

# 7 Amenable mortality: New Zealand, 1997-2001

## 7.1 Amenable mortality by age and sex

As noted in Chapter 5, 43.2% of avoidable deaths (or 32.1% of total deaths) at ages 0 to 74 years over the period 1997 to 2001 are considered to be amenable to health care.

Almost half (46.1%) of these deaths occurred in the 65 to 74 year age group, with a further 38.0% in the 45 to 64 year age group (Table 7.1).

The 25 to 44 year age groups and infants under one year of age accounted for 8.1% and 5.5% of amenable mortality, respectively.

Death rates from amenable mortality varied from 707.7 deaths per 100,000 population in the 65 to 74 year age group to 6.2 deaths per 100,000 population at ages 1 to 14 years. Infants had the second highest rate (387.9 per 100,000 population) of amenable mortality.

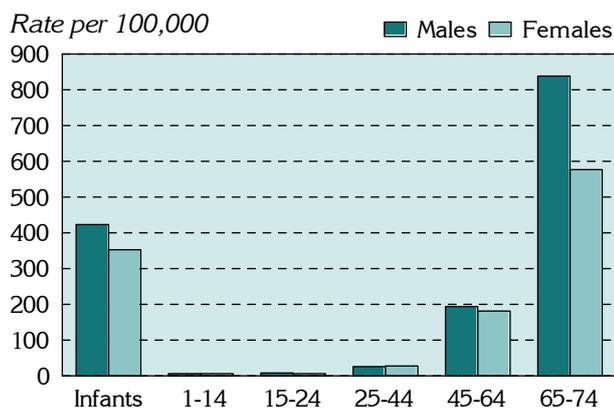
**Table 7.1: Amenable mortality by age and sex, New Zealand, 1997-2001**

Age (years)	Number			Per cent of total	Rate per 100,000 population <sup>1</sup>			Rate ratio M:F
	Males	Females	Total		Males	Females	Total	
Infants (<1)	593	467	1,060	5.5	423.1	352.8	387.9	1.20**
1-14	125	116	241	1.3	6.3	6.1	6.2	1.03
15-24	110	82	192	1.0	8.5	6.4	7.4	1.33
25-44	724	833	1,557	8.1	25.9	27.9	26.9	0.93
45-64	3,712	3,549	7,261	38.0	194.0	181.4	187.7	1.07**
65-74	5,036	3,783	8,819	46.1	838.5	576.9	707.7	1.45**
<b>Total</b>	<b>10,300</b>	<b>8,830</b>	<b>19,130</b>	<b>100.0</b>	<b>103.1</b>	<b>85.4</b>	<b>94.2</b>	<b>1.21**</b>

<sup>1</sup> Rates are age standardised within age categories, except under 1 year

Male death rates from amenable causes were notably higher than female death rates for infants, and in the 15 to 24 and 65 to 74 year age groups, with marginally higher rates in the 1 to 14 and 45 to 64 year age groups (Table 7.1, Figure 7.1). The male rate was 7% lower in the 25 to 44 year age group. The highest rates of amenable mortality for both males and females were in the 65 to 74 year age group, which also had the largest differential in male and female rates, with the male rate almost 50.0% higher than the female rate (a rate ratio of 1.45\*\*). The next highest differential was for infants, with the male rate 20% higher than the female rate (a rate ratio of 1.20\*\*).

**Figure 7.1: Amenable mortality by age and sex, New Zealand, 1997-2001**



From 1997 to 2001, amenable mortality accounted for a total of 324,100 years of life lost (YLL)<sup>1</sup> from deaths before 75 years of age. The largest numbers of YLL were in the 45 to 64 year age group (133,300), and the 65 to 74 year age group (107,500) (Table 7.2). These two age groups accounted for almost three quarters (74.3%) of the YLL from deaths from amenable causes.

**Table 7.2: YLL from amenable mortality by age and sex, New Zealand, 1997-2001**

Age (years)	Number		
	Males	Females	Total
Infants (<1)	18,095	14,261	32,357
1-14	3,749	3,460	7,209
15-24	3,099	2,317	5,416
25-44	17,849	20,488	38,337
45-64	67,665	65,637	133,302
65-74	61,327	46,169	107,496
<b>Total</b>	<b>171,784</b>	<b>152,333</b>	<b>324,116</b>

The numbers of YLL were higher for males than for females in all age groups, apart from the 25 to 44 year age group where YLL were 13% higher for females than for males. The largest differentials in YLL between males and females were in the 15 to 24 year age group (males 34% higher) and the 65 to 74 year age group (males 33% higher).

<sup>1</sup> See Chapter 2, *Methods*

## 7.2 Amenable mortality by cause

Note: for three causes – diabetes, ischaemic heart disease and cerebrovascular diseases – only 50% of the total avoidable deaths were attributed as ‘amenable’ to health care intervention. Refer to Chapter 2, *Methods*, for further information.

Table 7.3 shows the number, age-standardised death rate, proportion of amenable deaths and YLL, for the major condition groups and individual causes included in the amenable mortality classification.

The highest rates of amenable mortality by major condition groups were for cardiovascular diseases,

with a rate of 36.2 deaths per 100,000 population (40.0% of amenable deaths), with a similar rate and proportion for cancer (36.0 deaths per 100,000 population, 38.9% of amenable deaths). These two major condition groups were responsible for almost 80% of amenable mortality at ages 0 to 74 years.

Similarly, the numbers of YLL from deaths from amenable causes were highest for these two major condition groups – cancer and cardiovascular diseases – accounting for 122,700 and 115,900 YLL, respectively.

**Table 7.3: Amenable mortality (0 to 74 years) by major condition group and cause, New Zealand, 1997-2001**

Major condition group/ cause	Number	ASR	Per cent of total	YLL
Infections	505	2.6	2.6	9,794
Tuberculosis	51	0.2	0.3	750
Selected invasive bacterial and protozoal infections	454	2.4	2.4	9,044
<b>Cancers (malignant neoplasms)</b>	<b>7,448</b>	<b>36.0</b>	<b>38.9</b>	<b>122,742</b>
Colorectal	3,193	15.2	16.7	48,248
Melanoma of skin	776	3.9	4.1	13,600
Nonmelanotic skin	115	0.5	0.6	1,670
Breast (female)	2,147	10.4	11.2	38,422
Cervix	267	1.3	1.4	5,101
Uterus	227	1.1	1.2	3,542
Bladder	300	1.4	1.6	4,252
Thyroid	46	0.2	0.2	766
Hodgkin's disease	51	0.3	0.3	991
Lymphoid leukaemia – acute/chronic	235	1.2	1.2	4,551
Benign	91	0.5	0.5	1,599
<b>Nutritional, endocrine and metabolic conditions</b>	<b>927</b>	<b>4.4</b>	<b>4.8</b>	<b>14,304</b>
Thyroid disorders	16	0.1	0.1	255
Diabetes	911	4.4	4.8	14,049
<b>Neurological disorders</b>	<b>266</b>	<b>1.5</b>	<b>1.4</b>	<b>6,145</b>
Epilepsy	266	1.5	1.4	6,145
<b>Cardiovascular diseases</b>	<b>7,654</b>	<b>36.2</b>	<b>40.0</b>	<b>115,931</b>
Rheumatic and other valvular heart disease	381	1.9	2.0	6,852
Hypertensive heart disease	221	1.0	1.2	3,455
Ischaemic heart disease	5,515	26.1	28.8	82,594
Cerebrovascular diseases	1,537	7.1	8.0	23,031
<b>Genitourinary disorders</b>	<b>446</b>	<b>2.1</b>	<b>2.3</b>	<b>6,843</b>
Nephritis and nephrosis	399	1.9	2.1	6,090
Obstructive uropathy and prostatic hyperplasia	46	0.2	0.2	753
<b>Respiratory diseases</b>	<b>85</b>	<b>0.5</b>	<b>0.4</b>	<b>2,219</b>
Asthma (0-44 years)	85	0.5	0.4	2,219
<b>Digestive disorders</b>	<b>346</b>	<b>1.6</b>	<b>1.8</b>	<b>5,142</b>
Peptic ulcer disease	137	0.6	0.7	2,001
Acute abdomen, appendicitis, intestinal obstruction, cholecystitis/ lithiasis, pancreatitis, hernia	209	1.0	1.1	3,142
<b>Maternal and infant causes</b>	<b>1,454</b>	<b>9.4</b>	<b>7.6</b>	<b>40,997</b>
Birth defects	843	5.2	4.4	22,353
Complications of perinatal period	611	4.2	3.2	18,644
<b>Total amenable mortality</b>	<b>19,130</b>	<b>94.2</b>	<b>100.0</b>	<b>324,116</b>

Of the top ten causes of amenable mortality, ischaemic heart disease ranked the highest, with a rate of 26.1 deaths per 100,000 population; colorectal cancer, with a rate of 15.2, was ranked next (Table 7.4). Together, ischaemic heart disease and colorectal cancer accounted for almost half (45.5%) of deaths from amenable causes. The rates for the other eight causes ranged from 1.9 deaths per 100,000 population for both rheumatic and other valvular heart diseases and nephritis and nephrosis, to 10.4 for breast cancer.

Ischaemic heart disease was also ranked highest for the number of YLL from deaths amenable mortality, accounting for approximately 82,600 YLL. Colorectal cancer and breast cancer were the next ranked causes, responsible for approximately 48,200 and 38,400 YLL, respectively. Deaths from cerebrovascular diseases resulted in approximately 23,000 YLL, followed by birth defects, which were responsible for approximately 22,300 YLL.

**Table 7.4: Top ten causes of amenable mortality (0 to 74 years), New Zealand, 1997-2001**

Cause	Number	ASR	Per cent of total	YLL
Ischaemic heart disease	5,515	26.1	28.8	82,594
Colorectal cancer	3,193	15.2	16.7	48,248
Breast cancer (female)	2,147	10.4	11.2	38,422
Cerebrovascular diseases	1,537	7.1	8.0	23,031
Birth defects	843	5.2	4.4	22,353
Diabetes	911	4.4	4.8	14,049
Complications of perinatal period	611	4.2	3.2	18,644
Skin cancer	776	3.9	4.1	13,600
Selected invasive bacterial and protozoal infections	454	2.4	2.4	9,044
Rheumatic and other valvular heart diseases	381	1.9	2.0	6,852
Nephritis and nephrosis	399	1.9	2.1	6,090
<b>All causes</b>	<b>19,130</b>	<b>94.2</b>	<b>100.0</b>	<b>324,116</b>

### By age

Table 7.5 shows variations in amenable mortality by the major causes in selected age groups.

For infants, complications of the perinatal period accounted for over half (56.8%) the deaths from amenable causes, a rate of 220.5 deaths per 100,000 population. Birth defects were responsible for a further 37.2% of these deaths, a rate of 144.2, followed by selected invasive bacterial and protozoal infections, which contributed 5.5%.

In the 1 to 14 year age group, deaths from birth defects accounted for 43.6% of amenable mortality, a rate of 2.7 deaths per 100,000 population. Selected invasive bacterial and protozoal infections (19.9%) and acute/ chronic lymphoid leukaemia (15.4%) were responsible for over one third of deaths from amenable causes in this age group, with 7.9% from epilepsy.

For the 15 to 24 year age group, amenable mortality from birth defects accounted for 29.7% of all deaths, a rate of 2.2 per 100,000 population. The next four highest causes of death each accounted for between 9% and 14% of deaths from amenable causes in this age group, with rates ranging from 0.7 deaths per 100,000 population for asthma to 1.0 death per 100,000 population for both epilepsy and selected invasive bacterial and protozoal infections.

The top two causes of death in the 25 to 44 year age group were responsible for over one third (38.4%) of amenable mortality: breast cancer (females only) accounted for 21.6% of amenable mortality, a rate of 5.6 deaths per 100,000 female population, and ischaemic heart disease contributed 16.8%, a rate of 4.5. Epilepsy (8.0%), skin cancer (7.6%) and colorectal cancer (7.0%) were responsible for a further 22.6% of deaths from amenable causes in this age group.

At ages 45 to 64, over one quarter (28.4%) of deaths from amenable causes were from ischaemic heart disease, a rate of 53.6 deaths per 100,000 population. Colorectal cancer ranked second, accounting for 18.4% of deaths, a rate of 34.7 deaths per 100,000 population, followed by breast cancer (females only), with 16.3%, a rate of 30.2. Over 12% of deaths from amenable causes in the 45 to 64 age group resulted from cerebrovascular diseases (6.9%) and diabetes (5.5%).

Ischaemic heart disease and colorectal cancer were also major causes of amenable mortality in the 65 to 74 year age group. Ischaemic heart disease resulted in 36.2% of deaths from amenable causes (a rate of 257.7 deaths per 100,000 population) with colorectal cancer responsible for 19.7% of these deaths (140.8 deaths per 100,000 population). Almost one quarter (22.9%) of deaths from amenable causes in this age group were from cerebrovascular diseases (10.5%), breast cancer (females only, 7.1%) and diabetes (5.3%).

**Table 7.5: Amenable mortality by major cause and age, New Zealand, 1997-2001**

Age (years)	Cause	Number	Rate per 100,000 <sup>1</sup>	% of total in age group	YLL
Infants (<1)	Complications of perinatal period	602	220.5	56.8	18,377
	Birth defects	394	144.2	37.2	12,019
	Selected invasive bacterial and protozoal infections	58	20.9	5.5	1,761
1-14	Birth defects	105	2.7	43.6	3,148
	Selected invasive bacterial and protozoal infections	48	1.3	19.9	1,462
	Lymphoid leukaemia – acute/chronic	37	0.9	15.4	1,096
	Epilepsy	19	0.5	7.9	565
15-24	Birth defects	57	2.2	29.7	1,597
	Selected invasive bacterial and protozoal infections	26	1.0	13.5	741
	Epilepsy	26	1.0	13.5	723
	Lymphoid leukaemia – acute/chronic	21	0.8	10.9	583
	Asthma	18	0.7	9.4	522
25-44	Breast cancer (female)	336	5.6	21.6	8,209
	Ischaemic heart disease	262	4.5	16.8	6,311
	Epilepsy	124	2.3	8.0	3,125
	Skin cancer	119	2.1	7.6	2,943
	Colorectal cancer	109	1.9	7.0	2,663
45-64	Ischaemic heart disease	2,060	53.6	28.4	37,450
	Colorectal cancer	1,337	34.7	18.4	24,008
	Breast cancer (female)	1,182	30.2	16.3	22,425
	Cerebrovascular diseases	498	12.9	6.9	9,074
	Diabetes	401	10.4	5.5	7,269
65-74	Ischaemic heart disease	3,191	257.7	36.2	38,758
	Colorectal cancer	1,739	140.8	19.7	21,349
	Cerebrovascular diseases	930	73.7	10.5	11,216
	Breast cancer (female)	625	48.2	7.1	7,701
	Diabetes	466	37.5	5.3	5,702

<sup>1</sup> Rates are age standardised within age categories, except under 1 year

As noted previously, death rates from amenable mortality are highest at older ages; however, there are also substantial numbers of deaths at younger ages. The impact of these deaths is illustrated in Table 7.5 by the measure of years of life lost (YLL).

For infants, 18,400 YLL were due to deaths from the complications of the perinatal period, with mortality from birth defects accounting for 12,000 YLL. For the 1 to 14 and 15 to 24 year age groups, YLL from birth defects ranked highest, with 3,100 YLL and 1,600 YLL, respectively.

In the 25 to 44 year age group, deaths from breast cancer were responsible for 8,200 YLL among females, followed by ischaemic heart disease, with 6,300 YLL.

For the 45 to 64 and 65 to 74 year age groups, ischaemic heart disease accounted for the highest YLL from amenable mortality (37,500 and 38,800 YLL, respectively). Amenable mortality from colorectal cancer ranked second, with approximately 24,000 YLL in the 45 to 64 year age group and 21,300 in the 65 to 74 year age group.

### By age and sex

The main causes impacting amenable mortality in the various age groups show interesting variations when further analysed by sex (Table 7.6).

Apart from for infants and the 1 to 14 year age group, the ranking of the main causes of death from amenable causes differed for males and females. At older ages this difference is in part due to the impact of breast cancer for females.

For infants, complications of the perinatal period were responsible for over half the deaths from amenable causes (55.3% of infant male deaths, a rate of 234.3 deaths per 100,000 population; and 58.7% of infant female deaths, a rate of 206.7). Birth defects accounted for 36.6% of infant male deaths and 37.9% of infant female deaths. (Note: only the top three causes of infant death are shown in Table 7.6, due to the lower numbers for the next ranked causes).

For the 1 to 14 year age group, birth defects were responsible for 40.8% of deaths from amenable causes for males and almost half (46.6%) of these deaths for females. Selected invasive bacterial and protozoal infections, ranked second, resulted in

20.8% of male and 19.0% of female deaths from amenable causes.

In the 15 to 24 year age group, birth defects were responsible for 30.0% of deaths from amenable causes for males and 29.3% for females. For males, acute/ chronic lymphoid leukaemia and epilepsy ranked next, jointly accounting for over 30% of these deaths for males. For females, selected invasive bacterial and protozoal infections ranked second, with almost 15% of female deaths.

For the 25 to 44 year age group, the rank order of amenable mortality for males and females varied. Ischaemic heart disease was the cause of 29.4% of male deaths from amenable causes (ranked first) and 5.9% of female deaths (ranked sixth). The rates for ischaemic heart disease were 7.4 deaths per 100,000 population for males and 1.6 for females, a differential of 4.7\*\*. The next highest causes of death for males were epilepsy, skin cancer, colorectal cancer and birth defects, each contributing approximately 7% to 12% of amenable male deaths. For females, deaths from breast cancer ranked highest, accounting for 40.3% of female deaths from amenable causes, a rate of 11.1 deaths per 100,000 population. The next highest causes of amenable mortality for females were cervical cancer, skin cancer, cerebrovascular diseases and colorectal cancer, each accounting for approximately 6% to 7% of female deaths.

Ischaemic heart disease accounted for 42.9% of male deaths from amenable causes at ages 45 to 64 years (the highest ranked cause for males) and 13.2% for females (ranked third). The male rate of deaths from ischaemic heart disease (83.2 deaths per 100,000 males) was almost three and a half times (3.47\*\*) the female rate (24.0). Deaths from breast cancer ranked highest for females in this age group, and were responsible for one third (33.3%) of female deaths from amenable causes, a rate of 60.3 deaths per 100,000 female. Colorectal cancer was the second highest cause of death for males and the third for females, accounting for 19.5% of male deaths (a rate of 37.9 per 100,000 males) and 17.3% of female amenable deaths (a rate of 31.4).

Causes of deaths from amenable mortality were ranked the same for males and females in the 65 to 74 year age group, with the exception of breast cancer for females (ranked third). Ischaemic heart disease was responsible for 43.6% of male deaths and 26.3% of female deaths; the male rate (365.9 deaths per 100,000 males) was almost two and a half times (2.45\*\*) the female rate (149.5 deaths per 100,000 females). Colorectal cancer resulted in 20.6% of amenable deaths for males (a rate of 173.7 deaths per 100,000 males) and 18.5% for females (a rate of 107.8).

**Table 7.6: Amenable mortality by major cause, age and sex, New Zealand, 1997-2001**

Age (years)	Cause	Males				Females			
		Number	Rate <sup>1</sup>	Per cent <sup>2</sup>	Rank <sup>3</sup>	Number	Rate <sup>1</sup>	Per cent <sup>2</sup>	Rank <sup>3</sup>
<1	Complications of perinatal period	328	234.3	55.3	1	274	206.7	58.7	1
	Birth defects	217	155.0	36.6	2	177	133.3	37.9	2
	Selected invasive bacterial and protozoal infections	44	31.1	7.4	3	14	10.7	3.0	3
1-14	Birth defects	51	2.5	40.8	1	54	2.9	46.6	1
	Selected invasive bacterial and protozoal infections	26	1.3	20.8	2	22	1.2	19.0	2
	Lymphoid leukaemia – acute/ chronic	21	1.0	16.8	3	16	0.8	13.8	3
	Epilepsy	10	0.5	8.0	4	9	0.5	7.8	4
15-24	Birth defects	33	2.5	30.0	1	24	1.8	29.3	1
	Lymphoid leukaemia – acute/ chronic	18	1.4	16.4	2	#	..	..	..
	Epilepsy	17	1.3	15.5	3	9	0.7	11.0	3
	Selected invasive bacterial and protozoal infections	14	1.1	12.7	4	12	0.9	14.6	2
	Asthma	10	0.8	9.1	5	8	0.6	9.8	4
25-44	Ischaemic heart disease	213	7.4	29.4	1	49	1.6	5.9	5
	Epilepsy	88	3.2	12.2	2	36	1.3	4.3	6
	Skin cancer	64	2.3	8.8	3	55	1.8	6.6	3
	Colorectal cancer	56	2.0	7.7	4	53	1.7	6.4	4
	Birth defect	53	2.0	7.3	5	35	1.2	4.2	7
	Breast cancer	–	..	..	..	336	11.1	40.3	1
	Cervical cancer	–	..	..	..	60	2.0	7.2	2
	Cerebrovascular diseases	48	1.7	6.6	6	53	1.8	6.4	3
45-64	Ischaemic heart disease	1,592	83.2	42.9	1	468	24.0	13.2	3
	Colorectal cancer	724	37.9	19.5	2	613	31.4	17.3	2
	Cerebrovascular diseases	258	13.5	7.0	3	239	12.2	6.7	4
	Diabetes	248	13.0	6.7	4	152	7.8	4.3	5
	Breast cancer	–	..	..	..	1,182	60.3	33.3	1
65-74	Ischaemic heart disease	2,196	365.9	43.6	1	995	149.5	26.3	1
	Colorectal cancer	1,037	173.7	20.6	2	701	107.8	18.5	2
	Cerebrovascular diseases	506	83.5	10.0	3	424	63.9	11.2	4
	Diabetes	265	44.3	5.3	4	201	30.8	5.3	5
	Breast cancer	–	..	..	..	625	96.4	16.5	3

<sup>1</sup> Rates are age standardised within age categories, except under 1 year

<sup>2</sup> Per cent is the proportion of total amenable deaths within the relevant age-sex group

<sup>3</sup> Rank is the rank order of rates for the top four causes of death for males and females: more than four causes are listed where the rank order differs for males and females

## 7.3 Amenable mortality by area

### Introduction to map and text pages

The following pages examine amenable mortality, based on area of usual residence of the deceased.

The analysis includes text and maps showing total amenable mortality: the individual causes have not been mapped as those with larger numbers (ischaemic heart disease, colorectal, breast cancer and cerebrovascular diseases) have the same patterns (albeit some with lower rates) in terms of mortality, as mapped in *Section 5.4*; and the remaining causes had insufficient numbers to be mapped.

For further information related to the map pages, refer to the 'Introduction to map and text pages' in *Section 5.4*.

A key to the areas mapped is included in *Appendix 1.4*.

# All causes: amenable mortality (0 to 74 years), New Zealand, 1997-2001

## By District Health Board (DHB)

Total amenable mortality varied considerably by District Health Board (Table 7.7), with the highest rate (133.1 deaths per 100,000 population) 40% above the average New Zealand rate (94.2), and the lowest rate (76.8 deaths per 100,000 population) 20% below the national average.

The highest rates of amenable mortality were in Tairāwhiti (133.1 deaths per 100,000 population), Lakes (114.5), Northland (113.1), West Coast (110.4) and Whanganui (109.6) (Map 7.1).

The lowest rates were in Waitemata (76.8), Canterbury (80.7), Nelson-Marlborough (83.7), Capital and Coast (88.2) and Taranaki (89.6).

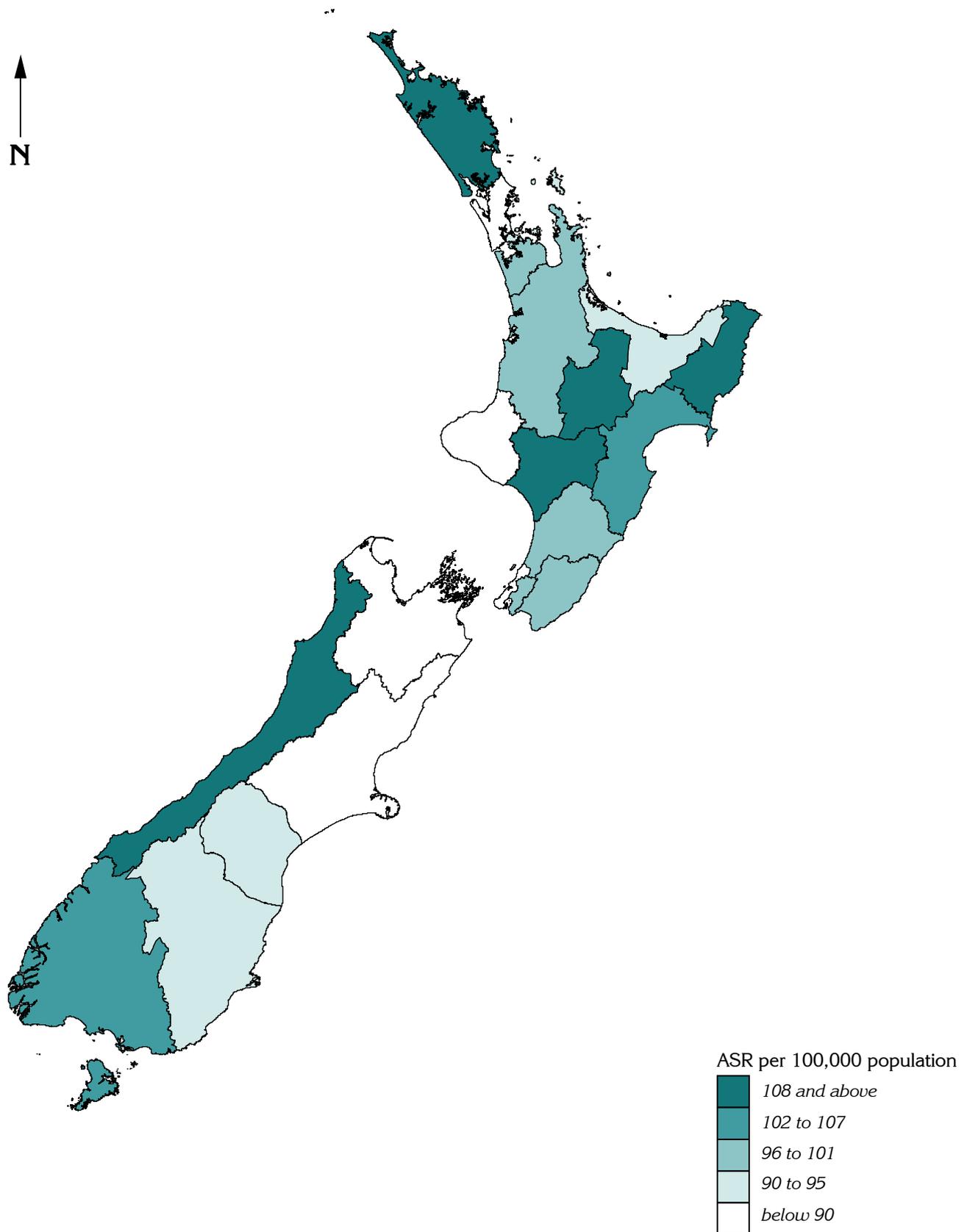
**Table 7.7: Amenable mortality from all causes by area, New Zealand, 1997-2001**

District Health Board	Number	ASR
Auckland	1,596	92.1
Bay of Plenty	1,033	94.7
Canterbury	1,961	80.7
Capital and Coast	1,076	88.2
Counties Manukau	1,757	101.2
Hawke's Bay	878	105.2
Hutt	704	101.9
Lakes	586	114.5
MidCentral	897	101.1
Nelson-Marlborough	614	83.7
Northland	969	113.1
Otago	947	92.4
South Canterbury	348	95.8
Southland	623	104.5
Tairāwhiti	320	133.1
Taranaki	549	89.6
Waikato	1,713	99.2
Wairarapa	241	98.4
Waitemata	1,691	76.8
West Coast	205	110.4
Whanganui	423	109.6
<b>Total</b>	<b>19,130</b>	<b>94.2</b>

### Map 7.1

All causes: amenable mortality (0 to 74 years), New Zealand, 1997-2001

age standardised deaths per 100,000 population by District Health Board



*Details of map boundaries are in Appendix 1.4*

Australian and New Zealand Atlas of Avoidable Mortality

## 7.4 Amenable mortality by deprivation

This section examines amenable mortality by deprivation (measured using the NZDep96 index). The calculation of age-standardised death rates by quintile and the NZDep96 index are described in Chapter 2, *Methods*.

### By sex

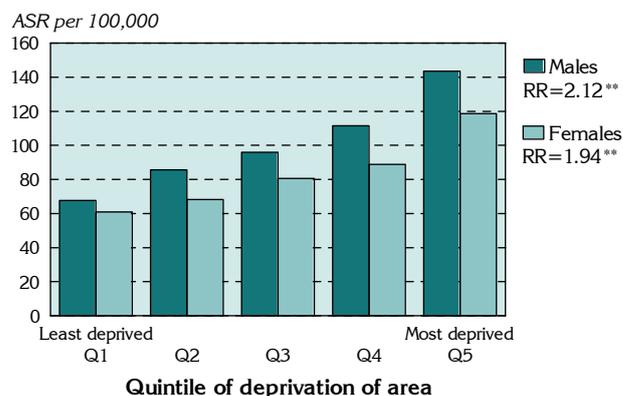
There is a clear gradient in the rates of amenable mortality for the total population, and for both males and females, from the least deprived areas to the most deprived areas (Table 7.1, Figure 7.2). Age-standardised death rates varied from 64.4 deaths per 100,000 population in Quintile 1 to 131.1 in Quintile 5, a differential in rates between the most deprived and least deprived areas of 2.04\*\*.

Within each quintile, the male rate was higher than the female rate. Male rates ranged from 67.7 deaths per 100,000 males in the least deprived areas (Quintile 1) to 143.5 in the most deprived areas (Quintile 5). Rates for females ranged from

61.0 deaths per 100,000 females in Quintile 1 to 118.6 in Quintile 5.

The differential in rates between the most deprived 20% of small areas and least deprived areas was 2.12\*\* for males and 1.94\*\* for females.

**Figure 7.2: Amenable mortality (0 to 74 years) by deprivation and sex, New Zealand, 1997-2001**



**Table 7.8: Amenable mortality (0 to 74 years) by deprivation and sex, New Zealand, 1997-2001**

Quintile	Males		Females		Rate ratio M:F	Total	
	Number	ASR	Number	ASR		Number	ASR
1: Least deprived	1,225	67.7	1,125	61.0	1.11*	2,350	64.4
2	1,632	85.7	1,335	68.2	1.26**	2,967	76.9
3	1,893	95.9	1,650	80.6	1.19**	3,543	88.3
4	2,407	111.5	2,017	88.8	1.26**	4,424	100.1
5: Most deprived	2,592	143.5	2,232	118.6	1.21**	4,825	131.1
<b>Total</b>	<b>10,300</b>	<b>103.1</b>	<b>8,830</b>	<b>85.4</b>	<b>1.21**</b>	<b>19,130</b>	<b>94.2</b>
<b>RR-Quintile 5:Quintile 1</b>	<b>..</b>	<b>2.12**</b>	<b>..</b>	<b>1.94**</b>	<b>..</b>	<b>..</b>	<b>2.04**</b>

### By excess deaths<sup>2</sup>

For the total population, and both males and females, there was a gradient in the number of excess deaths, with the fewest excess deaths in Quintile 2 and the greatest number in Quintile 5 (Table 7.9).

If mortality in all deprivation groups equalled that of the least deprived group (those in Quintile 1), total amenable deaths would be reduced from 19,130

(see Table 7.8 above) to 13,733. The 5,397 excess deaths that occurred over the observation period accounted for almost thirty per cent (28.2%) of total amenable mortality.

For males, there were 3,158 excess deaths (58.5% of all excess deaths) and for females, 2,239 (41.5%). The largest differential was in Quintile 2, where there were 334 male excess deaths and 137 for females, a differential of almost two and a half times. In the most deprived areas (Quintile 5), there were 1,359 male excess deaths and 1,085 female excess deaths, a differential of 1.25.

**Table 7.9: Excess deaths<sup>1</sup> from amenable mortality (0 to 74 years) by quintile of deprivation and sex, New Zealand, 1997-2001**

Sex	Number					Total (Q1:Q5)	Per cent of total
	Q1	Q2	Q3	Q4	Q5		
Males	(0)	334	543	923	1,359	3,158	58.5
Females	(0)	137	395	622	1,085	2,239	41.5
<b>Total</b>	<b>(0)</b>	<b>471</b>	<b>938</b>	<b>1,545</b>	<b>2,443</b>	<b>5,397</b>	<b>100.0</b>
<b>Ratio-M:F</b>	<b>..</b>	<b>2.44</b>	<b>1.37</b>	<b>1.48</b>	<b>1.25</b>	<b>1.41</b>	<b>..</b>

<sup>1</sup> Excess deaths is the difference between the observed and expected number of deaths, calculated between Quintile 1 (least deprived) and the quintile under analysis

The number of excess deaths increased with age, with over 80.0% of excess deaths (4,363) in the two oldest age groups (Table 7.10). The one to 24 year age group had 135 excess deaths (2.5% of total excess deaths) and infants under one year of age had 360 excess deaths (6.7%).

In Quintile 2, it was estimated that had the rates in Quintile 1 applied, there would have been four fewer excess deaths in the one to 24 year age group (giving a figure of -4). The 65 to 74 year age group recorded the highest number of excess deaths, with 220 deaths (46.7%).

While the numbers of excess deaths increased in each age group across Quintiles 3, 4 and 5, the proportions of total excess deaths in each deprivation group were consistent. For infants, the numbers of excess deaths in these quintiles were 48, 99 and 177.

The one to 24 year age group recorded the smallest number of excess deaths in Quintile 3 (26), with just less than 3% of deaths.

In Quintile 4, the 45 to 64 year age group had the highest number of excess deaths (646), and together with the 65 to 74 year age group (603 deaths), accounted for just over 80% of excess deaths. The smallest number of excess deaths in Quintile 4 was in the one to 24 year age group (42), with less than 3% of deaths.

The highest number of excess deaths in Quintile 5, as with Quintile 4, was in the 45 to 64 year age group (1,038), with 42.3% of deaths in these areas. The one to 24 year age group recorded the smallest number of deaths in Quintile 5 (71), contributing just less than 3% of excess deaths.

**Table 7.10: Excess deaths from amenable mortality (0 to 74 years) by quintile of deprivation and age, New Zealand, 1997-2001**

Age (years)	Number					Total (Q2:Q5)	Per cent of total
	Q1	Q2	Q3	Q4	Q5		
Infants (<1)	(0)	35	48	99	177	360	6.7
1-24	(0)	-4	26	42	71	135	2.5
25-44	(0)	16	90	155	278	540	10.0
45-64	(0)	203	352	646	1,038	2,239	41.5
65-74	(0)	220	423	603	879	2,124	39.3
<b>Total</b>	<b>(0)</b>	<b>471</b>	<b>938</b>	<b>1,545</b>	<b>2,443</b>	<b>5,397</b>	<b>100.0</b>

## 7.5 Amenable mortality by ethnicity

This section examines amenable mortality by ethnicity, with comparisons of Māori, Pacific peoples, and the remaining population (referred to as 'European/ others').

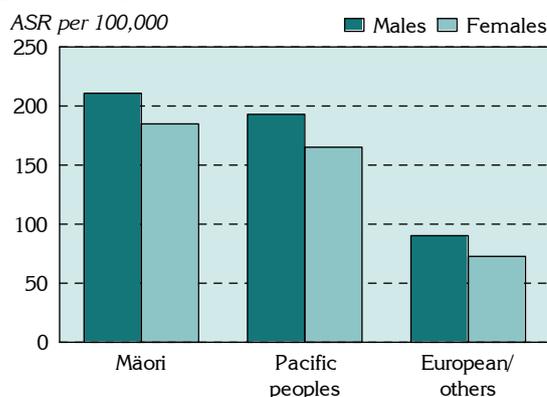
### By sex

Mortality from amenable causes varied substantially by ethnicity (Table 7.12, Figure 7.3). For the total population and for both males and females, rates for Māori were highest, followed by those for Pacific peoples and the remaining population. The Māori rate (198.2 deaths per 100,000 population) for amenable mortality was 2.43\*\* times the European/ others rate (81.6 deaths per 100,000 population); the rate for Pacific peoples (179.4) was substantially higher than the European/ others rate, with a rate ratio of 2.20\*\*.

For each ethnic group, the male rate for deaths from amenable causes was higher than the female

rate. The differential between the Māori and European/ others rate was higher for females (2.54\*\*) than for males (2.34\*\*). For Pacific peoples, the rate ratios were also higher for females (2.27\*\*) than for males (a rate ratio of 2.14\*\*).

**Figure 7.3: Amenable mortality (0 to 74 years) by ethnicity and sex, New Zealand, 1997-2001**



**Table 7.11: Amenable mortality (0 to 74 years) by ethnicity and sex, New Zealand, 1997-2001**

Ethnic group	Number			ASR per 100,000 population			Rate ratio
	Males	Females	Total	Males	Females	Total	M:F
Māori	1,698	1,639	3,337	211.0	184.9	198.2	1.14**
Pacific peoples	564	548	1,112	193.1	165.2	179.4	1.17**
European/ others	8,038	6,643	14,681	90.3	72.8	81.6	1.24**
<b>Total</b>	<b>10,300</b>	<b>8,830</b>	<b>19,130</b>	<b>103.1</b>	<b>85.4</b>	<b>94.2</b>	<b>1.21**</b>
RR-Māori:European/ others	..	..	..	2.34**	2.54**	2.43**	..
RR-Pacific:European/ others	..	..	..	2.14**	2.27**	2.20**	..

### By age

Mortality from amenable causes in the younger and middle age groups (0 to 44 years) was highest for Pacific peoples, while for older (45 to 64 year and 65 to 74 year) age groups rates were highest for Māori (Table 7.12, Figure 7.4).

The highest rates for all ethnic groups were in the 65 to 74 year age group, with rates of 1,591.3 deaths per 100,000 population for Māori, 1,334.4 for Pacific peoples and 649.0 for European/ others. Infants recorded the next highest rates, with 580.9 for Pacific peoples, 480.5 for Māori and 323.5 for European/ others. The 45 to 64 year age group

also had high rates, with 475.0 deaths per 100,000 population for Māori, 374.6 for Pacific peoples and 155.1 for European/ others.

The largest differentials between the Māori and European/ others rates were in the 45 to 64 year age group (a rate ratio of 3.06\*\*), and the 25 to 44 year age group (a rate ratio of 2.83\*\*).

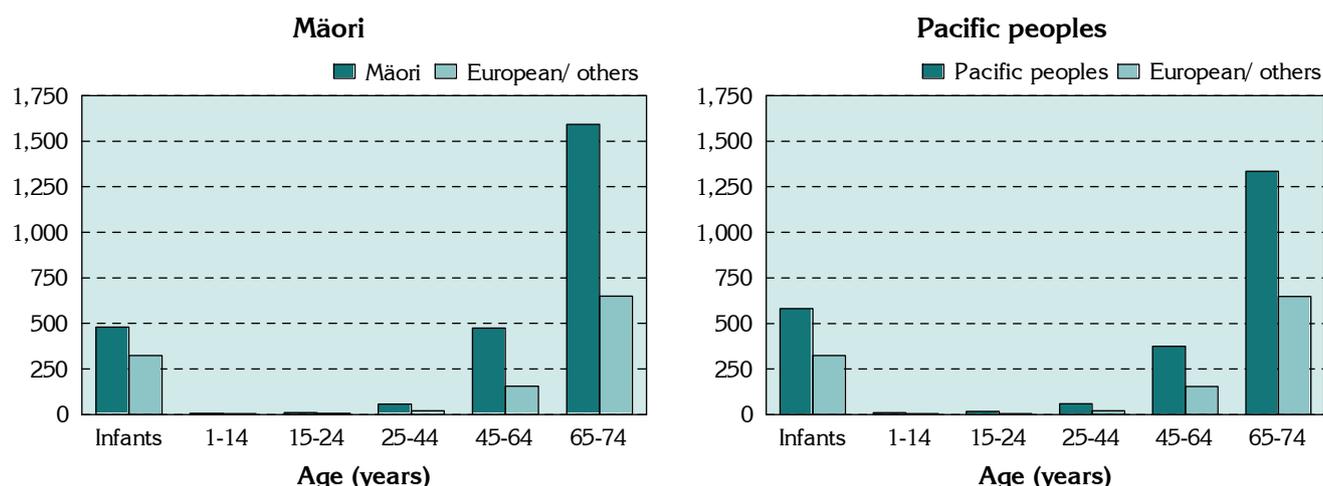
For Pacific peoples, the largest differentials were in the 15 to 24 year (a rate ratio of 3.02\*\*), and the 25 to 44 year age groups (with a rate ratio of 2.89\*\*).

**Table 7.12: Amenable mortality by ethnicity and age, New Zealand, 1997-2001**

Age (years)	Number			Rate per 100,000 population <sup>1</sup>			Rate ratio	Rate ratio
	Māori	Pacific peoples	European/ others	Māori	Pacific peoples	European others	Māori: Euro/ others	Pacific: Euro/ others
Infants (<1)	345	144	572	480.5	580.9	323.5	1.49**	1.80**
1-14	65	31	145	7.1	10.0	5.4	1.31	1.85*
15-24	47	30	114	10.0	17.8	5.9	1.69**	3.02**
25-44	423	162	972	57.7	59.0	20.4	2.83**	2.89**
45-64	1,491	435	5,335	475.0	374.6	155.1	3.06**	2.42**
65-74	966	310	7,544	1,591.3	1,334.4	649.0	2.45**	2.06**
<b>Total</b>	<b>3,337</b>	<b>1,112</b>	<b>14,681</b>	<b>198.2</b>	<b>179.4</b>	<b>81.6</b>	<b>2.43**</b>	<b>2.20**</b>

<sup>1</sup> Rates are age standardised within age categories, except under 1 year

**Figure 7.4: Amenable mortality by ethnicity and age, New Zealand, 1997-2001**  
Rate per 100,000 population



As with avoidable mortality, the impact of amenable mortality on each of the ethnic populations is most evident at younger ages in the Māori and Pacific peoples populations, and at older ages in the European/ others population (Table 7.13). The proportions of years of life lost (YLL) from amenable causes at ages 0 to 24 years for Māori (19.6%) and Pacific peoples (24.0%) were

more than twice the proportion for European/ others (9.1 %).

At the same time, the proportions of YLL from amenable mortality at ages 65 to 74 years for Māori (18.9%) and Pacific peoples (17.3%) were less than half the proportion for the European/ others at these ages (38.5%).

**Table 7.13: YLL from amenable mortality by ethnicity and age, New Zealand, 1997-2001**

Age (years)	Number			Per cent			Ratio Māori: Euro/ others	Ratio Pacific: Euro/ others
	Māori	Pacific peoples	Euro/ others	Māori	Pacific peoples	Euro/ others		
Infants (<1)	10,516	4,380	17,460	16.5	19.8	7.3	2.24**	2.69**
1-14	1,959	930	4,320	3.1	4.2	1.8	1.69**	2.31**
15-24	1,330	859	3,227	2.1	3.9	1.4	1.54**	2.86**
25-44	10,394	4,016	23,927	16.3	18.1	10.1	1.62**	1.80**
45-64	27,635	8,149	97,519	43.3	36.7	41.0	1.06**	0.90**
65-74	12,052	3,841	91,603	18.9	17.3	38.5	0.49**	0.45**
<b>Total</b>	<b>63,886</b>	<b>22,175</b>	<b>238,055</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>..</b>	<b>..</b>

### By deprivation

There are clear socioeconomic gradients in the rates of amenable mortality for the Māori and European/ others populations: for Pacific peoples, there is a gradient from Quintile 2 to Quintile 5 (Table 7.14). The gradient is more pronounced for Māori compared to the European/ others, with a differential in rates of 2.10\*\* between the most deprived areas and the least deprived areas for Māori, compared to 1.58\*\* for European/ others.

The greatest differential in rates between the Māori and European/ others was in the most deprived areas (Quintile 5), where the Māori rate (228.7 deaths per 100,000 population) was more than twice (2.33\*\*) that of the European/ others population (a rate of 98.1).

In the least deprived areas (Quintile 1), the Māori rate (109.1 deaths per 100,000 population) was one and three quarters times (1.76\*\*) the European/ others (a rate of 61.9).

The pattern was different for Pacific peoples: the highest differential in rates compared with the European/ others was in the least deprived areas (Quintile 1), where Pacific peoples rate (216.3 deaths per 100,000 population) was three and a half times (3.49\*\*) the European/ others (61.9 deaths per 100,000 population). In the most deprived areas (Quintile 5), the rate for Pacific peoples (183.8 deaths per 100,000 population) was just less than twice (1.87\*\*) the European/ others (98.1).

**Table 7.14: Amenable mortality (0 to 74 years) by ethnicity and deprivation, New Zealand, 1997-2001**

Quintile	Number			ASR per 100,000 population			Rate ratio	Rate ratio
	Māori	Pacific peoples	Euro/ others	Māori	Pacific peoples	Euro/ others	Māori: Euro/ others	Pacific: Euro/ others
1: Least deprived	116	55	2,180	109.1	216.3	61.9	1.76**	3.49**
2	228	58	2,681	142.7	135.5	73.4	1.94**	1.85**
3	440	139	2,964	162.3	166.6	81.0	2.00**	2.06**
4	753	229	3,442	195.4	178.2	88.1	2.22**	2.02**
5: Most deprived	1,641	591	2,592	228.7	183.8	98.1	2.33**	1.87**
<b>Total</b>	<b>3,337</b>	<b>1,112</b>	<b>14,681</b>	<b>198.2</b>	<b>179.4</b>	<b>81.6</b>	<b>2.43**</b>	<b>2.20**</b>
<b>RR-Q5:Q1</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>2.10**</b>	<b>0.85</b>	<b>1.58**</b>	<b>..</b>	<b>..</b>