

# Chapter 4: High Blood Pressure

## Key points

- High blood pressure is common in New Zealand and is an important contributing factor to heart disease and stroke.
- Actual blood pressure measurements were not carried out as part of the 1996/97 Health Survey. For the purposes of this chapter, people are referred to as having high blood pressure if they reported that they had ever taken medication for high blood pressure, excluding during pregnancy.
- More than 1 in 10 adults in the 1996/97 Health Survey overall, and more than a third of those aged 65 years or over, had high blood pressure.
- Māori people were most likely to have high blood pressure, followed by people from the Other ethnic group, Pacific people and European/Pākehā people.
- High blood pressure was more common among people with lower family incomes, lower levels of education and among those living in more deprived areas.
- People with high blood pressure were more likely to report their health was fair or poor.
- People with high blood pressure were more likely to have seen their GP six or more times, or to have been admitted to hospital in the previous year.

## Introduction

High blood pressure (hypertension) is common in New Zealand, affecting at least 1 in 10 adults (Russell and Wilson 1991; Trye et al 1996; Bullen et al 1996). Hypertension is associated with high body weight (Hubert 1986), high alcohol and (possibly) salt intake, low dietary potassium (US Department of Health and Human Services 1997; Taubes 1998) and a sedentary lifestyle (US Department of Health and Human Services 1996; National Health Committee 1998). It is not a disease in itself, but is an important risk factor for heart disease (MacMahon et al 1990; Anderson et al 1991) and stroke (Wolf et al 1991; Rodgers et al 1996). The prevalence of high blood pressure in New Zealand seems to have declined since the early 1980s (Trye et al 1996). This decline may be at least partially due to an increase in physical activity, or to a reduction in salt or alcohol consumption over this time (Trye et al 1996).

There are usually no symptoms associated with high blood pressure, so many people with high blood pressure are unaware they have it. Because of this, the best way to estimate the true prevalence of hypertension in the community is to take actual blood pressure measurements. For example, in the Life in New Zealand Survey, 10% of adults reported that they were on drugs for high blood pressure, but when measurements were taken a further 4% were found to have high blood pressure (Russell and Wilson 1991). A similar pattern has been seen in other more recent surveys in New Zealand (Trye et al 1996; Penrose et al 1996).

Taking blood pressure measurements was beyond the scope of the 1996/97 Health Survey. In order to obtain an indication of the prevalence of high blood pressure in the community, adults

were asked whether they had *ever* taken medication for high blood pressure, not including during pregnancy. This gives an indication of the prevalence of identified, clinically important high blood pressure. People who indicated that they had, at some time, taken medication for high blood pressure are referred to in this chapter as having high blood pressure. However, it is important to note that estimates based on self-reported use of medication only will under-estimate the actual prevalence of high blood pressure in the community. Furthermore, other factors, including access to health care, will affect whether or not people with high blood pressure have been diagnosed and received treatment for it. Actual blood pressure measurements were carried out as part of the National Nutrition Survey. It will be possible to link the results of the two surveys once the results from the Nutrition Survey are available.

Those who said they had taken medication for high blood pressure at some time were also asked if they were currently doing so. This is because a certain proportion of people with high blood pressure stop taking their medication. There may be a number of reasons for this: people may not like taking regular medication; or people may be able to control their blood pressure without drugs, such as through weight loss, increasing their level of physical activity or reducing their salt or alcohol consumption. The questions on high blood pressure in the 1992/93 and the 1996/97 Health Surveys differed, so results across these two surveys are not directly comparable (see Table 15).

Unless otherwise stated, age- and sex-standardised rates, and 95% confidence intervals in parentheses, have been given in the text. Tables at the end of this section show key standardised and unstandardised estimates. More detailed tables relating to this section are available on the Ministry of Health website ([www.moh.govt.nz](http://www.moh.govt.nz)).

**Table 15:** Questions on high blood pressure asked in the 1992/93 Household Health Survey and the 1996/97 New Zealand Health Survey

1992/93 Household Health Survey	<ul style="list-style-type: none"> <li>• Has a doctor told you that your blood pressure is too high at present?</li> <li>• Are you now taking pills regularly for high blood pressure?</li> </ul>
1996/97 New Zealand Health Survey	<ul style="list-style-type: none"> <li>• Have you ever taken pills regularly for high blood pressure (other than during pregnancy)?</li> <li>• If yes, are you currently taking pills regularly for high blood pressure?</li> </ul>

## Results

### High blood pressure

#### *High blood pressure by age and sex*

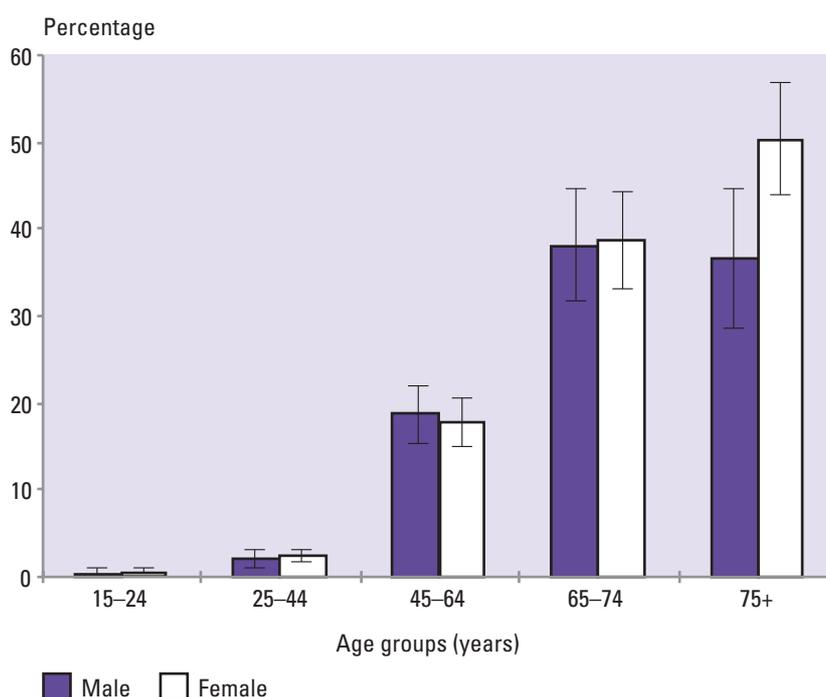
There were 1149 adult respondents in the 1996/97 Health Survey who said that they had taken medication at some time for high blood pressure. This is equivalent to an estimated 11.7% (10.7–12.7) of the New Zealand population. A similar proportion reported in the 1992/93 Health Survey (Ministry of Health 1994) either that their doctor had told them that their blood pressure was too high, or that they were currently on medication for high blood pressure.

In 1996/97, of the 11.7% (10.7–12.7) who said that they had ever taken medication for blood pressure, 19.2% (16.1–22.3) said that they were no longer doing so. This suggests that approximately 1 in 10 people are currently taking medication for high blood pressure. This is the same proportion reported in a survey of the New Zealand population carried out in 1989/90 (Russell and Wilson 1991). In the 1992/93 Health Survey, 8.4% of people reported that they were currently taking medication for high blood pressure (Ministry of Health 1994).

The proportion of people with high blood pressure increased substantially with age ( $p < 0.0001$ ). Well over a third of those aged 65 years and over had high blood pressure compared with only 2.3% (1.7–2.9) in the 25–44 years age group (see Figure 16). In the 65 years and over group, 35.7% (32.4–39) reported that they were currently on medication for high blood pressure. This compares with 29% in the 1992/93 Health Survey. The apparent increase over this time occurs only in this age group and may be because of an increasing awareness of the benefits of treating high blood pressure in the older age group (Bonita and Beaglehole 1998).

In general, men and women were equally likely to have high blood pressure. However, among those aged 75 years or over, women were significantly more likely to fall into this category ( $p < 0.01$ ). This may be because men of this age with high blood pressure are more likely to have already died due to their greater overall risk of cardiovascular disease (Dong et al 1996).

**Figure 16:** Proportion of people with high blood pressure, by age and sex



Note: High blood pressure is defined by whether or not an individual has ever taken medication for high blood pressure. Error bars indicate 95% confidence intervals. For further explanation of graphs, see Appendix 2: Notes to Figures and Tables.

### *High blood pressure by ethnicity*

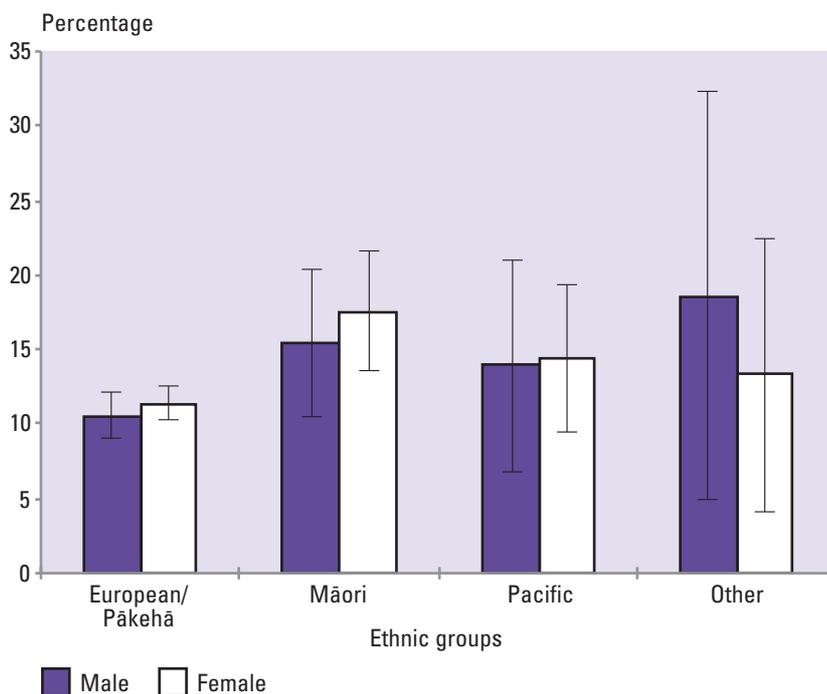
Māori and Pacific people have higher rates of stroke (Bonita et al 1997) and heart disease (Tipene-Leach et al 1991; Tukuitonga et al 1990) than European/Pākehā people in New Zealand. Differences in high blood pressure across ethnic groups, as well as differences in the prevalence of other risk factors, may contribute to the higher rates of heart disease and stroke in these groups.

The 1996/97 Health Survey results showed that after differences in age and sex were accounted for, there were significant differences across ethnic groups in the proportions with high blood pressure ( $p < 0.01$ ). The proportions in each ethnic group were: European/Pākehā people (11.0%; 10.0–12.0); Māori (16.6%; 13.7–19.5); Pacific people (14.1%; 10.0–18.2); and the Other ethnic group (15.9%; 7.7–24.1) (see Figure 17).

Māori and people from the Other ethnic group were the most likely to be currently on medication for high blood pressure (13.3%; 10.6–16.0 and 14.1%; 6.3–21.9 respectively), followed by Pacific people (10.2%; 6.7–13.7) and European/Pākehā people (8.7%; 7.9–9.5).

In the 1992/93 Health Survey, the proportions of European/Pākehā and Māori who were currently taking medication for high blood pressure were similar (8.2% and 8.8% respectively). Results were not calculated at that time for Pacific people or people from the Other ethnic group. Comparing the results from the two health surveys suggests that more Māori were receiving medication for high blood pressure in 1996/97 relative to 1992/93. It is appropriate that Māori have higher rates of blood pressure medication use because, when measurements have been taken, more Māori have been found to have high blood pressure than European/Pākehā. For example, an Auckland workforce study (Bullen et al 1996), involving actual blood pressure measurements, showed that after age and sex adjustment, 20% of Māori were hypertensive compared with 16% of Pacific people and 11% of European/Pākehā.

**Figure 17:** Proportion of people with high blood pressure, by ethnicity and sex (age-standardised)

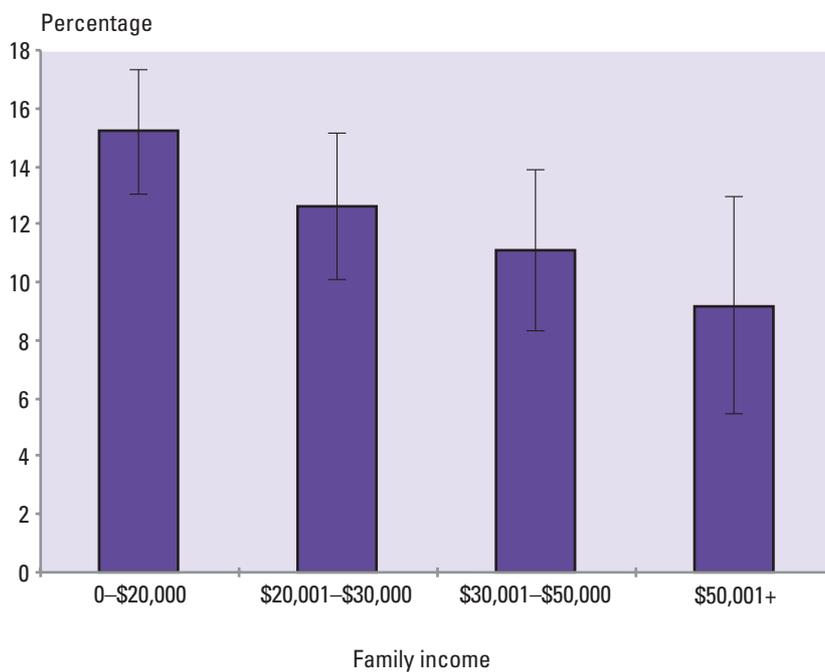


Note: High blood pressure is defined by whether or not an individual has ever taken medication for high blood pressure. Error bars indicate 95% confidence intervals. For further explanation of graphs, see Appendix 2: Notes to Figures and Tables.

### High blood pressure by family income, education and NZDep96 score\*

People with lower family incomes ( $p < 0.05$ ), lower levels of education ( $p < 0.001$ ) and those living in more deprived areas ( $p < 0.001$ ) were all more likely to have high blood pressure (see Figures 18, 19 and 20). This is consistent with findings from overseas, which show that lower socioeconomic status is associated with higher rates of high blood pressure (Luepker et al 1993; Dong et al 1996; James et al 1997). Some of this difference may be explained by differences in diet and rates of obesity (James et al 1997). In the Life in New Zealand study (Russell and Wilson 1991), obesity was found to be more common among people in lower social classes, and there was also a marked increase in rates of obesity among people with lower levels of education.

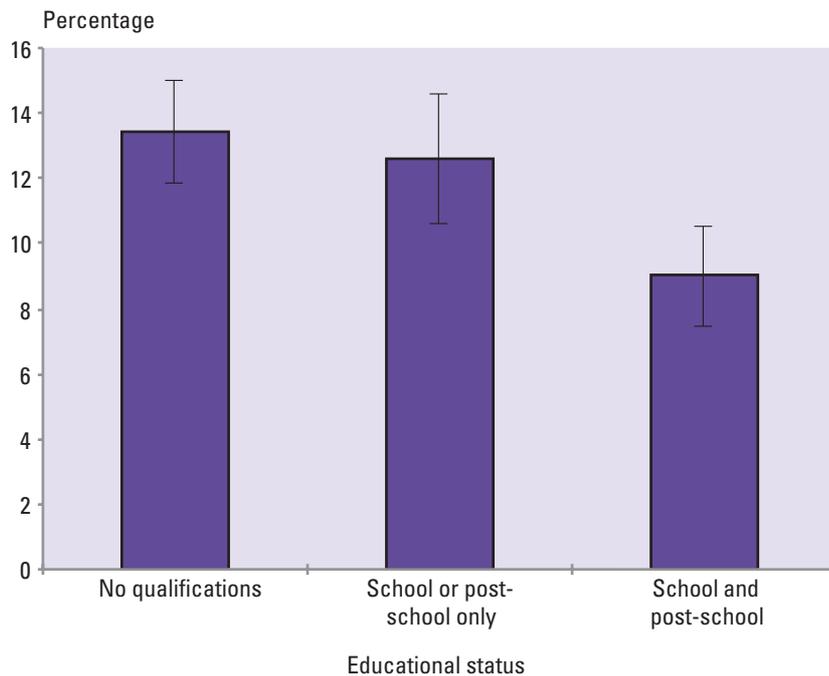
**Figure 18:** Proportion of people with high blood pressure, by family income (age- and sex-standardised)



Note: High blood pressure is defined by whether or not an individual has ever taken medication for high blood pressure. Error bars indicate 95% confidence intervals. For further explanation of graphs, see Appendix 2: Notes to Figures and Tables.

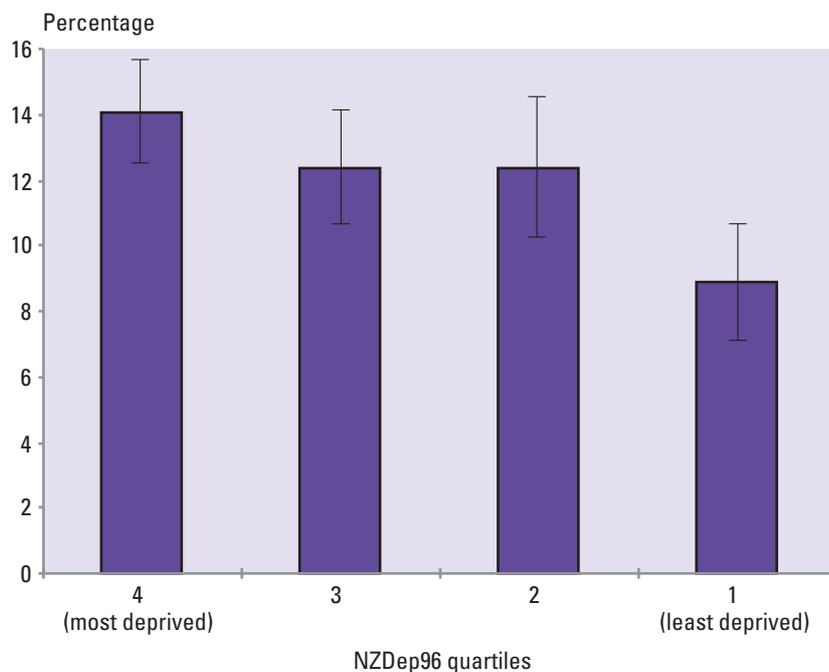
\* The NZDep96 score measures the level of deprivation in the area in which a person lives, according to a number of census variables, such as the proportion of people in that area who earn low incomes or who receive income support benefits, are unemployed, do not own their own home, have no access to a car, are single-parent families, or have no qualifications. The scores are divided into quartiles from 1 (least deprived) to 4 (most deprived). For more details, see Chapter 1: The Survey.

**Figure 19:** Proportion of people with high blood pressure, by education (age- and sex-standardised)



Note: High blood pressure is defined by whether or not an individual has ever taken medication for high blood pressure. Error bars indicate 95% confidence intervals. For further explanation of graphs, see Appendix 2: Notes to Figures and Tables.

**Figure 20:** Proportion of people with high blood pressure, by NZDep96 score quartiles (age- and sex-standardised)



Note: High blood pressure is defined by whether or not an individual has ever taken medication for high blood pressure. Error bars indicate 95% confidence intervals. For further explanation of graphs, see Appendix 2: Notes to Figures and Tables.

### *People with high blood pressure who smoke*

Clinical management guidelines (NACCHDSS 1992) for high blood pressure emphasise the importance of reducing other cardiovascular risk factors in hypertensives. Smoking is known to increase the risk of cardiovascular disease among those with high blood pressure, and those over the age of 45 years are at particular risk. Of those with high blood pressure, around one in six aged between 45 and 64 years, and one in nine people aged 65 years or more smoked (see Table 16).

**Table 16:** Proportion of people who are current smokers, by high blood pressure and age: percent (95% confidence intervals)

Current Smoker	
High blood pressure	% (95% CI)
<b>Yes</b>	
15–24 years	—*
25–44 years	41.7 (29.2–54.2)
45–64 years	15.7 (11.6–19.8)
65+ years	11.3 (7.6–15.0)
<b>No</b>	
15–24 years	29.6 (25.9–33.3)
25–44 years	30.3 (28.1–32.5)
45–64 years	22.6 (20.1–25.1)
65+ years	13.3 (10.6–16.0)

\* Insufficient numbers to calculate estimate.

### *High blood pressure by self-rated health status*

People with high blood pressure were significantly more likely to report their health was only fair or poor, and less likely to report their health was very good or excellent ( $p < 0.0001$ ): those with high blood pressure were about twice as likely to report that their health was fair or poor compared with those without high blood pressure (10.7%; 9.7–11.7 and 20.9%; 14.4–27.4 respectively, see Table 17). For more information and discussion on the relationship between self-rated health and high blood pressure, see Chapter 11: SF-36 Health Status Questionnaire: Health Risk Behaviours, Specific Conditions and Health Service Utilisation.

**Table 17:** Self-rated health status, by high blood pressure: percent (95% confidence intervals)

High blood pressure	Excellent/very good % (95% CI)		Good % (95% CI)		Fair/poor % (95% CI)	
	Unadj	Adj*	Unadj	Adj*	Unadj	Adj*
Yes	33.2 (29.1–37.3)	38.6 (27.8–49.4)	38.7 (35.0–42.4)	40.5 (27.4–53.6)	28.1 (24.4–31.8)	20.9 (14.4–27.4)
No	61.5 (59.9–63.1)	60.7 (59.1–62.3)	28.3 (26.7–29.9)	28.6 (27.0–30.2)	10.2 (9.2–11.2)	10.7 (9.7–11.7)

\* Adjusted rates are adjusted for age and sex.

Note: For further explanation of Tables, see Appendix 2: Notes to Figures and Tables.

### *High blood pressure by health service utilisation*

After adjustments were made for differences in age and sex, people with high blood pressure were around twice as likely to have seen their GP six or more times in the previous year than those without high blood pressure (25.1%; 17.8–32.4 and 13.1%; 11.9–14.3 respectively;  $p < 0.0001$ ). It is not clear to what extent the high rate of GP consultations amongst those with high blood pressure reflects blood pressure monitoring and obtaining repeat prescriptions, or hypertension-related morbidity itself. Similarly, people with high blood pressure were more likely to have been admitted to hospital in the previous year compared to those without high blood pressure (22.2%; 14.0–30.4 and 13.6%; 12.4–14.8 respectively;  $p < 0.05$ ).

**Table 18:** High blood pressure, by sociodemographic variables: percent (95% confidence intervals)

High blood pressure			
	% (95% CI)		Pop est
	Unadj	Adj*	
<b>Total</b>	11.7 (10.7–12.7)		331,462
<b>Sex</b>			
Male	10.9 (9.5–12.3)	11.3 (9.9–12.7)	149,719
Female	12.5 (11.3–13.7)	12.1 (10.9–13.3)	181,743
<b>Age</b>			
15–24 years	0.4 (0.0–0.8)	0.4 (0.0–0.8)	2020
25–44 years	2.3 (1.7–2.9)	2.3 (1.7–2.9)	26,685
45–64 years	18.2 (16.0–20.4)	18.2 (16.0–20.4)	136,797
65–74 years	38.5 (34.4–42.6)	38.4 (34.1–42.7)	93,958
75+ years	45.0 (39.7–50.3)	44.4 (39.1–49.7)	72,002
<b>Ethnicity</b>			
European/Pākehā	12.4 (11.4–13.4)	11.0 (10.0–12.0)	281,123
Māori	11.2 (8.8–13.6)	16.6 (13.7–19.5)	31,245
Pacific	8.0 (5.6–10.4)	14.1 (10.0–18.2)	10,643
Other	5.8 (2.3–9.3)	15.9 (7.7–24.1)	8450
<b>Family income</b>			
0–\$20,000	25.2 (22.8–27.6)	15.2 (13.0–17.4)	126,788
\$20,001–\$30,000	17.7 (14.8–20.6)	12.6 (10.1–15.1)	67,089
\$30,001–\$50,000	8.8 (6.6–11.0)	11.1 (8.4–13.8)	47,109
\$50,001+	5.1 (3.7–6.5)	9.2 (5.5–12.9)	44,953
<b>NZDep96 score</b>			
1 (least deprived)	8.8 (7.0–10.6)	8.9 (7.1–10.7)	71,546
2	13.1 (10.9–15.3)	12.4 (10.2–14.6)	91,687
3	12.5 (10.7–14.3)	12.4 (10.6–14.2)	79,091
4 (most deprived)	13.1 (11.5–14.7)	14.1 (12.5–15.7)	89,138
<b>Education</b>			
No qualification	17.8 (16.0–19.6)	13.4 (11.8–15.0)	143,514
School or post-school only	11.1 (9.5–12.7)	12.6 (10.6–14.6)	112,108
School and post-school	7.5 (6.1–8.9)	9.0 (7.4–10.6)	73,950

\* Adjusted rates are adjusted for age and sex, except when they are age-specific, in which case they are adjusted only for sex, or when they are sex-specific, in which case they are adjusted only for age.  
Note: For further explanation of Tables, see Appendix 2: Notes to Figures and Tables.

**Table 19: High blood pressure, by age and ethnicity, for males: percent (95% confidence intervals)**

High blood pressure			
Males	%(95% CI)		Pop est
	Unadj	Adj*	
<b>Total</b>	10.9 (9.5–12.3)	11.3 (9.9–12.7)	149,719
<b>Age</b>			
15–24 years	0.3 (0.0–0.9)		729
25–44 years	2.1 (1.1–3.1)		11,772
45–64 years	18.7 (15.4–22.0)		69,798
65–74 years	38.1 (31.6–44.6)		44,480
75+ years	36.7 (28.7–44.7)		22,938
<b>Ethnicity</b>			
European/Pākehā	11.3 (9.7–12.9)	10.6 (9.0–12.2)	125,164
Māori	11.4 (7.3–15.5)	15.4 (10.5–20.3)	15,070
Pacific	7.4 (3.9–10.9)	13.9 (6.8–21.0)	4869
Other	6.4 (0.9–11.9)	18.6 (4.9–32.3)	4615

\* Adjusted rates are adjusted for age.

Note: For further explanation of Tables, see Appendix 2: Notes to Figures and Tables.

**Table 20: High blood pressure, by age and ethnicity, for females: percent (95% confidence intervals)**

High blood pressure			
Females	%(95% CI)		Pop est
	Unadj	Adj*	
<b>Total</b>	12.5 (11.3–13.7)	12.1 (10.9–13.3)	181,743
<b>Age</b>			
15–24 years	0.5 (0.1–0.9)		1290
25–44 years	2.5 (1.7–3.3)		14,913
45–64 years	17.8 (14.9–20.7)		66,999
65–74 years	38.7 (33.2–44.2)		49,478
75+ years	50.3 (43.8–56.8)		49,064
<b>Ethnicity</b>			
European/Pākehā	13.4 (12.0–14.8)	11.4 (10.2–12.6)	155,959
Māori	11.0 (8.5–13.5)	17.6 (13.7–21.5)	16,175
Pacific	8.7 (5.6–11.8)	14.4 (9.5–19.3)	5774
Other	5.2 (0.5–9.9)	13.3 (4.1–22.5)	3835

\* Adjusted rates are adjusted for age.

Note: For further explanation of Tables, see Appendix 2: Notes to Figures and Tables.

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