

5 Avoidable mortality: New Zealand, 1997-2001

5.1 Total avoidable and unavoidable mortality

Three quarters (74.4%) of all deaths at ages 0 to 74 years over the period 1997 to 2001 are considered to be from avoidable causes. Of these avoidable deaths, 43.2% (or 32.1% of total deaths at these ages) are considered to be amenable to health care (Table 5.1).

The age-standardised death rate (ASR) from avoidable mortality was 219.3 deaths per 100,000 population. Within this overall rate, 94.2 deaths per 100,000 population were estimated to be amenable mortality: this sub-set is shown in brackets in Table 5.1.

The death rate from the remaining, or 'unavoidable' deaths, was 75.4 per 100,000 population; and the

rate for all deaths was 294.6 deaths per 100,000 population.

The proportion of male (74.8%) and female (73.7%) deaths considered to be avoidable were similar. The 27,089 male deaths accounted for almost two thirds (61.2%) of avoidable mortality.

There were just over three quarters of a million (approximately 757,000) years of life lost (YLL)¹ for total avoidable mortality over the observation period, considerably more for males (approximately 466,000) than for females (291,000).

¹ See Chapter 2, *Methods*

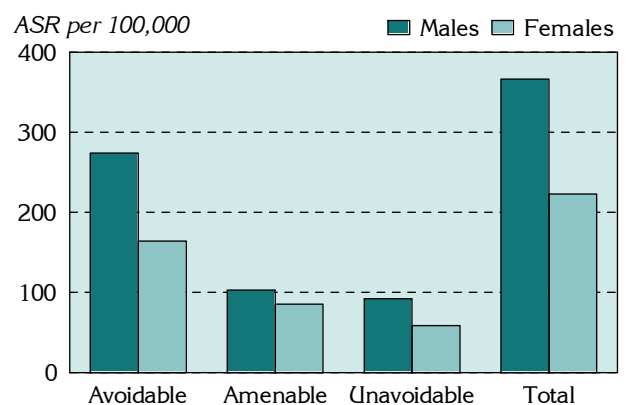
Table 5.1: Avoidable mortality (0 to 74 years) by sex, New Zealand, 1997-2001

Mortality category	Number			Per cent of total	ASR per 100,000			Rate ratio M:F
	Males	Females	Total		Males	Females	Total	
Avoidable mortality	27,089	17,183	44,272	74.4	274.2	164.4	219.3	1.67**
(Amenable mortality)	(10,300)	(8,830)	(19,130)	(32.1)	(103.1)	(85.4)	(94.2)	(1.21**)
Unavoidable mortality	9,132	6,117	15,249	25.6	92.2	58.5	75.4	1.58**
Total mortality	36,221	23,300	59,520	100.0	366.4	222.9	294.6	1.64**
Avoidable mortality - as % of Total	74.8	73.7	74.4	..	..	..	..	..
- Years of life lost (YLL)	465,699	291,049	756,747	..	..	..	..	..

Death rates in all mortality categories were higher for males than for females (Table 5.1, Figure 5.1). For avoidable mortality, the male rate was 274.2 deaths per 100,000 males and 164.4 for females, with the male rate more than one and a half times (1.67**) the female rate.

For amenable mortality, the male rate was 103.1 deaths per 100,000 males, 21% higher than the female rate of 85.4. Unavoidable death rates for males (92.2 deaths per 100,000 males) were almost 60% higher than for females (58.5, a rate ratio of 1.58**).

Figure 5.1: Avoidable mortality (0 to 74 years) by sex, New Zealand, 1997-2001



5.2 Avoidable mortality by age and sex

Almost half (46.1%) of avoidable mortality at ages 0 to 74 years occurred in the 65 to 74 year age group (Table 5.2). The 45 to 64 and 25 to 44 year age groups accounted for 35.0% and 11.1% of avoidable mortality, respectively, with the age groups below 25 years contributing 7.9%.

Death rates varied from 1,640.4 deaths per 100,000 population in the 65 to 74 year age group to 16.5 at ages 1 to 14 years. Other high rates were for infants under one year of age (405.8) and in the 45 to 64 year age group (401.5).

Table 5.2: Avoidable mortality by age and sex, New Zealand, 1997-2001

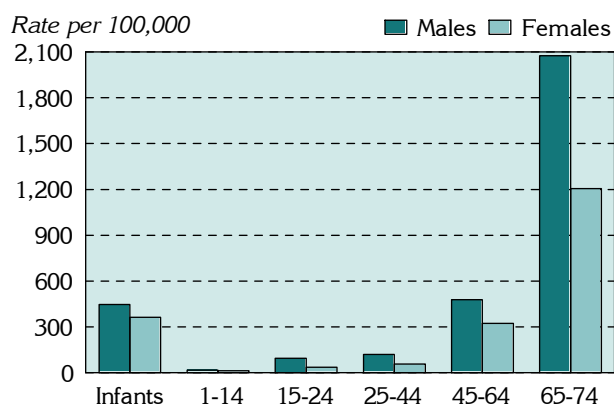
Age (years)	Number			Per cent of total	Rate per 100,000 population ¹			Rate ratio M:F
	Males	Females	Total		Males	Females	Total	
Infants (<1)	628	482	1,109	2.5	448.0	363.5	405.8	1.23**
1-14	369	276	644	1.5	18.4	14.5	16.5	1.27**
15-24	1,239	473	1,712	3.9	95.9	36.8	66.4	2.61**
25-44	3,211	1,688	4,900	11.1	119.5	57.4	88.4	2.08**
45-64	9,181	6,330	15,511	35.0	479.6	323.5	401.5	1.48**
65-74	12,461	7,935	20,396	46.1	2,075.1	1,205.6	1,640.4	1.72**
Total	27,089	17,183	44,272	100.0	274.2	164.4	219.3	1.67**

¹ Rates are age standardised within age categories, except under 1 year

Male death rates from avoidable mortality were higher than female death rates in each age group in the analysis (Table 5.2, Figure 5.2). The highest avoidable mortality rates for both males and females were in the 65 to 74 year age group, where the male rate of 2,075.1 deaths per 100,000 population was 72% higher than the female rate of 1,205.6 (a rate ratio of 1.72**).

However, the greatest differentials between the male and female rates were in the 15 to 24 year and 25 to 44 year age groups. For the 15 to 24 year age group, the rate for males (95.9 deaths per 100,000 males) was 2.61** times the female rate (36.8); and for the 25 to 44 year age group, the rate for males (119.5 deaths per 100,000 males) was more than twice (2.08**) the female rate (57.4).

Figure 5.2: Avoidable mortality by age and sex, New Zealand, 1997-2001



From 1997 to 2001, avoidable mortality accounted for approximately 760,000 years of life lost (YLL) for the 0 to 74 year age groups. The number of YLL from avoidable mortality were highest in the 45 to 64 year age group (approximately 284,000 years), followed by the 65 to 74 year age group (approximately 248,000 years) (Table 5.3). These two age groups accounted for 70% of total YLL from avoidable mortality.

Table 5.3: YLL from avoidable mortality by age and sex, New Zealand, 1997-2001

Age (years)	Number		
	Males	Females	Total
Infants (<1)	19,160	14,696	33,856
1-14	11,020	8,238	19,258
15-24	34,978	13,390	48,368
25-44	80,752	41,924	122,677
45-64	168,000	116,258	284,257
65-74	151,788	96,543	248,331
Total	465,699	291,049	756,747

YLL were higher for males than females in all age groups. The largest differentials in YLL between males and females were in the 15 to 24 year age group (YLL for males was 2.6 times females) and the 25 to 44 year age group (males 1.9 times females).

5.3 Avoidable mortality by cause

Table 5.4 shows the number, age-standardised death rate, proportion of avoidable mortality and YLL, for the major condition groups and individual causes included in the avoidable mortality classification.

The highest rates of avoidable mortality at the major condition group level were for cardiovascular diseases, with a rate of 73.1 deaths per 100,000 population (35.0% of total avoidable mortality) and

cancer (67.7 deaths per 100,000 population, 31.8% of avoidable mortality). These two major condition groups were responsible for over two-thirds (66.8%) of mortality from avoidable causes at ages 0 to 74 years.

Similarly, the numbers of YLL from avoidable mortality were highest for cardiovascular diseases and cancer, accounting for approximately 233,000 and 224,000 YLL, respectively.

Table 5.4: Avoidable 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	729	3.8	1.6	14,682
Tuberculosis	51	0.2	0.1	750
Selected invasive bacterial and protozoal infections	454	2.4	1.0	9,044
Hepatitis	94	0.5	0.2	1,822
HIV/AIDS	100	0.5	0.2	2,328
Viral pneumonia and influenza	30	0.2	0.1	738
Cancers (malignant neoplasms)	14,100	67.7	31.8	224,066
Lip, oral cavity and pharynx	349	1.7	0.8	5,580
Oesophagus	486	2.3	1.1	7,237
Stomach	841	4.0	1.9	13,312
Colorectal	3,193	15.2	7.2	48,248
Liver	434	2.2	1.0	7,297
Lung	4,543	21.6	10.3	67,898
Melanoma of skin	776	3.9	1.8	13,600
Non-melanotic skin	115	0.5	0.3	1,670
Breast (female)	2,147	10.4	4.8	38,422
Cervix	267	1.3	0.6	5,101
Uterus	227	1.1	0.5	3,542
Bladder	300	1.4	0.7	4,252
Thyroid	46	0.2	0.1	766
Hodgkin's disease	51	0.3	0.1	991
Lymphoid leukaemia – acute/chronic	235	1.2	0.5	4,551
Benign	91	0.5	0.2	1,599
Nutritional, endocrine and metabolic conditions	1,837	8.8	4.1	28,353
Thyroid disorders	16	0.1	— ¹	255
Diabetes	1,821	8.7	4.1	28,097
Drug use disorders	714	3.7	1.6	13,795
Alcohol related disease	579	2.9	1.3	10,303
Illicit drug use disorders	134	0.8	0.3	3,492
Neurological disorders	266	1.5	0.6	6,145
Epilepsy	266	1.5	0.6	6,145
Cardiovascular diseases	15,512	73.1	35.0	232,667
Rheumatic and other valvular heart disease	381	1.9	0.9	6,852
Hypertensive heart disease	221	1.0	0.5	3,455
Ischaemic heart disease	11,030	52.1	24.9	165,188
Cerebrovascular diseases	3,073	14.3	6.9	46,061
Aortic aneurysm	806	3.7	1.8	11,112
Genitourinary disorders	446	2.1	1.0	6,843
Nephritis and nephrosis	399	1.9	0.9	6,090
Obstructive uropathy and prostatic hyperplasia	46	0.2	0.1	753

... continued

Table 5.4: Avoidable mortality (0 to 74 years) by major condition group and cause, New Zealand, 1997-2001 ... continued

Major condition group/ cause	Number	ASR	Per cent of total	YLL
Respiratory diseases	2,925	13.4	6.6	40,757
DVT with pulmonary embolism	106	0.5	0.2	1,844
COPD (45-74 years)	2,734	12.4	6.2	36,693
Asthma (0-44 years)	85	0.5	0.2	2,219
Digestive disorders	436	2.0	1.0	6,497
Peptic ulcer disease	137	0.6	0.3	2,001
Acute abdomen, appendicitis, intestinal obstruction, cholecystitis/ lithiasis, pancreatitis, hernia	209	1.0	0.5	3,142
Chronic liver disease	90	0.4	0.2	1,355
Maternal and infant causes	1,454	9.4	3.3	40,997
Birth defects	843	5.2	1.9	22,353
Complications of perinatal period	611	4.2	1.4	18,644
Unintentional injuries	2,993	17.3	6.8	72,351
Road traffic injuries	2,198	12.9	5.0	54,027
Falls	295	1.5	0.7	5,701
Fires, burns	98	0.6	0.2	2,554
Accidental poisonings	103	0.6	0.2	2,485
Drownings	298	1.8	0.7	7,584
Intentional injuries	2,860	16.5	6.5	69,596
Suicide and self inflicted injuries	2,588	14.9	5.8	62,699
Violence	272	1.6	0.6	6,897
Total avoidable mortality	44,272	219.3	100.0	756,747

¹ Not shown: proportion of avoidable mortality less than 0.1%, rounded to 1 decimal place

Of the top ten causes of avoidable mortality, ischaemic heart disease ranked the highest, with a rate of 52.1 deaths per 100,000 population, followed by lung cancer, with a rate of 21.6 (Table 5.5). Together, ischaemic heart disease and lung cancer accounted for over one third (35.2%) of mortality from avoidable causes. Rates for the other eight causes ranged from 5.2 deaths per 100,000 population for birth defects to 15.2 for colorectal cancer.

Ischaemic heart disease also ranked highest for YLL from avoidable deaths, accounting for approximately 165,200 YLL from 1997 to 2001. YLL from lung cancer (approximately 67,900 years) was ranked second, followed by suicide and self inflicted injuries (approximately 62,700 years) and road traffic injuries (approximately 54,000 years).

Table 5.5: Top ten causes of avoidable mortality (0 to 74 years), New Zealand, 1997-2001

Cause	Number	ASR	Per cent of total	YLL
Ischaemic heart disease	11,030	52.1	24.9	165,188
Lung cancer	4,543	21.6	10.3	67,898
Colorectal cancer	3,193	15.2	7.2	48,248
Suicide and self inflicted injuries	2,588	14.9	5.9	62,699
Cerebrovascular diseases	3,073	14.3	6.9	46,061
Road traffic injuries	2,198	12.9	5.0	54,027
COPD (45-74 years)	2,734	12.4	6.2	36,693
Breast cancer (female)	2,147	10.4	4.8	38,422
Diabetes	1,821	8.7	4.1	28,097
Birth defects	843	5.2	1.9	22,353
All causes	44,272	219.3	100.0	756,747

By age

Table 5.6 shows the variation in avoidable mortality by cause and age. Complications of the perinatal period accounted for over half (54.3%) of avoidable mortality for infants, a rate of 220.5 deaths per 100,000 population. Birth defects were responsible for a further 35.5% of avoidable mortality, a rate of 144.2. Selected invasive bacterial and protozoal infections contributed 5.2% of avoidable infant deaths, and violence accounted for 1.4%.

In the 1 to 14 year age group, deaths from road traffic injuries accounted for 29.0% of avoidable mortality, a rate of 4.7 deaths per 100,000 population. Birth defects (16.3%), drowning (10.9%) and selected invasive bacterial and protozoal infections (7.5%) resulted in approximately 35% of deaths in this age group.

For young people aged 15 to 24 years, deaths from road traffic injuries and suicides were the major causes of avoidable mortality. Road traffic injuries accounted for 37.6% of avoidable mortality, a rate of 24.9 deaths per 100,000 population. Suicide and self inflicted injuries were responsible for a further 36.9% of avoidable mortality in this age group, a rate of 24.5. Approximately 9% of avoidable deaths in the 15 to 24 year age group were from deaths resulting from birth defects (3.3%), drownings (3.1%) and violence (2.9%).

In the 25 to 44 year age group, the top two causes of death are the same as for the 15 to 24 year age group, but in the reverse order of rankings. Suicide and self inflicted injuries resulted in 25.1% of avoidable mortality (a rate of 23.1 deaths per 100,000 population) and road traffic injuries contributed 16.1% (a rate of 14.9). Ischaemic heart disease (10.7%) and breast cancer (females only, 6.9%) accounted for a further 17.6% of avoidable mortality in this age group.

At ages 45 to 64 years, over one quarter (26.6%) of avoidable deaths were from ischaemic heart disease, a rate of 107.1 deaths per 100,000 population. Lung cancer ranked second, accounting for 12% of avoidable deaths, with a rate of 48.4. Over 16% of avoidable deaths in the 45 to 64 year age group resulted from colorectal cancer (8.6%) and breast cancer (females only, 7.6%).

Ischaemic heart disease and lung cancer were also major causes of death in the 65 to 74 year age group. Ischaemic heart disease accounted for almost one third (31.3%) of avoidable deaths (a rate of 515.4 deaths per 100,000 population) and lung cancer was the cause of 12.5% of avoidable deaths (206.7 deaths per 100,000 population). Almost 20% of avoidable deaths in this age group were from COPD (10.0%) and cerebrovascular diseases (9.1%).

Table 5.6: Avoidable mortality by major cause and age, New Zealand, 1997-2001

Age (years)	Cause	Number	Rate per 100,000 ¹	% of total in age group	YLL
Infants (<1)	Complications of perinatal period	602	220.5	54.3	18,377
	Birth defects	394	144.2	35.5	12,019
	Selected invasive bacterial and protozoal infections	58	20.9	5.2	1,761
	Violence	15	5.6	1.4	472
1-14	Road traffic injuries	187	4.7	29.0	5,564
	Birth defects	105	2.7	16.3	3,148
	Drownings	70	1.8	10.9	2,102
	Selected invasive bacterial and protozoal infections	48	1.3	7.5	1,462
15-24	Road traffic injuries	643	24.9	37.6	18,218
	Suicide and self inflicted injuries	631	24.5	36.9	17,816
	Birth defects	57	2.2	3.3	1,597
	Drownings	53	2.0	3.1	1,486
	Violence	50	2.0	2.9	1,411
25-44	Suicide and self inflicted injuries	1,229	23.1	25.1	31,361
	Road traffic injuries	788	14.9	16.1	20,155
	Ischaemic heart disease	523	9.0	10.7	12,622
	Breast (female)	336	5.6	6.9	8,209
45-64	Ischaemic heart disease	4,120	107.1	26.6	74,900
	Lung cancer	1,865	48.4	12.0	33,543
	Colorectal cancer	1,337	34.7	8.6	24,008
	Breast cancer (female)	1,182	30.2	7.6	22,425
65-74	Ischaemic heart disease	6,382	515.4	31.3	77,516
	Lung cancer	2,548	206.7	12.5	31,237
	COPD (45-74 years)	2,033	161.5	10.0	24,499
	Cerebrovascular diseases	1,859	147.4	9.1	22,432

¹ Rates are age standardised within age categories, except under 1 year

As noted previously, death rates from avoidable 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 5.6, with the measure of years of life lost (YLL).

For infants, over 18,000 YLL were due to avoidable mortality from complications of the perinatal period, with deaths from birth defects accounting for approximately 12,000 YLL. In the 1 to 14 year age group, deaths from road traffic injuries were responsible for over 5,500 YLL.

In the 15 to 24 year age group, deaths from road traffic injuries and suicide and self inflicted injuries accounted for approximately 18,000 YLL each. In the 25 to 44 year age group, deaths from suicide and self inflicted injuries were responsible for approximately 31,500 YLL; with a further 20,000 YLL from road traffic injuries.

For the 45 to 64 year and 65 to 74 year age groups, ischaemic heart disease accounted for the largest number of YLL from avoidable mortality (approximately 75,000 and 77,500 YLL, respectively). Avoidable mortality from lung cancer ranked second, with more than 30,000 YLL in both the 45 to 64 and 65 to 74 year age groups.

By age and sex

The main causes impacting avoidable mortality in the various age groups show interesting variations when further analysed by sex (Table 5.7).

Apart from for infants, there were differences in all age groups in the ranking of the main causes of avoidable death 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 of all infant avoidable deaths (52.2% of infant male deaths and 56.8% of infant female deaths). Birth defects accounted for over one third of avoidable deaths (34.6% of infant male deaths and 36.7% of infant female deaths). Selected invasive bacterial and protozoal infections resulted in 7.0% of infant male deaths and 2.9% of infant female deaths. (Note: only the top three causes of infant death are shown in Table 5.7, due to the low numbers for the next ranked causes.)

Road traffic injuries were the largest cause of death in the 1 to 14 year age group, responsible for 29.8% of avoidable male deaths and 27.5% of female deaths. Birth defects accounted for 13.8% of avoidable male deaths and 19.6% of female deaths. Drownings resulted in 13.0% of male deaths and 8.0% of female deaths. Selected invasive bacterial and protozoal infections and suicide and self inflicted injuries also accounted for 8.0% each of avoidable female deaths.

In the 15 to 24 year age group, the top two causes of avoidable mortality for males were suicide and self inflicted injuries, and road traffic injuries, the same two causes top the rankings for females but in reverse order. These two causes were responsible for over three-quarters (76.9%) of avoidable deaths for males and over two-thirds (67.8%) for females. The male rate of deaths from road traffic injuries (38.0 deaths per 100,000 males) was almost three and a half times (3.45**) the female rate (11.0). For suicide and self inflicted injuries, the rates were 35.8 deaths per 100,000 males and 14.0 for females, a differential of over two and a half times (2.56**).

In the 25 to 44 year age group, deaths from breast cancer ranked highest for females (11.1 deaths per 100,000 females), accounting for almost one fifth (19.9%) of avoidable female deaths. For males, suicide and self inflicted injuries were the major causes, responsible for 29.9% of avoidable male deaths (a rate of 36.8), compared to 15.9% (a rate of 9.4) for females (a rate ratio of 3.91**). The next highest cause of avoidable deaths in this age group was road traffic injuries, contributing 18.3% of male deaths (a rate of 22.7) and 12.0% of female deaths (a rate of 7.1), a differential of more than three (3.20**). For males, ischaemic heart disease ranked third in this age group, with 13.2% of avoidable deaths (a rate of 14.8).

Deaths from breast cancer accounted for 18.7% of avoidable female deaths at ages 45 to 64 years (60.3 deaths per 100,000 females). The other major causes of avoidable mortality for females in this age group were ranked in the same order as for males, although with lower rates. Ischaemic heart disease resulted in 34.7% of avoidable deaths for males (166.3 deaths per 100,000 males) and 14.8% for females (a rate of 48.0), a differential in rates of 3.46**. The proportions of deaths from lung cancer were similar for males (11.4%) and females (12.9%), but the rates were one third (1.32**) higher for males (a rate of 55.0 deaths per 100,000 males) compared to females (41.7).

In the 65 to 74 year age group, the top three causes of avoidable mortality were ranked the same for males and females. Ischaemic heart disease resulted in 35.3% of avoidable male deaths (a rate of 731.8 deaths per 100,000 males) and 25.1% of avoidable female deaths (a rate of 299.0), a differential in rates of almost two and a half (2.45**). The second highest cause of avoidable deaths was lung cancer, which contributed 13.0% of avoidable male deaths (271.4 deaths per 100,000 males) and 11.7% of avoidable female deaths (a rate of 142.0), a differential in rates of 1.91**.

Table 5.7: Avoidable mortality by major cause, age and sex, New Zealand, 1997-2001

Age (years)	Cause	Males				Females			
		Number	Rate ¹	Per cent ²	Rank ³	Number	Rate ¹	Per cent ²	Rank ³
Infants (<1)	Complications of perinatal period	328	234.3	52.2	1	274	206.7	56.8	1
	Birth defects	217	155.0	34.6	2	177	133.3	36.7	2
	Selected invasive bacterial and protozoal infections	44	31.1	7.0	3	14	10.7	2.9	3
1-14	Road traffic injuries	110	5.5	29.8	1	76	4.0	27.5	1
	Birth defects	51	2.5	13.8	2	54	2.9	19.6	2
	Drownings	48	2.4	13.0	3	22	1.2	8.0	3
	Fire, burns	28	1.4	7.6	4	12	0.6	4.3	7
	Selected invasive bacterial and protozoal infections	26	1.3	7.0	5	22	1.2	8.0	3
	Suicide and self inflicted injuries	22	1.1	6.0	6	22	1.1	8.0	4
15-24	Suicide and self inflicted injuries	490	38.0	39.5	1	142	11.0	30.0	2
	Road traffic injuries	464	35.8	37.4	2	179	14.0	37.8	1
	Drownings	49	3.8	4.0	3	#	..	..	..
	Falls	33	2.6	2.7	4	#	..	..	..
	Birth defects	33	2.5	2.7	5	24	1.8	5.1	3
	Violence	29	2.2	2.3	6	21	1.7	4.4	4
25-44	Suicide and self inflicted injuries	961	36.8	29.9	1	268	9.4	15.9	2
	Road traffic injuries	587	22.7	18.3	2	202	7.1	12.0	3
	Ischaemic heart disease	425	14.8	13.2	3	98	3.2	5.8	5
	Drownings	98	3.8	3.1	4	#	..	..	..
	Cerebrovascular diseases	96	3.5	3.0	5	105	3.6	6.2	4
	Breast cancer	-	..	..	..	336	11.1	19.9	1
45-64	Ischaemic heart disease	3,184	166.3	34.7	1	937	48.0	14.8	2
	Lung cancer	1,049	55.0	11.4	2	816	41.7	12.9	3
	Colorectal cancer	724	37.9	7.9	3	613	31.4	9.7	4
	Cerebrovascular diseases	517	26.9	5.6	4	479	24.5	7.6	5
	Breast cancer	-	..	..	..	1,182	60.3	18.7	1
65-74	Ischaemic heart disease	4,393	731.8	35.3	1	1,989	299.0	25.1	1
	Lung cancer	1,622	271.4	13.0	2	926	142.0	11.7	2
	COPD	1,169	192.8	9.4	3	863	130.2	10.9	3
	Colorectal cancer	1,037	173.7	8.3	4	701	107.8	8.8	5
	Cerebrovascular diseases	1,011	167.0	8.1	5	848	127.8	10.7	4

Not shown or not calculated, as there are fewer than 5 deaths over the period shown

¹ Rates are age standardised within age categories, except under 1 year

² Per cent is the proportion of total avoidable deaths within the relevant age-sex group

³ 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 between males and females

5.4 Avoidable mortality by area

Introduction to map and text pages

This section examines avoidable mortality, based on the area of usual residence of the deceased. The analysis includes text and maps showing total avoidable mortality, avoidable mortality for three major condition groups and avoidable mortality for the seven causes with the highest age-standardised death rates.

The maps and associated text showing avoidable mortality for the major condition groups/ causes by area have been ordered alpha-numerically, according to ICD-10, as follows:

- **All causes**
- **Major condition group** – Cancer
 - Selected cause – Colorectal cancer
 - Selected cause – Lung cancer
- **Major condition group** – Cardiovascular diseases
 - Selected cause – Ischaemic heart disease
 - Selected cause – Cerebrovascular diseases
- **Major condition group** – Respiratory diseases
 - Selected cause – Chronic obstructive pulmonary disease
- Selected cause – Road traffic injuries
- Selected cause – Suicide and self inflicted injuries

For total avoidable mortality, and for each selected major condition group/ cause, a map and associated text page is included with:

- a discussion of the mapped rates by District Health Board, which are also included in a table;
- a figure showing the rates by quintile of deprivation of area², by sex; and
- a table showing the rates by ethnicity (Māori, Pacific peoples and European/ others) and sex.

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

² See Chapter 2, *Methods*

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All causes: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

Total avoidable mortality varied considerably by District Health Board, with the highest rate (an age-standardised death rate of 319.1 deaths per 100,000 population) almost one and a half times (1.46**) the average New Zealand rate (219.3 deaths per 100,000 population) and the lowest rate (177.4) 19% below the national average (a rate ratio of 0.81**) (Table 5.8).

Overall, age-standardised rates of avoidable mortality at the District Health Board level were highest in the North Island (Map 5.1). The highest rates were in Tairāwhiti (319.1 deaths per 100,000 population), Lakes (283.5), Northland (274.9), West Coast (267.0) and Whanganui (261.9) District Health Boards.

The lowest rates were in Waitemata (177.4 deaths per 100,000 population), Canterbury (185.2), Nelson-Marlborough (192.4) and Capital and Coast (201.0).

Table 5.8: Avoidable mortality from all causes by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	3,624	207.8
Bay of Plenty	2,458	229.0
Canterbury	4,489	185.2
Capital and Coast	2,459	201.0
Counties Manukau	3,904	227.2
Hawke's Bay	1,999	243.0
Hutt	1,594	231.9
Lakes	1,439	283.5
MidCentral	2,101	237.5
Nelson-Marlborough	1,398	192.4
Northland	2,318	274.9
Otago	2,171	211.6
South Canterbury	779	217.2
Southland	1,458	245.4
Tairāwhiti	755	319.1
Taranaki	1,277	210.6
Waikato	4,117	239.8
Wairarapa	556	230.7
Waitemata	3,885	177.4
West Coast	492	267.0
Whanganui	999	261.9
Total	44,272	219.3

By deprivation

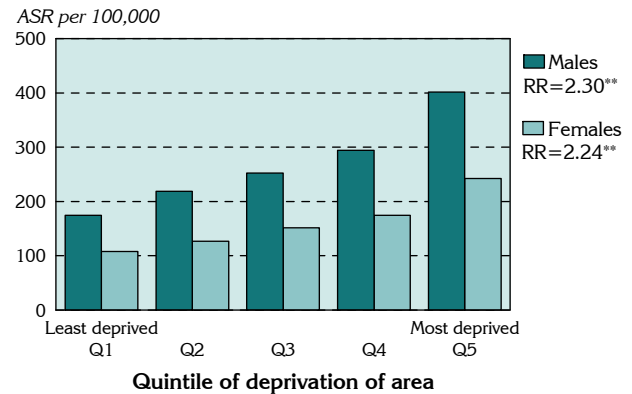
For both males and females, there was a marked deprivation gradient in the rates of death from avoidable conditions (Figure 5.3).

Rates for males were higher than females, ranging from 174.7 deaths per 100,000 population in the least deprived areas (Quintile 1) to 401.3 in the most deprived areas (Quintile 5).

Age-standardised death rates for females ranged from 108.2 in the least deprived areas to 242.3 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were both large, being 2.30** for males and 2.24** for females.

Figure 5.3: Avoidable mortality from all causes by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality varied substantially by ethnicity. For the total population, and for both males and females, rates were highest for Māori, followed by Pacific peoples and the remaining population (Table 5.9). The avoidable death rate for Māori (509.4 deaths per 100,000 population) was almost three (2.73**) times the rate for European/ others (186.9): the rate for Pacific peoples (379.0 deaths per 100,000 population) was double the European/ others rate (a rate ratio of 2.03**).

Within all ethnic groups, the male rate of avoidable mortality was higher than the female rate.

The differential in rates between the Māori and European/ others was greater for females (a rate ratio of 3.02**) than for males (2.54**). For Pacific peoples, the differentials between the European/ others rates were approximately double, for both males and females.

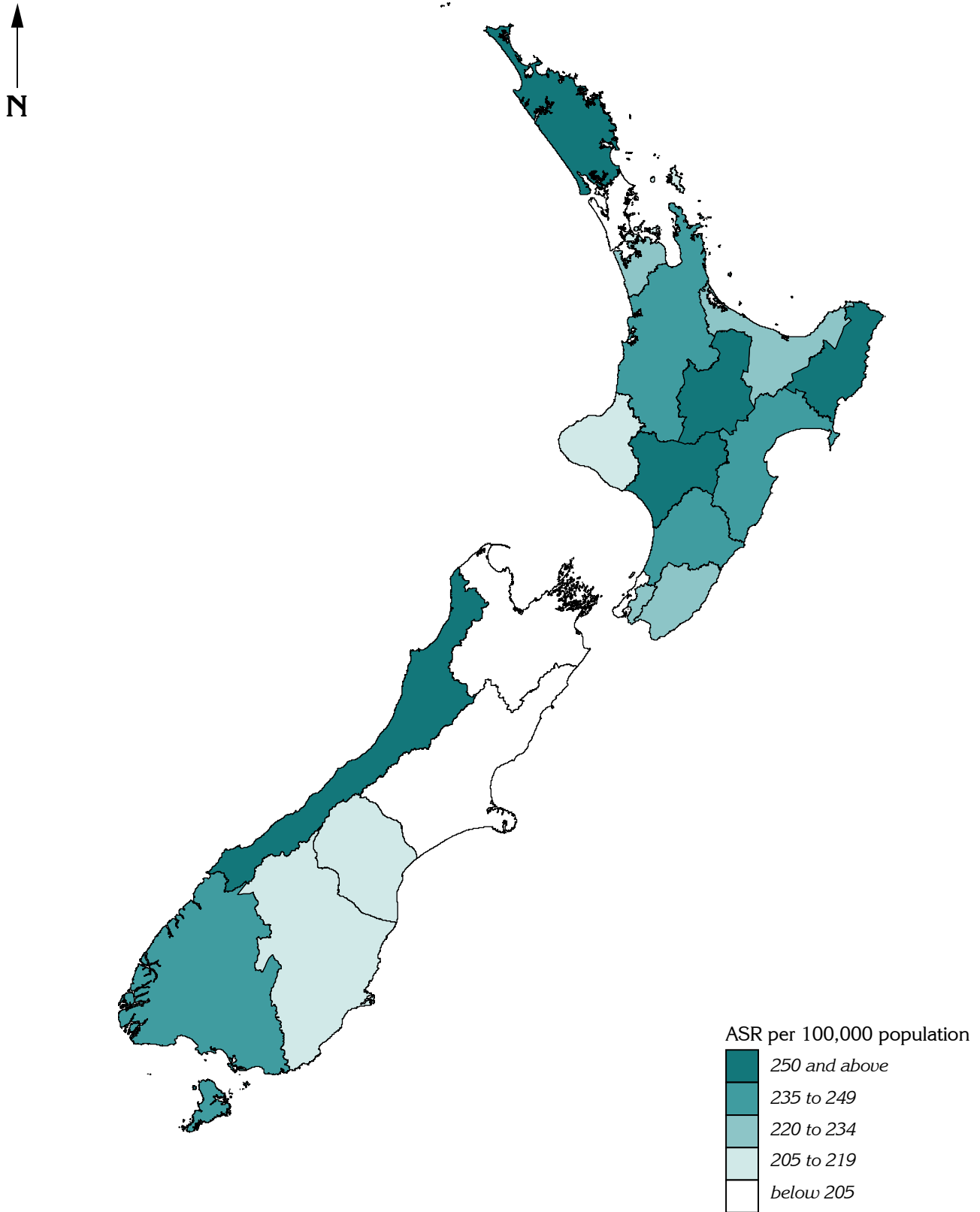
Table 5.9: Avoidable mortality from all causes by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	ASR per 100,000 population			RR M:F
	Males	Females	Total	
Māori	603.2	413.3	509.4	1.46**
Pacific peoples	476.0	282.3	379.0	1.69**
Euro/ others	237.1	137.0	186.9	1.73**
Total	274.2	164.4	219.3	1.67**
RR-Māori:Euro	2.54**	3.02**	2.73**	..
RR-Pacific:Euro	2.01**	2.06**	2.03**	..

Map 5.1

All causes: avoidable 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

Major condition group – Cancer: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

Avoidable mortality from cancer varied considerably by District Health Board, with the highest rate (89.1 deaths per 100,000 population) 32% above the average New Zealand rate of 67.7 deaths per 100,000 population (a rate ratio of 1.32^{**}); and the lowest rate (59.7) 12% below the national average (a rate ratio of 0.88^{**}) (Table 5.10).

The highest rates of avoidable mortality from cancer were in Tairāwhiti (89.1 deaths per 100,000 population), Lakes (84.4), Northland (81.1), Whanganui (77.0) and Southland (74.3) (Map 5.2).

Rates were lowest in Waitemata (59.7 deaths per 100,000 population), Canterbury (60.1), Nelson-Marlborough (61.8), Capital and Coast (62.4) and Auckland (64.1).

Table 5.10: Avoidable mortality from cancer by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	1,121	64.1
Bay of Plenty	768	67.9
Canterbury	1,511	60.1
Capital and Coast	773	62.4
Counties Manukau	1,261	72.9
Hawke's Bay	580	67.6
Hutt	483	68.7
Lakes	439	84.4
MidCentral	647	70.8
Nelson-Marlborough	473	61.8
Northland	721	81.1
Otago	748	70.1
South Canterbury	269	70.5
Southland	456	74.3
Tairāwhiti	215	89.1
Taranaki	416	65.8
Waikato	1,259	71.4
Wairarapa	168	65.8
Waitemata	1,346	59.7
West Coast	139	72.1
Whanganui	306	77.0
Total	14,100	67.7

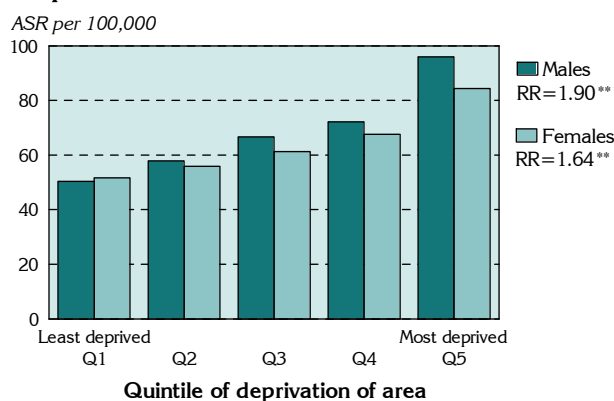
By deprivation

For both males and females, there was a marked deprivation gradient in the rates of avoidable mortality from cancer (Figure 5.4).

Rates for males were generally higher than for females, ranging from 50.4 deaths per 100,000 population in the least deprived areas (Quintile 1) to 96.0 in the most deprived areas (Quintile 5). The female rates ranged from 51.6 in Quintile 1 to 84.4 in Quintile 5.

Despite the relatively low rate in Quintile 1, the differential in rates between the most deprived areas and least deprived areas was larger for males (1.90^{**}) than for females (1.64^{**}).

Figure 5.4: Avoidable mortality from cancer by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from cancer varied by ethnicity (Table 5.11). The rate for Māori (141.9 deaths per 100,000 population) was more than twice (2.33^{**} times) that for European/ others (60.9): the rate for Pacific peoples was lower (106.3 deaths per 100,000 population), but still a substantial 1.75^{**} times.

For Pacific peoples and European/ others, the male rate of avoidable mortality from cancer was higher than the female rate: for the Māori population, the female rate was marginally lower than the male rate (a rate ratio of 0.98).

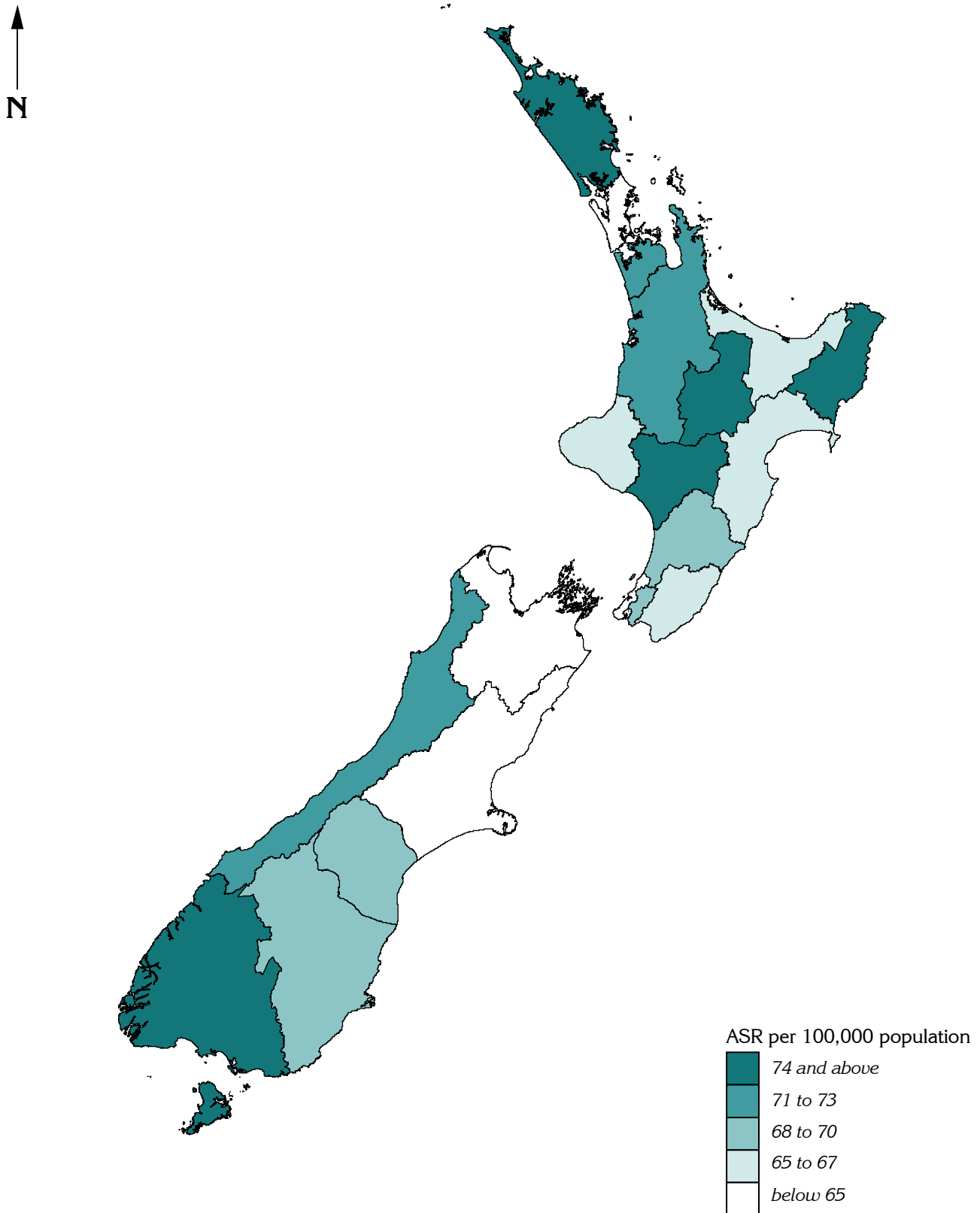
The differential in death rates between the Māori and European/ others was greater for females (2.45^{**}) than for males (2.21^{**}): for Pacific peoples, the differential was greater for males (1.86^{**}) than for females (1.65^{**}).

Table 5.11: Avoidable mortality from cancer by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	ASR per 100,000 population			RR M:F
	Males	Females	Total	
Māori	140.0	143.0	141.9	0.98
Pacific peoples	118.0	96.2	106.3	1.23 ^{**}
Euro/ others	63.4	58.4	60.9	1.09 ^{**}
Total	69.7	65.8	67.7	1.06^{**}
RR–Māori:Euro	2.21^{**}	2.45^{**}	2.33^{**}	..
RR–Pacific:Euro	1.86^{**}	1.65^{**}	1.75^{**}	..

Map 5.2

Major condition group – Cancer: avoidable 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

An Atlas of Avoidable Mortality in Australia and New Zealand

Selected cause – Colorectal cancer: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

The overall rate of mortality from colorectal cancer for New Zealand was 15.2 deaths per 100,000 population (Table 5.12). The highest rate at the District Health Board level (22.7 deaths per 100,000 population) was almost one and a half times (1.49**) the New Zealand average of 15.2; and the lowest rate (12.6) was 17% below the national average (a rate ratio of 0.83**).

Rates for colorectal cancer were highest in West Coast (22.7 deaths per 100,000 population), Southland (22.0), South Canterbury (20.7), Whanganui (20.1) and Otago (19.1) (Map 5.3).

The lowest rates were in Waitemata (12.6 deaths per 100,000 population), Hawke's Bay and Hutt (both 12.7), and Bay of Plenty (12.9).

Table 5.12: Avoidable mortality from colorectal cancer by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	247	14.2
Bay of Plenty	150	12.9
Canterbury	382	15.0
Capital and Coast	182	14.7
Counties Manukau	237	13.9
Hawke's Bay	111	12.7
Hutt	90	12.7
Lakes	82	15.6
MidCentral	149	16.0
Nelson-Marlborough	117	15.1
Northland	146	16.1
Otago	208	19.1
South Canterbury	82	20.7
Southland	137	22.0
Tairāwhiti	42	17.2
Taranaki	102	15.9
Waikato	279	15.6
Wairarapa	42	16.0
Waitemata	283	12.6
West Coast	45	22.7
Whanganui	82	20.1
Total	3,193	15.2

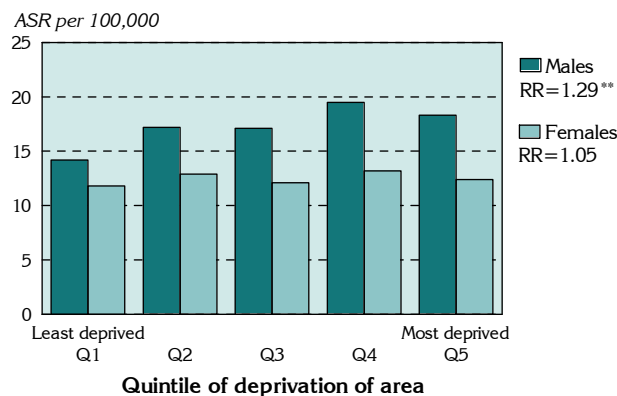
By deprivation

For males, there was a largely continuous gradient in the rates of male deaths from colorectal cancer, when examined by quintile of NZDep score; for females, there was no relationship evident (Figure 5.5).

Rates for males were higher than females in each quintile, ranging from 14.2 deaths per 100,000 population in the least deprived areas (Quintile 1) to 19.5 in Quintile 4. The female rates ranged from 11.8 in Quintile 1 to 13.2 in Quintile 4.

The differentials in rates between Quintile 1 and Quintile 5 were 1.29** for males and 1.05 for females.

Figure 5.5: Avoidable mortality from colorectal cancer by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from colorectal cancer varied by ethnicity, and showed a reversal of the trend for the causes described previously, with the highest rates for European/ others (Table 5.13). The differential in rates for Māori and Pacific peoples were 0.89** and 0.80**, respectively (or 89% and 80% of the European/ others rate).

For all ethnic groups, the male rate of colorectal cancer mortality was higher than the female rate

For both males and females, the rates for Māori and Pacific peoples were between 74% and 90% of the European/ others rates.

Table 5.13: Avoidable mortality from colorectal cancer by ethnicity and sex, New Zealand, 1997-2001

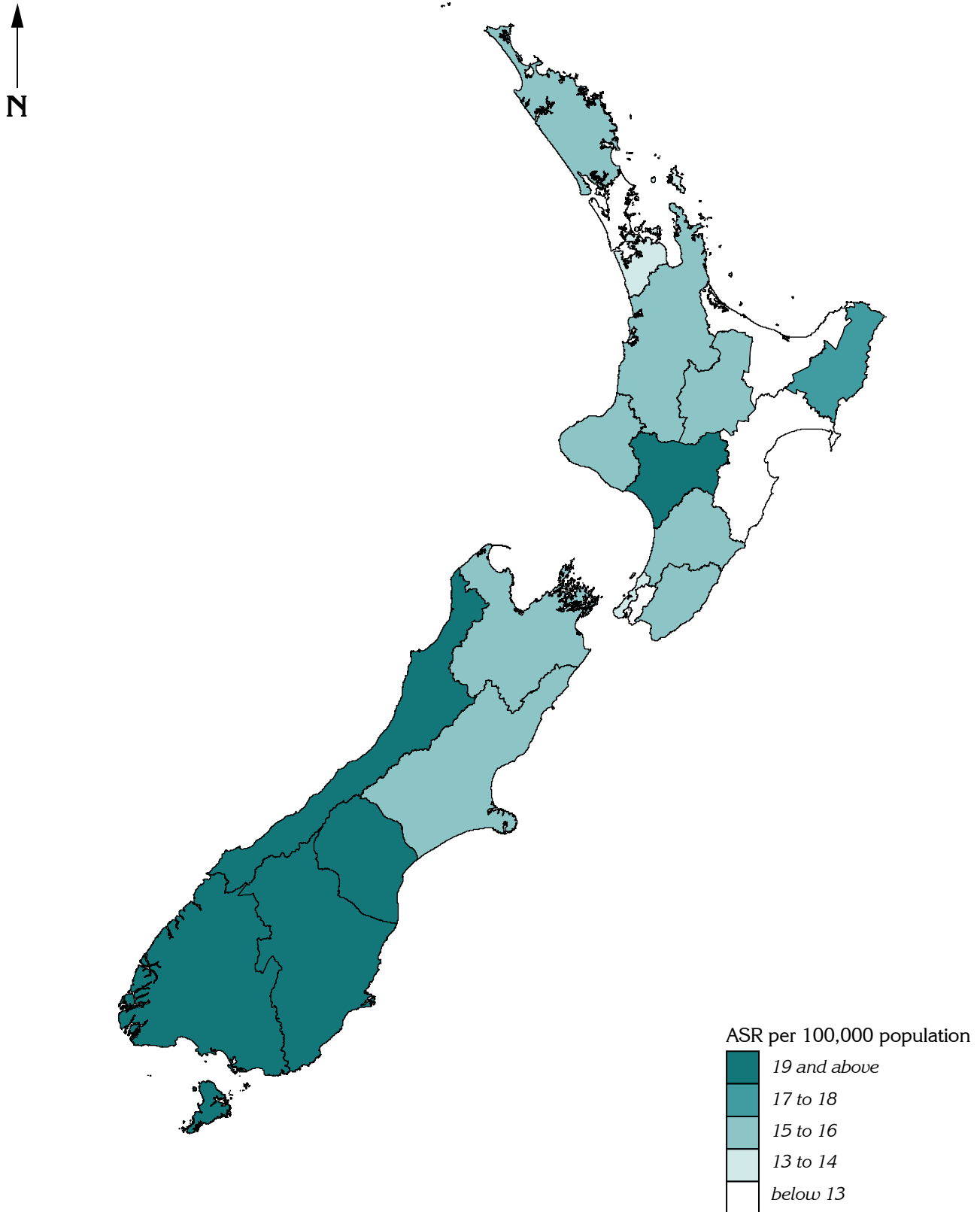
ASR per 100,000 population				
Ethnic group	Males	Females	Total	RR M:F
Māori	16.1	11.4	13.7	1.41*
Pacific peoples	15.2	9.6	12.3	1.58
Euro/ others	17.8	12.9	15.4	1.38**
Total	17.7	12.7	15.2	1.39**
RR–Māori:Euro	0.90	0.88	0.89	..
RR–Pacific:Euro	0.85	0.74	0.80	..

Map 5.3

Selected cause – Colorectal cancer: avoidable 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

Selected cause – Lung cancer: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

The overall rate of avoidable mortality from lung cancer for New Zealand was 21.6 deaths per 100,000 population (Table 5.14). The highest rate by District Health Board (31.5 deaths per 100,000 population) was almost one and a half times (1.46**) the New Zealand average and the lowest rate (16.9) was 22% below the national average (a rate ratio of 0.78**).

The highest rates of lung cancer were in the District Health Boards of Lakes (31.5 deaths per 100,000 population), Northland (31.1), and Tairāwhiti (30.6) (Map 5.4).

Rates were lowest in Nelson-Marlborough (16.9), Canterbury (17.4), Auckland (17.9), and Capital and Coast and Wairarapa (both 18.7).

Table 5.14: Avoidable mortality from lung cancer by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	309	17.9
Bay of Plenty	250	21.4
Canterbury	444	17.4
Capital and Coast	230	18.7
Counties Manukau	408	23.8
Hawke's Bay	184	21.0
Hutt	155	21.9
Lakes	166	31.5
MidCentral	217	23.2
Nelson-Marlborough	133	16.9
Northland	285	31.1
Otago	261	23.8
South Canterbury	83	20.8
Southland	146	23.4
Tairāwhiti	75	30.6
Taranaki	135	20.8
Waikato	445	24.8
Wairarapa	49	18.7
Waitemata	431	19.1
West Coast	43	21.5
Whanganui	96	23.4
Total	4,543	21.6

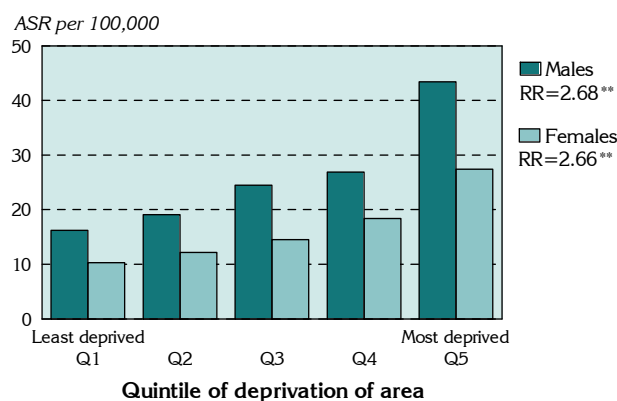
By deprivation

For both males and females, there was a marked deprivation gradient in the rates of death from lung cancer (Figure 5.6).

Age-standardised death rates for males were higher than females, ranging from 16.2 deaths per 100,000 population in the least deprived areas (Quintile 1) to 43.4 in the most deprived areas (Quintile 5). The female rates ranged from 10.3 in the least deprived areas to 27.4 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were both large, being 2.68** for males and 2.66** for females.

Figure 5.6: Avoidable mortality from lung cancer by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from lung cancer varied substantially by ethnicity (Table 5.15). The age-standardised death rate for Māori (72.1 deaths per 100,000 population) was more than four times (4.10**) the European/ others rate (17.6 deaths per 100,000 population): the rate for Pacific peoples (36.6) was just over double (a rate ratio of 2.08**).

For all ethnic groups, the male rate of lung cancer mortality was higher than the female rate, with a substantially larger differential for Pacific peoples (3.02**).

The differential in rates between the Māori and European/ others was greater for females (5.07**) than for males (3.44**): for Pacific peoples, the differential was greater for males (2.55**) than for females (1.43**).

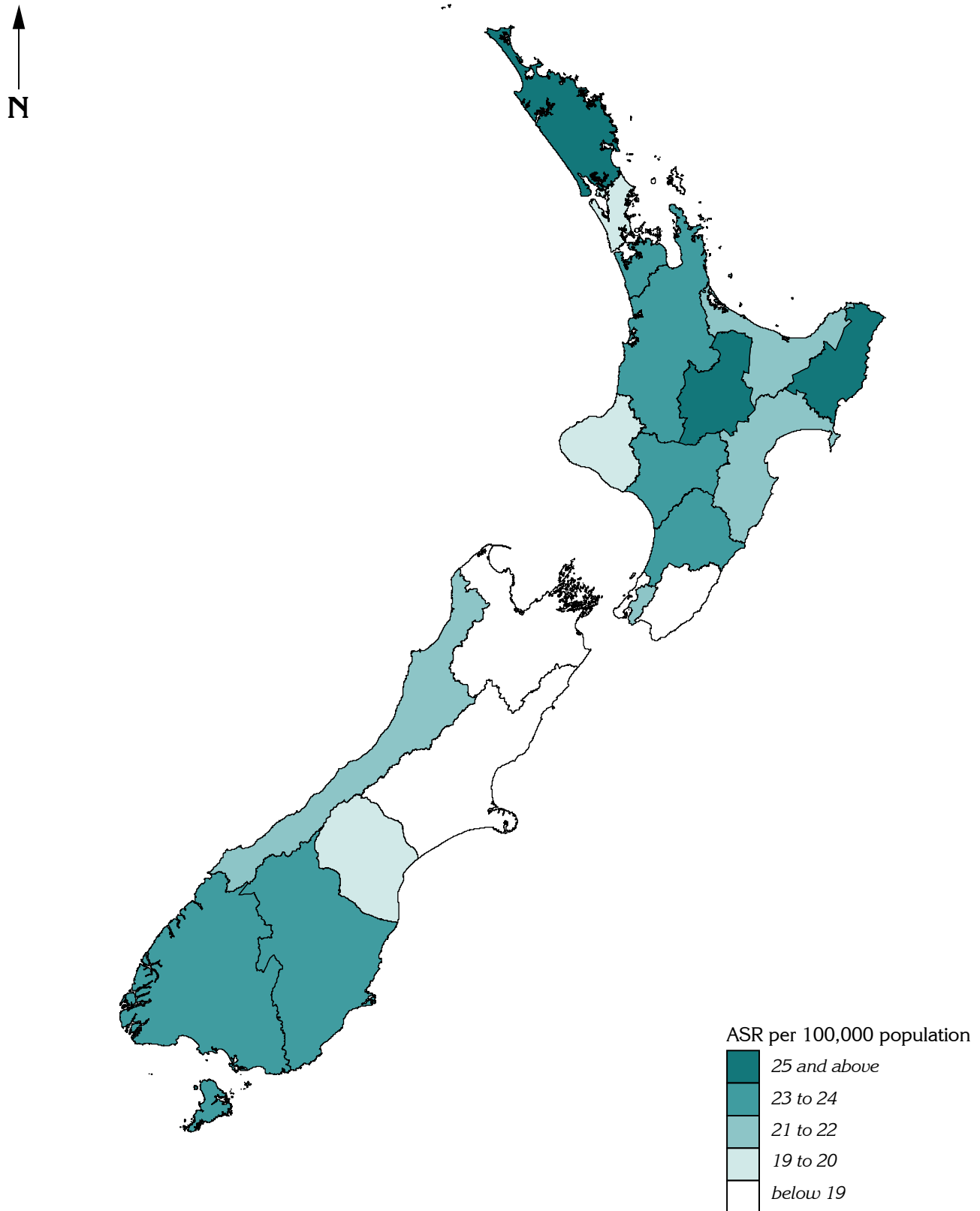
Table 5.15: Avoidable mortality from lung cancer by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	ASR per 100,000 population			RR M:F
	Males	Females	Total	
Māori	76.3	66.4	72.1	1.15*
Pacific peoples	56.5	18.7	36.6	3.02**
Euro/ others	22.2	13.1	17.6	1.69**
Total	26.3	16.8	21.6	1.57**
RR-Māori:Euro	3.44**	5.07**	4.10**	..
RR-Pacific:Euro	2.55**	1.43*	2.08**	..

Map 5.4

Selected cause – Lung cancer: avoidable 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

Major condition group – Cardiovascular diseases: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

The average rate of avoidable mortality from cardiovascular diseases for New Zealand was 73.1 deaths per 100,000 population (Table 5.16). The highest rate by District Health Board (107.8 deaths per 100,000 population) was almost one and a half times (1.47**) the New Zealand average, and the lowest rate (56.0) was 23% below the national average (a rate ratio of 0.77**).

The highest rates were in Tairāwhiti (107.8 deaths per 100,000 population), West Coast (98.2), Southland (90.6) and Lakes (88.6) (Map 5.5).

The lowest rates were in Waitemata (56.0), Nelson-Marlborough (61.7) and Canterbury (63.3).

Table 5.16: Avoidable mortality from cardiovascular diseases by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	1,201	68.4
Bay of Plenty	805	68.5
Canterbury	1,635	63.3
Capital and Coast	892	71.6
Counties Manukau	1,247	72.7
Hawke's Bay	728	82.8
Hutt	582	81.9
Lakes	470	88.6
MidCentral	832	88.3
Nelson-Marlborough	487	61.7
Northland	810	88.3
Otago	799	72.3
South Canterbury	267	66.6
Southland	573	90.6
Tairāwhiti	267	107.8
Taranaki	435	66.7
Waikato	1456	80.7
Wairarapa	213	80.3
Waitemata	1272	56.0
West Coast	197	98.2
Whanganui	344	83.9
Total	15,512	73.1

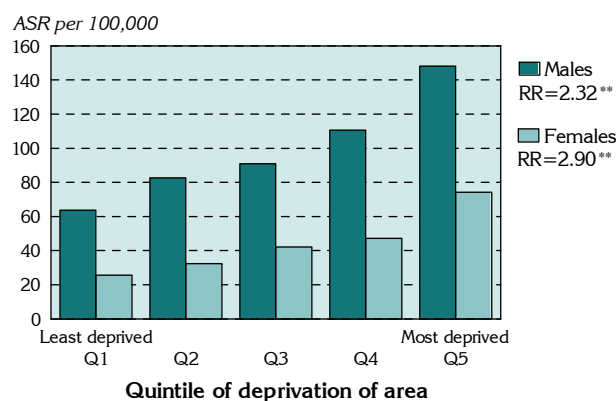
By deprivation

For both males and females, there was a marked deprivation gradient in rates of avoidable mortality from cardiovascular diseases (Figure 5.7).

Rates for males were higher than females, ranging from 63.7 deaths per 100,000 population in the least deprived areas (Quintile 1) to 148.1 in the most deprived areas (Quintile 5). The female rates ranged from 25.6 in the least deprived areas to 74.2 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were 2.32** for males and 2.90** for females.

Figure 5.7: Avoidable mortality from cardiovascular diseases by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from cardiovascular diseases varied markedly by ethnicity (Table 5.17). The Māori rate (73.1 deaths per 100,000 population) was 3.30** times the rate for European/ others (61.7): the rate for Pacific peoples (157.5 deaths per 100,000 population) was 2.55** times the rate for European/ others.

For all ethnic groups, the rate of avoidable mortality from cardiovascular diseases was markedly higher for males than for females; the largest differential was for European/ others (2.43**).

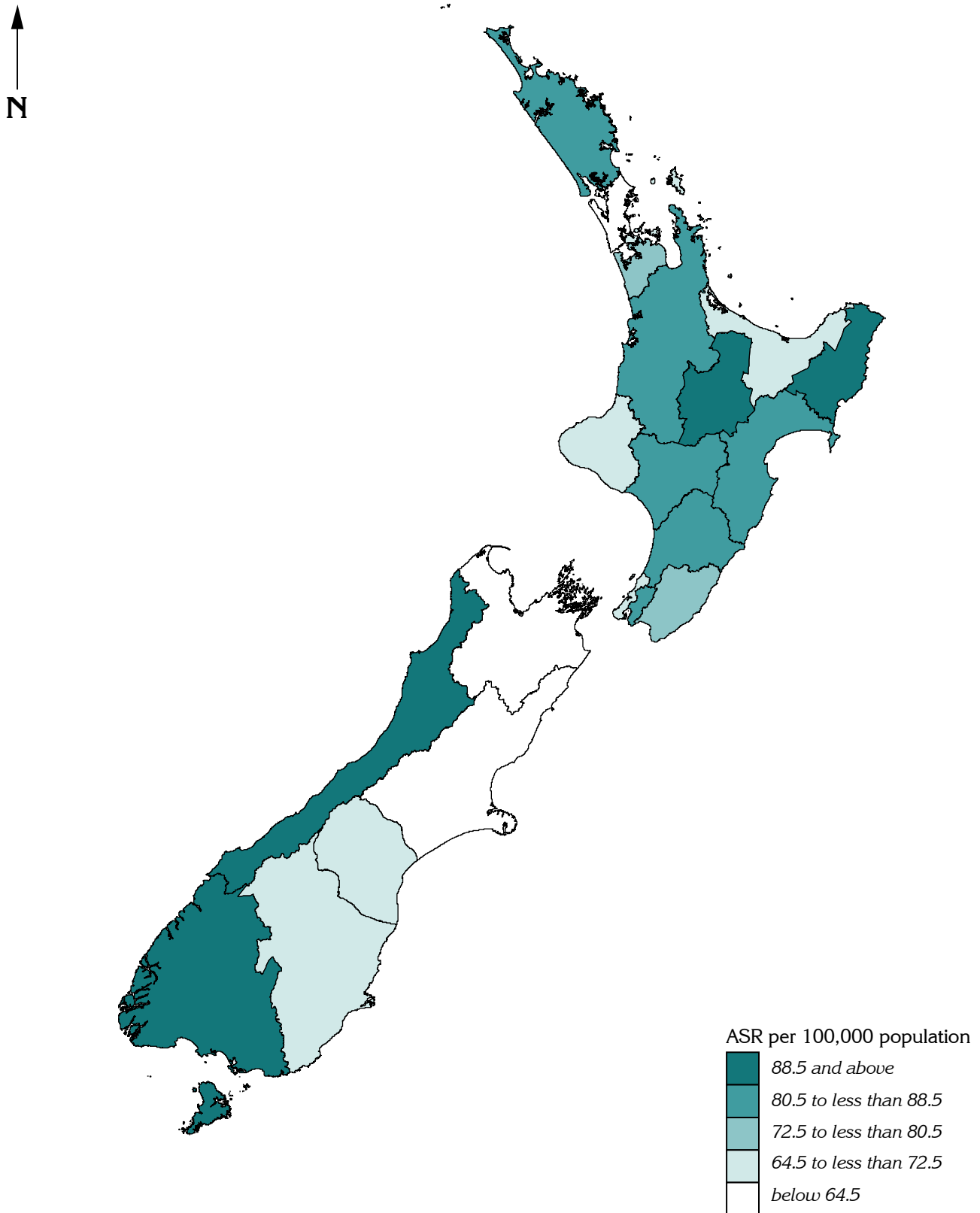
The differential in rates between the Māori and European/ others was larger for females (4.21**) than for males (2.90**); and, similarly, for Pacific peoples, with the differential 2.86** times for females and 2.41** times for males.

Table 5.17: Avoidable mortality from cardiovascular diseases by ethnicity and sex, New Zealand, 1997-2001

ASR per 100,000 population				
Ethnic group	Males	Females	Total	RR M:F
Māori	253.7	151.7	203.8	1.67**
Pacific peoples	211.2	103.1	157.5	2.05**
Euro/ others	87.5	36.0	61.7	2.43**
Total	101.0	45.1	73.1	2.24**
RR–Māori:Euro	2.90**	4.21**	3.30**	..
RR–Pacific:Euro	2.41**	2.86**	2.55**	..

Map 5.5

Major condition group – Cardiovascular diseases: avoidable 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

Selected cause – Ischaemic heart disease: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

The overall rate of avoidable mortality from ischaemic heart disease for New Zealand was 52.1 deaths per 100,000 population (Table 5.18). The highest rate (74.9 deaths per 100,000 population) was almost one and a half times (1.44**) the New Zealand average and the lowest rate (40.4) was 22% below the national average (a rate ratio of 0.78**).

The highest rates were in Tairāwhiti (74.9 deaths per 100,000 population), West Coast (73.2) and Southland (65.4) (Map 5.6).

The lowest rates were in Waitemata (40.4), Nelson-Marlborough (45.8), Canterbury (46.3) and Auckland (46.4).

Table 5.18: Avoidable mortality from ischaemic heart disease by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	809	46.4
Bay of Plenty	564	48.1
Canterbury	1,189	46.3
Capital and Coast	636	51.4
Counties Manukau	816	47.7
Hawke's Bay	521	59.5
Hutt	423	59.7
Lakes	335	63.1
MidCentral	589	62.8
Nelson-Marlborough	361	45.8
Northland	580	63.2
Otago	576	52.3
South Canterbury	202	50.6
Southland	413	65.4
Tairāwhiti	185	74.9
Taranaki	322	49.6
Waikato	1,032	57.3
Wairarapa	156	58.9
Waitemata	913	40.4
West Coast	147	73.2
Whanganui	262	64.0
Total	11,030	52.1

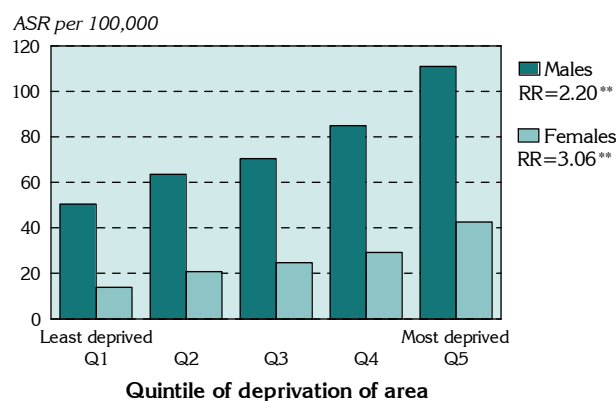
By deprivation

For both males and females, there was a marked deprivation gradient in the rates of death from ischaemic heart disease (Figure 5.8).

Death rates for males were higher than females, ranging from 50.4 deaths per 100,000 population in the least deprived areas (Quintile 1) to 111.0 in the most deprived areas (Quintile 5). The female rates ranged from 13.9 in the least deprived areas to 42.5 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were 2.20** for males and 3.06** for females.

Figure 5.8: Avoidable mortality from ischaemic heart disease by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from ischaemic heart disease varied by ethnicity (Table 5.19). The Māori rate (144.5 deaths per 100,000 population) was over three times (3.24**) the rate for European/ others (44.6): the rate for Pacific peoples (97.1) was 2.18** times.

For all ethnic groups, the male rate of mortality from ischaemic heart disease was substantially higher than the female rate; the largest differentials in rates were for Pacific peoples (3.31**) and European/ others (3.05**).

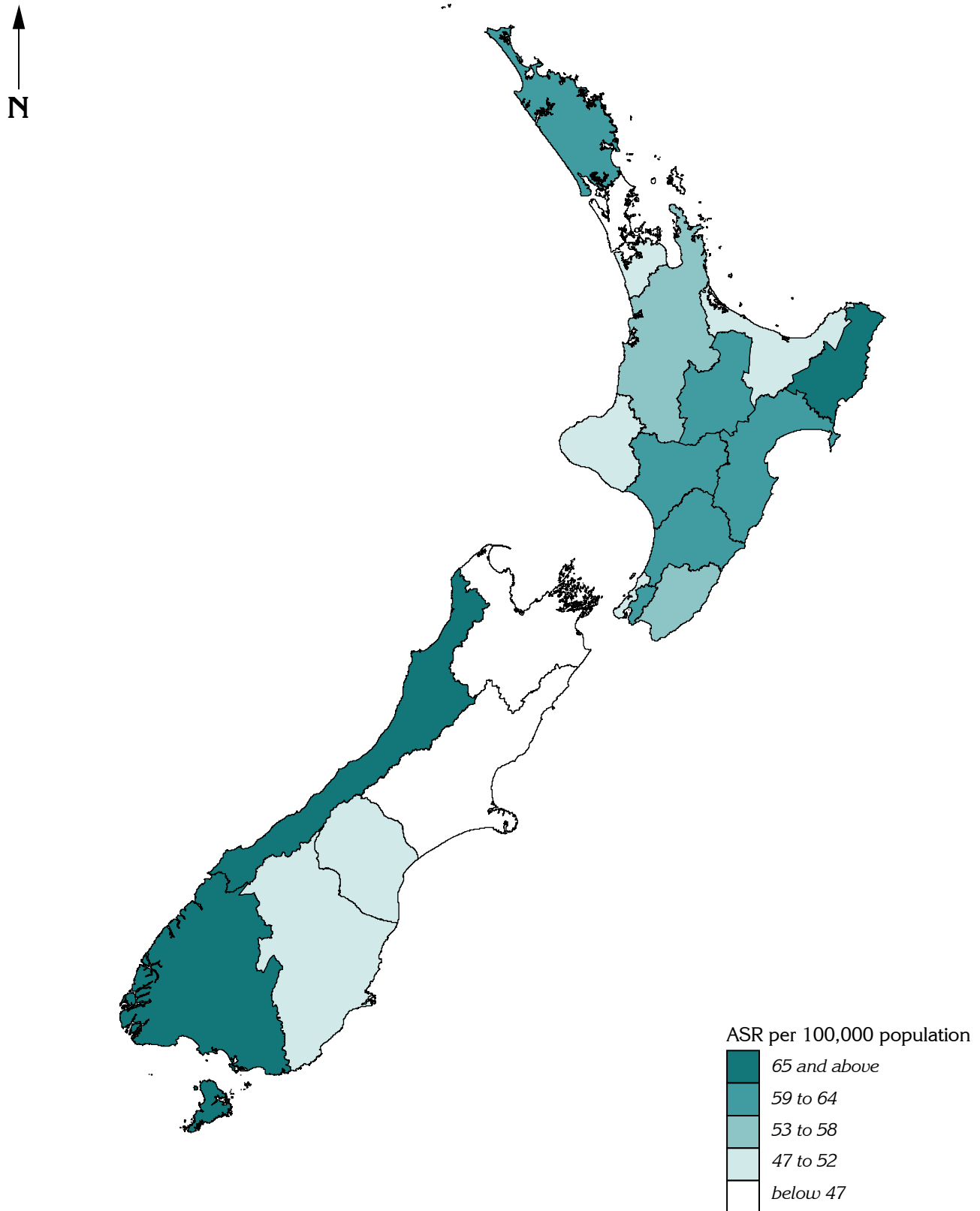
The differential between the Māori and the European/ others rates was notably higher for females (4.11**) than for males (2.94**): for Pacific peoples, the differential was slightly larger for males (2.22**) than for females (2.05**).

Table 5.19: Avoidable mortality from ischaemic heart disease by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	ASR per 100,000 population			RR M:F
	Males	Females	Total	
Māori	197.7	90.4	144.5	2.19**
Pacific peoples	149.5	45.2	97.1	3.31**
Euro/ others	67.2	22.0	44.6	3.05**
Total	77.5	26.8	52.1	2.89**
RR-Māori:Euro	2.94**	4.11**	3.24**	..
RR-Pacific:Euro	2.22**	2.05**	2.18**	..

Map 5.6

Selected cause – Ischaemic heart disease: avoidable 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

Selected cause – Cerebrovascular diseases: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

The overall rate of avoidable mortality from cerebrovascular diseases for New Zealand was 14.3 deaths per 100,000 population (Table 5.20). The highest rate by District Health Board (20.2 deaths per 100,000 population) was 41% above the New Zealand average (a rate ratio of 1.41^{*}) and the lowest rate (9.8) was 31% below the national average (a rate ratio of 0.69^{*}).

Rates at the District Health Board level were relatively uniform across both islands (Map 5.7), being highest in Tairāwhiti (20.2 deaths per 100,000 population), Northland and Southland (both 17.0).

The lowest rates were in South Canterbury (9.8), Waitemata (11.0), Canterbury (11.6), Nelson-Marlborough (11.8) and Taranaki (12.1).

Table 5.20: Avoidable mortality from cerebrovascular diseases by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	272	15.2
Bay of Plenty	160	13.4
Canterbury	305	11.6
Capital and Coast	194	15.3
Counties Manukau	283	16.3
Hawke's Bay	143	16.1
Hutt	121	16.8
Lakes	78	14.7
MidCentral	149	15.6
Nelson-Marlborough	94	11.8
Northland	156	17.0
Otago	160	14.3
South Canterbury	40	9.8
Southland	108	17.0
Tairāwhiti	50	20.2
Taranaki	80	12.1
Waikato	299	16.4
Wairarapa	44	16.4
Waitemata	254	11.0
West Coast	34	16.9
Whanganui	52	12.5
Total	3,073	14.3

By deprivation

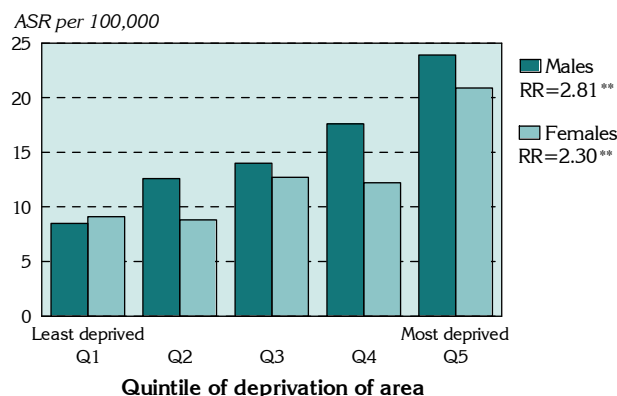
For both males and females, there was a marked deprivation gradient in the rates of mortality from cerebrovascular diseases (Figure 5.9).

Rates for males were higher than females, ranging from 8.5 deaths per 100,000 population in the least deprived areas (Quintile 1) to 23.9 in the most deprived areas (Quintile 5). The female rates

ranged from 9.1 in the least deprived areas to 20.9 in the most deprived areas.

The differentials in rates between Quintile 5 to Quintile 1 were 2.81^{**} for males and 2.30^{**} for females.

Figure 5.9: Avoidable mortality from cerebrovascular diseases by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Pacific peoples had the highest rates of avoidable mortality from cerebrovascular diseases, followed by Māori and European/ others (Table 5.21). The rate for Pacific peoples (37.8 deaths per 100,000 population) was 3.05^{**} times the European/ others rate (12.4); the rate for Māori (32.0) was similar high (2.58^{**}).

The male rate of avoidable mortality from cerebrovascular diseases was higher for Pacific peoples (1.12) and European/ others (1.32^{**}), and 18% lower (a rate ratio of 0.82^{*}) for Māori.

The differential in rates between Pacific peoples and European/ others was greater for females (3.33^{**}) than for males (2.82^{**}): and, similarly, between Māori and European/ others, with differentials of 3.24^{**} for females and 2.03^{**} for males.

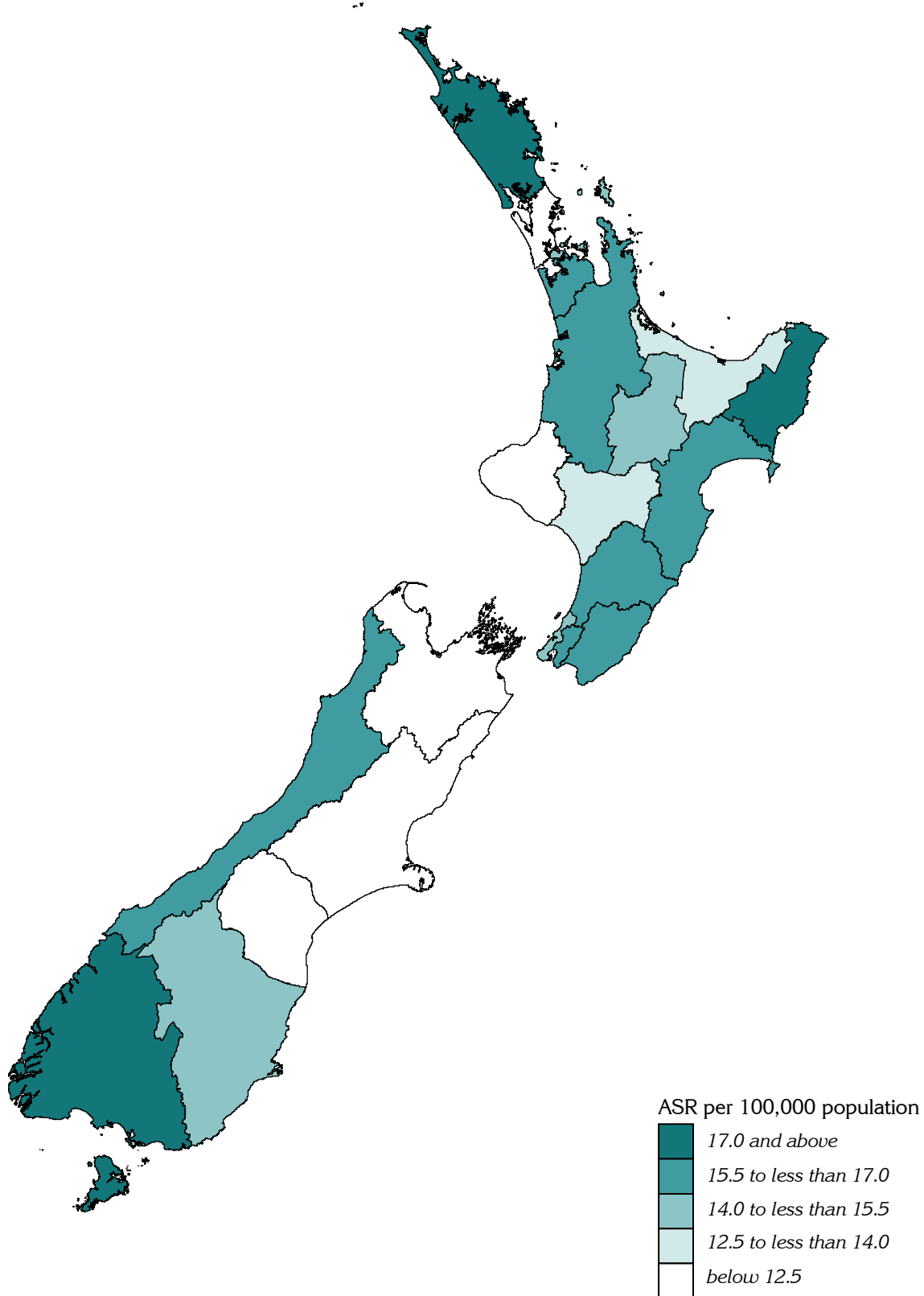
Table 5.21: Avoidable mortality from cerebrovascular diseases by ethnicity and sex, New Zealand, 1997-2001

ASR per 100,000 population

Ethnic group	Males	Females	Total	RR M:F
Māori	28.6	34.7	32.0	0.82 [*]
Pacific peoples	39.8	35.6	37.8	1.12
Euro/ others	14.1	10.7	12.4	1.32 ^{**}
Total	15.6	13.0	14.3	1.20^{**}
RR-Māori:Euro	2.03^{**}	3.24^{**}	2.58^{**}	..
RR-Pacific:Euro	2.82^{**}	3.33^{**}	3.05^{**}	..

Map 5.7

Selected cause – Cerebrovascular diseases: avoidable 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

Major condition group – Respiratory diseases: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

The rate of avoidable mortality from respiratory diseases for New Zealand was 13.4 deaths per 100,000 population (Table 5.22). The highest rate by District Health Board (20.9 deaths per 100,000 population) was one and a half times (1.56**) the New Zealand average and the lowest rate (10.0) was 25% below the national average (a rate ratio of 0.75**).

Rates were highest in West Coast (20.9 deaths per 100,000 population), Lakes (17.9) and Tairāwhiti (17.5) (Map 5.8).

The lowest rates were in Waitemata (10.0), Canterbury (11.0), Capital and Coast (11.5) and South Canterbury (11.7).

Table 5.22: Avoidable mortality from respiratory diseases by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	242	13.6
Bay of Plenty	169	13.6
Canterbury	297	11.0
Capital and Coast	146	11.5
Counties Manukau	243	14.1
Hawke's Bay	117	12.8
Hutt	112	15.4
Lakes	98	17.9
MidCentral	147	14.8
Nelson-Marlborough	102	12.5
Northland	119	12.5
Otago	179	15.4
South Canterbury	50	11.7
Southland	107	16.4
Tairāwhiti	45	17.5
Taranaki	83	12.1
Waikato	293	15.7
Wairarapa	34	12.2
Waitemata	231	10.0
West Coast	43	20.9
Whanganui	71	16.4
Total	2,925	13.4

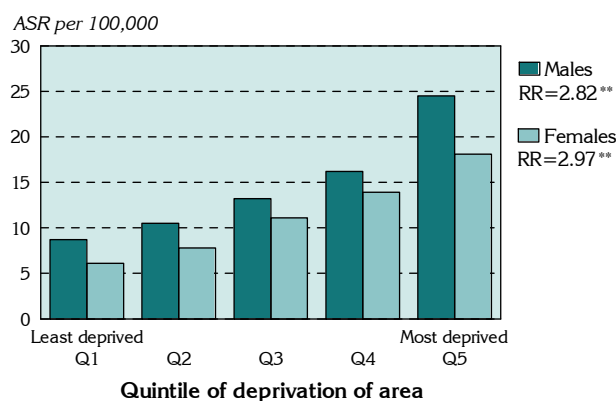
By deprivation

For both males and females, there was marked deprivation gradient in the rates of avoidable mortality from respiratory diseases (Figure 5.10).

Rates for males were higher than females, ranging from 8.7 deaths per 100,000 population in the least deprived areas (Quintile 1) to 24.5 in the most deprived areas (Quintile 5). The female rates ranged from 6.1 in the least deprived areas to 18.1 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were 2.82** for males and 2.97** for females.

Figure 5.10: Avoidable mortality from respiratory diseases by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from respiratory diseases varied by ethnicity (Table 5.23). The rate for Māori (36.1 deaths per 100,000 population) was over three times (3.09**) the European/ others rate (11.7): the rate for Pacific peoples (19.1 deaths per 100,000 population) was 1.63** times.

For Pacific peoples, the rate of avoidable mortality from respiratory diseases for males was more than three times (3.40**) the female rate, and also one third higher (1.35**) than the European/ others population. Conversely, for Māori, the male rate was 14% lower than the female rate (a rate ratio of 0.86).

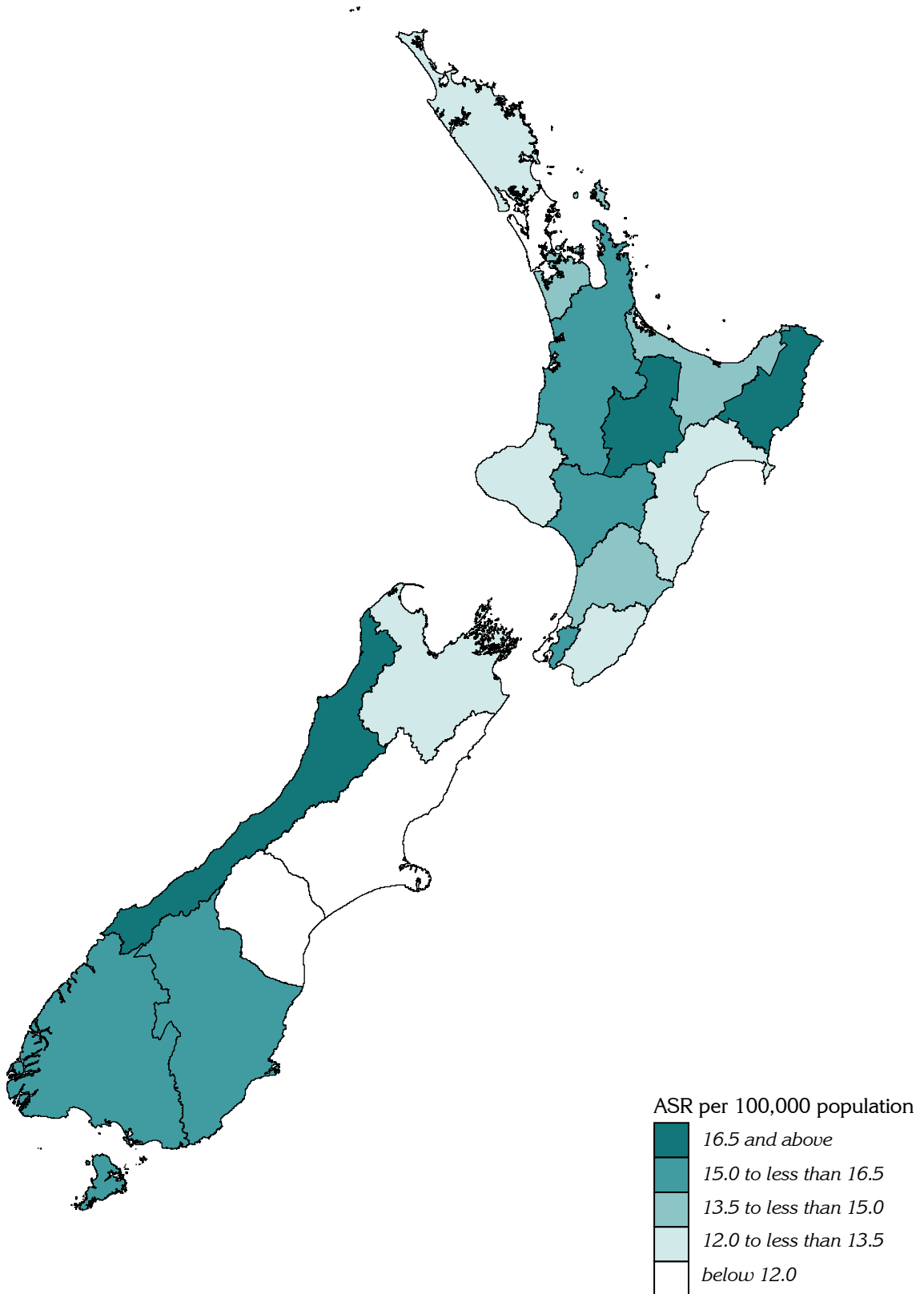
The differential in rates between the Māori and European/ other females was just less than four times (3.83**), and for males was approximately two and one half times (2.44**). For Pacific peoples, the differential was 2.22** for males; however, females had a relatively low rate, being 91% of the female European/ others rate.

Table 5.23: Avoidable mortality from respiratory diseases by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	ASR per 100,000 population			RR M:F
	Males	Females	Total	
Māori	32.9	38.3	36.1	0.86
Pacific peoples	30.9	9.1	19.1	3.40**
Euro/ others	13.5	10.0	11.7	1.35**
Total	15.0	11.7	13.4	1.28**
RR-Māori:Euro	2.44**	3.83**	3.09**	..
RR-Pacific:Euro	2.29**	0.91	1.63**	..

Map 5.8

Major condition group – Respiratory diseases: avoidable 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

Selected cause – Chronic obstructive pulmonary disease: avoidable mortality (45 to 74 years), New Zealand

By District Health Board

The average rate of mortality from Chronic Obstructive Pulmonary Disease (COPD) for New Zealand was 12.4 deaths per 100,000 population (Table 5.24). The highest rate by District Health Board (20.1 deaths per 100,000 population) was over 62% above the New Zealand average (a rate ratio of 1.62**) and the lowest rate (9.3) was 25% below the national average (a rate ratio of 0.75**).

The highest rates were in West Coast (20.1 deaths per 100,000 population), Lakes (17.2), Tairāwhiti (16.6), Whanganui (15.4) and Southland (15.0) (Map 5.9).

Rates were lowest in Waitemata (9.3 deaths per 100,000 population), Wairarapa (10.2), Tarānaki (10.3) and Canterbury (10.4).

Table 5.24: Avoidable mortality from COPD by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	223	12.5
Bay of Plenty	160	12.6
Canterbury	285	10.4
Capital and Coast	134	10.6
Counties Manukau	218	12.7
Hawke's Bay	110	11.9
Hutt	102	14.0
Lakes	94	17.2
MidCentral	132	13.1
Nelson-Marlborough	94	11.3
Northland	116	12.0
Otago	175	14.8
South Canterbury	50	11.4
Southland	99	15.0
Tairāwhiti	43	16.6
Taranaki	72	10.3
Waikato	275	14.6
Wairarapa	29	10.2
Waitemata	216	9.3
West Coast	42	20.1
Whanganui	68	15.4
Total	2,734	12.4

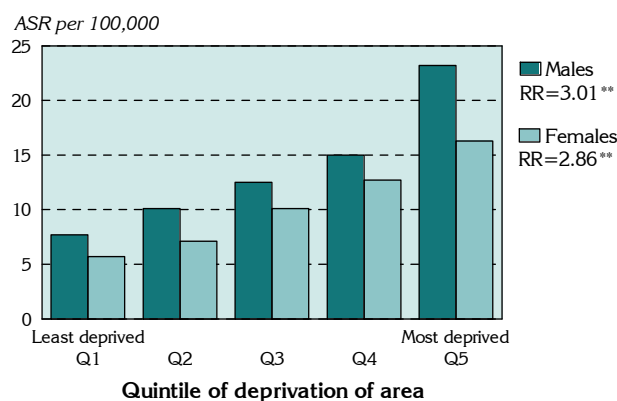
By deprivation

For both males and females, there was a marked deprivation gradient in the rates of death from chronic obstructive pulmonary disease (Figure 5.11).

Rates for males were higher than females, ranging from 7.7 deaths per 100,000 population in the least deprived areas (Quintile 1) to 23.2 in the most deprived areas (Quintile 5). The female rates ranged from 5.7 in the least deprived areas to 16.3 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were a high 3.01** for males and 2.86** for females.

Figure 5.11: Avoidable mortality from COPD by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from COPD varied by ethnicity (Table 5.25). The rate for Māori (34.4 deaths per 100,000 population) was 3.16** times the European/ others rate (10.9): the rate for Pacific peoples (17.4 deaths per 100,000 population) was 1.60** times.

As seen for all respiratory diseases (above), the male rate of mortality from COPD for Pacific peoples was four times (4.10**) the female rate, and was also higher for European/ others (1.40**). Conversely, for Māori, the male rate was 15% lower than the female rate (a rate ratio of 0.85).

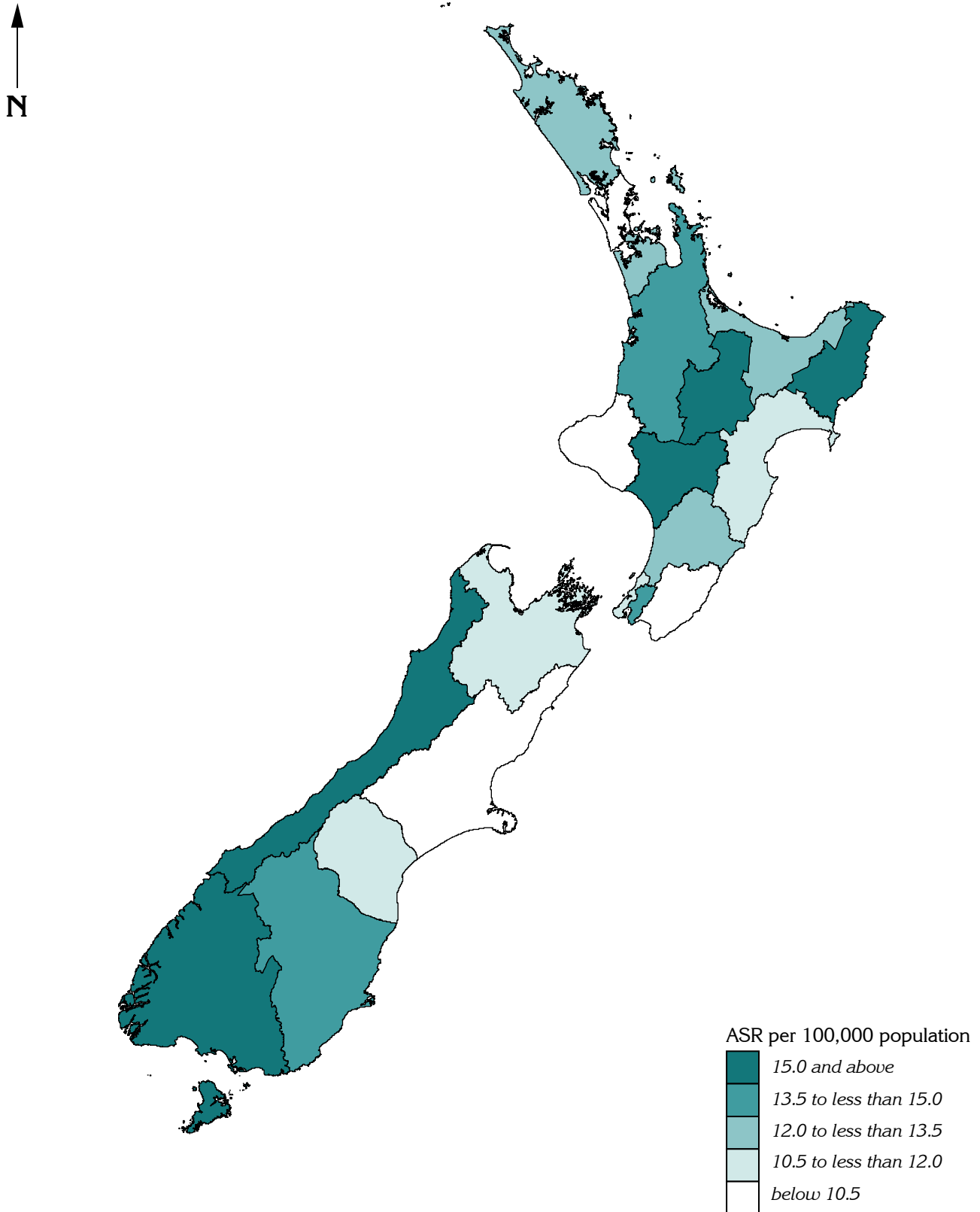
The differential between the Māori and European/ others rate was higher for females (4.02**) than for males (2.46**). For Pacific peoples, males had a relatively high rate (a differential of 2.32**); however, females had a relatively low rate, being 79% of the female European/ others rate.

Table 5.25: Avoidable mortality from COPD by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	ASR per 100,000 population			
	Males	Females	Total	RR M:F
Māori	31.2	36.6	34.4	0.85
Pacific peoples	29.5	7.2	17.4	4.10**
Euro/ others	12.7	9.1	10.9	1.40**
Total	14.0	10.7	12.4	1.31**
RR-Māori:Euro	2.46**	4.02**	3.16**	..
RR-Pacific:Euro	2.32**	0.79	1.60**	..

Map 5.9

Selected cause – Chronic obstructive pulmonary disease: avoidable mortality (45 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

Selected cause – Road traffic injuries: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

Avoidable mortality from road traffic injuries varied substantially, at the District Health Board level, around the New Zealand rate of 12.9 deaths per 100,000 population (Table 5.26). The highest rate (23.5 deaths per 100,000 population) was 82% above the average (a rate ratio of 1.82**), and the lowest rate (6.4) was 50% below the national average (0.50**).

The highest rates were in Bay of Plenty (23.5 deaths per 100,000 population), Northland and Whanganui (both 21.6), and Lakes (20.4) (Map 5.10).

The lowest rates were in Capital and Coast (6.4), Auckland (7.4), Hutt (7.7), Otago (8.1) and Canterbury (8.6).

Table 5.26: Avoidable mortality from road traffic injuries by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	127	7.4
Bay of Plenty	178	23.5
Canterbury	171	8.6
Capital and Coast	75	6.4
Counties Manukau	199	11.9
Hawke's Bay	118	18.3
Hutt	47	7.7
Lakes	88	20.4
MidCentral	129	17.6
Nelson-Marlborough	69	12.7
Northland	132	21.6
Otago	67	8.1
South Canterbury	39	16.6
Southland	75	15.4
Tairāwhiti	38	19.4
Taranaki	89	19.0
Waikato	253	17.2
Wairarapa	33	19.5
Waitemata	185	9.6
West Coast	23	16.9
Whanganui	63	21.6
Total	2,198	12.9

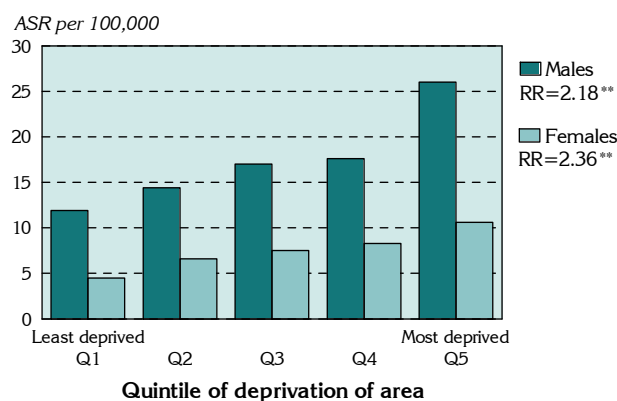
By deprivation

For both males and females, there was a marked deprivation gradient in the rates of death from road traffic injuries (Figure 5.12).

Rates for males were higher than females, ranging from 11.9 deaths per 100,000 population in the least deprived areas (Quintile 1) to 26.0 in the most deprived areas (Quintile 5). The female rates ranged from 4.5 in the least deprived areas to 10.6 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were 2.18** for males and 2.36** for females.

Figure 5.12: Avoidable mortality from road traffic injuries by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from road traffic injuries also varied markedly by ethnicity (Table 5.27). The rate for Māori (25.3 deaths per 100,000 population) was 2.34** times the European/ others rate (10.8). The rate for Pacific peoples (10.5 deaths per 100,000 population) was only marginally lower than the European/ others rate (three per cent lower, a rate ratio of 0.97).

For all ethnic groups, the male rates of avoidable mortality from road traffic injuries were more than twice the female rates.

The differential in rates between the Māori and European/ others was greater for females (2.56**) than for males (2.25**). For Pacific peoples, rates were lower than for the European/ others population, at 92% (of the European/ others rate) for females and 99% for males.

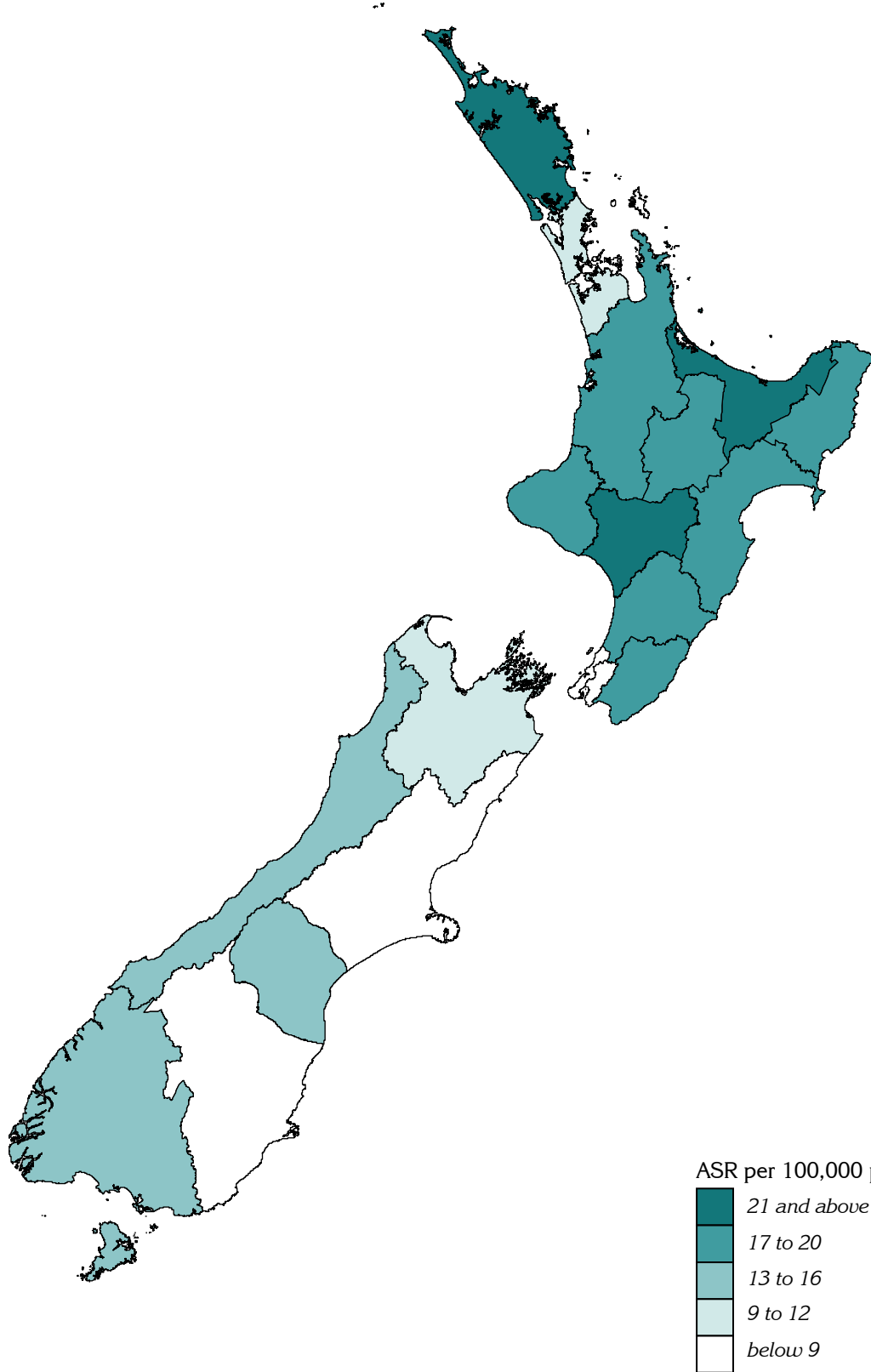
Table 5.27: Avoidable mortality from road traffic injuries by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	ASR per 100,000 population			RR M:F
	Males	Females	Total	
Māori	34.4	16.1	25.3	2.14**
Pacific peoples	15.2	5.8	10.5	2.62**
Euro/ others	15.3	6.3	10.8	2.43**
Total	18.0	7.7	12.9	2.34**
RR-Māori:Euro	2.25**	2.56**	2.34**	..
RR-Pacific:Euro	0.99	0.92	0.97	..

Map 5.10

Selected cause – Road traffic injuries: avoidable 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

Selected cause – Suicide and self inflicted injuries: avoidable mortality (0 to 74 years), New Zealand

By District Health Board

The rate of avoidable mortality from suicide and self inflicted injuries for New Zealand is 14.9 deaths per 100,000 population (Table 5.28). The highest rate (24.2 deaths per 100,000 population) was 62% (a rate ratio of 1.62**) higher than the average, and the lowest (10.7) approximately 30% below the national average (0.72).

The highest rates of avoidable mortality from suicide were in West Coast (24.2 deaths per 100,000 population), Lakes (20.9), Hawke's Bay (18.6), Nelson-Marlborough (18.4) and Bay of Plenty (18.1) (Map 5.11).

The lowest rates were in Wairarapa (10.7; 18 deaths), Capital and Coast (12.2) and Auckland (13.2).

Table 5.28: Avoidable mortality from suicide and self inflicted injuries by area, New Zealand, 1997-2001

District Health Board	Number	ASR
Auckland	238	13.2
Bay of Plenty	136	18.1
Canterbury	305	15.0
Capital and Coast	147	12.2
Counties Manukau	227	13.5
Hawke's Bay	119	18.6
Hutt	100	16.1
Lakes	91	20.9
MidCentral	103	14.2
Nelson-Marlborough	102	18.4
Northland	99	16.4
Otago	114	13.7
South Canterbury	41	17.1
Southland	79	15.9
Tairāwhiti	32	16.5
Taranaki	68	14.5
Waikato	214	14.6
Wairarapa	18	10.7
Waitemata	268	13.6
West Coast	34	24.2
Whanganui	51	17.6
Total	2,588	14.9

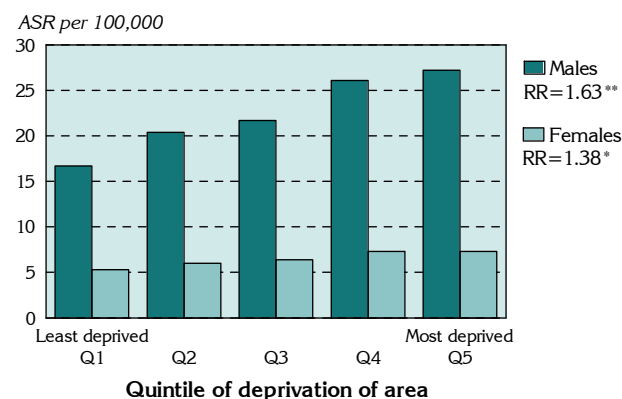
By deprivation

For both males and females, there was a deprivation gradient in the rates of death from suicide and self inflicted injuries (Figure 5.13).

Rates for males were higher than females, ranging from 16.7 deaths per 100,000 population in the least deprived areas (Quintile 1) to 27.2 in the most deprived areas (Quintile 5). The female rates ranged from 5.3 in the least deprived areas to 7.3 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were 1.63** for males and 1.38* for females.

Figure 5.13: Avoidable mortality from suicide and self inflicted injuries by deprivation and sex, New Zealand, 1997-2001



By ethnicity

Avoidable mortality from suicide and self inflicted injuries varied by ethnicity (Table 5.29). The rate for Māori (22.4 deaths per 100,000 population) was 1.6 times the European/ others rate (14.0). However, the rate for Pacific peoples (11.0 deaths per 100,000 population) was 21% lower than the European/ others rate.

For all ethnic groups, the male rate of avoidable mortality from suicide and self inflicted injuries was substantially higher than the female rate.

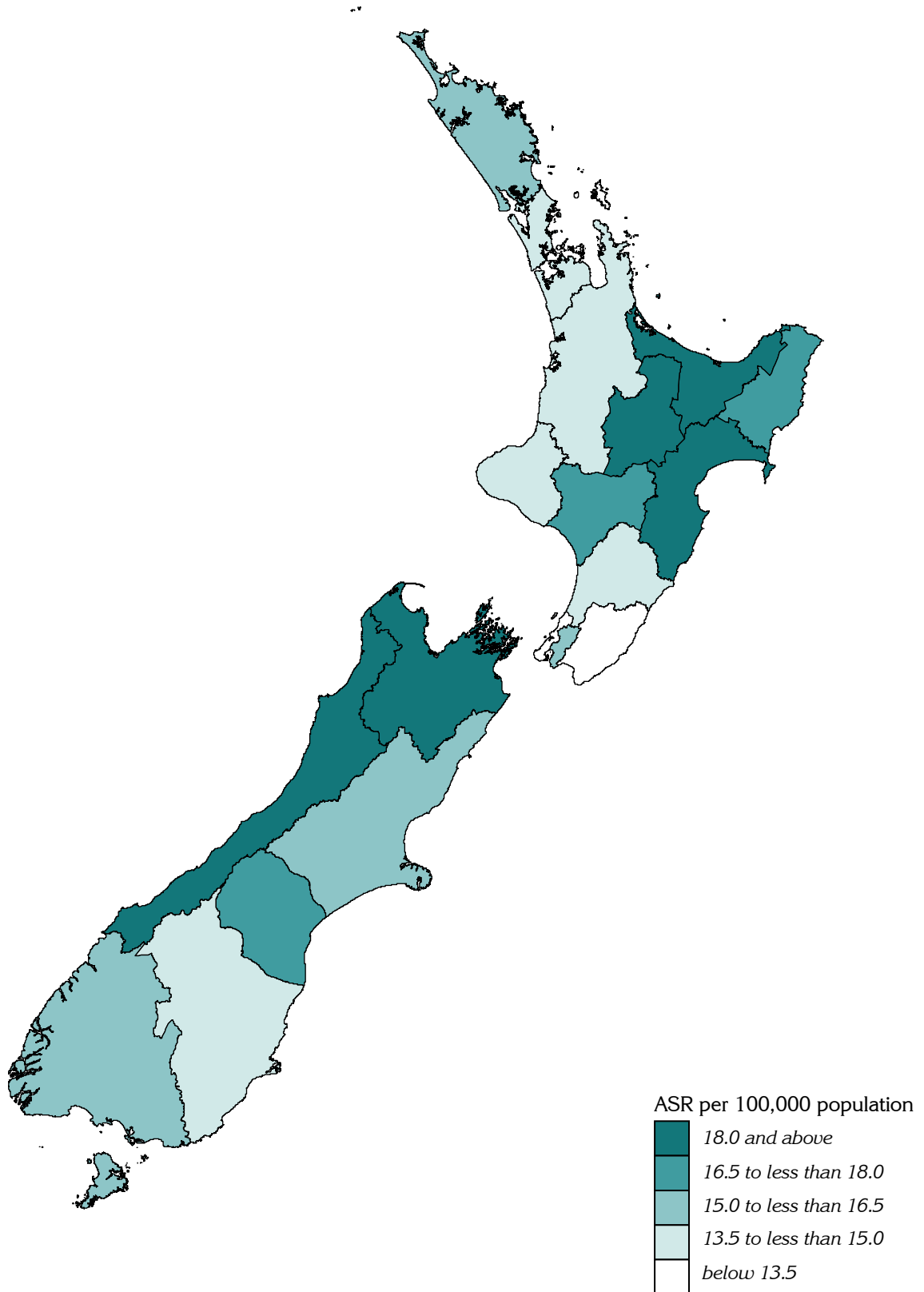
The differential in rates between the Māori and European/ others was greater for males (1.62**) than for females (1.55**). For Pacific peoples, the rates were below the European/ others rate, being 19% lower for males and 26% lower for females.

Table 5.29: Avoidable mortality from suicide and self inflicted injuries by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	ASR per 100,000 population			RR M:F
	Males	Females	Total	
Māori	35.1	9.6	22.4	3.66**
Pacific peoples	17.5	4.6	11.0	3.80**
Euro/ others	21.7	6.2	14.0	3.50**
Total	23.2	6.6	14.9	3.52**
RR–Māori:Euro	1.62**	1.55**	1.60**	..
RR–Pacific:Euro	0.81	0.74	0.79*	..

Map 5.11

Selected cause – Suicide and self inflicted injuries: avoidable 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

5.5 Avoidable mortality by deprivation

This section examines avoidable 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

Figure 5.14 (also shown on page 106) and Table 5.30 show clear gradients in rates of avoidable mortality across the quintiles of deprivation of area for the total population and for both males and females. Age-standardised death rates varied from 141.5 deaths in the least deprived areas (Quintile 1) to 321.9 in the most deprived areas (Quintile 5), a differential in rates between the most deprived areas and least deprived areas of 2.27**.

Within each quintile, the male rate was some 60% to 70% higher than the female rate. Male rates ranged from 174.7 deaths per 100,000 population in Quintile 1 to 401.3 in Quintile 5. For females, the variation in rates of avoidable mortality was

from 108.2 in the least deprived areas to 242.3 in the most deprived areas.

The differentials in rates between Quintile 5 and Quintile 1 were both large, being 2.30** for males and 2.24** for females.

Figure 5.14: Avoidable mortality (0 to 74 years) by deprivation and sex, New Zealand, 1997-2001

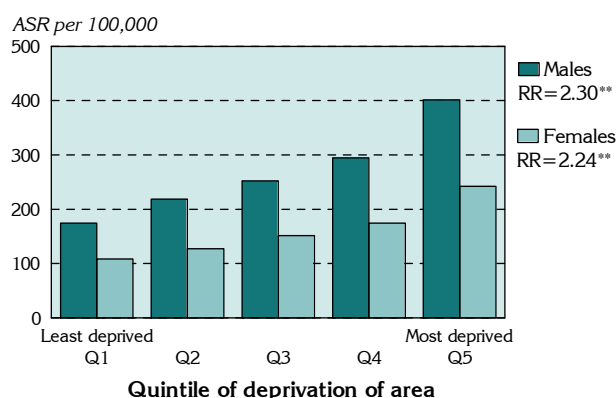


Table 5.30: Avoidable mortality (0 to 74 years) by deprivation and sex, New Zealand, 1997-2001

Quintile	Number			ASR per 100,000 population				Rate ratio M:F
	Males	Females	Total	Males	Females	Total	Rate ratio M:F	
1: Least deprived	3,132	2,001	5,133	174.7	108.2	141.5	1.61**	
2	4,116	2,510	6,626	218.8	127.1	172.9	1.72**	
3	4,921	3,142	8,063	252.2	151.7	202.0	1.66**	
4	6,275	4,033	10,309	294.6	174.6	234.6	1.69**	
5: Most deprived	7,176	4,610	11,785	401.3	242.3	321.9	1.66**	
Total	27,089	17,183	44,272	274.2	164.4	219.3	1.67**	
RR-Quintile 5:Quintile 1	..	..	..	2.30**	2.24**	2.27**	..

By excess deaths³

For the total population, and for both males and females, the number of excess deaths increased with increasing deprivation, with the fewest excess deaths in Quintile 2 and the largest number in Quintile 5 (most deprived) (Table 5.31).

The size of the impact of inequality is noteworthy: if mortality in all quintiles equalled that of the least deprived group (Quintile 1), total avoidable deaths

would be reduced from 44,272 (see Table 5.30 above) to 30,257. The 14,015 excess deaths that occurred over the observation period accounted for almost one third (31.7%) of total avoidable mortality.

For males, there were estimated to be 8,730 excess deaths (62.3%), and 5,285 for females (37.7%). The number of male excess deaths was between one and a half (Quintile 5) and just over twice (Quintile 2) the level for females.

³ See Chapter 2, *Methods*

Table 5.31: Excess deaths¹ from avoidable 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)	794	1,461	2,473	4,002	8,730	62.3
Females	(0)	360	881	1,503	2,541	5,285	37.7
Total	(0)	1,154	2,342	3,976	6,543	14,015	100.0
Ratio-M:F	..	2.21	1.66	1.65	1.57	1.65	..

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

By excess deaths and age

The number of excess deaths increased by age, with marginally fewer deaths in the 65 to 74 year age group (Table 5.32). Over 80.0% of excess deaths (11,150) were in the 45 to 64 year and 65 to 74 year age groups.

In the age group under one year, there were 376 excess deaths, 2.7% of the total for all age groups in the analysis, with twice this number in the 1 to 24 year age group (761 deaths, 5.4%).

One in eight (12.3%) of the total excess deaths were recorded in the 25 to 44 year age group. The largest number of excess deaths, 5,835 (41.6%) was in the 45 to 64 year age group, while the 65 to 74 year age group, with 5,315 (37.9%), had marginally fewer.

The pattern of excess deaths within each quintile of deprivation of area was similar to that for New Zealand as a whole, with the largest numbers (between 36% and 43% of excess deaths in each Quintile) in the two oldest age groups, and the smallest (less than 3%) in the youngest. Excess deaths in the 45 to 64 year and 65 to 74 year age groups in Quintile 2 accounted for a total of 935 deaths, 81.0% of excess deaths in this group.

The smallest number of excess deaths in Quintile 2 was among infants with 33 deaths (2.9%). There were 49 excess deaths in the 1 to 24 year age group and 137 in those aged 25 to 44 years.

In Quintile 3, the 65 to 74 year age group had 953 excess deaths, two fifths (40.7%) of all excess deaths in these areas, and marginally more than the 932 excess deaths (39.8%) in those aged 45 to 64 years. There were 48 excess deaths of infants under one year of age, and the 1 to 24 year and 25 to 44 year age groups recorded 124 and 285 excess deaths, respectively.

In Quintiles 4 and 5, excess deaths in the 65 to 74 year (1,578 and 2,330) and 45 to 64 year (1,613 and 2,808) age groups comprised 80.3% and 78.5% of excess deaths in these quintiles, respectively.

While the number of excess deaths in the 1 to 24 year age group was lower in Quintile 4 (221) than in Quintile 5 (368), the proportions were the same (5.6%). Similarly, in the 25 to 44 year age group, there was marginal variation in the proportions of excess deaths between Quintile 4 (11.5%, 459 deaths) and Quintile 5 (12.9%, 847 deaths).

Table 5.32: Excess deaths from avoidable 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)	33	48	105	190	376	2.7
1-24	(0)	49	124	221	368	761	5.4
25-44	(0)	137	285	459	847	1,728	12.3
45-64	(0)	481	932	1,613	2,808	5,835	41.6
65-74	(0)	454	953	1,578	2,330	5,315	37.9
Total	(0)	1,154	2,342	3,976	6,543	14,015	100.0

By excess deaths, age and sex

Total excess deaths for males were above those for females in each age group of the analysis, except for infants, where there was little difference by sex, although there were notable variations by age (Table 5.33).

The pattern of excess deaths by age for both sexes is similar to that for the total population, with the highest number of excess deaths for both males (3,686, 42.2% of male excess deaths) and females (2,149, 40.7% of female excess deaths) in the 45 to 64 year age group. The 45 to 64 and 65 to 74 year age groups accounted for more than three quarters of excess deaths in both males (79.4%, 6,936 deaths) and females (79.8%, 4,214).

The greatest differentials between male and female excess deaths were in the 1 to 24 year and 25 to 44 year age groups, where deaths in males (492,

5.6% and 1,115, 12.8%, respectively) were just under twice those for females in these age groups (270, 5.1%, and 612, 11.6%, respectively).

The greatest variation between male and female excess deaths was in Quintile 2, with almost four times the number of male deaths in the 1 to 24 year age group (39) than female deaths (10). The differential of 2.3 times for infants was notably larger than for this age group in the other deprivation groups. There were also differentials of greater than two in the 25 to 44 year age group and the 65 to 74 year age group.

In Quintile 3, male excess deaths in the 45 to 64 year age group (628) were more than twice those for females (305) in this age group. Differentials for the other age groups in this deprivation group ranged from less than one (in infants) to just under two (in the 1 to 24 year age group).

The number of excess deaths for males in the 1 to 24 year age group in Quintile 4 was just less than twice those for females, with slightly smaller differentials in each subsequent age group. For infants, female excess deaths were higher than those for males.

In Quintile 5, the most deprived areas, male excess deaths were 83% higher than for females in the 25 to 44 year age group. Apart from infants (where there was little difference in numbers of deaths) differentials between males and females in the other age groups in Quintile 5 were just over one and one half times.

Table 5.33: Excess deaths from avoidable mortality by quintile of deprivation, age and sex, New Zealand, 1997-2001

Age (years) and sex	Number					Total (Q2:Q5)	Per cent of total
	Q1	Q2	Q3	Q4	Q5		
Males							
Infants (<1)	(0)	23	23	43	98	187	2.1
1-24	(0)	39	82	146	225	492	5.6
25-44	(0)	94	177	297	548	1,115	12.8
45-64	(0)	317	628	1,014	1,728	3,686	42.2
65-74	(0)	321	551	973	1,404	3,250	37.2
Total	(0)	794	1,461	2,473	4,002	8,730	100.0
Females							
Infants (<1)	(0)	10	25	62	92	189	3.6
1-24	(0)	10	42	75	143	270	5.1
25-44	(0)	43	108	163	299	612	11.6
45-64	(0)	164	305	600	1,080	2,149	40.7
65-74	(0)	133	402	604	926	2,065	39.1
Total	(0)	360	881	1,503	2,541	5,285	100.0
Ratio-M:F							
Infants (<1)	..	2.30	0.92	0.69	1.07	0.99	..
1-24	..	3.90	1.95	1.95	1.57	1.82	..
25-44	..	2.19	1.64	1.82	1.83	1.82	..
45-64	..	1.93	2.06	1.69	1.60	1.72	..
65-74	..	2.41	1.37	1.61	1.52	1.57	..
Total	..	1.66	1.65	1.57	1.65	..	..

5.6 Avoidable mortality by ethnicity

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

Overall impact by ethnicity

The proportion of deaths at ages 0 to 74 years from avoidable causes is 77.4% for Māori, 76.1% for Pacific peoples and 73.5% for the European/ others population (Table 5.34).

The differences between the three ethnic groups are relatively small when compared with the differences in rates.

The Māori rate is 2.73** times that for European/ others, and the rate for Pacific peoples is more than twice (2.03**) the European/ others rate.

The proportion of deaths from amenable causes for Māori is 30.6%, lower than the proportions of 36.3% for Pacific peoples and 32.2% for the population.

Table 5.34: Avoidable mortality (0 to 74 years) by ethnicity, New Zealand, 1997-2001

Mortality category	Number			ASR per 100,000 population			Rate ratio	
	Māori	Pacific peoples	Euro/ others	Māori	Pacific peoples	Euro/ others	Māori: Euro/ others	Pacific: Euro/ others
Avoidable (Amenable)	8,449 (3,337)	2,332 (1,112)	33,491 (14,681)	509.4 (198.2)	379.0 (179.4)	186.9 (81.6)	2.73** (2.43**)	2.03** (2.20**)
Unavoidable	2,466	732	12,051	146.5	117.7	67.2	2.18**	1.75**
Total	10,915	3,064	45,542	655.5	496.7	254.2	2.58**	1.95**

By sex

Avoidable mortality varied substantially by ethnicity (Figure 5.15, Table 5.35 – note rates also shown in Table 5.9, page 106). Māori rates were the highest for the total population and for both males and females, followed by rates for Pacific peoples and the remaining population. The Māori rate for deaths from avoidable causes (509.4 deaths per 100,000 population) was 2.73** times the European/ others rate (186.9): the rate for Pacific peoples (379.0) was 2.01** times.

For all ethnic groups, the male rate of avoidable mortality was higher (1.46** to 1.73**) than the female rate. The differential between the Māori and the European/ others rate was larger for females (3.02**) than for males (2.54**).

For Pacific peoples, the rates were approximately double the European/ others rate for both males (2.01**) and females (2.03**).

Figure 5.15: Avoidable mortality (0 to 74 years) by ethnicity and sex, New Zealand, 1997-2001

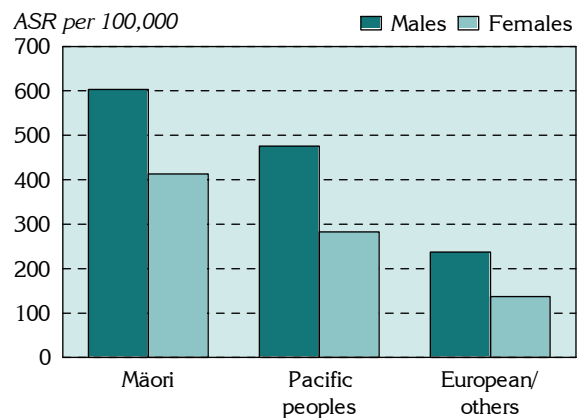


Table 5.35: Avoidable mortality (0 to 74 years) by ethnicity and sex, New Zealand, 1997-2001

Ethnic group	Number			ASR per 100,000 population			Rate ratio
	Males	Females	Total	Males	Females	Total	M:F
Māori	4,870	3,579	8,449	603.2	413.3	509.4	1.46**
Pacific peoples	1,412	919	2,332	476.0	282.3	379.0	1.69**
Euro/ others	20,806	12,685	33,491	237.1	137.0	186.9	1.73**
Total	27,089	17,183	44,272	274.2	164.4	219.3	1.67**
RR-Māori:Euro	..	..	..	2.54**	3.02**	2.73**	..
RR-Pacific:Euro	..	..	..	2.01**	2.06**	2.03**	..

By age

Apart from the infant death rate, which was higher for Pacific peoples, Māori rates for avoidable mortality were the highest in each age group; next highest were the rates for Pacific peoples and then the remaining population (Table 5.36, Figure 5.16).

The highest rates were in the 65 to 74 year age group, with a rate of 3,969.3 per 100,000 population for Māori, 3,143.4 for Pacific peoples, and 1,489.5 for European/ others.

The next highest rates were in the 45 to 64 year age group.

The rates of avoidable mortality for infants were 602.9 for Pacific peoples, 510.8 for Māori and 335.6 for European/ others. The largest differential in the Māori and European/ others rates was in the 45 to 64 year age group, with a rate ratio of 3.55**. For Pacific peoples, the largest differential was also in the 45 to 64 year age group, with a rate ratio of 2.48**.

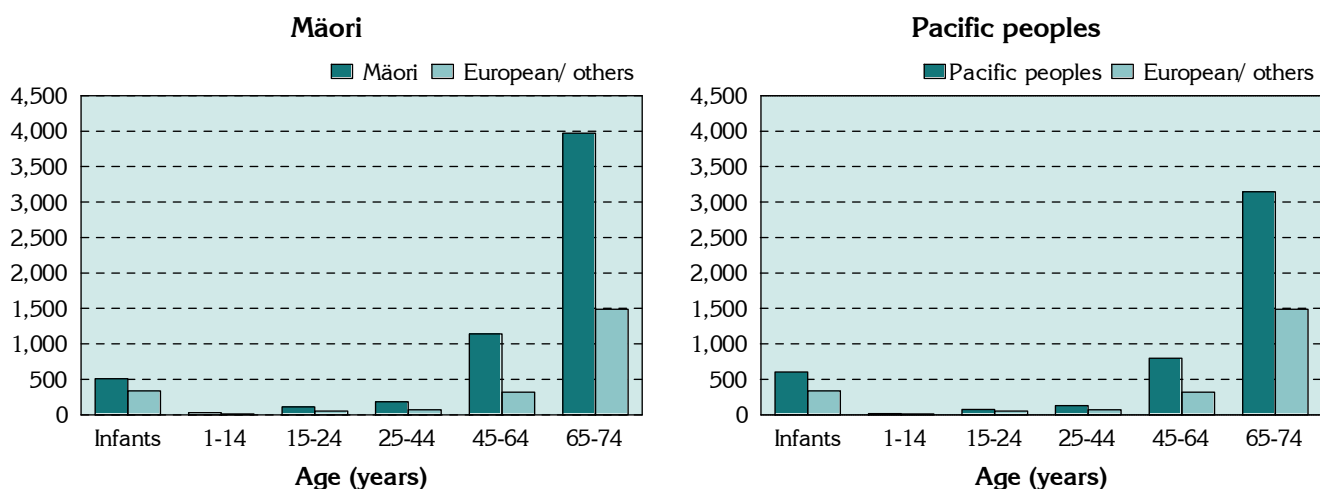
Table 5.36: Avoidable mortality by ethnicity and age, New Zealand, 1997-2001

Age (years)	Number			Rate per 100,000 ¹			Rate ratio Māori: Euro/ others	Rate ratio Pacific: Euro/ others
	Māori	Pacific peoples	Euro/ others	Māori	Pacific peoples	Euro/ others		
Infants (<1)	366	149	594	510.8	602.9	335.6	1.52**	1.80**
1-14	266	54	325	29.0	17.4	12.1	2.40**	1.44*
15-24	513	127	1,071	110.2	75.3	55.1	2.00**	1.37**
25-44	1,347	357	3,196	185.3	129.4	70.4	2.63**	1.84**
45-64	3,563	922	11,026	1,140.9	797.1	321.0	3.55**	2.48**
65-74	2,394	723	17,279	3,969.3	3,143.4	1,489.5	2.66**	2.11**
Total	8,449	2,332	33,491	509.4	379.0	186.9	2.73**	2.03**

¹ Rates are age standardised within age categories, except under 1 year

Figure 5.16: Avoidable mortality by ethnicity and age, New Zealand, 1997-2001

Rate per 100,000 population



The impact of avoidable 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 5.37). The proportions of years of life lost (YLL) from avoidable causes at ages 0 to 24 years were similar for the Māori population

(20.7%) and Pacific peoples (21.7%), and were more than twice the proportion for the European/ others (10.6%). At the same time, the proportions of YLL at ages 45 to 74 years for Māori (58.6%) and Pacific peoples (58.3%) were notably lower than the proportion for the European/ others at these ages (74.9%).

Table 5.37: YLL from avoidable mortality by ethnicity and age, New Zealand, 1997-2001

Age (years)	Number			Per cent			Ratio	Ratio
	Māori	Pacific peoples	Euro/ others	Māori	Pacific peoples	Euro/ others	Māori: Euro/ others	Pacific: Euro/ others
Infants (<1)	11,185	4,548	18,123	6.9	10.1	3.3	2.08**	3.07**
1-14	7,949	1,614	9,695	4.9	3.6	1.8	2.76**	2.04**
15-24	14,518	3,586	30,263	8.9	8.0	5.5	1.61**	1.45**
25-44	33,817	8,916	79,944	20.7	19.9	14.6	1.42**	1.37**
45-64	65,819	17,216	201,222	40.3	38.4	36.7	1.10**	1.05**
65-74	29,884	8,934	209,512	18.3	19.9	38.2	0.48**	0.52**
Total	163,173	44,815	548,759	100.0	100.0	100.0	..	..

By deprivation

There are clear socioeconomic gradients in the rates of avoidable mortality for Māori and European/ others, but no clear pattern for Pacific peoples (Table 5.38). 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 (Quintile 5) and the least deprived areas (Quintile 1) for Māori, compared to 1.77** for European/ others.

The greatest differential in rates between the Māori and European/ others was in the most deprived areas, where the Māori rate (509.4 deaths per 100,000 population) was more than two and half times (2.73**) the rate for European/ others (186.9). The highest differential in rates between Pacific peoples and European/ others was in Quintile 1 where the Pacific peoples rate (368.8 deaths per 100,000 population) was also 2.73** times the European/ others rate (135.3).

Table 5.38: Avoidable 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	307	95	4,730	286.7	368.8	135.3	2.12**	2.73**
2	604	151	5,871	379.4	354.3	161.7	2.35**	2.19**
3	1,109	281	6,673	411.9	335.3	183.3	2.25**	1.83**
4	1,836	470	8,003	483.7	367.8	205.9	2.35**	1.79**
5: Most deprived	4,205	1,260	6,321	600.8	396.7	239.1	2.51**	1.66**
Total	8,449	2,332	33,491	509.4	379.0	186.9	2.73**	2.03**
RR-Q5:Q1	2.10**	1.08**	1.77**

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