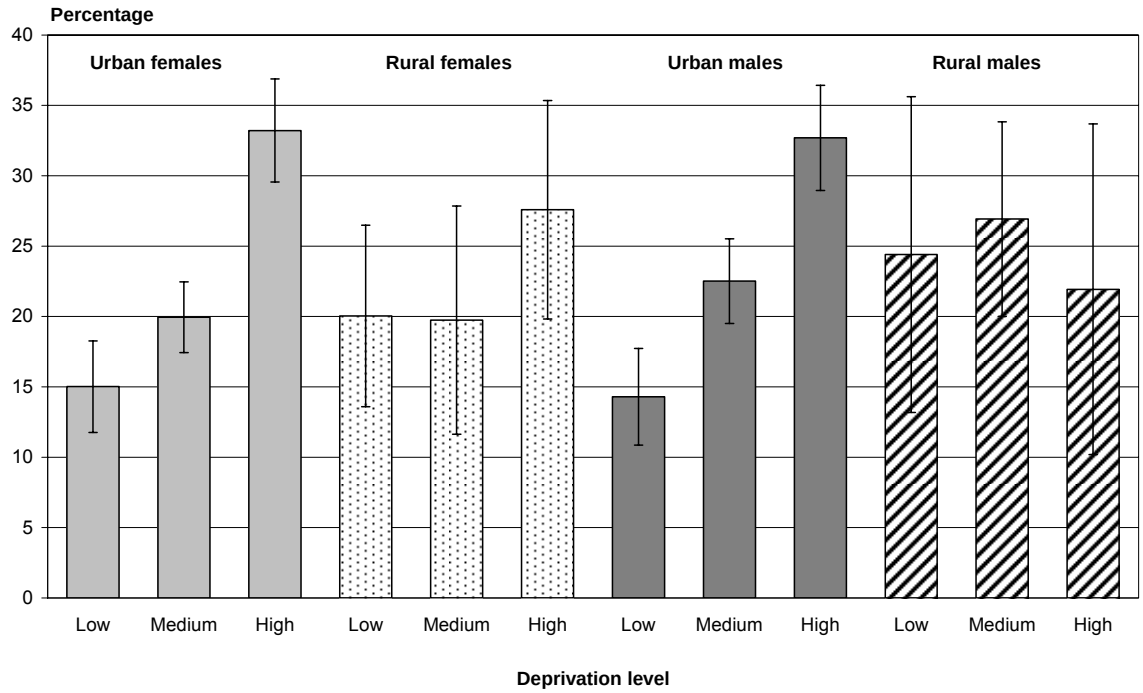
Overall, the prevalence of current smoking (one or more tobacco cigarettes a day) did not differ significantly between rural and urban areas for males or females (Table 7). However, females in minor urban areas and rural centres were significantly more likely to smoke than females in either main urban areas or true rural areas (Figure 22).

Figure 22: Current smoking, by sex and area type (age-standardised)



In urban areas, but not rural areas, the prevalence of smoking increased significantly with deprivation for both males and females (Figure 23).

Figure 23: Current smoking, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Alcohol consumption

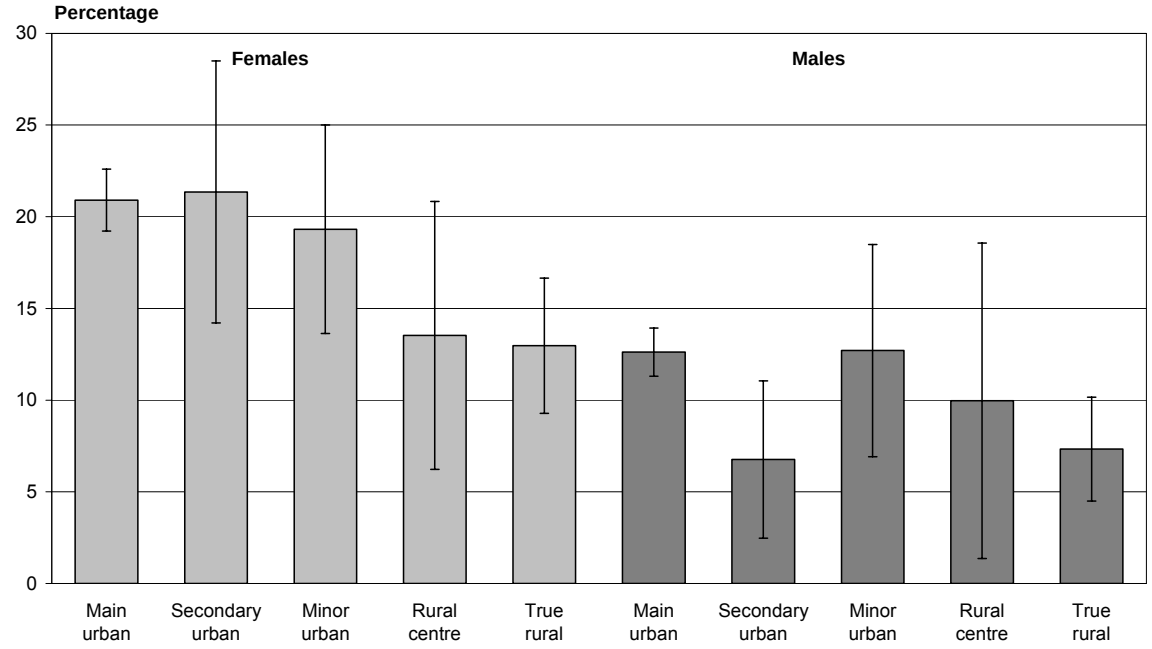
Alcohol causes a range of adverse effects on health, including cirrhosis of the liver, pancreatitis, endocrine disorders, cardiomyopathy, gastritis, high blood pressure, haemorrhagic stroke, and cancers of the mouth, pharynx, larynx, oesophagus, breast and liver. High levels of alcohol use are also associated with alcohol dependence and abuse, and alcohol during pregnancy can lead to birth defects in infants, including foetal alcohol syndrome. In older people, moderate alcohol consumption can protect against ischaemic heart disease, ischaemic stroke, vascular dementia and type 2 diabetes.

In this survey, participants were asked questions about their alcohol consumption using the Alcohol Use Disorders Identification Test (AUDIT). The AUDIT is a 10-item questionnaire covering alcohol consumption, alcohol-related problems and abnormal drinking behaviour. It was developed by the World Health Organization as a screening tool for health professionals to identify people at risk of developing alcohol problems (Babor et al 1992; Saunders et al 1993). Hazardous drinking is most commonly identified from an AUDIT score of 8 or more. This report presents the prevalence of hazardous drinking in the total population using this criterion.

Both males and females in urban areas were significantly more likely than rural dwellers to have not drunk alcohol in the last year (Table 7). In contrast, there was no significant difference between urban and rural areas in the prevalence of potentially hazardous drinking. In both urban and rural areas, males were significantly more likely to show potentially hazardous drinking patterns and less likely to abstain from alcohol than females.

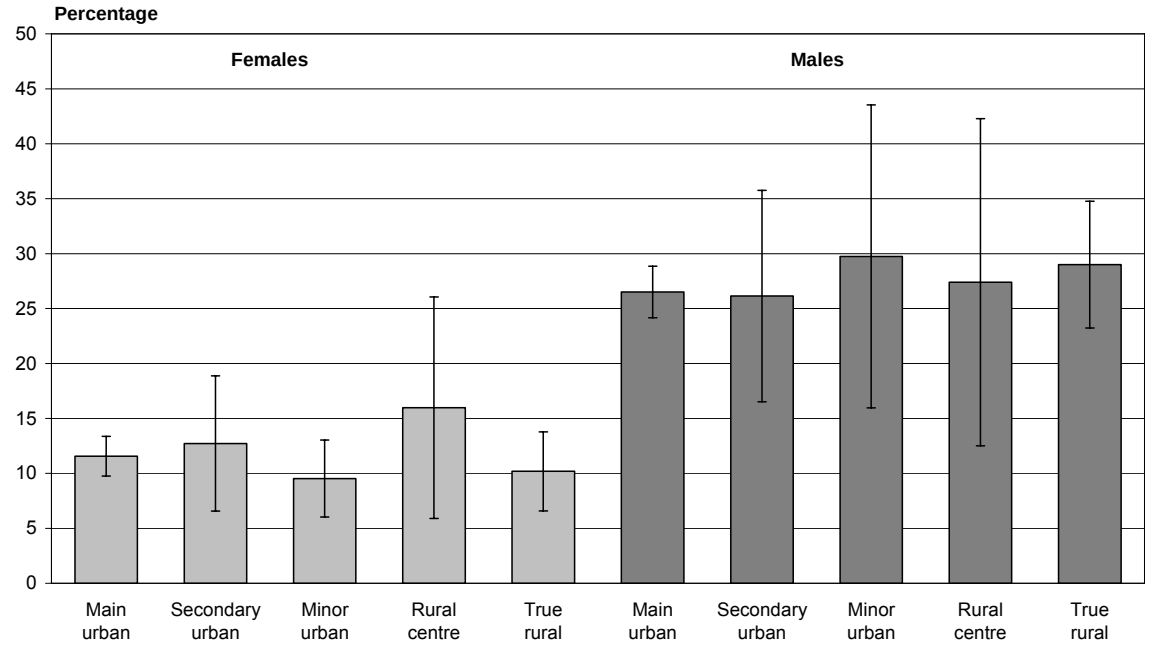
Females in main and secondary urban areas were significantly more likely to abstain from alcohol consumption than females in rural areas (Figure 24, Table 7). Males in main urban areas were significantly more likely to abstain from alcohol compared to males in true rural areas.

Figure 24: Have not drunk alcohol in last year, by sex and area type (age-standardised)



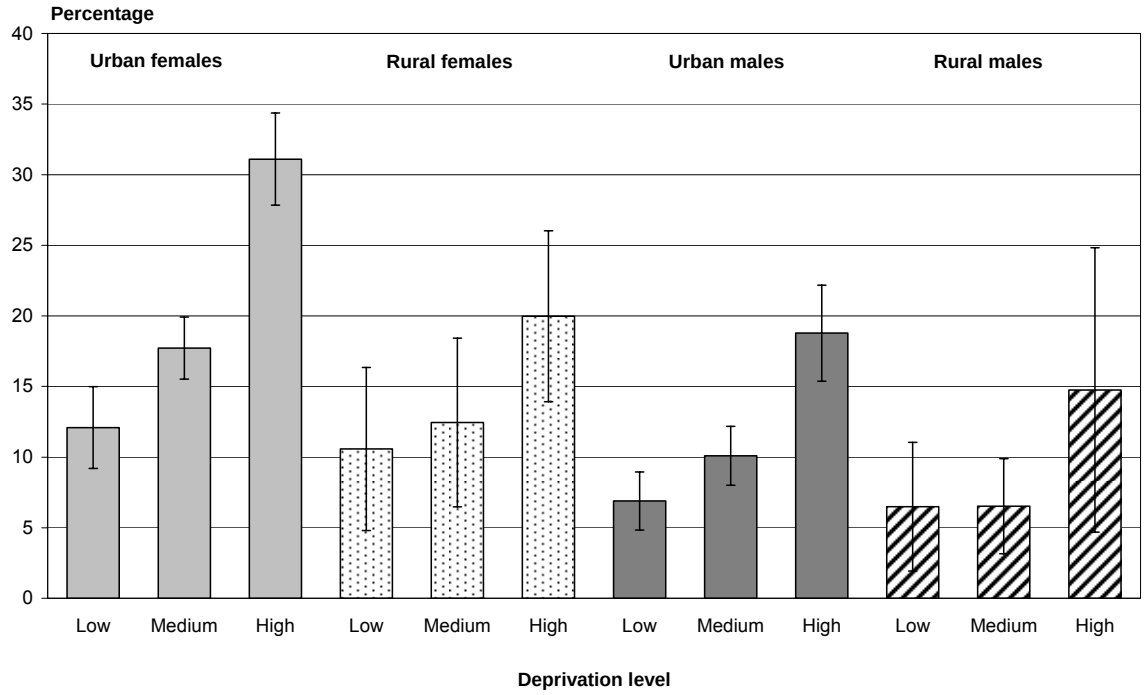
The prevalence of potentially hazardous drinking did not differ significantly between areas (Figure 25).

Figure 25: Potentially hazardous drinking, by sex and area type (age-standardised)



The rate of alcohol abstention increased with increasing deprivation (Figure 26).

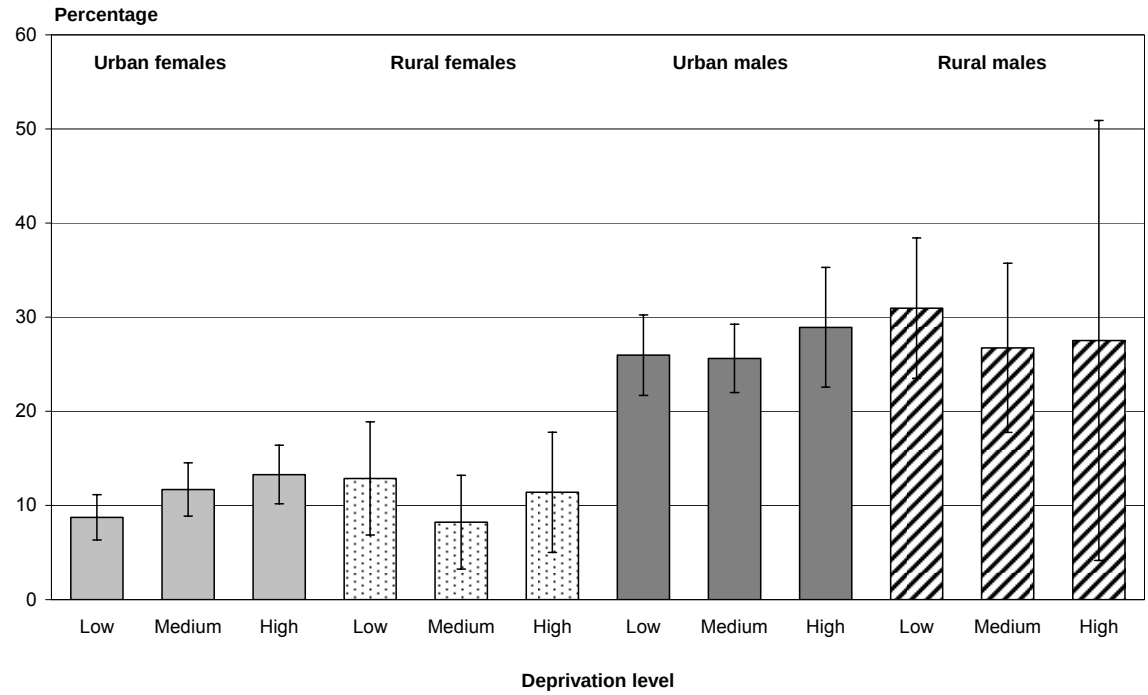
Figure 26: Have not drunk alcohol in last year, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Urban females in the least deprived areas had a significantly lower prevalence of potentially hazardous drinking than urban females in the most deprived areas, but otherwise the prevalence of potentially hazardous drinking did not differ between areas (Figure 27).

Figure 27: Potentially hazardous drinking, by sex, rural/urban and deprivation level (age-standardised)



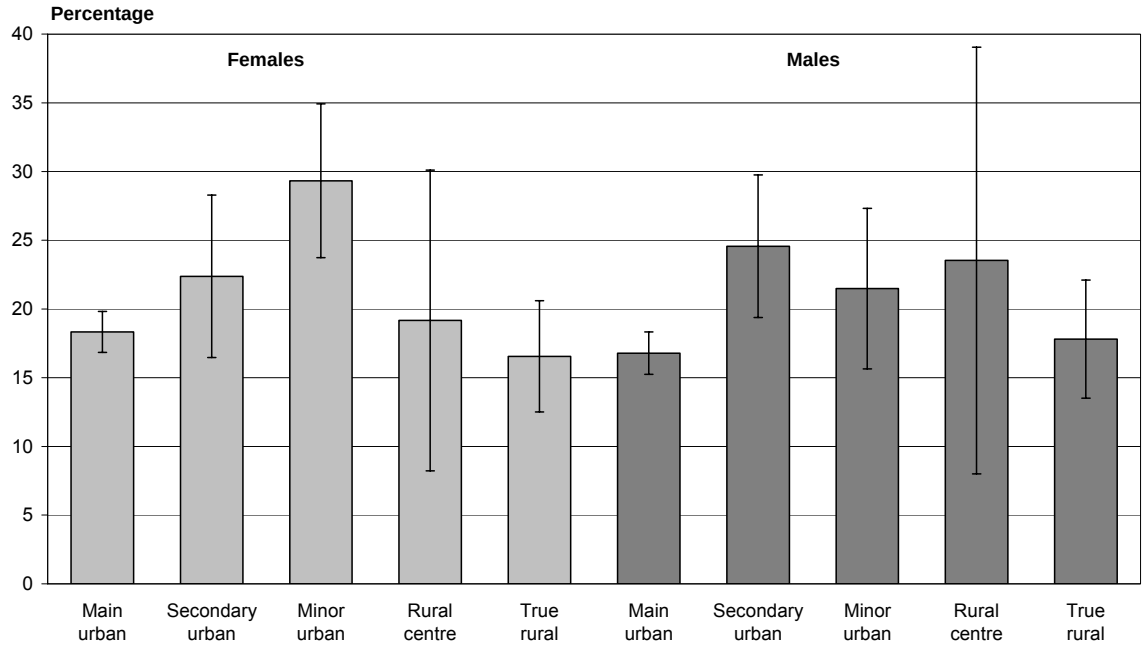
Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

High blood pressure

High blood pressure (hypertension) is an important risk factor for cardiovascular disease, particularly stroke. Survey participants were asked if they had ever been told by a doctor they have high blood pressure (other than during pregnancy). This will underestimate the true prevalence, as not all people with high blood pressure will have been diagnosed.

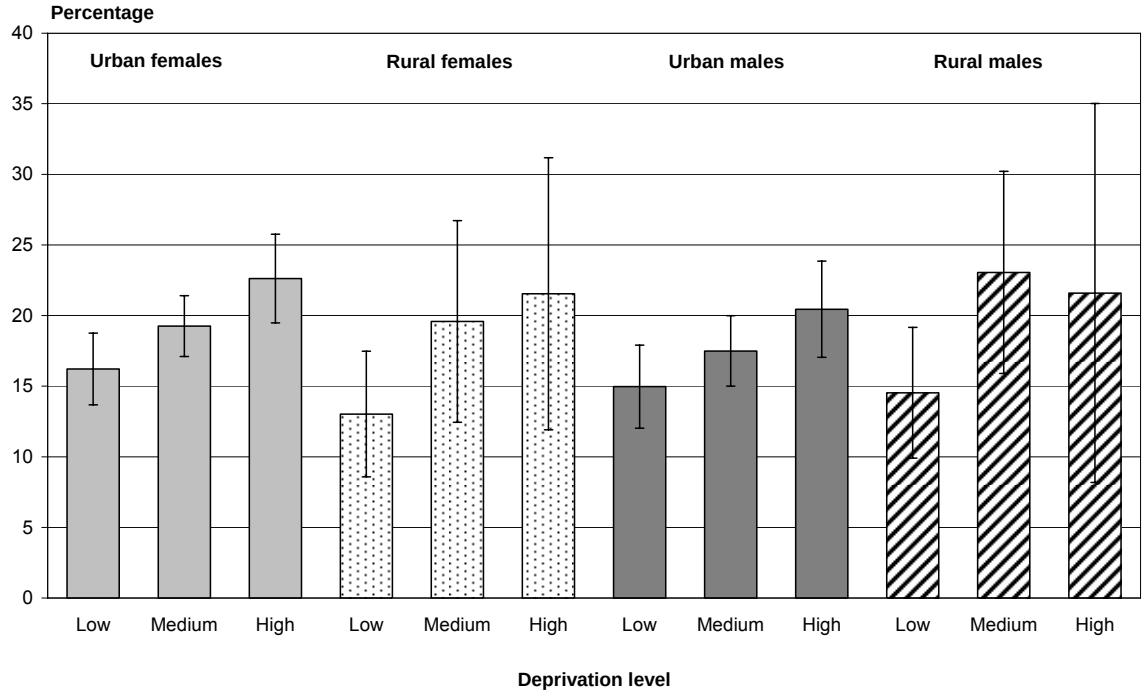
The prevalence of high blood pressure did not differ significantly overall between rural and urban areas, for either sex (Table 7). However, females from minor urban areas were significantly more likely to have high blood pressure compared to females in main urban areas and true rural areas (Figure 28).

Figure 28: Identified high blood pressure, by sex and area type (age-standardised)



The prevalence of high blood pressure tended to increase with increasing deprivation, with a significant increase between the least deprived and most deprived areas for urban males and females (Figure 29). For areas of equivalent deprivation, there were no significant differences in the prevalence of high blood pressure between rural and urban areas.

Figure 29: Identified high blood pressure, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

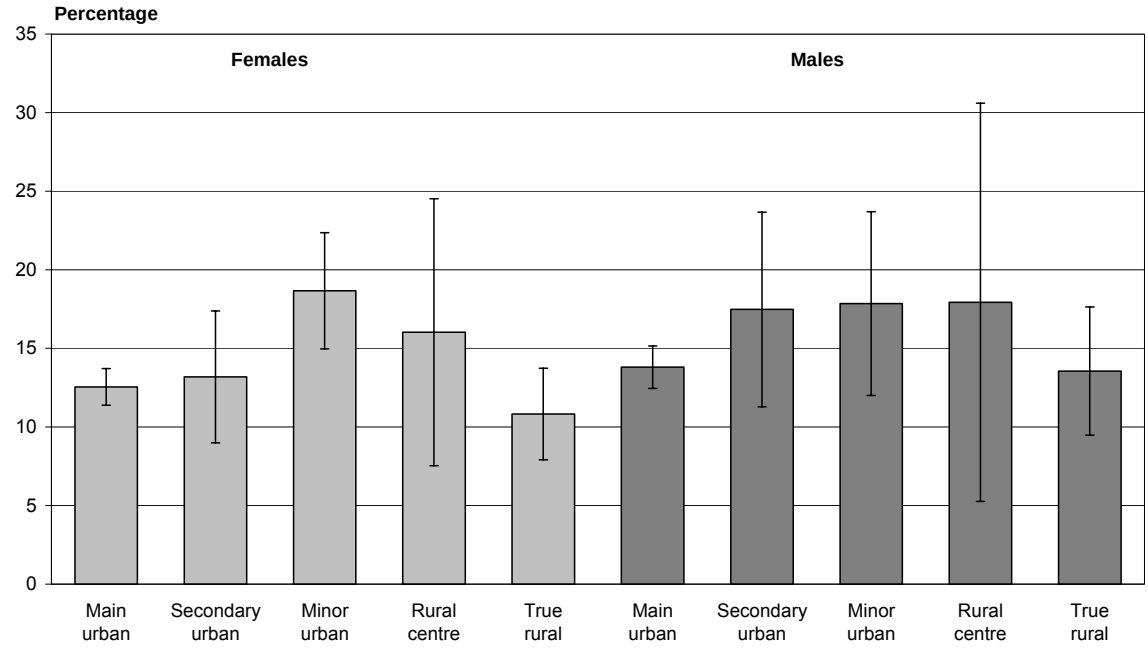
High cholesterol

High blood cholesterol is an important risk factor for cardiovascular disease, particularly ischaemic heart disease (IHD). Survey participants were asked if they had ever been told by a doctor they have high cholesterol. This will underestimate the true prevalence, as not all people with high cholesterol will have been diagnosed.

The prevalence of high cholesterol did not differ significantly overall between rural and urban areas, for either sex (Table 7).

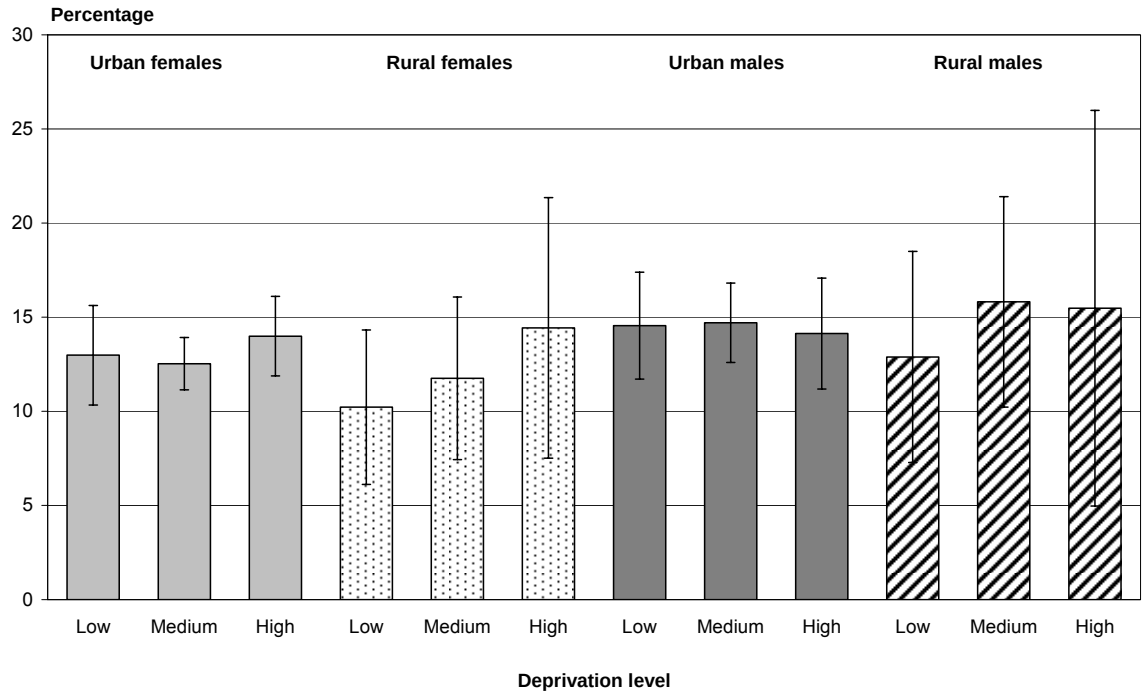
Females in minor urban areas were significantly more likely to have high cholesterol compared to females in main urban areas and true rural areas (Figure 30).

Figure 30: Identified high cholesterol, by sex and area type (age-standardised)



The prevalence of high cholesterol did not differ significantly between areas by level of deprivation (Figure 31).

Figure 31: Identified high cholesterol, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Summary tables of crude rates

Table 8 (females) and Table 9 (males) summarise the crude prevalence rates of selected risk and protective factors for rural and urban areas. Use these crude estimates if you want to know the actual burden experienced by the population of interest. However, differences in crude rates may arise from differences in age distributions, which is why age-standardised rates have been used in the body of the report.

Table 8: Prevalence of risk and protective factors, females, by area type, percent (crude rate), 2002/03

Indicator	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
2+ servings of fruit per day	63.6 (61.8, 65.3)	68.4 (63.8, 72.9)	64.2 (62.1, 66.4)	61.8 (55.1, 68.4)	59.5 (53.1, 65.9)	59.0 (43.7, 74.4)	70.2 (65.8, 74.6)
3+ servings of vegetables per day	70.9 (69.0, 72.8)	81.0 (77.3, 84.7)	69.3 (67.1, 71.5)	73.9 (68.2, 79.6)	82.3 (78.5, 86.1)	75.6 (67.1, 84.1)	82.1 (78.3, 85.8)
Physically active (at least 2.5 hours in last week)	67.7 (65.5, 69.8)	79.2 (75.5, 83.0)	66.3 (63.9, 68.7)	74.1 (67.5, 80.6)	73.5 (68.8, 78.3)	71.5 (61.3, 81.8)	80.7 (76.7, 84.7)
Regularly physically active (at least 2.5 hours and 5+ days in last week)	46.9 (44.7, 49.1)	57.6 (52.9, 62.2)	45.8 (43.4, 48.2)	54.6 (46.6, 62.5)	49.4 (42.4, 56.5)	51.9 (40.1, 63.6)	58.7 (53.4, 64.0)
Underweight*	4.0 (3.3, 4.7)	1.2 (0.1, 2.2)	4.2 (3.4, 5.0)	4.0 (1.6, 6.4)	–	–	–
Overweight*	27.9 (26.2, 29.5)	31.7 (27.3, 36.2)	27.3 (25.5, 29.1)	26.9 (20.4, 33.4)	34.0 (27.8, 40.3)	31.4 (16.9, 46.0)	31.8 (27.5, 36.1)
Obese*	21.5 (20.0, 22.9)	23.8 (20.1, 27.6)	20.2 (18.7, 21.8)	28.5 (21.6, 35.4)	26.2 (21.2, 31.2)	30.6 (19.5, 41.8)	22.5 (18.6, 26.4)
Overweight or obese*	49.3 (47.5, 51.1)	55.6 (50.8, 60.3)	47.5 (45.4, 49.7)	55.4 (48.7, 62.1)	60.2 (54.2, 66.1)	62.1 (52.9, 71.2)	54.3 (49.0, 59.5)
Adult weight gain (gained 10+ kg since age 18)	55.9 (54.3, 57.5)	58.7 (53.8, 63.6)	53.6 (51.7, 55.5)	64.7 (58.6, 70.7)	67.8 (61.9, 73.7)	57.4 (46.9, 67.9)	59.0 (53.6, 64.3)
Current smoker (daily)	22.2 (20.9, 23.5)	22.4 (18.9, 25.9)	21.4 (20.0, 22.9)	25.1 (19.2, 30.9)	25.8 (21.7, 29.9)	34.1 (26.5, 41.7)	20.1 (16.2, 24.0)
Have not drunk alcohol in last year	22.1 (20.8, 23.5)	13.1 (10.2, 16.0)	22.3 (20.7, 23.8)	22.7 (16.3, 29.1)	20.5 (15.3, 25.7)	14.0 (7.0, 21.0)	12.9 (9.7, 16.1)
Potentially hazardous drinking (AUDIT score of 8+)	9.6 (8.4, 10.9)	10.0 (7.3, 12.7)	9.6 (8.1, 11.0)	11.2 (6.0, 16.3)	8.4 (5.6, 11.2)	14.2 (6.4, 22.0)	9.2 (6.3, 12.0)
High blood pressure	22.2 (20.9, 23.5)	19.3 (15.3, 23.3)	20.8 (19.4, 22.2)	25.8 (19.7, 31.9)	31.0 (25.9, 36.1)	22.4 (11.4, 33.5)	18.6 (14.1, 23.2)
High cholesterol	14.9 (13.9, 16.0)	13.1 (10.5, 15.7)	14.3 (13.0, 15.5)	14.7 (10.7, 18.7)	21.0 (16.9, 25.0)	17.0 (9.4, 24.6)	12.3 (9.4, 15.2)

* Measured by body mass index (BMI). Underweight was defined as a BMI of 18.5 or less. Overweight was defined as a BMI of 25.0–29.9 (26.0–31.9 for Māori and Pacific peoples). Obese was defined as a BMI of 30.0+ (32.0+ for Māori and Pacific peoples). Higher BMI cut-offs were used to classify Māori and Pacific peoples as overweight and obese to account for differences in muscle mass (Swinburn 1998). Caution: almost one in ten respondents had a missing BMI value. These people were excluded from the rate calculations.

Note: A dash (–) indicates that numbers were too low for reliable estimation.

Table 9: Prevalence of risk and protective factors, males, by area type, percent (crude rate), 2002/03

Indicator	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
2+ servings of fruit per day	44.8 (42.5, 47.0)	40.5 (34.8, 46.2)	44.7 (42.1, 47.3)	47.0 (39.4, 54.6)	43.1 (35.5, 50.7)	35.9 (17.2, 54.6)	41.3 (35.1, 47.5)
3+ servings of vegetables per day	63.3 (60.9, 65.6)	71.2 (65.4, 77.0)	62.1 (59.7, 64.4)	66.8 (56.9, 76.6)	70.5 (59.7, 81.3)	73.0 (60.5, 85.5)	70.9 (64.2, 77.6)
Physically active (at least 2.5 hours in last week)	76.1 (74.3, 77.9)	88.7 (85.3, 92.0)	76.3 (74.3, 78.3)	79.6 (72.1, 87.2)	71.4 (64.7, 78.2)	85.8 (75.2, 96.3)	89.2 (85.4, 92.9)
Regularly physically active (at least 2.5 hours and 5+ days in last week)	52.8 (50.8, 54.9)	76.8 (72.5, 81.1)	52.6 (50.3, 54.9)	56.5 (46.2, 66.8)	51.3 (43.4, 59.2)	68.3 (54.2, 82.5)	78.3 (74.1, 82.6)
Underweight*	2.0 (1.4, 2.7)	2.1 (0.6, 3.6)	2.3 (1.5, 3.0)	–	–	–	–
Overweight*	42.2 (39.9, 44.4)	41.8 (36.8, 46.7)	41.8 (39.1, 44.5)	49.9 (42.4, 57.4)	38.6 (32.4, 44.9)	43.8 (27.9, 59.7)	41.4 (36.1, 46.7)
Obese*	19.7 (18.2, 21.2)	22.5 (18.3, 26.7)	19.1 (17.5, 20.8)	21.9 (15.6, 28.3)	22.6 (16.2, 29.0)	23.3 (12.9, 33.7)	22.4 (17.5, 27.2)
Overweight or obese*	61.9 (59.9, 63.9)	64.3 (59.4, 69.1)	61.0 (58.4, 63.5)	71.9 (65.1, 78.6)	61.2 (54.1, 68.3)	67.1 (51.9, 82.3)	63.7 (58.6, 68.9)
Adult weight gain (gained 10+ kg since 18)	57.9 (55.6, 60.2)	56.0 (49.3, 62.6)	56.8 (54.3, 59.4)	63.9 (57.3, 70.4)	62.3 (55.8, 68.9)	58.1 (39.3, 77.0)	55.6 (48.6, 62.6)
Current smoker (daily)	23.7 (21.9, 25.6)	23.9 (18.9, 28.8)	23.6 (21.7, 25.5)	24.5 (16.0, 33.1)	24.1 (14.9, 33.2)	25.1 (12.6, 37.6)	23.7 (18.3, 29.1)
Have not drunk alcohol in last year	12.3 (11.0, 13.5)	8.2 (5.4, 10.9)	12.7 (11.5, 14.0)	8.0 (3.0, 13.0)	12.0 (7.2, 16.9)	9.6 (3.3, 16.0)	7.9 (4.9, 10.9)
Potentially hazardous drinking (AUDIT score of 8+)	25.1 (23.0, 27.2)	27.1 (22.2, 32.0)	25.0 (22.8, 27.2)	23.3 (15.4, 31.2)	27.9 (17.2, 38.6)	27.1 (15.0, 39.3)	27.1 (21.6, 32.5)
High blood pressure	19.8 (18.4, 21.2)	20.6 (16.4, 24.8)	18.4 (16.9, 20.0)	28.3 (23.4, 33.2)	23.6 (18.0, 29.1)	24.9 (8.9, 41.0)	19.8 (15.4, 24.2)
High cholesterol	16.2 (14.9, 17.5)	16.6 (12.7, 20.6)	15.6 (14.1, 17.1)	19.7 (13.0, 26.5)	18.7 (12.9, 24.5)	19.3 (5.0, 33.5)	16.2 (11.6, 20.7)

* Measured by body mass index (BMI). Underweight was defined as a BMI of 18.5 or less. Overweight was defined as a BMI of 25.0–29.9 (26.0–31.9 for Māori and Pacific peoples). Obese was defined as a BMI of 30.0+ (32.0+ for Māori and Pacific peoples). Higher BMI cut-offs were used to classify Māori and Pacific peoples as overweight and obese to account for differences in muscle mass (Swinburn 1998). Caution: almost one in ten respondents had a missing BMI value. These people were excluded from the rate calculations.

Note: A dash (–) indicates that numbers were too low for reliable estimation.

Chapter 4: Health Service Utilisation

Introduction

This chapter covers a wide range of health care providers, with a particular focus on primary health. Primary health care providers are a person's first point of contact with the health system and include general practitioner (GP) services, nurses, pharmacists, complementary and alternative health care providers, and a range of other providers (eg, dentists and physiotherapists). In addition, this chapter also includes medical specialists and hospital use, as well as information on prescriptions.

In this survey the use of health services was determined by asking adults if they had seen certain health care providers or workers in the last 12 months. If they had, they were asked additional questions such as the number of times they had visited, the reasons for their last visit, and whether they felt they needed to see a health practitioner for some reason but did not (unmet health need) and the reasons for this.

All results presented by sex, area type and NZDep2001 in the body of this report have been age-standardised by the direct method using the WHO world population as the standard population. This is to allow comparisons between population sub-groups without differences in the age distribution of the comparison populations influencing results. However, age-standardised estimates have no meaning by themselves; they are meaningful only when compared with other age-standardised estimates. Therefore, you should only use these age-standardised estimates to compare one population sub-group with another.

If you want to know the actual burden experienced by the population of interest (eg, the actual proportion of urban males who had seen a GP in the last year), use the crude (unadjusted) estimates shown in the summary tables at the end of this chapter.

In this report, comparisons are made between urban areas and rural areas. In addition to this, for comparisons of area types, each urban type (main, secondary, minor urban) is compared with the overall rural total, and each rural type (rural centre, true rural) is compared with the overall urban total.

Comments are also made in the text on comparisons between urban and rural areas of the same deprivation level, and on any other comparisons of interest.

Ninety-five percent confidence intervals are presented for all descriptive results, following the estimate in the table or as error bars in graphs.

Results

Key points

- Rural females were significantly less likely to have seen a GP in the last year than urban females.
- At their last GP visit, urban females were significantly more likely than rural females to have seen a GP for an immunisation or vaccination. Rural males were significantly more likely than urban males to have seen a GP due for injury or poisoning.
- Urban females were significantly more likely than rural females to have paid more than $40 for their last GP visit.
- Females in main urban areas were significantly more likely to have had unmet need for a GP in the last year, compared to females in true rural areas. Unmet need for GP services increased with level of deprivation in urban areas, but not rural areas.
- Females and males from true rural areas were significantly more likely to have seen a dentist or dental therapist in the last year compared to people from urban areas.
- Females from true rural areas were significantly more likely to have seen an alternative or complementary provider in the last year than females from rural centres or urban areas.
- The use of opticians or optometrists decreased with increasing levels of deprivation, and urban females were significantly more likely to have seen an optician or optometrist in the last year than rural females at each deprivation level.
- The use of public and private hospitals in the last year did not differ significantly between urban and rural areas overall, for either sex. However, females in rural centres had a significantly higher rate of using public hospitals in the last year compared to all other people.
- Females in urban areas were significantly more likely to have received a prescription at their last doctor's visit than females in rural areas.
- People in the most deprived urban areas were significantly more likely to have received a prescription at their last doctor's visit than those in the least deprived urban areas, but the same trend did not occur in rural areas.
- Among females, rural dwellers were significantly more likely to have had no prescription items in the last year than urban dwellers.

Use of GP services

The vast majority of people had a usual health practitioner, and among these people this was almost always a GP (Table 10). Among females who had a usual health practitioner, rural females were significantly more likely than urban females to have a GP as their usual provider.

Rural females were significantly more likely to have not seen a GP at all, or to have only seen a GP between one and four times, in the last year, relative to urban females (Table 10).

Table 10: Use of GP services, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

Indicator	Females	Males

	Urban	Rural	Urban	Rural
Have a usual health provider	95.8 (95.0, 96.6)	97.4 (96.0, 98.8)	89.4 (87.7, 91.2)	91.6 (87.0, 96.1)
Usual health provider is a GP (of those who have a usual service)	96.3 (95.4, 97.1)	98.4 (97.3, 99.6)	97.0 (96.1, 97.9)	98.2 (96.3, 100.0)
Seen a GP in last 12 months	86.6 (85.2, 87.9)	78.9 (74.6, 83.3)	76.1 (74.1, 78.2)	73.1 (65.9, 80.3)
Number of GP visits in last year				
None	13.4 (12.1, 14.8)	21.1 (16.7, 25.4)	23.9 (21.8, 25.9)	26.9 (19.7, 34.1)
1 to 4	63.2 (61.2, 65.1)	55.1 (49.9, 60.3)	61.6 (59.2, 64.0)	61.4 (54.0, 68.7)
5 to 9	14.1 (12.7, 15.5)	16.5 (12.7, 20.2)	9.3 (7.9, 10.6)	8.2 (4.9, 11.4)
10+	9.3 (8.0, 10.6)	7.3 (4.3, 10.4)	5.2 (4.1, 6.4)	3.6 (2.1, 5.1)

Figure 32 shows the proportion of people who had a GP as their usual health provider, as a proportion of the total population, by area type. Females from main urban areas were significantly less likely to have a GP as their usual health practitioner than females from other areas.

Figure 32: Have a usual health provider and that provider is a GP, among total population, by sex and area type (age-standardised)

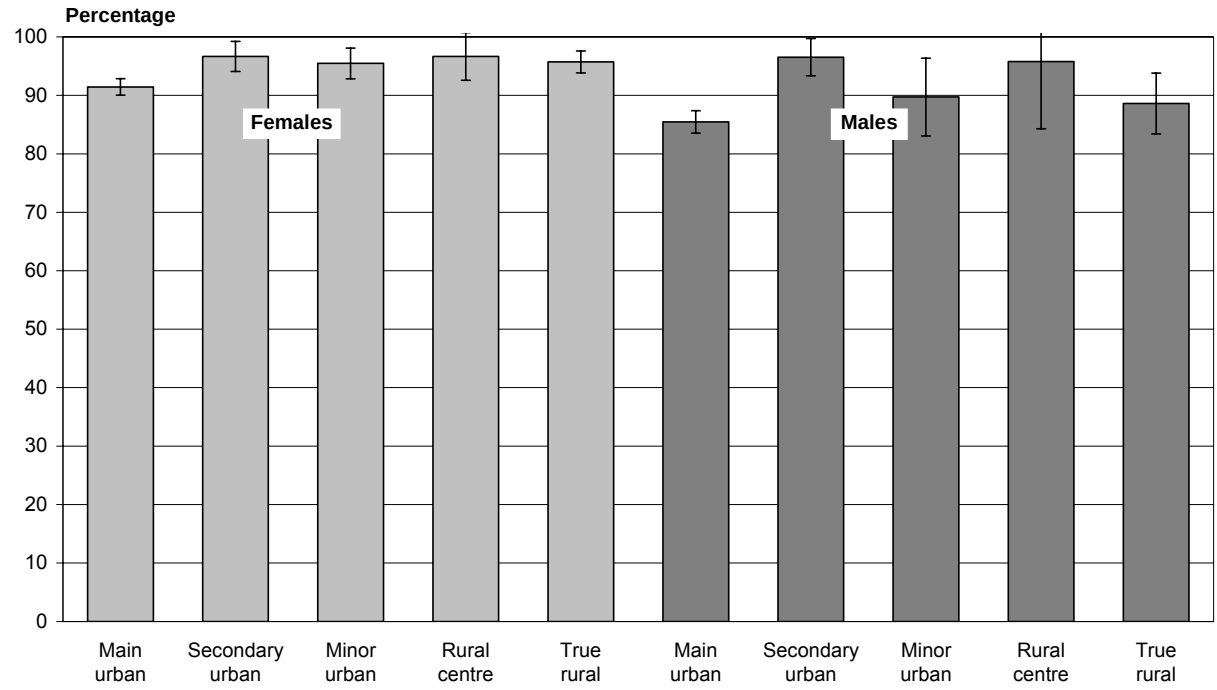
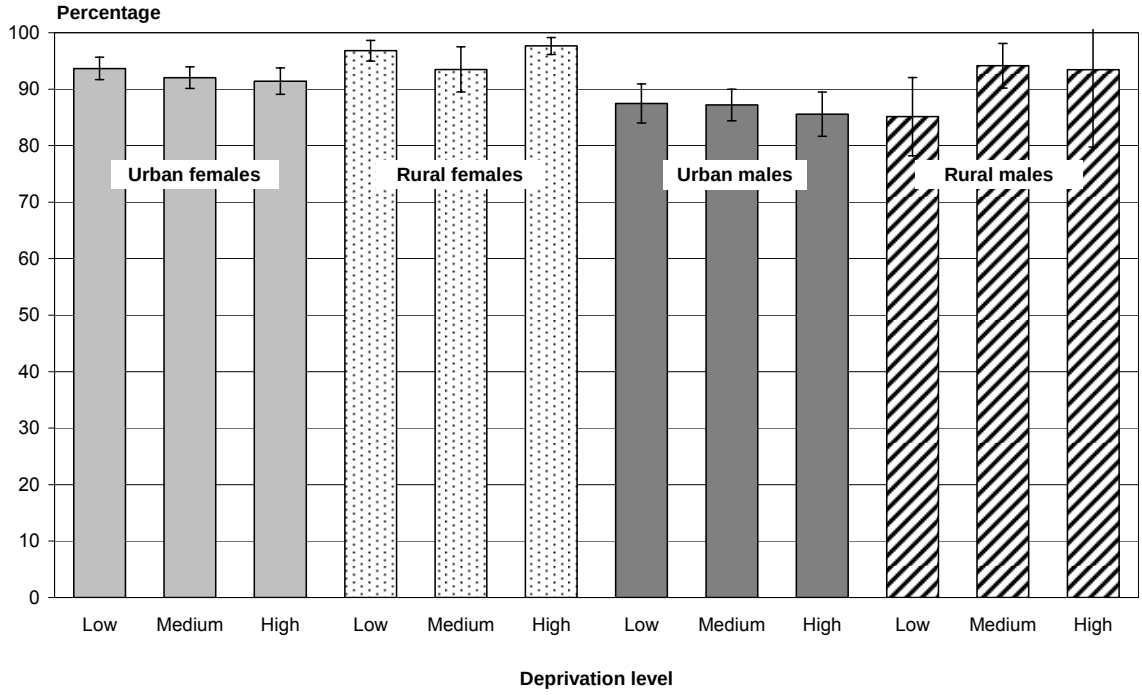


Figure 33 shows the proportion of people who had a GP as their usual health provider, as a proportion of the total population, by deprivation level. Urban females tended to be less likely to have a GP as their usual health provider than rural females at all levels of deprivation (significantly so for areas of low and high deprivation). For males living in areas of medium

deprivation, rural males were significantly more likely to have a GP as their usual health provider than urban males.

Figure 33: Have a usual health provider and that provider is a GP, among total population, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Reason for last GP visit

The main reasons given for their last GP visit were generally similar between rural and urban dwellers (Table 11). Urban females were significantly more likely than rural females to have seen a GP for an immunisation or vaccination. Rural males were significantly more likely than urban males to have seen a GP due to injury or poisoning.

Table 11: Reason for last GP visit, among those who had visited a GP in the last 12 months, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

Reasons	Females		Males	
	Urban	Rural	Urban	Rural
Short-term illness	37.8 (35.7, 39.9)	38.0 (31.6, 44.5)	35.9 (33.5, 38.3)	31.1 (23.8, 38.4)
Routine check or advice	26.4 (24.7, 28.2)	24.1 (19.6, 28.6)	31.3 (29.1, 33.5)	25.8 (20.6, 31.0)
Disability, long-term/chronic condition	17.2 (15.6, 18.7)	17.0 (13.0, 21.0)	19.5 (17.6, 21.4)	17.1 (11.5, 22.7)
Injury or poisoning	6.8 (5.8, 7.9)	7.9 (4.9, 10.9)	16.9 (14.9, 18.8)	24.9 (19.6, 30.3)
Cervical smear	9.2 (8.0, 10.4)	8.1 (5.0, 11.3)	–	–
Contraception, family planning, pregnancy test	10.1 (8.7, 11.5)	11.0 (7.4, 14.6)	–	–
Maternity care	5.0 (4.0, 5.9)	3.7 (1.7, 5.8)	–	–
Immunisation, vaccination	2.4 (1.8, 3.0)	1.3 (0.5, 2.1)	4.0 (2.9, 5.1)	2.7 (0.5, 5.0)
Mental or emotional health	4.6 (3.5, 5.7)	3.2 (1.6, 4.8)	3.0 (1.9, 4.1)	2.2 (0.3, 4.0)

Note: A dash (–) indicates not applicable, or that numbers were too low for reliable estimation.

Cost of last GP visit

Urban females were significantly more likely than rural females to have paid more than $40 for their last GP visit (Table 12).

Table 12: Cost of last GP visit, among those who had visited a GP in the last 12 months, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

Cost	Females		Males	
	Urban	Rural	Urban	Rural
Free	11.8 (10.2, 13.4)	10.2 (6.5, 13.8)	8.5 (6.8, 10.2)	7.4 (3.2, 11.5)
$10 or less	5.9 (4.8, 6.9)	3.9 (1.4, 6.3)	5.2 (3.9, 6.4)	6.2 (0.0, 13.4)
$11–$20	12.5 (10.9, 14.1)	16.8 (12.1, 21.5)	16.0 (13.6, 18.4)	17.6 (11.0, 24.2)
$21–$30	20.8 (18.9, 22.7)	21.9 (16.4, 27.4)	20.9 (18.8, 23.0)	22.1 (16.4, 27.9)
$31–$40	23.0 (21.3, 24.7)	29.9 (23.9, 36.0)	24.8 (22.7, 26.9)	26.8 (21.1, 32.6)
$41–$50	21.2 (19.6, 22.9)	15.2 (11.1, 19.3)	17.9 (16.2, 19.6)	15.6 (10.6, 20.5)
More than $50	4.6 (3.8, 5.4)	2.0 (0.6, 3.4)	6.6 (5.3, 7.9)	4.1 (1.4, 6.7)
Other arrangement	0.2 (0.0, 0.4)	–	0.2 (0.0, 0.4)	–

Note: a dash (–) indicates that numbers were too low for reliable estimation.

Unmet need for GP services

Unmet need for GP services was measured by the proportion of people who wanted to see a GP but did not get to see one, in the last year.

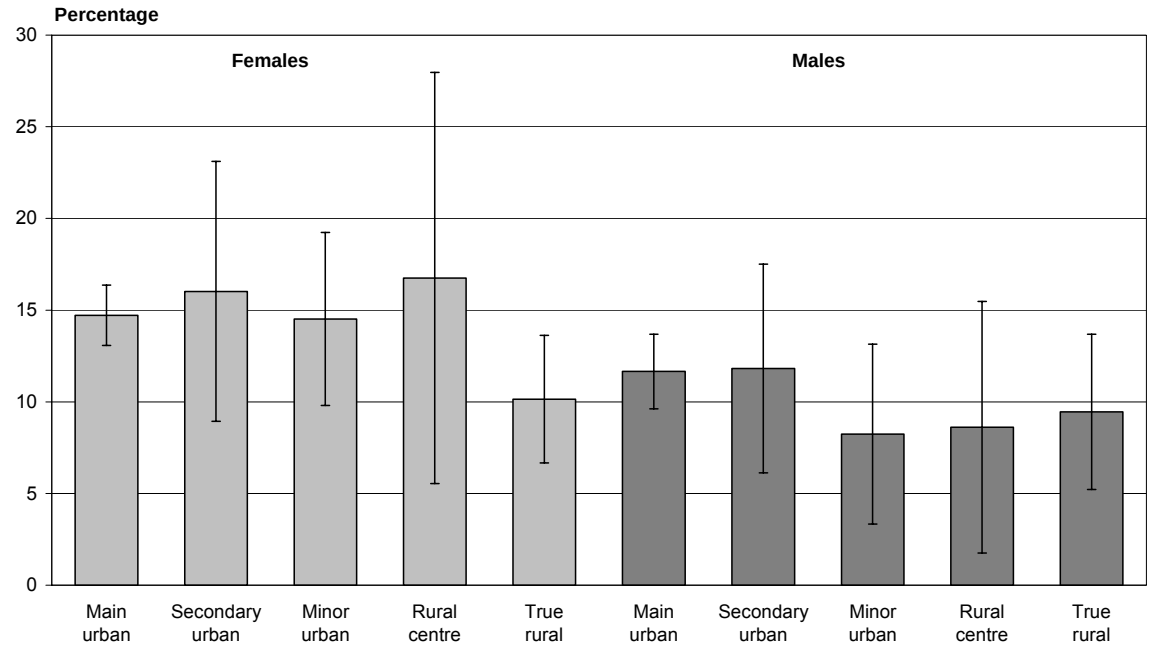
Table 13: Unmet need for GP services, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

Indicator	Females		Males	
	Urban	Rural	Urban	Rural
Unmet need for GP in last 12 months	14.8 (13.3, 16.4)	11.1 (7.6, 14.6)	11.3 (9.5, 13.2)	9.3 (5.5, 13.0)
Reason for unmet need (among those with unmet need for GP services)				
Cost	53.2 (47.5, 58.8)	38.0 (24.3, 51.8)	47.1 (38.3, 56.0)	39.7 (20.8, 58.6)
No suitable appointment	24.0 (19.2, 28.8)	40.8 (23.1, 58.4)	16.7 (10.2, 23.3)	24.9 (8.1, 41.6)
Couldn't spare the time	12.1 (9.0, 15.1)	26.4 (11.9, 41.0)	24.9 (17.7, 32.0)	31.0 (9.7, 52.3)
Didn't want to fuss / couldn't be bothered	24.6 (19.9, 29.2)	26.8 (12.5, 41.2)	27.4 (21.1, 33.8)	27.1 (10.8, 43.3)

Urban females had a slightly higher rate of unmet need for GP services than rural females, although this was not statistically significant (Table 13).

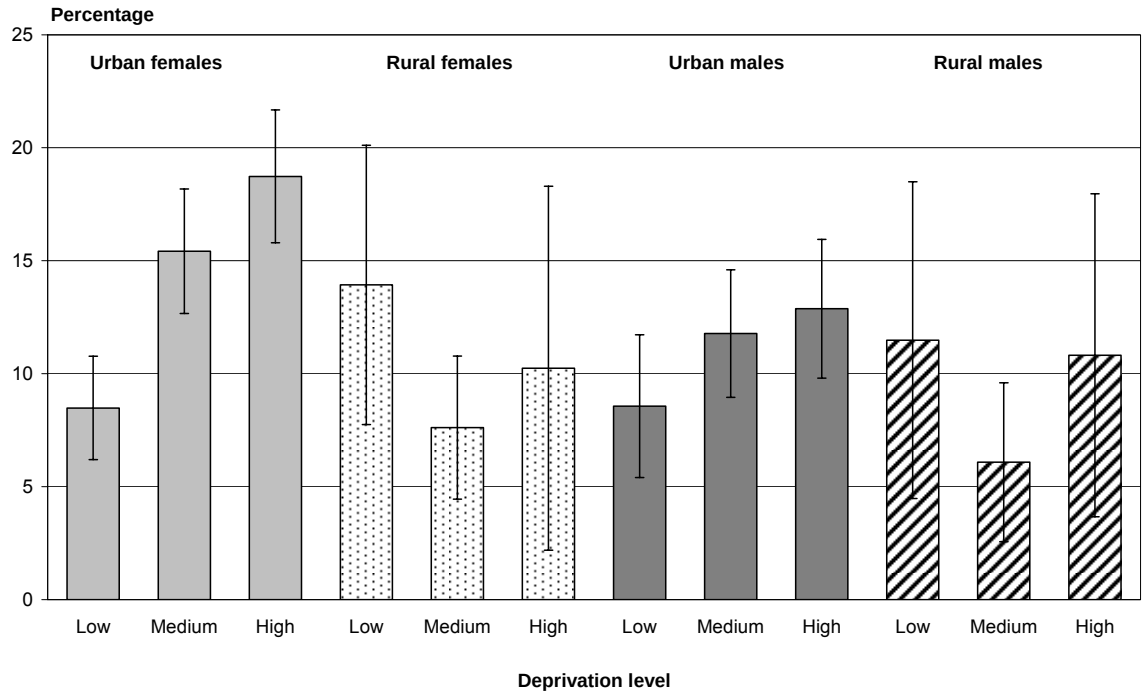
Females in main urban areas were significantly more likely to have had an unmet need for GP in the last year, compared to females in true rural areas (Figure 34).

Figure 34: Unmet need for GP in last year, by sex and area type (age-standardised)



Unmet need for GP services increased with level of deprivation in urban areas, but not in rural areas (Figure 35). Urban females in low deprivation areas were significantly less likely to have had an unmet GP need than urban females in medium or high deprivation areas.

Figure 35: Unmet need for GP in last year, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Of those who did have an unmet need, urban dwellers tended to be more likely to give cost as a reason for not visiting a GP, while rural dwellers tended to be more likely to say the reason was their inability to get a suitable appointment or being unable to spare the time, although these differences were not statistically significant (Table 13).

Use of other health provider services

Table 14: Use of other health providers in the last year, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

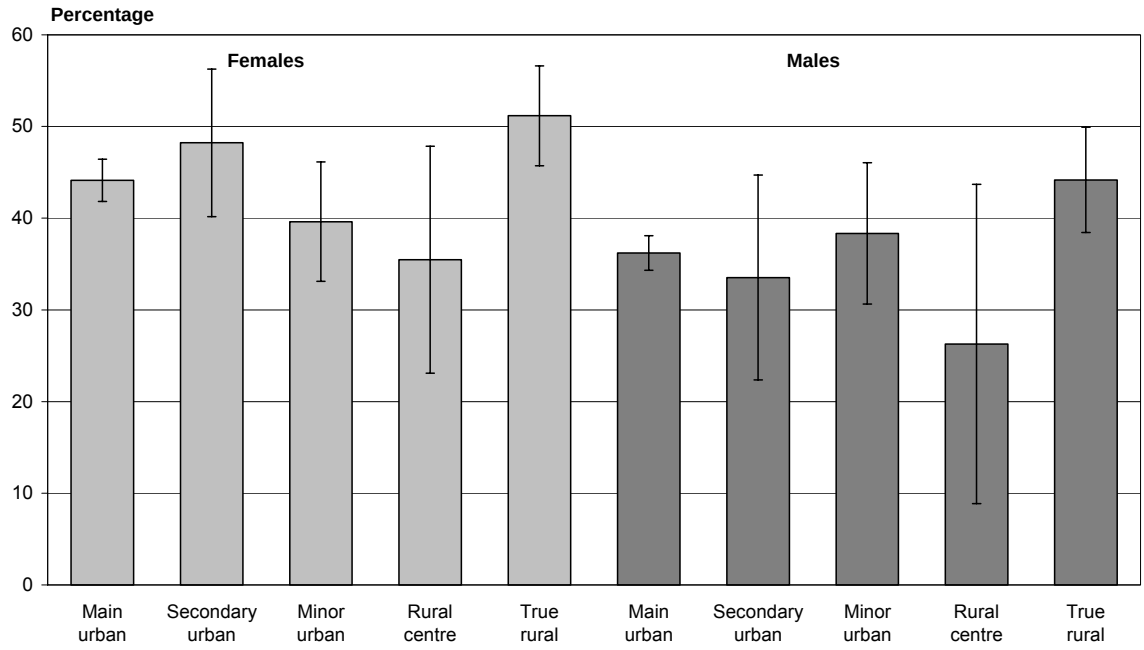
Indicator	Females		Males	
	Urban	Rural	Urban	Rural
Pharmacist	92.1 (91.0, 93.2)	90.0 (86.6, 93.4)	79.9 (77.7, 82.2)	74.5 (69.3, 79.6)
Nurse (excluding nurse in hospital, midwife)	47.7 (45.6, 49.8)	49.7 (43.9, 55.5)	36.6 (34.4, 38.7)	36.6 (29.5, 43.7)
Dentist/dental therapist	44.1 (42.0, 46.2)	49.0 (43.8, 54.1)	36.2 (34.5, 37.9)	40.8 (34.3, 47.3)
Medical specialist	33.0 (31.3, 34.8)	30.2 (25.2, 35.1)	28.4 (26.3, 30.5)	25.4 (20.5, 30.2)
Alternative/complementary provider*	28.7 (26.8, 30.5)	32.4 (28.2, 36.7)	17.7 (15.8, 19.6)	22.3 (16.8, 27.7)
Optician/optometrist	21.4 (19.6, 23.1)	14.5 (11.0, 18.0)	14.6 (12.9, 16.2)	10.9 (7.0, 14.8)
Physiotherapist	14.6 (13.2, 16.1)	14.6 (10.9, 18.2)	15.5 (13.4, 17.6)	16.5 (12.4, 20.7)

* Includes massage therapist, acupuncturist, homeopath, naturopath, Feldenkrais/Alexander teacher, herbalist, osteopath, aromatherapist, chiropractor, traditional Chinese medicine practitioner, spiritual healer, Māori traditional healer, Pacific traditional healer.

The proportion of people who had seen a nurse or physiotherapist in the last year did not differ significantly between urban and rural areas for either sex, overall, or by area type or deprivation level (Table 14).

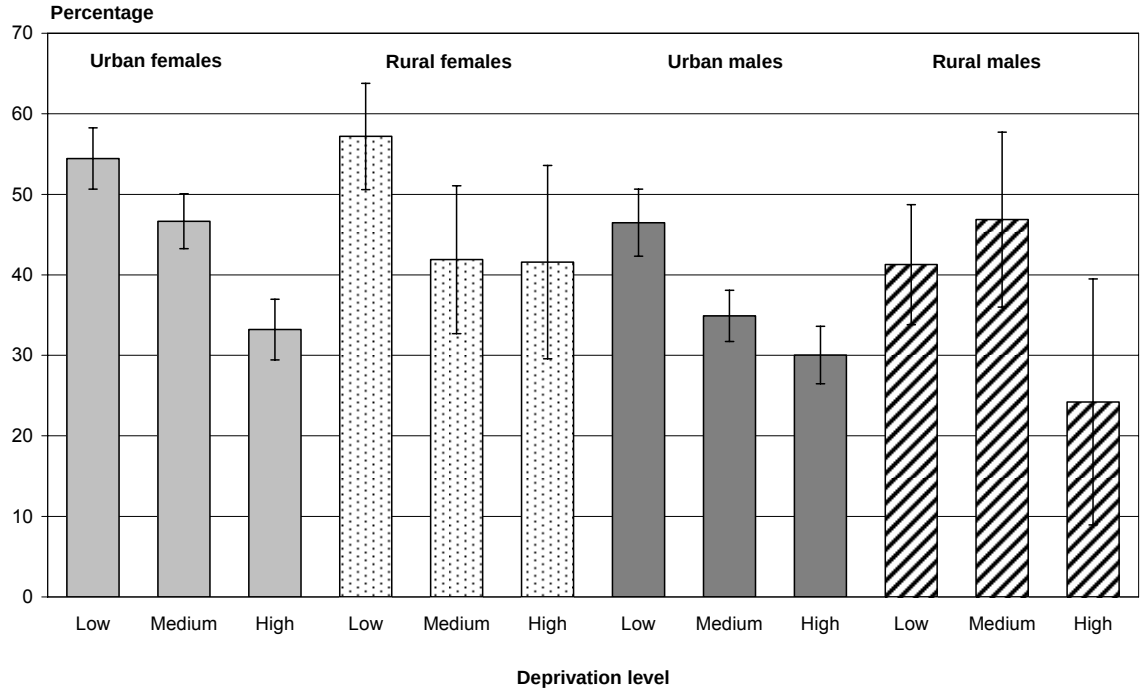
Females and males from true rural areas were significantly more likely to have seen a dentist or dental therapist in the last year than people from urban areas (Figure 36, Table 14).

Figure 36: Seen dentist or dental therapist in last year, by sex and area type (age-standardised)



People in the most deprived areas were significantly less likely to have seen a dentist or dental therapist in the last year than people in the least deprived areas, for females in rural and urban areas, and for males in urban areas (Figure 37).

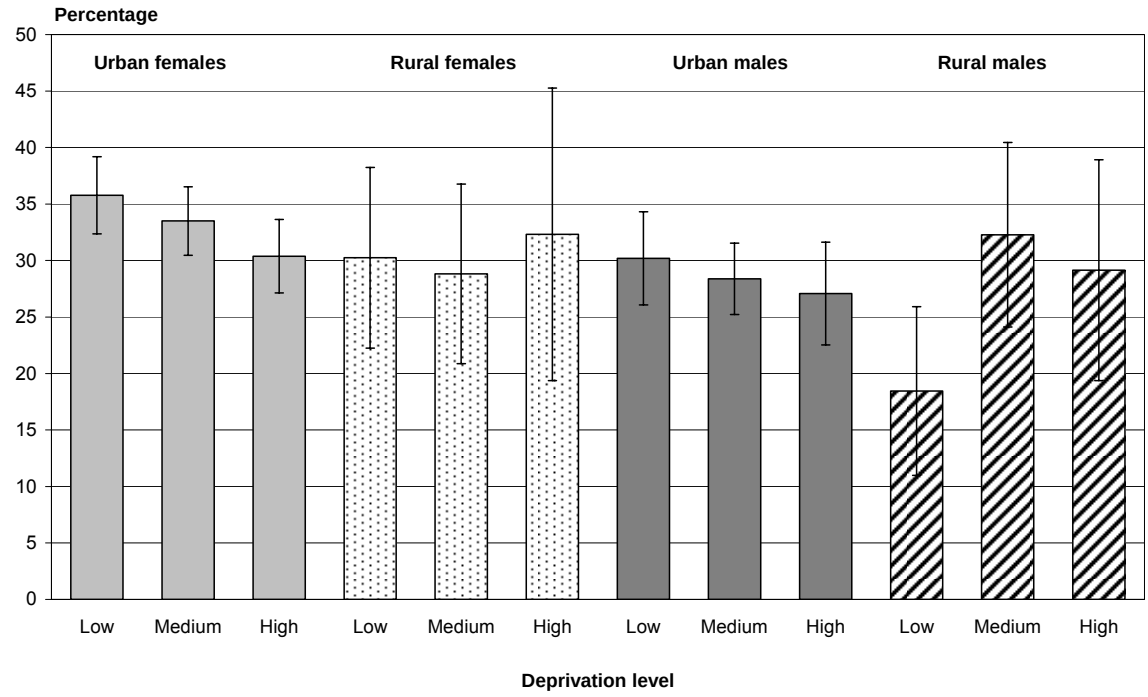
Figure 37: Seen dentist or dental therapist in last year, by sex, rural/urban, and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

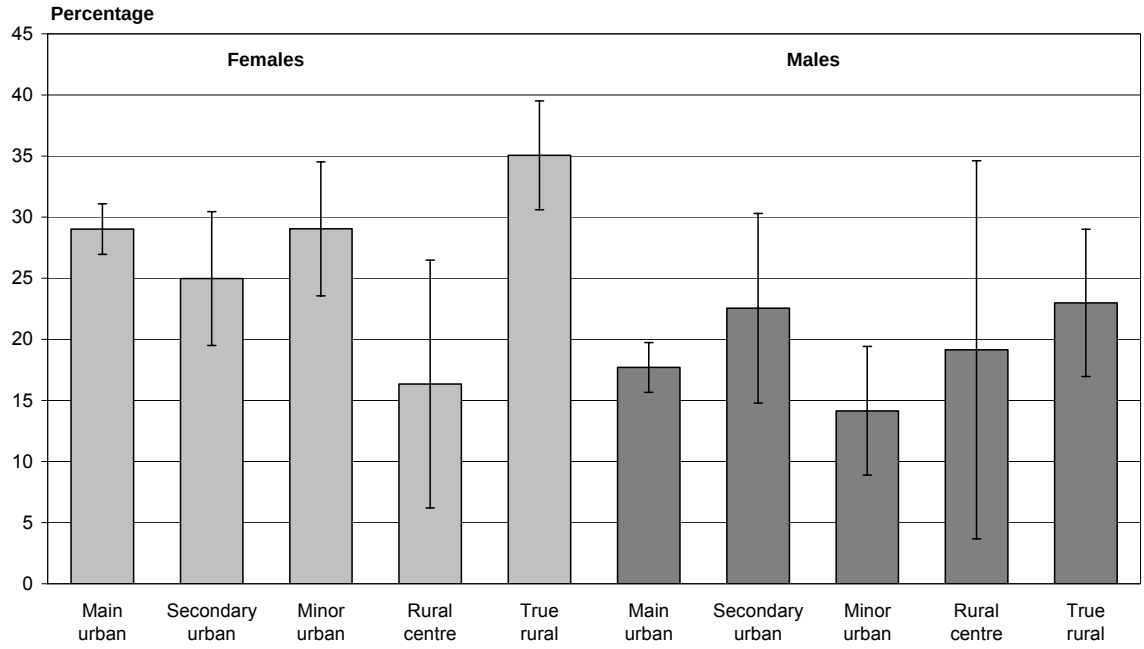
The use of medical specialists in the last year did not differ between urban and rural people, either overall (Table 14) or between area types. The use of medical specialists by rural males in the least deprived areas tended to be lower than for other groups (Figure 38). In low deprivation areas, rural males were significantly less likely to have used a medical specialist in the last year than urban males.

Figure 38: Seen medical specialist in last year, by sex, rural/urban and deprivation level (age-standardised)



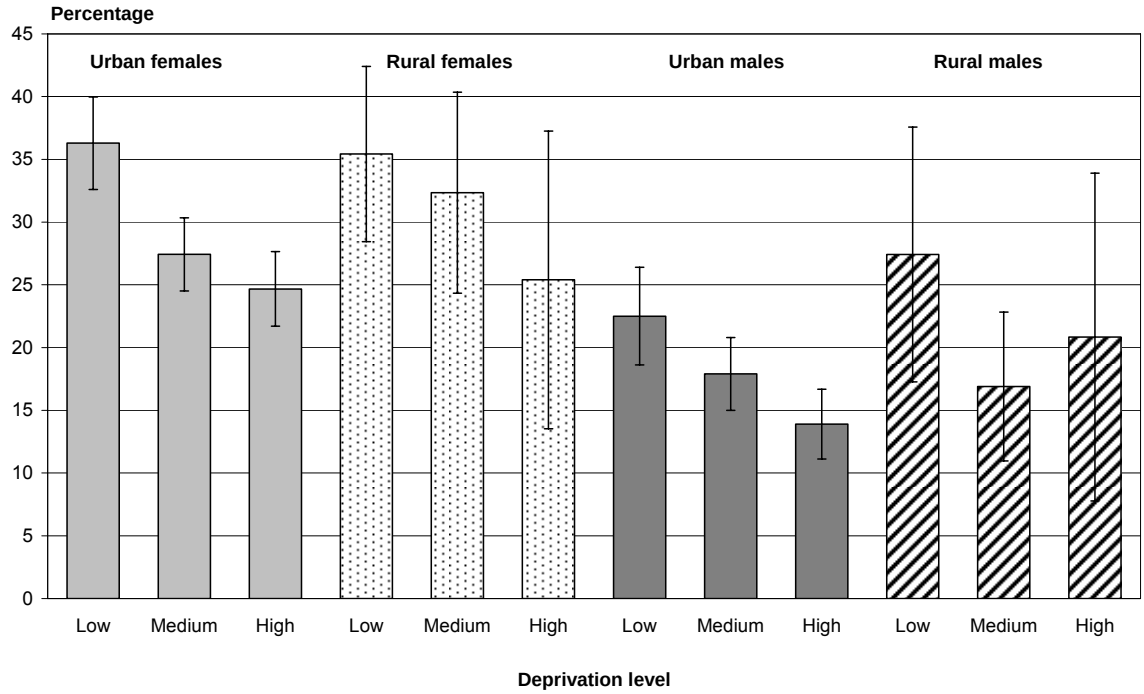
Females from true rural areas were significantly more likely to have seen an alternative or complementary health provider in the last year than females from rural centres or urban areas (Figure 39, Table 14).

Figure 39: Seen alternative/complementary provider in last year, by sex and area type (age-standardised)



The use of alternative or complementary health providers decreased with increasing levels of deprivation (Figure 40). There were no significant differences in prevalence rates between rural and urban areas of the same deprivation level.

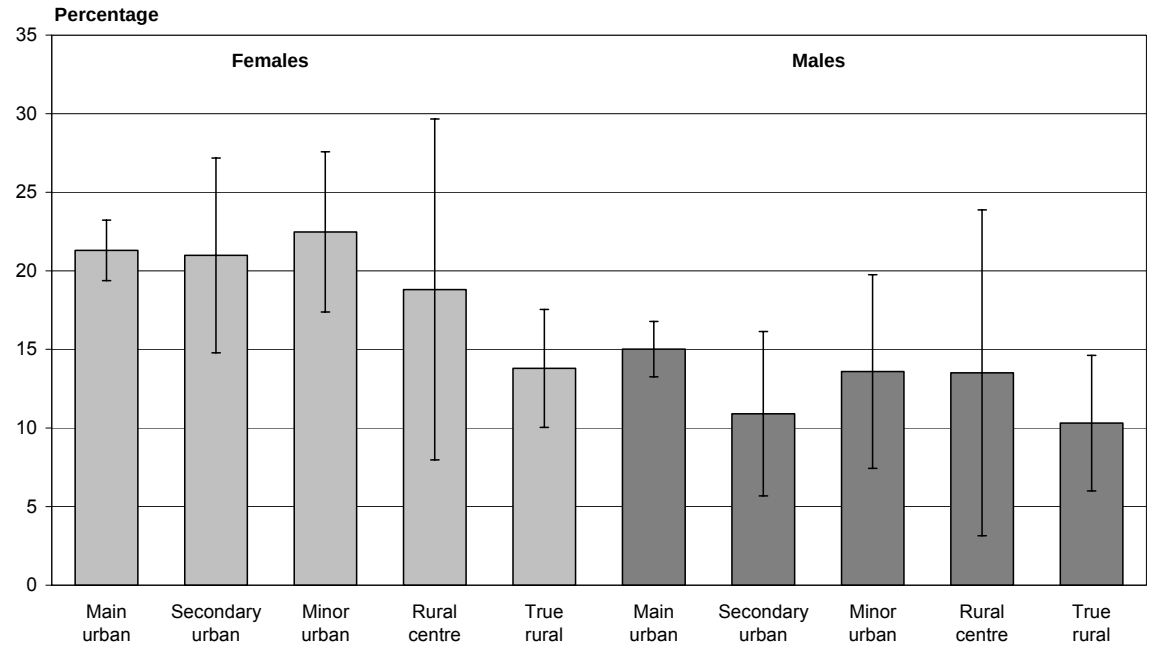
Figure 40: Seen alternative/complementary provider in last year, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

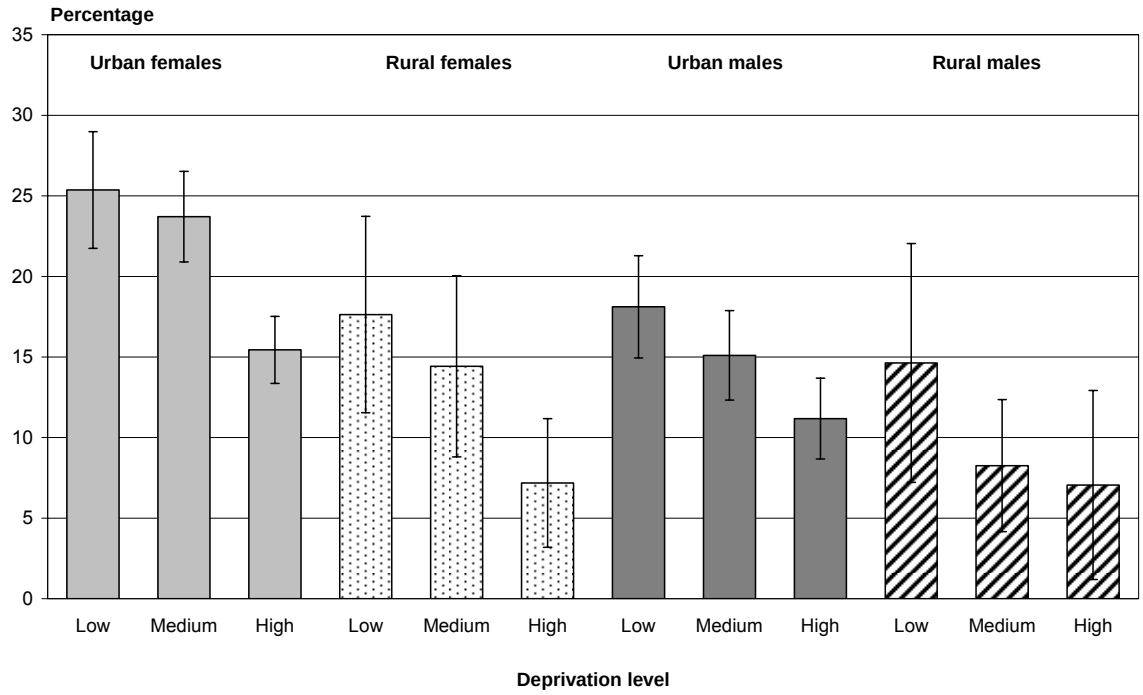
Urban females were significantly more likely to have seen an optician or optometrist in the last year than rural females (Table 14, Figure 41).

Figure 41: Seen optometrist/optician in last year, by sex and area type (age-standardised)



The use of opticians or optometrists decreased with increasing levels of deprivation (Figure 42). Urban females were significantly more likely to have seen an optician or optometrist than rural females at each deprivation level. The same trend occurred for males, but the difference was only statistically significant for males from areas of medium deprivation.

Figure 42: Seen optometrist/optician in last year, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

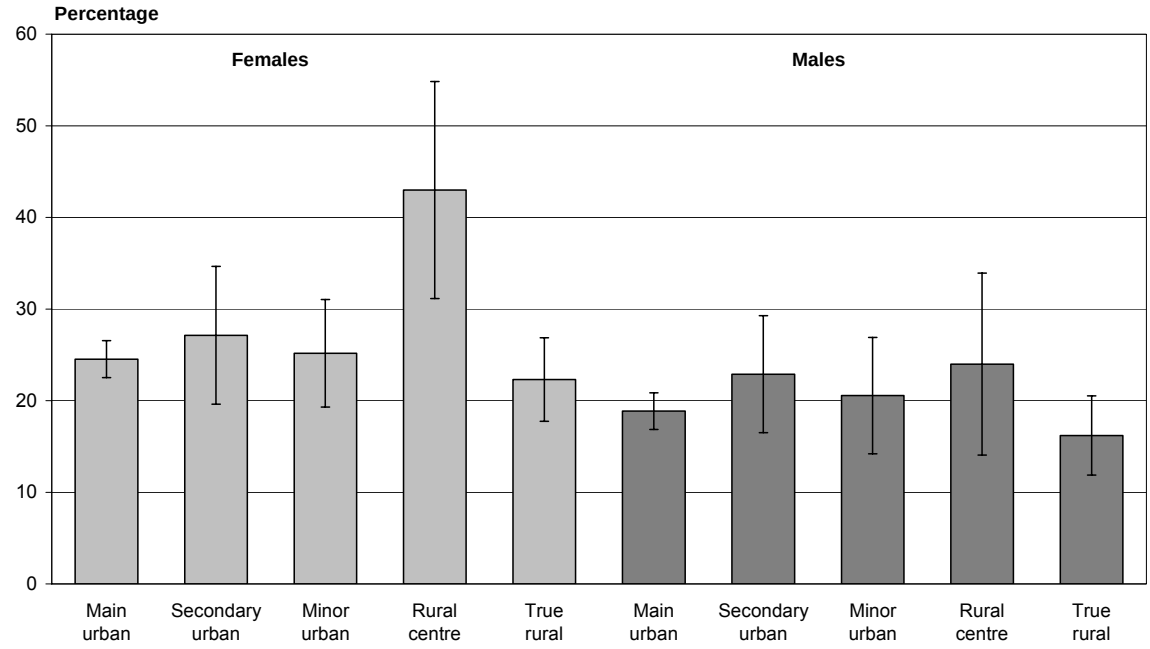
Use of hospital services

Table 15: Use of other hospital services in the last year, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

Indicator	Females		Males	
	Urban	Rural	Urban	Rural
Used/been admitted to public hospital	24.8 (22.9, 26.7)	25.2 (20.8, 29.6)	19.3 (17.4, 21.3)	17.7 (13.6, 21.7)
Used/been admitted to private hospital	6.3 (5.4, 7.2)	6.9 (4.8, 8.9)	5.3 (4.4, 6.3)	4.9 (1.6, 8.1)

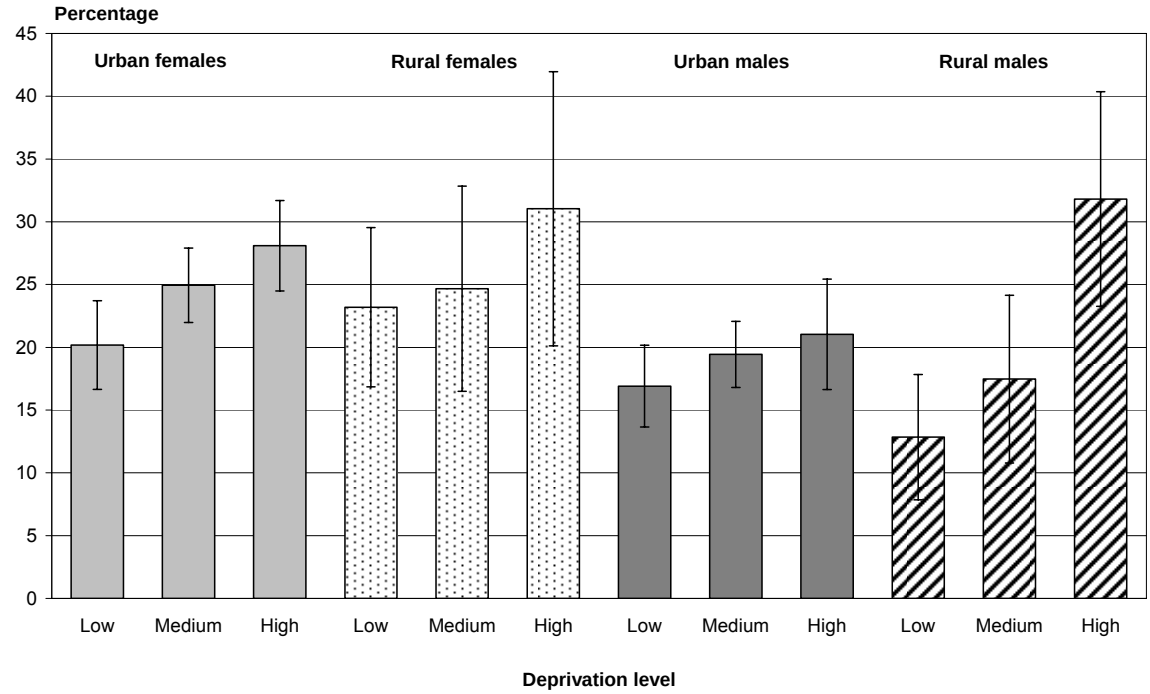
The use of public hospitals in the last year did not differ significantly between urban and rural areas overall, for either sex (Table 15). Females in rural centres were significantly more likely to have used public hospital services compared to all other people (Figure 43).

Figure 43: Public hospital use in the last year, by sex and area type (age-standardised)



The use of public hospitals increased with increasing deprivation (Figure 44). There were no significant differences in the use of public hospitals in the last year between rural and urban areas of the same deprivation level, except for a significantly higher rate of use by rural males in the most deprived areas, compared to urban males from the most deprived areas.

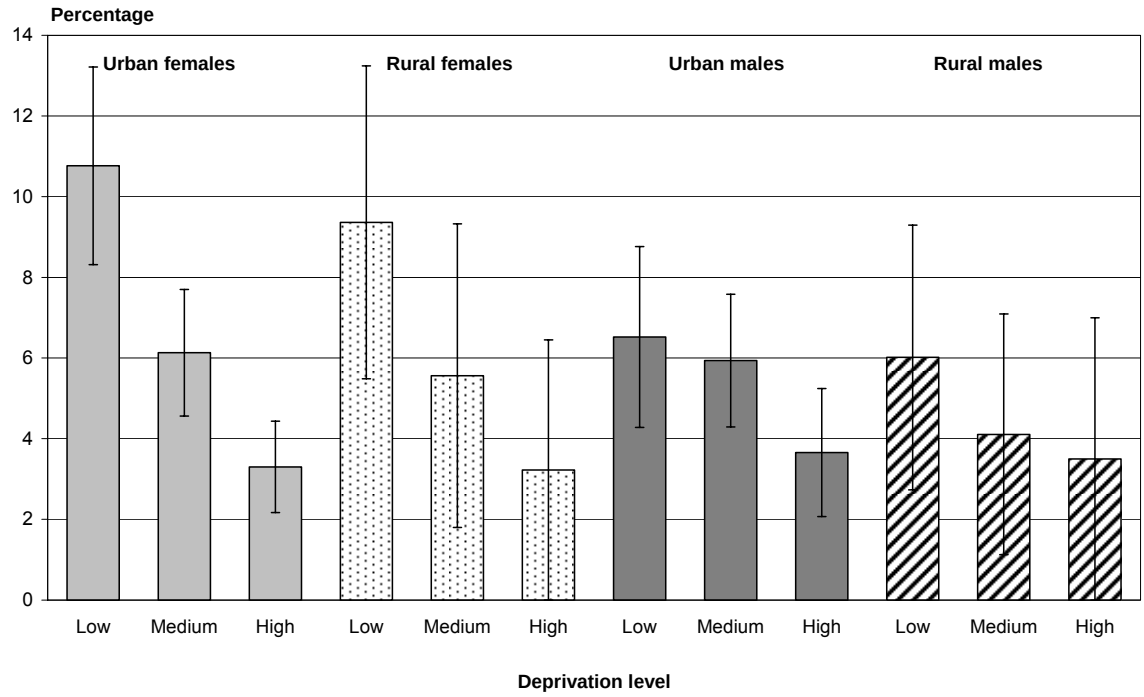
Figure 44: Public hospital use in the last year, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

The use of private hospitals in the last year did not differ significantly between urban and rural areas for either sex, either overall (Table 15) or by area type. The use of private hospitals decreased with increasing deprivation (Figure 45), with no significant differences between rural and urban areas of the same deprivation level.

Figure 45: Private hospital use in the last year, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

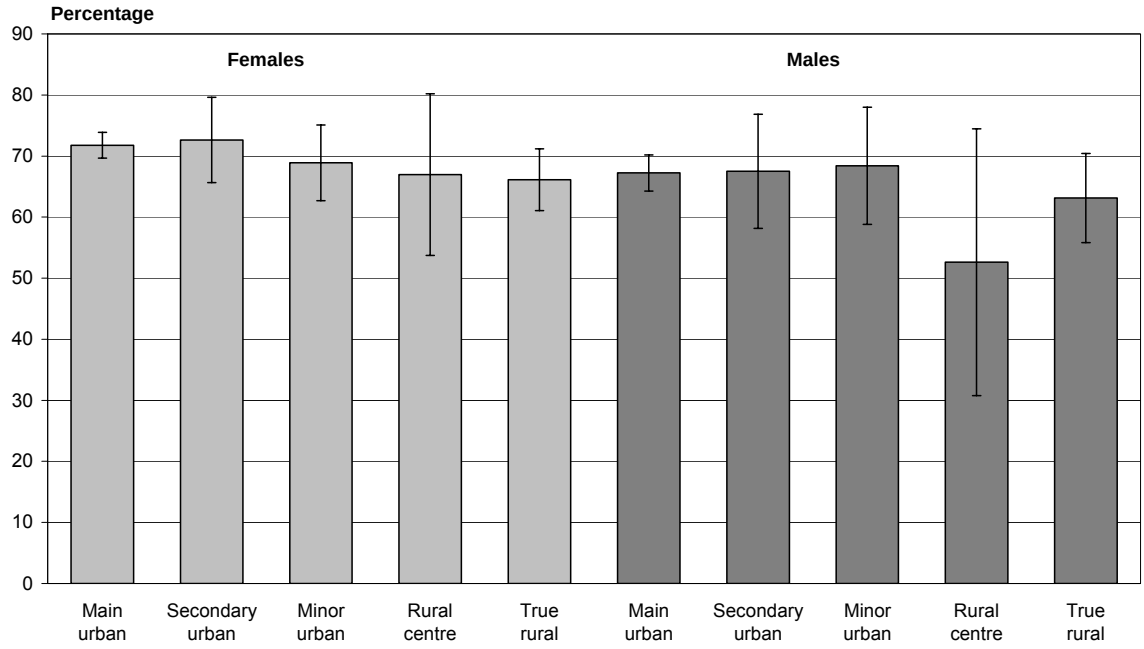
Prescriptions

Table 16: Prescriptions in the last year, by sex and rural/urban, percent, self-reported (age-standardised rate), 2002/03

Indicator	Females		Males	
	Urban	Rural	Urban	Rural
Doctor wrote a prescription at last visit (of those who visited a doctor in last 12 months)	71.6 (69.7, 73.5)	66.2 (61.5, 71.0)	67.4 (64.6, 70.2)	60.9 (54.2, 67.6)
Had prescription but didn't pick it up in last 12 months (of those who received a script from a doctor in the last 12 months)	21.4 (19.2, 23.7)	21.2 (16.5, 25.9)	13.7 (11.7, 15.7)	12.3 (7.0, 17.7)
Number of prescriptions in last 12 months				
None	21.2 (19.6, 22.8)	29.2 (24.5, 33.9)	34.6 (32.2, 37.1)	39.0 (32.1, 45.9)
1 to 2	19.6 (17.9, 21.3)	18.0 (14.1, 22.0)	23.9 (21.9, 25.9)	25.2 (19.9, 30.5)
3 to 4	16.0 (14.7, 17.4)	15.5 (11.7, 19.3)	12.4 (11.0, 13.9)	10.2 (6.9, 13.5)
5 to 9	14.1 (12.4, 15.8)	15.1 (11.1, 19.0)	8.7 (7.4, 10.0)	10.6 (6.5, 14.7)
10 to 14	10.5 (9.3, 11.7)	7.3 (4.5, 10.0)	5.9 (5.0, 6.9)	4.8 (2.4, 7.3)
15+	18.6 (17.2, 19.9)	14.8 (11.4, 18.3)	14.3 (12.8, 15.7)	10.1 (7.0, 13.2)

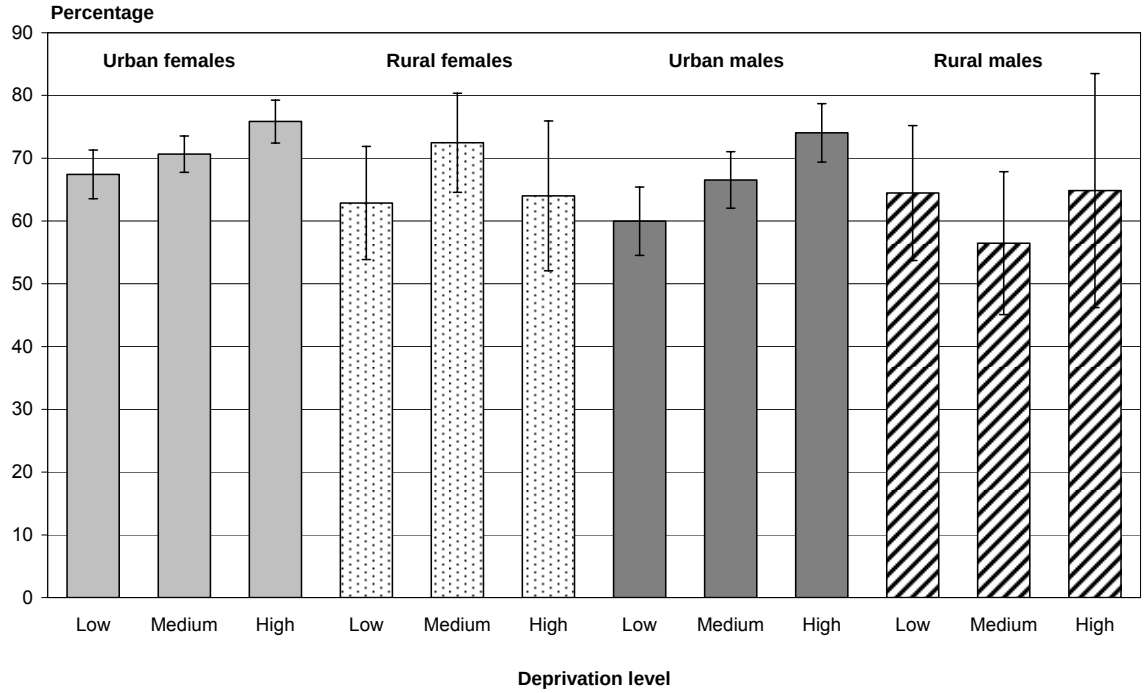
Female urban dwellers were significantly more likely to have received a prescription at their last doctor's visit than rural females (Table 16). However, when comparing different area types, there were no significant differences overall for having received a prescription at their last doctor's visit (Figure 46).

Figure 46: Doctor wrote prescription at last visit, among people who visited a doctor in the last 12 months, by sex and area type (age-standardised)



People from urban areas of high deprivation were significantly more likely to have received a prescription at their last doctor's visit than those in the least deprived urban areas, but the same trend did not occur in rural areas (Figure 47).

Figure 47: Doctor wrote prescription at last visit, among people who visited a doctor in the last 12 months, by sex, rural/urban and deprivation level (age-standardised)



Note: Deprivation levels are defined by NZDep2001 deciles (low or least deprived areas = deciles 1–3, medium = deciles 4–7, high or most deprived = deciles 8–10).

Although females were more likely than males to have not picked up a prescribed item in the last year (Table 16), there were no differences between urban and rural areas, for either sex, or by area type or deprivation level. Among females, rural dwellers were significantly more likely than urban dwellers to have had no prescription items in the last year (Table 16).

Summary tables of crude rates

Table 17 (females) and Table 18 (males) summarise the crude prevalence rates of selected health service variables for rural and urban areas. Use these crude estimates if you want to know the actual burden experienced by the population of interest. However, differences in crude rates may arise from differences in age distributions, and therefore age-standardised rates have been used in the body of the report.

Table 17: Health service utilisation, females, by area type, percent (crude rate), 2002/03

	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
GP services							
Have a usual health provider	95.9 (95.1, 96.7)	97.2 (95.9, 98.6)	95.5 (94.6, 96.4)	98.2 (96.5, 99.8)	97.4 (95.0, 99.8)	97.1 (93.8, 100.0)	97.3 (95.7, 98.8)
Usual health provider is a GP (of those who have a usual service)	96.7 (95.9, 97.4)	98.4 (97.2, 99.5)	96.3 (95.4, 97.1)	98.7 (97.7, 99.7)	98.2 (96.8, 99.7)	99.8 (99.5, 100.0)	98.1 (96.7, 99.5)
Seen a GP in last 12 months	86.2 (85.0, 87.4)	78.3 (74.2, 82.5)	86.2 (84.7, 87.7)	84.8 (80.3, 89.3)	87.6 (83.8, 91.3)	78.2 (67.6, 88.8)	78.4 (73.8, 82.9)
Number of GP visits in last year							
None	13.8 (12.6, 15.0)	21.7 (17.5, 25.8)	13.8 (12.3, 15.3)	15.2 (10.7, 19.7)	12.4 (8.7, 16.2)	21.8 (11.2, 32.4)	21.6 (17.1, 26.2)
1 to 4	63.2 (61.5, 64.9)	55.9 (51.3, 60.4)	63.2 (61.2, 65.2)	64.5 (58.4, 70.5)	62.3 (57.0, 67.7)	45.0 (37.3, 52.6)	58.0 (53.0, 63.1)
5 to 9	14.1 (12.8, 15.3)	15.7 (12.2, 19.3)	14.2 (12.9, 15.5)	13.2 (10.0, 16.4)	14.0 (9.4, 18.5)	22.3 (10.6, 34.0)	14.5 (11.0, 17.9)
10 or more	8.9 (7.7, 10.0)	6.7 (4.3, 9.1)	8.8 (7.6, 10.0)	7.1 (4.3, 9.9)	11.3 (7.0, 15.5)	10.9 (3.9, 17.9)	5.8 (3.2, 8.5)

	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
Reason for last visit (of those who visited a GP in last year)							
Short-term illness	36.2 (34.4, 38.0)	37.2 (31.7, 42.7)	37.2 (35.0, 39.4)	32.1 (26.4, 37.9)	31.3 (26.2, 36.4)	32.6 (19.4, 45.9)	38.1 (31.6, 44.5)
Routine check or advice	28.7 (27.0, 30.4)	25.7 (21.2, 30.2)	27.6 (25.7, 29.4)	34.8 (27.5, 42.0)	32.8 (27.4, 38.2)	23.6 (11.6, 35.6)	26.1 (21.3, 31.0)
Disability, long-term/ chronic condition	18.1 (16.6, 19.6)	17.8 (14.2, 21.4)	17.4 (15.8, 19.1)	21.6 (16.0, 27.1)	20.7 (15.9, 25.5)	21.9 (13.9, 29.8)	17.0 (12.8, 21.1)
Injury or poisoning	6.8 (5.8, 7.7)	8.0 (5.3, 10.7)	6.5 (5.6, 7.5)	7.5 (3.7, 11.3)	8.0 (5.1, 10.9)	12.1 (4.9, 19.3)	7.2 (4.3, 10.0)
Cervical smear	9.2 (8.2, 10.3)	8.4 (5.3, 11.5)	9.3 (8.2, 10.5)	7.5 (3.0, 12.0)	9.9 (6.2, 13.5)	10.2 (1.3, 19.2)	8.0 (4.7, 11.4)
Contraception, family planning, pregnancy test	8.4 (7.2, 9.5)	9.3 (6.6, 12.0)	8.8 (7.5, 10.1)	5.0 (1.8, 8.1)	7.7 (4.4, 11.0)	5.0 (0.0, 11.3)	10.1 (7.2, 13.1)
Maternity care	4.7 (3.9, 5.6)	3.6 (1.8, 5.3)	5.1 (4.2, 6.0)	2.8 (0.5, 5.1)	3.5 (0.8, 6.1)	4.7 (0.0, 10.6)	3.3 (1.5, 5.1)
Immunisation, vaccination	2.7 (2.1, 3.3)	1.7 (0.7, 2.7)	2.9 (2.2, 3.5)	2.5 (0.4, 4.6)	1.6 (0.2, 3.1)	1.6 (0.0, 4.4)	1.7 (0.6, 2.7)
Mental or emotional health	4.3 (3.4, 5.2)	3.4 (1.6, 5.1)	4.6 (3.6, 5.6)	3.3 (1.2, 5.5)	3.0 (0.9, 5.1)	–	3.5 (1.6, 5.4)
Cost of last visit (of those who visited GP in last year)							
Free	10.5 (9.2, 11.9)	10.0 (6.6, 13.3)	11.3 (9.8, 12.8)	4.0 (1.0, 7.0)	9.6 (5.4, 13.9)	9.9 (4.2, 15.5)	10.0 (6.2, 13.8)
$10 or less	5.3 (4.5, 6.2)	3.7 (1.7, 5.7)	5.5 (4.6, 6.4)	2.7 (0.4, 5.0)	5.9 (2.2, 9.6)	5.0 (1.9, 8.2)	3.4 (1.1, 5.8)
$11–$20	12.5 (11.1, 13.9)	16.6 (12.0, 21.3)	11.2 (9.9, 12.6)	14.7 (9.9, 19.6)	21.8 (16.3, 27.2)	22.6 (7.2, 38.0)	15.5 (10.8, 20.2)
$21–$30	22.6 (20.9, 24.3)	22.2 (17.7, 26.7)	21.1 (19.2, 23.1)	31.2 (25.3, 37.1)	27.6 (21.4, 33.8)	37.1 (27.9, 46.3)	19.3 (14.1, 24.6)
$31–$40	22.9 (21.4, 24.4)	29.9 (24.2, 35.5)	22.6 (21.1, 24.2)	31.3 (25.0, 37.6)	17.9 (12.9, 23.0)	19.3 (8.4, 30.1)	31.9 (25.6, 38.2)
$41–$50	21.5 (20.0, 23.0)	15.4 (11.8, 18.9)	23.0 (21.3, 24.7)	14.7 (9.7, 19.8)	14.9 (9.5, 20.2)	–	17.3 (13.2, 21.4)
More than $50	4.5 (3.8, 5.3)	2.0 (0.7, 3.4)	5.1 (4.3, 6.0)	–	–	–	2.4 (0.8, 4.1)
Other arrangement	0.1 (0.0, 0.3)	–	0.1 (0.0, 0.3)	–	0.2 (0.0, 0.3)	–	–

	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
Unmet need for GP in last 12 months	13.8 (12.5, 15.0)	11.2 (8.2, 14.1)	13.6 (12.2, 15.0)	16.2 (10.4, 22.0)	13.1 (9.1, 17.1)	15.9 (7.1, 24.8)	10.3 (7.2, 13.3)
Main reasons for unmet need (of those with unmet need)							
Cost	52.4 (47.3, 57.4)	39.5 (26.0, 52.9)	51.8 (46.4, 57.2)	59.5 (45.8, 73.2)	49.6 (32.4, 66.8)	63.0 (27.0, 99.1)	32.4 (20.3, 44.4)
No suitable appointment	24.4 (20.1, 28.7)	40.1 (26.0, 54.1)	23.6 (18.6, 28.7)	20.8 (6.4, 35.1)	35.0 (22.0, 47.9)	18.1 (0.0, 42.7)	46.7 (31.2, 62.2)
Couldn't spare the time	12.8 (9.9, 15.8)	23.5 (11.8, 35.3)	13.8 (10.3, 17.3)	–	8.2 (0.7, 15.8)	19.7 (0.0, 48.2)	24.7 (10.9, 38.5)
Didn't want to fuss / couldn't be bothered	24.3 (20.1, 28.5)	27.7 (14.5, 41.0)	23.7 (19.2, 28.3)	31.7 (18.6, 44.8)	21.0 (7.4, 34.6)	41.4 (16.5, 66.4)	23.6 (9.2, 38.0)
Other health providers seen in last year							
Medical specialist	34.0 (32.5, 35.6)	30.7 (26.2, 35.1)	34.1 (32.4, 35.9)	30.8 (25.6, 36.1)	36.1 (30.9, 41.4)	37.3 (23.5, 51.1)	29.4 (24.7, 34.0)
Nurse	48.1 (46.3, 49.9)	50.5 (45.3, 55.7	47.4 (45.5, 49.3)	44.0 (37.4, 50.6)	58.2 (50.9, 65.4)	45.8 (37.8, 53.8)	51.5 (45.3, 57.6)
Pharmacist	92.1 (91.0, 93.1)	90.2 (86.9, 93.4)	92.0 (90.9, 93.2)	92.5 (89.2, 95.8)	91.8 (88.3, 95.3)	86.9 (74.5, 99.3)	90.8 (87.9, 93.7)
Alternative/ complementary	27.5 (25.8, 29.3)	31.6 (28.1, 35.2)	27.7 (25.9, 29.6)	24.9 (20.0, 29.9)	28.5 (23.6, 33.4)	17.1 (7.0, 27.3)	34.5 (30.6, 38.4)
Physiotherapist	14.6 (13.3, 16.0)	14.4 (11.0, 17.8)	14.6 (13.0, 16.2)	13.7 (9.4, 18.1)	16.0 (12.0 20.0)	10.1 (0.0, 20.4)	15.3 (11.6, 18.9)
Dentist/dental therapist	43.0 (41.3, 44.8)	46.6 (42.0, 51.1)	43.5 (41.4, 45.5)	43.9 (37.3, 50.5)	38.5 (33.0, 44.0)	35.8 (25.4, 46.2)	48.7 (43.8, 53.6)
Optician/optometrist	22.6 (21.0, 24.1)	15.6 (12.2, 18.9)	22.3 (20.6, 24.0)	23.2 (17.1, 29.4)	24.1 (19.3, 28.9)	19.3 (9.8, 28.8)	14.8 (11.2, 18.5)
Hospital services used in last year							
Used/been admitted to public hospital as patient	24.8 (23.2, 26.4)	24.3 (20.7, 28.0)	24.6 (22.9, 26.3)	26.0 (19.9, 32.1)	25.3 (19.8, 30.8)	39.3 (31.5, 47.1)	21.4 (17.3, 25.5)
Used/been admitted to private hospital as patient	6.5 (5.6, 7.3)	7.5 (5.3, 9.6)	6.9 (5.8, 7.9)	4.5 (2.2, 6.7)	4.7 (2.3, 7.1)	6.7 (0.0, 13.8)	7.6 (5.4, 9.8)
Prescriptions							
Doctor wrote a prescription at last visit (of those who visited a doctor in the last 12 months)	71.2 (69.5, 73.0)	66.6 (62.0, 71.1)	71.2 (69.3, 73.1)	74.1 (67.7, 80.4)	68.8 (62.9, 74.8)	70.7 (58.3, 83.1)	65.8 (61.0, 70.6)
Had prescription but didn't pick up in last year (of those who received a script from a doctor in the last 12 months)	20.2 (18.3, 22.1)	21.1 (16.8, 25.3)	19.3 (17.3, 21.3)	25.3 (18.1, 32.6)	22.8 (16.2, 29.4)	27.2 (14.5, 40.0)	19.8 (15.6, 24.1)

	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
Number of prescriptions in last year							
None	21.5 (20.0, 23.0)	30.2 (25.5, 34.9)	21.8 (20.2, 23.5)	19.0 (14.2, 23.7)	21.1 (15.9, 26.2)	30.2 (20.9, 39.6)	30.2 (24.9, 35.5)
1 to 2	19.0 (17.5, 20.5)	17.3 (13.9, 20.7)	19.1 (17.4, 20.8)	20.7 (16.1, 25.2)	16.4 (12.7, 20.1)	11.9 (5.8, 18.0)	18.3 (14.4, 22.3)
3 to 4	15.2 (14.0, 16.4)	15.1 (11.8, 18.4)	15.9 (14.6, 17.3)	13.9 (9.4, 18.3)	10.4 (7.4, 13.5)	14.3 (4.6, 24.1)	15.3 (11.6, 19.0)
5 to 9	13.3 (11.9, 14.7)	13.4 (10.1, 16.7)	13.5 (12.0, 15.0)	10.6 (7.1, 14.1)	14.3 (10.1, 18.5)	11.2 (3.6, 18.9)	13.8 (10.2, 17.5)
10 to 14	10.1 (9.2, 11.1)	7.4 (4.9, 9.8)	10.0 (8.9, 11.1)	10.1 (6.2, 14.0)	11.6 (7.9, 15.3)	5.9 (1.6, 10.2)	7.6 (4.8, 10.5)
15 or more	20.7 (19.4, 22.1)	16.5 (12.7, 20.3)	19.6 (18.2, 21.0)	25.7 (20.1, 31.3)	26.0 (20.9, 31.1)	26.0 (12.4, 39.7)	14.6 (11.1, 18.2)

Note: A dash (–) indicates that numbers were too low for reliable estimation.

Table 18: Health service utilisation, males, by area type, percent (crude rate), 2002/03

	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
GP services							
Have a usual health provider	90.3 (88.9, 91.8)	92.4 (89.1, 95.8)	89.4 (87.9, 90.8)	97.5 (95.4, 99.6)	92.4 (87.6, 97.2)	95.5 (85.7, 100.0)	91.9 (88.1, 95.6)
Usual health provider is a GP (of those who have a usual service)	97.2 (96.4, 97.9)	97.9 (95.5, 100.0)	96.8 (95.9, 97.7)	98.9 (97.4, 100.0)	98.6 (97.2, 100.0)	100.0 (100.0, 100.0)	97.5 (94.7, 100.0)
Seen a GP in last 12 months	76.6 (74.7, 78.4)	74.4 (68.9, 79.9)	75.7 (73.6, 77.9)	84.3 (79.1, 89.6)	76.8 (70.8, 82.7)	81.4 (69.2, 93.7)	73.1 (67.2, 79.1)
Number of GP visits in last year							
None	23.4 (21.6, 25.3)	25.6 (20.1, 31.1)	24.3 (22.1, 26.4)	15.7 (10.4, 20.9)	23.2 (17.3, 29.2)	18.6 (6.3, 30.8)	26.9 (20.9, 32.8)
1 to 4	61.4 (59.1, 63.6)	62.0 (56.4, 67.7)	61.4 (59.0, 63.9)	64.1 (56.5, 71.7)	58.4 (51.7, 65.2)	64.9 (45.5, 84.2)	61.5 (56.2, 66.9)
5 to 9	10.0 (8.7, 11.3)	8.2 (5.2, 11.3)	9.5 (8.1, 10.8)	13.9 (9.0, 18.8)	11.1 (7.2, 15.1)	12.7 (1.9, 23.6)	7.4 (4.3, 10.5)
10 or more	5.2 (4.1, 6.3)	4.1 (2.2, 6.0)	4.9 (3.8, 5.9)	6.4 (2.5, 10.2)	7.2 (3.5, 10.9)	3.9 (0.0, 8.1)	4.2 (2.0, 6.4)

	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
Reason for last visit (of those who visited GP in last year)							
Short-term illness	35.1 (32.9, 37.3)	30.4 (24.1, 36.8)	35.6 (33.2, 38.1)	37.3 (27.2, 47.4)	28.3 (17.4, 39.3)	28.6 (10.2, 47.1)	30.8 (23.8, 37.7)
Routine check or advice	32.7 (30.7, 34.7)	27.2 (22.2, 32.3)	33.3 (30.8, 35.7)	33.1 (25.7, 40.4)	27.3 (20.1, 34.5)	24.1 (14.6, 33.6)	27.9 (22.0, 33.7)
Disability, long-term/ chronic condition	20.9 (19.0, 22.8)	18.7 (13.2, 24.2)	20.4 (18.2, 22.6)	21.4 (15.9, 26.9)	24.3 (16.6, 32.0)	20.6 (0.7, 40.6)	18.3 (13.2, 23.4)
Injury or poisoning	15.8 (14.0, 17.5)	22.8 (18.0, 27.7)	15.1 (13.2, 17.0)	16.4 (9.1, 23.7)	20.7 (13.7, 27.6)	25.0 (15.1, 34.8)	22.4 (16.7, 28.1)
Immunisation, vaccination	4.0 (3.0, 5.0)	2.3 (0.6, 4.0)	4.1 (3.0, 5.3)	–	4.2 (1.0, 7.5)	–	2.4 (0.4, 4.4)
Mental or emotional health	2.8 (1.8, 3.7)	2.2 (0.6, 3.9)	2.9 (1.9, 4.0)	–	–	–	2.7 (0.7, 4.7)
Cost of last visit (of those who visited GP in last year)							
Free	8.1 (6.6, 9.6)	6.6 (3.3, 9.9)	8.6 (6.8, 10.3)	–	7.6 (3.8, 11.5)	7.4 (0.0, 21.2)	6.5 (3.7, 9.3)
$10 or less	4.7 (3.7, 5.7)	6.0 (1.2, 10.9)	5.0 (3.7, 6.2)	–	4.1 (0.0, 9.9)	9.0 (0.0, 33.7)	5.4 (2.7, 8.2)
$11–$20	15.3 (13.2, 17.4)	15.0 (9.5, 20.4)	13.7 (11.6, 15.8)	18.5 (11.3, 25.6)	25.9 (16.0, 35.8)	27.1 (8.1, 46.1)	12.6 (7.5, 17.6)
$21–$30	21.8 (19.8, 23.9)	22.9 (17.3, 28.5)	21.2 (19.2, 23.2)	26.5 (18.3, 34.8)	22.4 (13.9, 30.9)	23.7 (5.0, 42.4)	22.7 (17.5, 28.0)
$31–$40	25.2 (23.2, 27.3)	29.3 (23.4, 35.2)	24.3 (22.1, 26.6)	28.3 (21.0, 35.7)	29.8 (21.1, 38.4)	15.7 (5.1, 26.3)	32.0 (25.3, 38.7)
$41–$50	18.4 (16.8, 20.1)	15.5 (10.8, 20.3)	20.2 (18.1, 22.4)	15.2 (10.2, 20.2)	6.2 (2.6, 9.8)	16.6 (0.7, 32.5)	15.3 (10.6, 20.0)
More than $50	6.4 (5.2, 7.5)	4.4 (1.8, 6.9)	6.9 (5.5, 8.3)	4.6 (1.5, 7.7)	–	–	5.1 (2.1, 8.2)
Other arrangement	0.1 (0.0, 0.3)	–	–	–	0.4 (0.0, 0.9)	–	–
Unmet need for GP in last 12 months	10.8 (9.2, 12.4)	8.7 (5.5, 11.8)	11.0 (9.3, 12.8)	11.3 (6.2, 16.5)	8.1 (3.7, 12.6)	9.7 (2.6, 16.9)	8.5 (5.1, 11.9)
Main reasons for unmet need (of those with unmet need)							
Cost	46.2 (37.9, 54.5)	41.7 (25.1, 58.4)	46.9 (38.4, 55.5)	58.9 (37.1, 80.6)	21.5 (0.0, 45.8)	27.4 (4.8, 50.1)	44.7 (24.5, 64.9)
No suitable appointment	16.5 (10.0, 23.0)	24.6 (9.3, 40.0)	15.4 (9.6, 21.3)	–	23.0 (0.9, 45.2)	27.6 (0.2, 54.9)	24.0 (6.5, 41.6)
Couldn't spare the time	24.4 (17.8, 31.0)	31.0 (13.1, 48.9)	25.2 (18.1, 32.3)	–	11.3 (0.0, 29.5)	42.5 (10.4, 74.6)	28.7 (7.3, 50.0)
Didn't want to fuss/ couldn't be bothered	28.4 (22.3, 34.5)	24.5 (10.1, 38.9)	28.5 (21.8, 35.2)	–	28.3 (8.9, 47.7)	39.4 (0.0, 82.6)	21.4 (6.5, 36.3)

	Urban total	Rural total	Main urban	Secondary urban	Minor urban	Rural centre	True rural
Other health providers seen in last year							
Medical specialist	29.7 (27.8, 31.5)	27.6 (22.9, 32.4)	28.7 (26.8, 30.7)	34.5 (27.4, 41.6)	33.3 (26.0, 40.7)	31.1 (19.8, 42.4)	27.0 (21.5, 32.6)
Nurse	37.8 (35.7, 40.0)	39.3 (32.6, 46.0)	36.2 (33.9, 38.5)	38.3 (28.9, 47.7)	51.8 (44.2, 59.4)	38.1 (17.2, 59.0)	39.5 (31.6, 47.4)
Pharmacist	80.7 (78.8, 82.7)	76.0 (71.2, 80.9)	80.9 (79.0, 82.7)	85.1 (77.4, 92.7)	75.8 (68.6, 83.0)	69.4 (57.5, 81.3)	77.2 (72.0, 82.4)
Alternative/ complementary	17.7 (15.9, 19.4)	22.9 (18.1, 27.7)	17.6 (15.7, 19.5)	21.0 (14.4, 27.7)	14.9 (10.0, 19.8)	17.7 (5.9, 29.4)	23.8 (18.5, 29.2)
Physiotherapist	14.7 (12.9, 16.5)	16.4 (12.2, 20.6)	14.7 (12.9, 16.5)	16.5 (10.0, 22.9)	13.0 (7.6, 18.5)	13.8 (4.3, 23.3)	16.9 (12.3, 21.5)
Dentist/dental therapist	36.0 (34.4, 37.7)	42.7 (37.7, 47.6)	36.2 (34.4, 38.0)	33.3 (23.0, 43.6)	36.8 (30.3, 43.3)	28.1 (10.7, 45.4)	45.3 (40.0, 50.5)
Optician/optometrist	15.3 (13.7, 16.9)	12.3 (8.1, 16.4)	15.7 (14.0, 17.4)	12.0 (6.9, 17.0)	15.2 (9.6, 20.7)	13.3 (4.5, 22.1)	12.1 (7.4, 16.8)
Hospital services used in last year							
Used/been admitted to public hospital as patient	19.8 (18.1, 21.6)	17.7 (13.9, 21.5)	19.0 (17.2, 20.9)	24.9 (18.6, 31.2)	22.0 (16.6, 27.5)	23.7 (14.8, 32.6)	16.7 (12.5, 20.8)
Used/been admitted to private hospital as patient	5.5 (4.6, 6.5)	5.1 (2.2, 8.1)	5.7 (4.7, 6.8)	4.7 (1.5, 7.9)	4.8 (1.4, 8.1)	–	5.5 (2.9, 8.1)
Prescriptions							
Doctor wrote a prescription at last visit (of those who visited a doctor in last 12 months)	68.3 (65.8, 70.9)	60.8 (54.5, 67.1)	68.1 (65.4, 70.8)	69.6 (61.2, 78.1)	69.2 (61.3, 77.1)	52.7 (33.8, 71.6)	62.4 (55.6, 69.3)
Had prescription but didn't pick up in last year (of those who received a script from a doctor in the last 12 months)	13.3 (11.4, 15.2)	13.4 (7.8, 18.9)	13.9 (11.7, 16.1)	8.2 (3.2, 13.2)	13.7 (8.5, 18.9)	17.8 (1.0, 34.6)	12.6 (6.8, 18.4)
Number of prescriptions in last year							
None	33.5 (31.3, 35.8)	37.5 (31.5, 43.5)	34.3 (31.8, 36.9)	26.4 (19.7, 33.1)	33.0 (26.2, 39.9)	37.7 (22.6, 52.8)	37.5 (30.9, 44.0)
1 to 2	22.9 (21.2, 24.6)	24.6 (19.8, 29.3)	23.0 (21.0, 25.0)	21.0 (14.0, 28.0)	23.8 (17.6, 30.0)	20.9 (1.5, 40.3)	25.2 (21.0, 29.5)
3 to 4	12.1 (10.8, 13.5)	10.7 (7.4, 14.0)	12.4 (10.9, 13.9)	11.8 (6.9, 16.7)	10.1 (6.1, 14.2)	8.9 (1.5, 16.3)	11.1 (7.3, 14.8)
5 to 9	9.0 (7.7, 10.2)	10.7 (7.0, 14.5)	9.0 (7.6, 10.3)	12.1 (7.6, 16.5)	6.2 (3.0, 9.4)	12.1 (0.4, 23.8)	10.5 (6.8, 14.2)
10 to 14	6.4 (5.4, 7.4)	5.1 (2.8, 7.5)	6.1 (5.0, 7.2)	8.0 (3.9, 12.1)	7.8 (3.9, 11.7)	5.5 (0.0, 12.8)	5.0 (2.6, 7.5)
15 or more	16.0 (14.5, 17.4)	11.3 (8.0, 14.6)	15.1 (13.5, 16.7)	20.5 (15.2, 25.9)	19.1 (13.4, 24.7)	14.9 (1.2, 28.6)	10.7 (7.4, 14.0)

Note: A dash (–) indicates that numbers were too low for reliable estimation.

Chapter 5: Self-reported Health Status

Introduction

The SF-36 is a standard questionnaire derived from a larger set of questions used in the US Medical Outcomes Study in the mid-1980s (Ware and Sherbourne 1992). The SF-36 has become one of the most widely used questionnaires for measuring self-reported physical and mental health status. Self-reported health measures, based on an individual's perception of their health status and functioning, are an alternative to the more traditional objective measures of health, such as hospitalisation rates. Self-reported health measures introduce an element of subjectivity into health status measurement, which is useful for providing a more consumer-centred view of health, thus placing more emphasis on quality of life or wellbeing.

The SF-36 questionnaire consists of 36 questions (items) measuring physical and mental health status in relation to eight health scales (Table 19). The Australian and New Zealand version of the SF-36 questionnaire (version 1) was used in this survey and differs only slightly from the original.

Responses to each of the SF-36 items are scored and summed across health scales according to a standardised protocol (Ware et al 1993). Scores are expressed on a 0–100 scale for each of the eight health scales, with higher scores representing better self-perceived health. Five of the scales (Physical Functioning, Role Physical, Bodily Pain, Social Functioning and Role Emotional) are unipolar, meaning they define health status in terms of the absence of limitation and the maximum score of 100 is achieved when no limitation is reported. The other scales (General Health, Vitality and Mental Health) are bipolar scales, covering both positive and negative health states and the maximum score on these scales indicates not just the absence of disability, but also the presence of a positive health state.

Interpretation of the SF-36 is based on the mean scores. The scales are independent of each other and scale scores cannot be compared. However, within one scale, population sub-group (eg, sex) means can be compared.

This chapter presents a summary of SF-36 results, by sex, for rural and urban areas. Ninety-five percent confidence intervals are presented for all descriptive results, following the estimate in the table or as error bars in graphs. All results presented in the body of this report have been age-standardised by the direct method using the WHO world population as the standard population.

Table 19: Item groupings and abbreviated item content for the SF-36

Health scale	Item	Abbreviated item content
Physical Functioning (PF)	PF1	Vigorous activities, such as running, lifting heavy objects
	PF2	Moderate activities, such as vacuuming, bowling
	PF3	Lifting or carrying groceries
	PF4	Climbing several flights of stairs
	PF5	Climbing one flight of stairs
	PF6	Bending, kneeling, stooping
	PF7	Walking more than one kilometre
	PF8	Walking half a kilometre
	PF9	Walking 100 metres
	PF10	Bathing or dressing yourself
Role Physical (RP)	RP1	Cut down the amount of time spent on work or other activities
	RP2	Accomplished less than would like
	RP3	Limited in the kind of work or other activities
	RP4	Difficulty performing work or other activities
Bodily Pain (BP)	BP1	Intensity of bodily pain
	BP2	Extent pain interfered with normal work
General Health (GH)	GH1	Is your health: excellent, very good, good, fair, poor
	GH2	I seem to get sick a little easier than other people
	GH3	I am as healthy as anybody I know
	GH4	I expect my health to get worse
	GH5	My health is excellent
Vitality (VT)	VT1	Feel full of life
	VT2	Have a lot of energy
	VT3	Feel worn out
	VT4	Feel tired
Social Functioning (SF)	SF1	Extent health problems interfered with normal social activities
	SF2	Frequent health problems interfered with social activities
Role Emotional (RE)	RE1	Cut down the amount of time spent on work or other activities
	RE2	Accomplished less than would like to
	RE3	Didn't do work or other activities as carefully as usual
Mental Health (MH)	MH1	Been a very nervous person
	MH2	Felt so down in the dumps that nothing could cheer you up
	MH3	Felt calm and peaceful
	MH4	Felt down
	MH5	Been a happy person

Results

Key points

- For 15 out of the 16 urban–rural comparisons between mean SF-36 scores (ie, eight scales for two sexes), rural people had the higher average score. However, for most of the scales the differences were small and not statistically significant.
- Rural females had significantly higher average scores than urban females on the Physical Functioning and Role Emotional scales.

- Rural males had significantly higher average scores than urban males on the General Health and Mental Health scales.

Mean SF-36 scores, by sex

Mean scores for all eight scales are shown in Table 20. For 15 out of the 16 urban–rural comparisons between mean SF-36 scores (ie, eight scales for two sexes), rural people had the higher average score. However, for most of the scales the differences were small and not statistically significant.

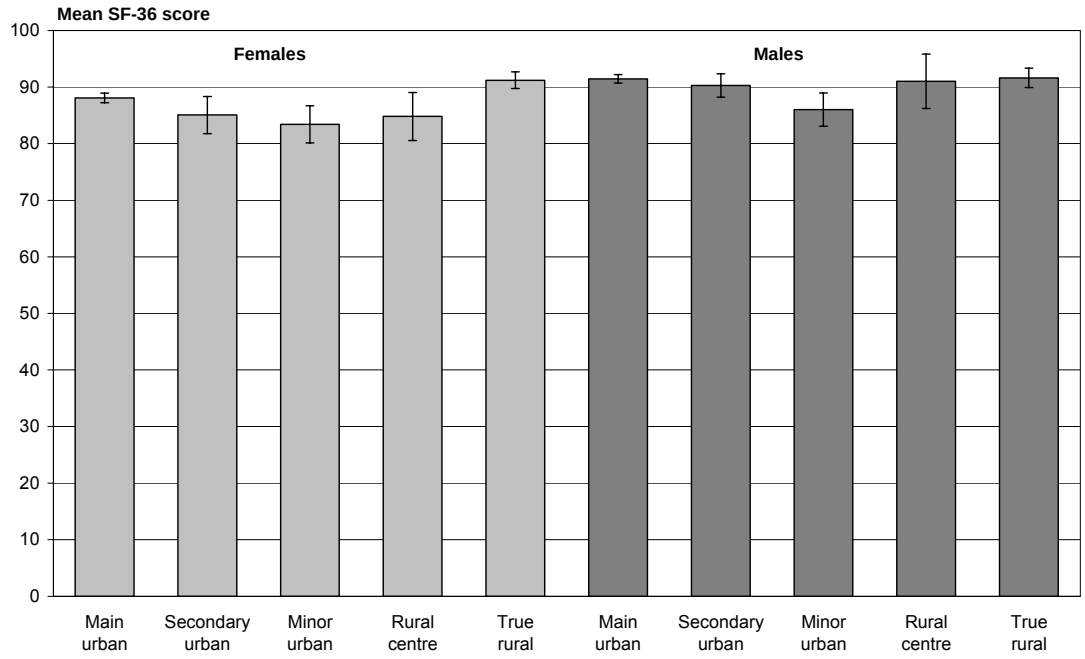
Table 20: Mean SF-36 scores, by sex and rural/urban (age-standardised rate), 2002/03

Scale	Females		Males	
	Urban	Rural	Urban	Rural
Physical Functioning	87.4 (86.7, 88.1)	90.3 (88.9, 91.7)	90.8 (90.2, 91.5)	91.5 (90.0, 93.0)
Role Physical	78.9 (77.5, 80.3)	80.3 (77.0, 83.5)	84.1 (82.8, 85.5)	84.5 (81.7, 87.3)
Bodily Pain	72.9 (71.8, 74.1)	73.6 (71.5, 75.7)	77.4 (76.1, 78.6)	75.2 (72.4, 77.9)
General Health	74.8 (73.9, 75.7)	76.6 (74.5, 78.7)	75.5 (74.6, 76.3)	78.1 (76.4, 79.8)
Vitality	62.4 (61.6, 63.2)	62.5 (60.3, 64.6)	67.8 (66.8, 68.9)	67.9 (65.7, 70.1)
Social Functioning	89.1 (88.2, 90.1)	90.9 (89.1, 92.7)	91.6 (90.6, 92.6)	92.2 (90.1, 94.2)
Role Emotional	88.0 (86.8, 89.2)	92.1 (90.1, 94.2)	90.9 (89.7, 92.1)	91.9 (89.3, 94.6)
Mental Health	81.5 (80.8, 82.1)	82.6 (80.9, 84.2)	84.1 (83.5, 84.8)	86.1 (84.9, 87.4)

Scores on the Physical Functioning scale were skewed towards the upper end of the scale. Rural females had a significantly higher average score than urban females, but males showed no overall significant difference between rural and urban areas (Table 20).

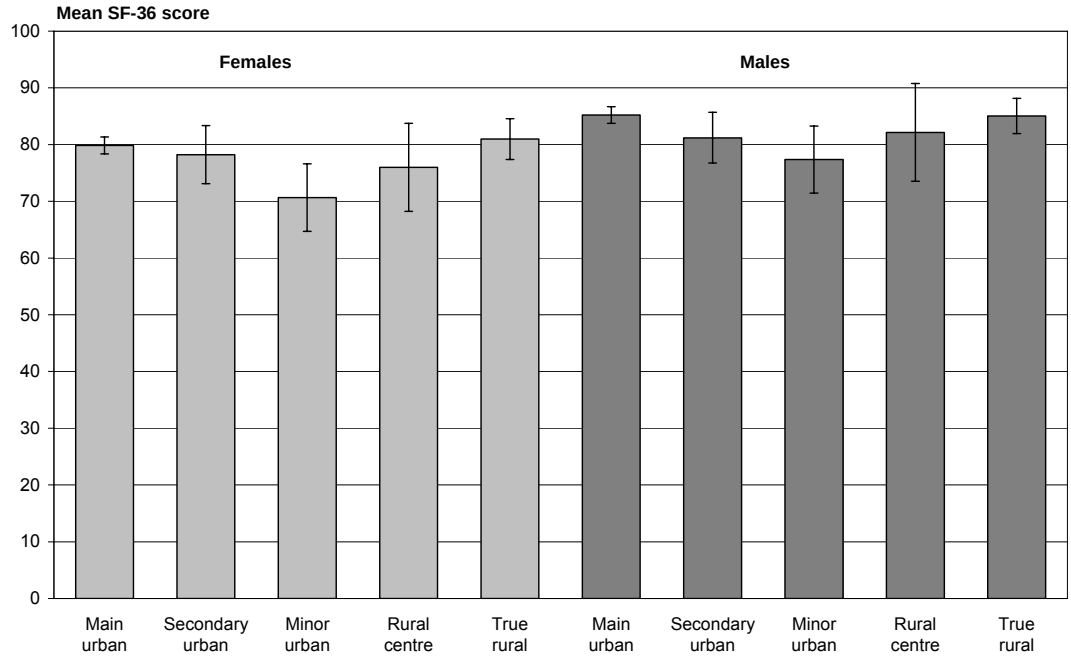
People living in minor urban areas had significantly lower average scores on the Physical Functioning scale, relative to people in main urban areas and true rural areas, for both males and females (Figure 48).

Figure 48: Mean SF-36 scores for the Physical Functioning scale, by sex and area type (age-standardised)



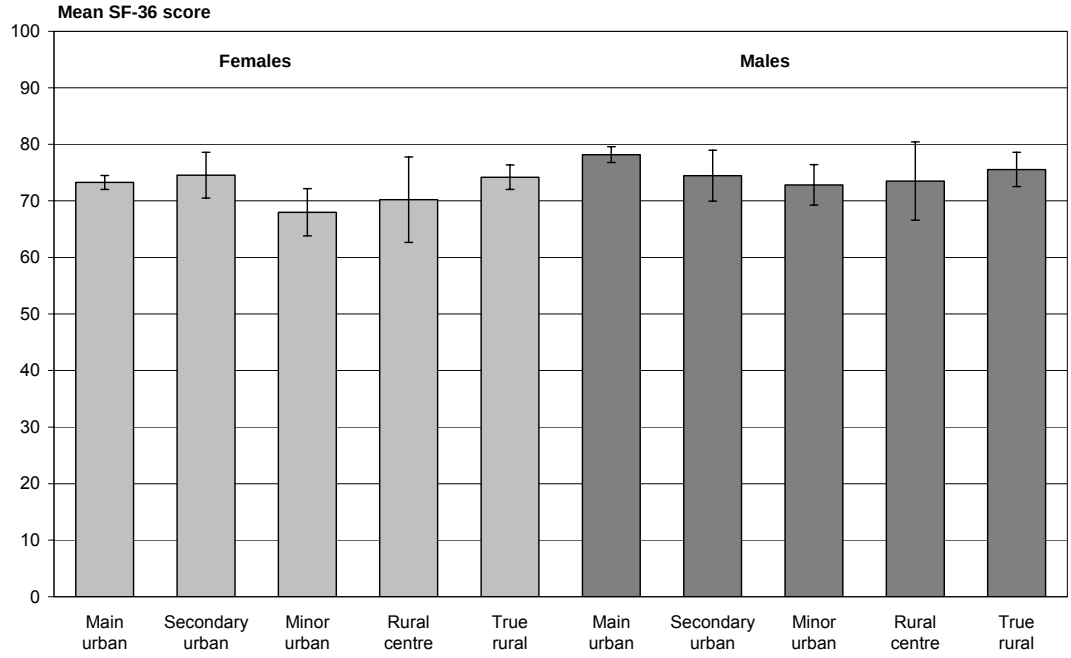
Scores on the Role Physical scale showed no overall significant difference between rural and urban areas, for males or females (Table 20). However, females in minor urban areas had significantly lower average scores on the Role Physical scale, compared to females in main urban areas and true rural areas. Furthermore, males in minor urban areas had significantly lower average scores compared to males in main urban areas (Figure 49).

Figure 49: Mean SF-36 scores for the Role Physical scale, by sex and area type (age-standardised)



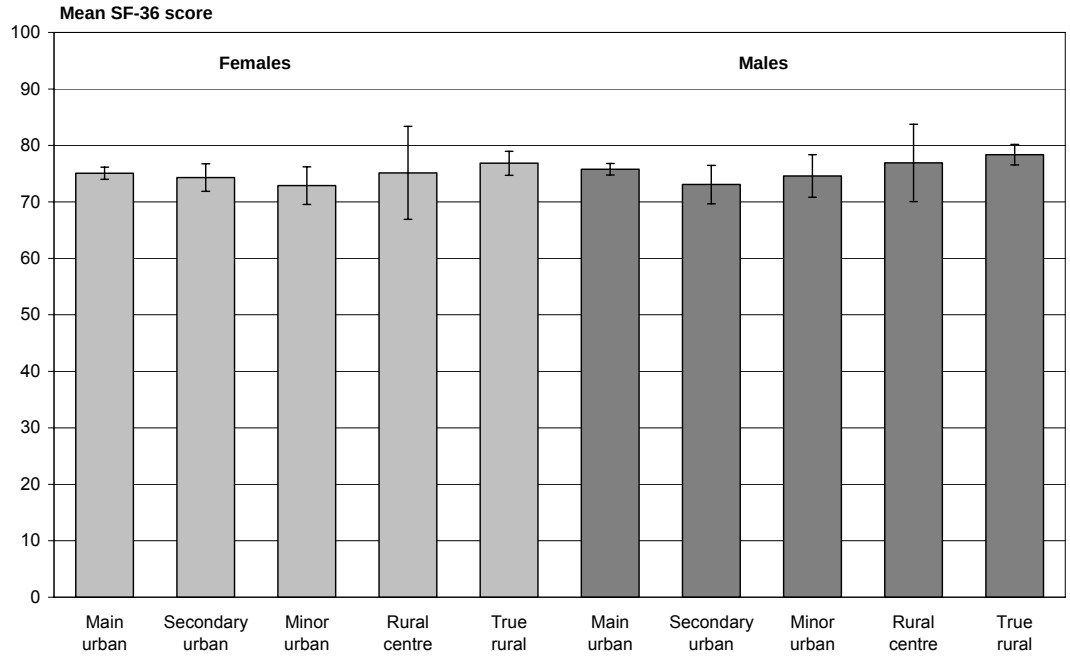
Scores on the Bodily Pain scale showed no overall difference between rural and urban areas, for males or females (Table 20). However, females in minor urban areas had significantly lower average scores on the Bodily Pain scale, compared to females in main urban areas and true rural areas. Males in minor urban areas also had significantly lower averages scores than males in main urban areas (Figure 50).

Figure 50: Mean SF-36 scores for the Bodily Pain scale, by sex and area type (age-standardised)



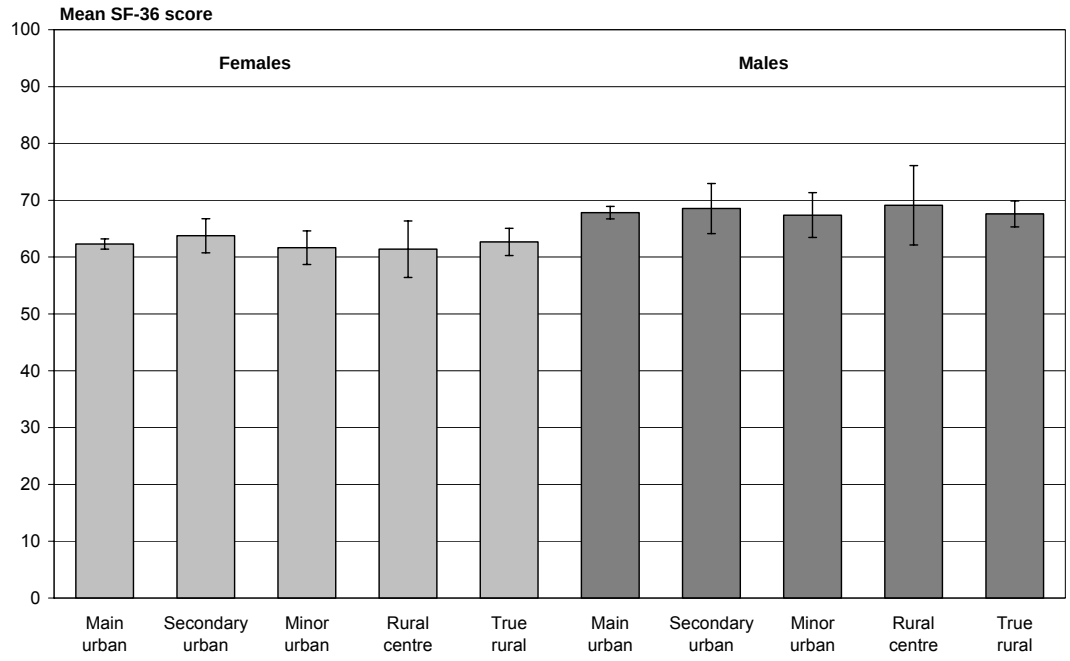
Scores on the General Health scale were significantly higher on average for rural males than urban males (Table 20, Figure 51).

Figure 51: Mean SF-36 scores for the General Health scale, by sex and area type (age-standardised)



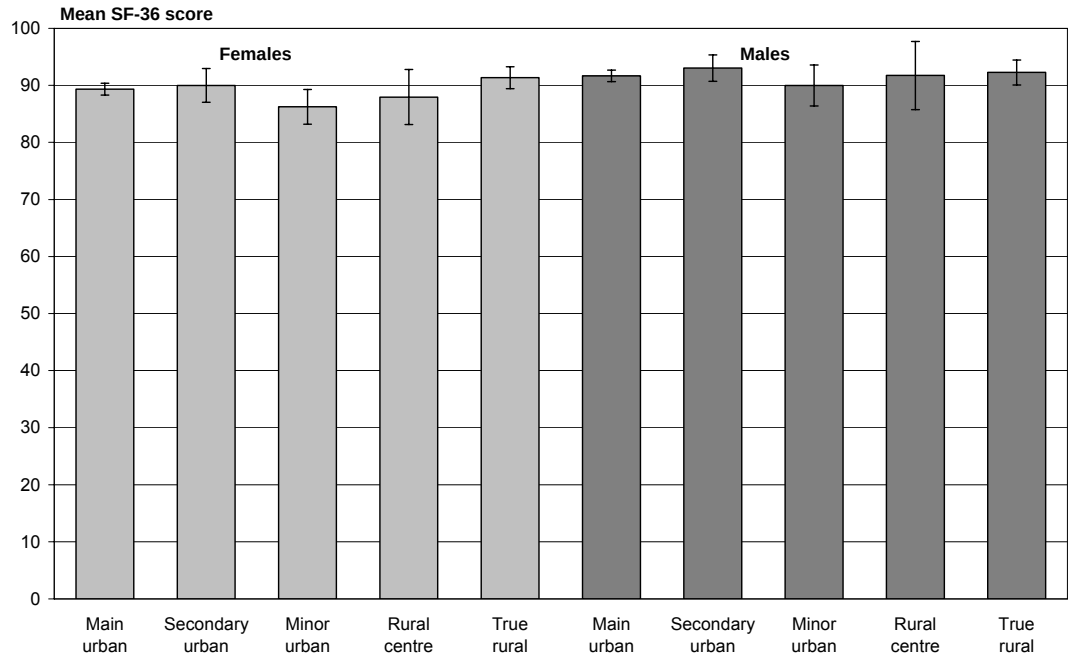
There were no significant differences in the average scores on the Vitality scale, across all types of rural and urban areas, for males and females (Table 20, Figure 52).

Figure 52: Mean SF-36 scores for the Vitality scale, by sex and area type (age-standardised)



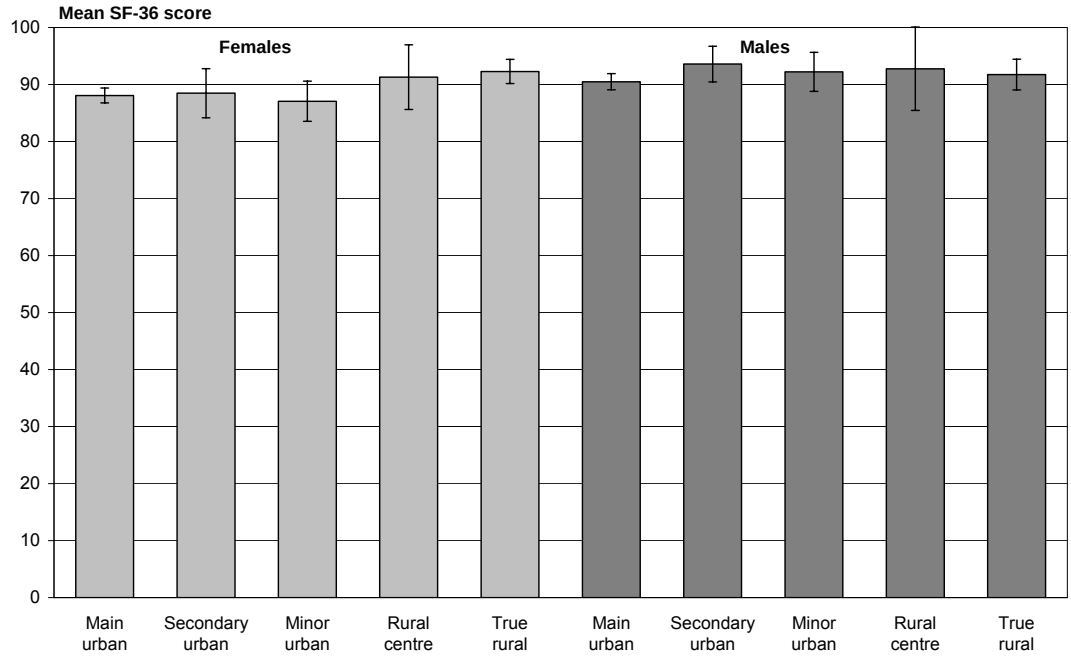
Scores on the Social Functioning scale did not differ significantly between rural and urban areas, for males or females (Table 20, Figure 53).

Figure 53: Mean SF-36 scores for the Social Functioning scale, by sex and area type (age-standardised)



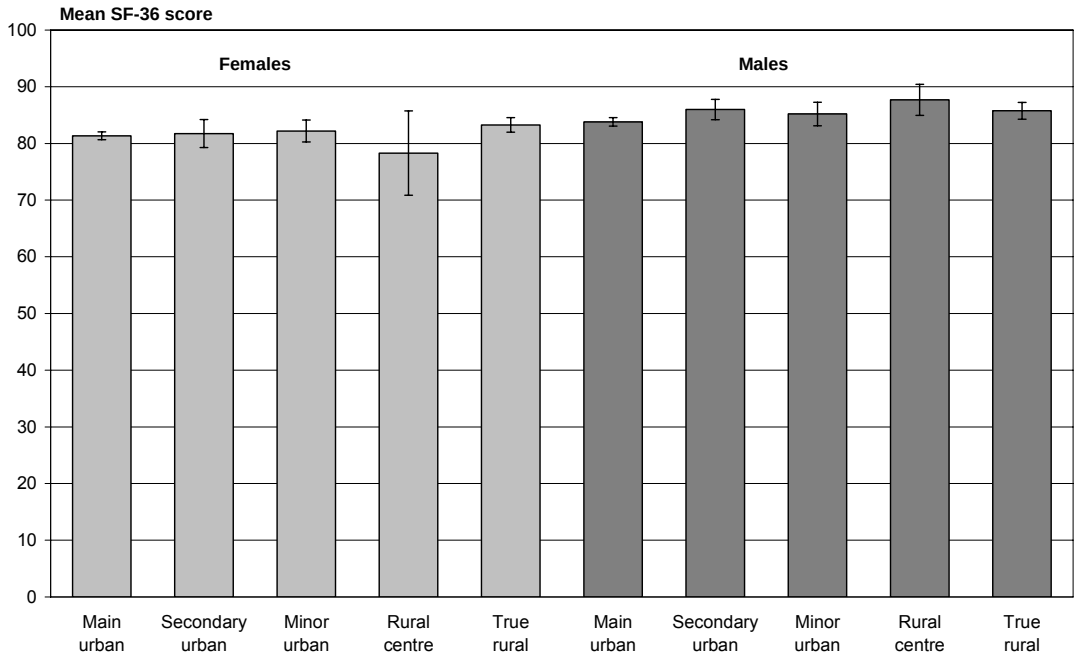
Rural females had a significantly higher average score than urban females on the Role Emotional scale (Table 20). In particular, the average scores were significantly higher for females in true rural areas, compared to females in main urban areas (Figure 54).

Figure 54: Mean SF-36 scores for the Role Emotional scale, by sex and area type (age-standardised)



Rural males had a significantly higher average score than urban males on the Mental Health Scale (Table 20). In particular, males in rural centres had a significantly higher average score than men in main urban areas (Figure 55).

Figure 55: Mean SF-36 scores for the Mental Health scale, by sex and area type (age-standardised)



Appendix 1: Sample Sizes

The analysis in this report used the Confidentialised Unit Record File (CURF) version of the 2002/03 New Zealand Health Survey data set. This version of the data set did not include the respondents from the Chatham Islands due to confidentiality reasons, although the data set was weighted to include these respondents in the total population.

The sample size for the CURF version of the survey was 12,529 respondents. Tables A1-1, A1-2 and A1-3 present the sample sizes for the groupings for which analyses are presented in this report.

Table A1-1: Sample sizes for urban/rural and sex, for the CURF version of the 2002/03 New Zealand Health Survey

Urban/rural classification	Females	Males	Total
Urban	6073	3802	9875
Rural	1585	1069	2654
Total	7658	4871	12,529

Table A1-2: Sample size for urban/rural area type and sex, for the CURF version of the 2002/03 New Zealand Health Survey

Urban/rural area type	Females	Males	Total
Main urban	4675	2975	7650
Secondary urban	452	272	724
Minor urban	946	555	1501
Rural centre	401	305	706
True rural	1184	764	1948

Table A1-3: Sample sizes for urban/rural, sex and NZDep2001 groups, for the CURF version of the 2002/03 New Zealand Health Survey

Urban/rural classification	Females			Males		
	NZDep 1–3	NZDep 4–7	NZDep 8–10	NZDep 1–3	NZDep 4–7	NZDep 8–10
Urban	1115	1992	2946	819	1266	1709
Rural	297	274	1014	205	214	649

Appendix 2: Demographic Profile

Tables A2-1, A2-2, A2-3 and A2-4 present the New Zealand 2001 Census populations aged 15 years and over for urban/rural classifications, by sex, ethnic and age group. These tables do not include the small number of people (<1000) who were usually resident in other area types (such as inlets, inland water and oceanic areas).

The following tables are provided as context for the information in this report.

Table A2-1: 2001 Census usually resident populations by urban/rural and sex, aged 15 years and over

Urban/rural	Females	Males	Total
Urban	1,308,159 (87.2%)	1,182,036 (85.2%)	2,490,183 (86.2%)
Rural	192,792 (12.8%)	205,650 (14.8%)	398,463 (13.8%)

Source: Statistics New Zealand

Note: Percentages may not add exactly to 100.0% in columns due to rounding.

Table A2-2: 2001 Census usually resident populations by urban/rural area type and sex, aged 15 years and over

Urban/rural area type	Females	Males	Total
Main urban	1,086,930 (72.4%)	980,859 (70.7%)	2,067,786 (71.6%)
Secondary urban	95,646 (6.4%)	86,388 (6.2%)	182,022 (6.3%)
Minor urban	125,583 (8.4%)	114,789 (8.3%)	240,375 (8.3%)
Rural centre	30,306 (2.0%)	29,748 (2.1%)	60,066 (2.1%)
True rural	162,486 (10.8%)	175,902 (12.7%)	338,397 (11.7%)

Source: Statistics New Zealand

Note: Percentages may not add exactly to 100.0% in columns due to rounding.

Table A2-3: 2001 Census usually resident populations by urban/rural area type and prioritised ethnicity, aged 15 years and over

Urban/rural area type	Maori	Pacific	Asian	European/Other
Main urban	211,512 (64.1%)	122,703 (93.9%)	165,891 (94.5%)	1,482,225 (69.6%)
Secondary urban	22,356 (6.8%)	3,390 (2.6%)	2,961 (1.7%)	147,477 (6.9%)
Minor urban	43,077 (13.1%)	2,235 (1.7%)	3,678 (2.1%)	181,335 (8.5%)
Rural centre	11,568 (3.5%)	438 (0.3%)	579 (0.3%)	44,769 (2.1%)
True rural	41,232 (12.5%)	1,860 (1.4%)	2,436 (1.4%)	274,182 (12.9%)

Source: Statistics New Zealand

Note: Percentages may not add exactly to 100.0% in columns due to rounding.

Table A2-4: 2001 Census usually resident populations by urban/rural area type and lifecycle age group

Urban/rural area type	Age group			
	15–24 years	25–44 years	45–64 years	65+ years
Main urban	387,744 (76.8%)	807,999 (72.9%)	561,924 (68.2%)	310,119 (68.9%)
Secondary urban	26,964 (5.3%)	63,426 (5.7%)	53,193 (6.5%)	38,439 (8.5%)
Minor urban	34,899 (6.9%)	82,137 (7.4%)	71,055 (8.6%)	52,284 (11.6%)
Rural centre	8,223 (1.6%)	21,612 (1.9%)	19,248 (2.3%)	10,983 (2.4%)
True rural	47,079 (9.3%)	133,749 (12.1%)	119,031 (14.4%)	38,538 (8.6%)

Source: Statistics New Zealand

Note: Percentages may not add exactly to 100.0% in columns due to rounding.

References

Ahmad OB, Boschi-Pinto C, Lopez AD, et al. 2000. *Age-standardization of Rates: A new WHO standard*. Geneva: World Health Organization.

Babor T, de la Fuente JR, Saunders JB, et al. 1992. *AUDIT: The Alcohol Use Disorder Identification Test: Guidelines for primary care.* Geneva: World Health Organization.

Department of Statistics. 1992. *New Zealand Standard Areas Classification*. Wellington: Department of Statistics.

Hillary Commission. 2001. *Active Communities*. Wellington: Hillary Commission for Sport, Fitness and Leisure.

Kott P. 1998. *Using the Delete-a-Group Jackknife Variance Estimator in NASS Surveys.* Washington DC: USDA.

Minister of Health. 2000. *New Zealand Health Strategy.* Wellington: Ministry of Health.

Ministry of Health. 2002. *The New Zealand Health Monitor*. Wellington: Ministry of Health.

Ministry of Health. 2003. *Food and Nutrition Guidelines for Healthy Adults: A background paper*. Wellington: Ministry of Health.

Ministry of Health. 2004. *A Portrait of Health: Key results of the 2002/03 New Zealand Health Survey*. Wellington: Ministry of Health.

Salmond C, Crampton P. 2002. *NZDep2001 Index of Deprivation*. Wellington: Department of Public Health, Wellington School of Medicine and Health Sciences.

Saunders JB, Aasland OG, Babor T, et al. 1993. Development of the Alcohol Use Disorders Screening Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption, -ii. *Addiction* 88: 791–804.

Statistics New Zealand. 2006. *2001 Census of Population and Dwellings: Urban/Rural Area Indicator of Usual Residence and Age (Five Year Groups) by Ethnicity (Prioritised Level 1) (1) and Sex for the Census Usually Resident Population Count.* Unpublished table prepared for the Ministry of Health. Christchurch: Statistics New Zealand.

Swinburn B. 1998. Using the body mass index: weigh then weigh up. *New Zealand Medical Journal* 111: 377–9.

Ware JE, Sherbourne CD. 1992. The MOS 36-item short-form health survey. I: conceptual framework and item selection. *Medical Care* 30: 473–83.

Ware JE, Snow KK, Kosinski M, et al. 1993. *SF-36 Health Survey: Manual and interpretation guide*. Boston, MA: The Health Institute.