4 Avoidable mortality: Australia, 1997-2001

4.1 Total avoidable and unavoidable mortality

Almost three quarters (71.5%) of all deaths at ages 0 to 74 years over the period 1997 to 2001 are considered to be avoidable. Of these avoidable deaths, 40.2% (or 28.7% of total deaths at these ages) are considered to be amenable to health care (Table 4.1).

The age-standardised death rate (ASR) for avoidable mortality over the period was176.6 deaths per 100,000 population. Within this overall rate, 70.4 deaths per 100,000 population were estimated to be amenable to health care. This sub-set is shown in brackets in Table 4.1.

The death rate from the remaining, or 'unavoidable' deaths, was 70.2 per 100,000 population, and the rate for all deaths at these ages was 246.8 deaths per 100,000 population.

A higher proportion of male deaths (73.0%) were from conditions considered to be avoidable, compared to female deaths (68.9%): the 123,026 male deaths accounted for almost two thirds (64.8%) of avoidable mortality.

The years of life lost (YLL)[1] from avoidable mortality over the observation period were 3.3 million, and were higher for males (2.2 million years) than for females (1.2 million years).

[1] See Chapter 2, *Methods*

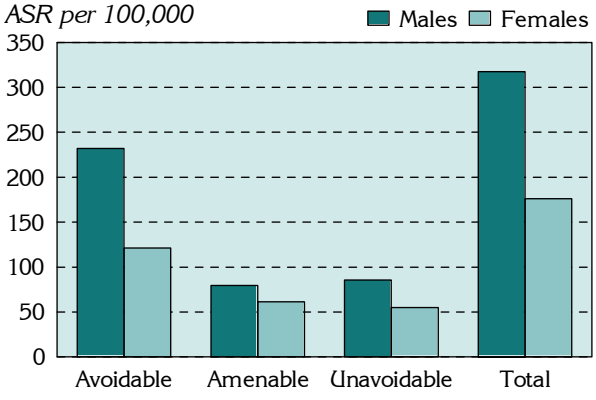
Table 4.1: Avoidable mortality (0 to 74 years) by sex, Australia, 1997-2001

Mortality category	Number			Per cent of total	ASR per 100,000			Rate ratio M:F
	Males	Females	Total		Males	Females	Total	
Avoidable mortality	123,026	66,819	189,845	71.5	232.1	121.1	176.6	1.92**
(Amenable mortality)	(42,568)	(33,682)	(76,249)	(28.7)	(79.4)	(61.4)	(70.4)	(1.29**)
Unavoidable mortality	45,463	30,119	75,582	28.5	85.5	55.0	70.2	1.55**
Total mortality	**168,489**	**96,938**	**265,427**	**100.0**	**317.6**	**176.1**	**246.8**	**1.80***
Avoidable mortality								
- as % of Total	**73.0**	**68.9**	**71.5**	**..**	**..**	**..**	**..**	**..**
- YLL ('000)	**2,174.4**	**1,153.0**	**3,327.4**	**..**	**..**	**..**	**..**	**..**

Death rates in all categories of mortality were higher for males than for females (Table 4.1, Figure 4.1). For avoidable mortality, the rate for males was 232.1 deaths per 100,000 males, and the rate for females was 121.1, with the male rate 92% higher than the female rate (a rate ratio of 1.92**).

For amenable mortality, the male rate was 79.4 deaths per 100,000 males, 29% higher than the female rate of 61.4 (a rate ratio of 1.29**). The death rate for unavoidable mortality for males (85.5 deaths per 100,000 males) was over half as high again as the rate for females (55.0: a rate ratio of 1.55**).

Figure 4.1: Avoidable mortality (0 to 74 years) by sex, Australia, 1997-2001



4.2 Avoidable mortality by age and sex

Almost half (46.6%) of avoidable mortality at ages 0 to 74 years occurred in the 65 to 74 year age group (Table 4.2). The 45 to 64 and 25 to 44 year age groups accounted for 33.9% and 12.8% of avoidable mortality, respectively, with the age groups below 25 years contributing 6.7%.

Age-standardised death rates varied from 1,338.8 deaths per 100,000 population in the 65 to 74 year age group to 10.2 at ages 1 to 14 years. Other highest rates were for infants under one year of age (315.4) and in the 45 to 64 year age group (309.6).

Table 4.2: Avoidable mortality by age and sex, Australia, 1997-2001

Age (years)	Number			Per cent of total	Rate per 100,000 population[1]			Rate ratio
	Males	Females	Total		Males	Females	Total	M:F
Infants (<1)	2,151	1,640	3,791	2.0	349.7	281.1	315.4	1.24**
1-14	1,132	746	1,878	1.0	12.0	8.3	10.2	1.45**
15-24	5,289	1,756	7,045	3.7	77.2	26.8	52.0	2.88**
25-44	16,967	7,389	24,356	12.8	116.4	49.7	83.1	2.34**
45-64	41,251	23,031	64,282	33.9	395.4	223.8	309.6	1.77**
65-74	56,236	32,257	88,493	46.6	1,760.4	917.3	1,338.8	1.92**
Total	**123,026**	**66,819**	**189,845**	**100.0**	**232.1**	**121.1**	**176.6**	**1.92****

[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 4.2, Figure 4.2). Whilst the highest rates for both males and females were in the 65 to 74 year age group, the largest differentials between the male and female rates were in the 15 to 24 and 25 to 44 year age groups.

For the 15 to 24 year age group, the male rate (77.2 deaths per 100,000 population) was 2.88** times the female rate (26.8); and for the 25 to 44 year age group, the male rate (116.4) was 2.34** times the female rate (49.7). For the 65 to 74 year age group, the male rate (1,760.4) was almost twice (1.92**) the female rate (917.3).

Figure 4.2: Avoidable mortality by age and sex, Australia, 1997-2001



From 1997 to 2001, avoidable mortality for the population aged 0 to 74 years accounted for a total of 3.3 million years of life lost (YLL) (Table 4.3). YLL from avoidable mortality were highest in the 45 to 64 year age group (1.2 million), followed by the 65 to 74 year age group (1.1 million). Together, these two age groups accounted for 70% of total YLL from avoidable mortality.

Table 4.3: YLL from avoidable mortality by age and sex, Australia, 1997-2001

Age (years)	Number ('000)		
	Males	Females	Total
Infants (<1)	65.7	50.1	115.7
1-14	33.9	22.4	56.2
15-24	149.4	49.7	199.1
25-44	430.8	185.3	616.0
45-64	776.4	436.8	1,213.1
65-74	718.2	408.9	1,127.1
Total	**2,174.4**	**1,153.0**	**3,327.4**

YLL were higher for males than females in all age groups. The largest differentials in the number of YLL between males and females were in the 15 to 24 (YLL for males was 3.0 times females) and the 25 to 44 year (males 2.3 times females) age group; the smallest (males 1.3 times females) was recorded for infants.

4.3 Avoidable mortality by cause

Table 4.4 shows the number, age-standardised death rate (ASR), 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 for the major condition groups were for cancers, with a rate of 56.2 deaths per 100,000 population (32.8% of avoidable mortality), and cardiovascular diseases (52.4, 31.6% of avoidable mortality).

Together, these two major condition groups were responsible for over 60% of avoidable mortality at ages 0 to 74 years.

Similarly, the numbers of YLL from avoidable mortality were highest for these two major condition groups – cancers and cardiovascular diseases – accounting for 1.0 million and 900,000 YLL, respectively.

Table 4.4: Avoidable mortality (0 to 74 years) by major condition group and cause, Australia, 1997-2001

Major condition group/ cause	Number	ASR	Per cent of total	YLL ('000)
Infections	**4,135**	**3.9**	**2.2**	**77.3**
Tuberculosis	127	0.1	0.1	2.0
Selected invasive bacterial and protozoal infections	2,993	2.8	1.6	52.3
Hepatitis	211	0.2	0.1	4.2
HIV/AIDS	754	0.8	0.4	17.6
Viral pneumonia and influenza	50	0.1	–[1]	1.2
Cancers (malignant neoplasms)	**62,338**	**56.2**	**32.8**	**1,013.0**
Lip, oral cavity and pharynx	2,287	2.1	1.2	38.5
Oesophagus	2,735	2.4	1.4	43.1
Stomach	3,246	2.9	1.7	52.1
Colorectal	13,008	11.7	6.9	206.3
Liver	2,210	2.0	1.2	35.8
Lung	21,208	18.9	11.2	325.5
Melanoma of skin	3,284	3.0	1.7	58.6
Non-melanotic skin	686	0.6	0.4	10.5
Breast (female)	8,550	7.9	4.5	155.7
Cervix	908	0.8	0.5	17.1
Uterus	724	0.6	0.4	11.3
Bladder	1,635	1.4	0.9	23.7
Thyroid	225	0.2	0.1	3.7
Hodgkin's disease	208	0.2	0.1	4.0
Lymphoid leukaemia – acute/chronic	1,108	1.1	0.6	21.5
Benign	316	0.3	0.2	5.7
Nutritional, endocrine and metabolic conditions	**6,253**	**5.5**	**3.3**	**97.2**
Thyroid disorders	84	0.1	–[1]	1.3
Diabetes	6,169	5.4	3.2	95.9
Drug use disorders	**6,877**	**6.8**	**3.6**	**145.8**
Alcohol related disease	4,621	4.4	2.4	87.2
Illicit drug use disorders	2,256	2.5	1.2	58.6
Neurological disorders	**1,000**	**1.0**	**0.5**	**23.2**
Epilepsy	1,000	1.0	0.5	23.2
Cardiovascular diseases	**59,945**	**52.4**	**31.6**	**912.2**
Rheumatic and other valvular heart disease	614	0.6	0.3	10.5
Hypertensive heart disease	619	0.5	0.3	9.9
Ischaemic heart disease	43,712	38.4	23.0	667.4
Cerebrovascular diseases	12,558	10.8	6.6	189.0
Aortic aneurysm	2,442	2.1	1.3	35.4
Genitourinary disorders	**2,072**	**1.8**	**1.1**	**31.2**
Nephritis and nephrosis	1,910	1.6	1.0	28.7
Obstructive uropathy and prostatic hyperplasia	162	0.1	0.1	2.5

... continued

Table 4.4: Avoidable mortality (0 to 74 years) by major condition group and cause, Australia, 1997-2001 … *continued*

Major condition group/ cause	Number	ASR	Per cent of total	YLL ('000)
Respiratory diseases	**11,612**	**10.1**	**6.1**	**186.5**
DVT with pulmonary embolism	827	0.7	0.4	13.9
COPD (45-74 years)	10,395	8.9	5.5	147.1
Asthma (0-44 years)	390	0.4	0.2	25.5
Digestive disorders	**2,695**	**2.4**	**1.4**	**44.0**
Peptic ulcer disease	664	0.6	0.3	10.1
Acute abdomen, appendicitis, intestinal obstruction, cholecystitis/ lithiasis, pancreatitis, hernia	1,012	0.9	0.5	16.5
Chronic liver disease	1,019	0.9	0.5	17.3
Maternal and infant causes	**4,803**	**6.4**	**2.5**	**137.9**
Birth defects	3,278	4.2	1.7	91.4
Complications of perinatal period	1,525	2.1	0.8	46.5
Unintentional injuries	**14,224**	**15.5**	**7.5**	**345.5**
Road traffic injuries	8,138	9.0	4.3	200.8
Falls	1,160	1.1	0.6	22.4
Fires, burns	364	0.4	0.2	8.4
Accidental poisonings	3,425	3.7	1.8	85.2
Drownings	1,137	1.3	0.6	28.7
Intentional injuries	**13,891**	**14.6**	**7.3**	**332.3**
Suicide and self inflicted injuries	12,393	13.0	6.5	295.4
Violence	1,498	1.6	0.8	37.0
Total avoidable mortality	**189,845**	**176.6**	**100.0**	**3,327.4**

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

Of the top ten avoidable mortality conditions, ischaemic heart disease ranked the highest, with a rate of 38.4 deaths per 100,000 population, followed by lung cancer, with a rate of 18.9 deaths per 100,000 population (Table 4.5). Together, they accounted for over one third (34.2%) of avoidable mortality. The rates for the remaining top ten causes ranged from 4.4 deaths per 100,000 population for alcohol related disease to 13.0 for suicide and self inflicted injuries.

Ischaemic heart disease also ranked the highest for YLL from avoidable deaths, accounting for more than 667,000 YLL. YLL from lung cancer was ranked second, resulting in around 325,000 YLL. Suicide and self inflicted injuries (around 295,000 YLL) had the next highest YLL, followed by colorectal cancer (over 206,000 YLL) and road traffic injuries (around 201,000 YLL).

Table 4.5: Top ten causes of avoidable mortality (0 to 74 years), Australia, 1997-2001

Cause	Number	ASR	Per cent of total	YLL
Ischaemic heart disease	43,712	38.4	23.0	667,419
Lung cancer	21,208	18.9	11.2	325,493
Suicide and self inflicted injuries	12,393	13.0	6.5	295,389
Colorectal cancer	13,008	11.7	6.9	206,296
Cerebrovascular diseases	12,558	10.8	6.6	188,991
Road traffic injuries	8,138	9.0	4.3	200,761
COPD (45-74 years)	10,395	8.9	5.5	147,095
Breast cancer (female)	8,550	7.9	4.5	155,729
Diabetes	6,169	5.4	3.2	95,858
Alcohol related disease	4,621	4.4	2.4	87,193
All causes	**189,845**	**176.6**	**100.0**	**3,327,375**

By age

Table 4.6 shows the variation in avoidable mortality by the top four causes in selected age groups.

For infants under one year of age, birth defects accounted for just over half (52.6%) of avoidable mortality, a rate of 166.2 deaths per 100,000 population. Complications of the perinatal period were responsible for a further 39.5% of avoidable mortality, a rate of 124.3, followed by selected invasive bacterial and protozoal infections, which contributed 3.5%. Avoidable mortality from violence accounted for 0.9% of infant deaths.

In the 1 to 14 year age group, deaths from road traffic injuries accounted for 29.4% of avoidable mortality, a rate of 3.0 deaths per 100,000 population. Drownings (15.5%) and birth defects (14.9%) were responsible for approximately 30% of deaths in this age group, followed by lymphoid leukaemia (6.9%).

For the 15 to 24 year age group, deaths from road traffic injuries accounted for over one third (35.0%) of avoidable mortality, a rate of 18.3 deaths per 100,000 population. Suicide and self inflicted injuries were responsible for a further 29.5% of avoidable mortality in this age group, a rate of 15.2. Approximately 16.0% of avoidable deaths in the 15 to 24 year age group were from deaths resulting from accidental poisonings (8.5%) and illicit drug use disorders (7.4%).

In the 25 to 44 year age group, the ranking of the top two causes of death is the reverse of that in the 15 to 24 year age group. Suicide and self inflicted injuries were responsible for 25.6% of avoidable mortality (21.6 deaths per 100,000 population), followed by road traffic injuries, which contributed 11.8% (10.0 deaths per 100,000 population). Accidental poisonings (8.6% of avoidable deaths) and ischaemic heart disease (8.0%) accounted for a further 16.6% of avoidable mortality in this age group.

At ages 45 to 64 years, almost one quarter (23.5%) of avoidable deaths were from ischaemic heart disease, a rate of 72.9 deaths per 100,000 population. Lung cancer ranked second, accounting for13.2% of avoidable deaths, a rate of 41.1. Over 16% of avoidable deaths in the 45 to 64 age group resulted from colorectal cancer (8.8%) and breast cancer (females only, 7.4%).

Ischaemic heart disease and lung cancer were also important causes of death in the 65 to 74 year age group. Ischaemic heart disease accounted for 30.1% of avoidable deaths (a rate of 402.1 deaths per 100,000 population) and lung cancer was responsible for 13.8% of avoidable deaths (187.8 deaths per 100,000 population). Over 18% of avoidable deaths in this age group were from cerebrovascular diseases (9.3%) and COPD (Chronic Obstructive Pulmonary Disease, 8.9%).

Table 4.6: Avoidable mortality by major cause and age, Australia, 1997-2001

Age (years)	Cause	Number	Rate[1]	% of total in age group	YLL
Infants (<1)	Birth defects	1,995	166.2	52.6	60,907
	Complications of perinatal period	1,497	124.3	39.5	45,703
	Selected invasive bacterial and protozoal infections	131	10.9	3.5	3,999
	Violence	35	2.9	0.9	1,069
1-14	Road traffic injuries	552	3.0	29.4	16,473
	Drownings	292	1.6	15.5	8,830
	Birth defects	280	1.5	14.9	8,417
	Lymphoid leukaemia - acute/chronic	129	0.7	6.9	3,843
15-24	Road traffic injuries	2,468	18.3	35.0	69,946
	Suicide and self inflicted injuries	2,075	15.2	29.5	58,533
	Accidental poisonings	600	4.4	8.5	16,897
	Illicit drug use disorders	522	3.8	7.4	14,686
25-44	Suicide and self inflicted injuries	6,245	21.6	25.6	160,083
	Road traffic injuries	2,863	10.0	11.8	73,901
	Accidental poisonings	2,095	7.3	8.6	53,854
	Ischaemic heart disease	1,960	6.4	8.0	48,048
45-64	Ischaemic heart disease	15,118	72.9	23.5	281,411
	Lung cancer	8,468	41.1	13.2	155,941
	Colorectal cancer	5,658	27.4	8.8	105,023
	Breast cancer (female)	4,742	22.9	7.4	92,198
65-74	Ischaemic heart disease	26,594	402.1	30.1	336,824
	Lung cancer	12,235	187.8	13.8	157,332
	Cerebrovascular diseases	8,207	121.7	9.3	102,680
	COPD (45-74 years)	7,864	118.4	8.9	99,469

[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 4.6, with the measure of years of life lost (YLL).

For infants, approximately 60,900 YLL were a result of avoidable mortality from birth defects, with deaths from complications of the perinatal period accounting for approximately 45,700 YLL. In the 1 to 14 year age group, deaths from road traffic injuries were responsible for almost 16,500 YLL.

In the 15 to 24 year age group, deaths from road traffic injuries, and suicide and self inflicted injuries, accounted for approximately 69,900 and 58,500 YLL, respectively. In the 25 to 44 year age group, deaths from suicide and self inflicted injuries resulted in approximately 160,100 YLL, with a further 73,900 years lost to road traffic injuries.

For the 45 to 64 and 65 to 74 year age groups, ischaemic heart disease accounted for the highest number of YLL from avoidable mortality (approximately 281,400 and 336,800 YLL, respectively). Although the rate of deaths from lung cancer in the 65 to 74 year age group was 4.6 times the rate in the 45 to 64 year age group, the numbers of YLL for each age group were similar, at approximately 157,300 YLL and 155,900 YLL, respectively.

By age and sex

The main causes impacting avoidable mortality at different ages show interesting variations when further analysed by sex (Table 4.7).

Apart from for infants and the 15 to 24 year age group, there were differences in the ranking of the main causes of death for males and females. At older ages this difference is in part due to the impact of breast cancer for females.

For infants, birth defects were responsible for over half of all infant avoidable deaths (55.5% of infant female deaths and 50.4% of infant male deaths). Complications of the perinatal period accounted for the majority of the remaining avoidable infant deaths (41.9% for males and 36.3% for females). (Note: only the top three causes of infant death are shown in Table 4.7, due to the lower numbers for the next ranked causes.)

Road traffic injuries were the main cause of avoidable death for both males (29.2% of avoidable male deaths) and females (29.8% of avoidable female deaths) at ages 1 to 14 years. Drownings were the next largest cause of avoidable mortality for males (17.8% of male deaths), with birth defects the third largest (13.8%). The order was reversed for females, with birth defects causing 16.6% and drownings 12.2% of avoidable female deaths.

The top four causes of avoidable mortality in the 15 to 24 year age group were ranked the same for both males and females. Road traffic injuries and suicide and self inflicted injuries were jointly responsible for over two thirds (67.4%) of avoidable deaths for males and more than half (55.7%) for females. The male rate of deaths from road traffic injuries (27.7 deaths per 100,000 males) was over three times (3.11**) the female rate (8.9). For suicide and self inflicted injuries, the rate for males (24.4 deaths per 100,000 males) was four (4.00**) times that for females (6.1).

Suicide and self inflicted injuries were the main causes of avoidable mortality in the 25 to 44 year age group, being responsible for 29.5% of avoidable deaths for males and 16.7% for females. The age-standardised death rates emphasise the difference in the impact of these causes on male and female avoidable deaths, with the male rate (34.8 deaths per 100,000 males) over four times that for females (8.5, a rate ratio of 4.09**). For females, deaths from breast cancer ranked second, accounting for 15.5% of avoidable female deaths in the age group (a rate of 7.4 deaths per 100,000 females). For males, the second ranked cause of avoidable death was road traffic injuries, comprising 13.0% of avoidable deaths (a rate of 15.4 deaths per 100,000 males) in this age group.

Ischaemic heart disease accounted for 29.1% of avoidable male deaths at ages 45 to 64 years, compared to 13.5% for female. The male rate of 115.3 deaths per 100,000 males was more than three and a half times (3.79**) the female rate of 30.4. Deaths from breast cancer ranked highest for females in this age group, with 20.6% of avoidable female deaths, and a high rate of 45.8 deaths per 100,000 females. Lung cancer was ranked second for males, resulting in 13.7% of avoidable male deaths, a rate of 54.6 deaths per 100,000 males, twice (1.99**) the rate for females of 27.5.

In the 65 to 74 year age group, the two top ranked causes of avoidable mortality were the same for males and females. Ischaemic heart disease was responsible for 32.4% of avoidable male deaths and 25.9% of avoidable female deaths. The male rate (570.0 deaths per 100,000 males) was almost two and a half times (2.43**) the female rate (234.3). Lung cancer resulted in 15.4% of avoidable male deaths (271.6 deaths per 100,000 males) and 11.2% of avoidable female deaths (104.0), a rate differential of more than two and a half (2.61**).

Table 4.7: Avoidable mortality by major cause, age and sex, Australia, 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)	Birth defects	1,085	176.4	50.4	1	910	156.0	55.5	1
	Complications of perinatal period	901	146.5	41.9	2	596	102.1	36.3	2
	Selected invasive bacterial and protozoal infections	75	12.2	3.5	3	56	9.6	3.4	3
1-14	Road traffic injuries	330	3.5	29.2	1	222	2.5	29.8	1
	Drownings	201	2.2	17.8	2	91	1.0	12.2	3
	Birth defects	156	1.7	13.8	3	124	1.4	16.6	2
	Lymphoid leukaemia – acute/chronic	82	0.9	7.2	4	47	0.5	6.3	5
	Selected invasive bacterial and protozoal infections	63	0.7	5.6	5	55	0.6	7.4	4
15-24	Road traffic injuries	1,890	27.7	35.7	1	578	8.9	32.9	1
	Suicide and self inflicted injuries	1,674	24.4	31.7	2	401	6.1	22.8	2
	Accidental poisonings	440	6.4	8.3	3	160	2.4	9.1	3
	Illicit drug use disorders	392	5.7	7.4	4	130	2.0	7.4	4
25-44	Suicide and self inflicted injuries	5,009	34.8	29.5	1	1,236	8.5	16.7	1
	Road traffic injuries	2,204	15.4	13.0	2	659	4.6	8.9	3
	Accidental poisonings	1,595	11.2	9.4	3	500	3.4	6.8	4
	Ischaemic heart disease	1,608	10.6	9.5	4	352	2.3	4.8	5
	Breast cancer	–	..	..	..	1,143	7.4	15.5	2
45-64	Ischaemic heart disease	12,012	115.3	29.1	1	3,106	30.4	13.5	2
	Lung cancer	5,650	54.6	13.7	2	2,818	27.5	12.2	3
	Colorectal cancer	3,381	32.6	8.2	3	2,277	22.2	9.9	4
	Suicide and self inflicted injuries	2,404	22.5	5.8	4	725	6.9	3.1	8
	Breast cancer	–	..	..	..	4,742	45.8	20.6	1
65-74	Ischaemic heart disease	18,237	570.0	32.4	1	8,357	234.3	25.9	1
	Lung cancer	8,636	271.6	15.4	2	3,599	104.0	11.2	2
	COPD	5,046	156.8	9.0	3	2,818	80.0	8.7	4
	Cerebrovascular diseases	4,667	144.5	8.3	4	3,540	98.8	11.0	3

[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 for males and females**

4.4 Avoidable mortality by area

There is considerable variation in avoidable mortality for all causes at ages 0 to 74 years when examined by area of usual residence of the deceased. The areas in this analysis are the states and territories, capital cities and other major urban centres, rest of states/ territories areas, Statistical Subdivisions, ASGC remoteness areas and deciles of socioeconomic disadvantage of area.

By state/ territory and area

Rates of avoidable mortality were highest in the Northern Territory (a rate of 361.3 deaths per 100,000 population), with the remaining state/ territory rates ranging from 150.2 in the Australian Capital Territory to 192.0 in Tasmania (Table 4.8).

The differential in rates between the rest of state/ territory areas and the capital cities and other major urban centres was also highest in Northern Territory, where the rate in the rest of Territory areas (492.3 deaths per 100,000 population) was more than twice the rate in Darwin (246.9, a rate ratio of 1.99**).

Tasmania was the only jurisdiction with fewer avoidable deaths in the rest of the state (185.7 deaths per 100,000 population) than in the capital city (200.0, a rate ratio of 0.93*). The differentials for the remaining jurisdictions ranged from 1.13** in Victoria and South Australia to 1.24** in Western Australia.

Table 4.8: Avoidable mortality (0 to 74 years) by state/ territory and area, Australia, 1997-2001

State/ Territory	Capital city (CC) and other major urban centres (MUC)		Rest of state/ territory areas (ROS)		Rate ratio ROS: CC/MUC	Whole of state/ territory[1]	
	Number	ASR	Number	ASR		Number	ASR
New South Wales[2]	45,343	170.5	19,535	195.8	1.15**	66,151	178.2
Victoria	32,374	162.1	13,049	183.7	1.13**	45,466	167.9
Queensland	22,043	174.4	14,053	199.8	1.15**	35,515	184.0
South Australia	11,086	169.1	4,818	190.7	1.13**	15,938	175.5
Western Australia	11,480	157.7	5,091	193.8	1.23**	16,602	167.6
Tasmania	2,254	200.0	3,080	185.7	0.93*	5,349	192.0
Northern Territory	1,008	246.9	1,500	492.3	1.99**	2,576	361.3
Australian Capital Territory[3]	2,610	155.2	#	210.8	..	2,236	150.2
Total	**128,198**	**168.1**	**61,130**	**195.7**	**1.16****	**189,845**	**176.6**

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

[1] Total for *Whole of State/ Territory* includes 'Other Territories' (Jervis Bay, Christmas Island and Cocos Islands)

[2] NSW *Rest of state* areas include Tweed Heads

[3] ACT *Capital city and other major urban centres* comprises Canberra, Queanbeyan and Yarrowlumla A (Part A)

Introduction to map and text pages

The emphasis in the remainder of this section is on describing the pattern of avoidable mortality by Statistical Subdivision, through maps of the capital cities and Australia. 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, two map pages and associated text pages are included, showing the rates within the capital cities and the rest of state/ territory areas (Australian map).

The 'Capital cities' text and map pages for all causes and by major condition group/ cause includes:

- a table showing age-standardised death rates for the capital cities;
- text detailing the rates for the 'other major urban centres
- a discussion of the rates in the capital cities by Statistical Subdivision (SSD), with the maps shown opposite; and
- a figure showing the age-standardised death rates for the capital cities and other major urban centres by decile of socioeconomic disadvantage of area[2], by sex.

Similarly, the Australia text and map pages highlighting the 'Rest of state/ territory areas' for all causes and by major condition group/ cause includes:

- a table comparing the age-standardised death rates for each state/ territory jurisdiction, including rates for the capital cities, other major urban centres, and the rest of state/ territory areas;
- a discussion of the rates in the rest of state/ territory areas (including the other major urban centres) by SSD, with the map shown opposite;
- a figure showing the rates for the rest of states/ territories (excluding the other major urban centres) by decile of socioeconomic disadvantage of area, by sex; and
- a figure (included on the 'Australia' map page), showing the ASGC remoteness classification[2].

Keys to the areas mapped are included in *Appendix 1.4*.

Additional notes regarding the map and text pages

The text discussing the rates by SSD generally focuses on the highest and lowest rates mapped within each capital city or rest of state area for each state/ territory. (Note: for the Australian Capital Territory, only the capital city (Canberra) rate is mapped: the rate for the ACT Balance is excluded from the rest of state/ territory areas map due to insufficient numbers).

Rates were not mapped if there were fewer than five deaths. Where the discussion includes rates based on fewer than 20 reported deaths, the number of deaths is shown in brackets after the rate.

The numbers and rates by SSD are available at www.publichealth.gov.au.

[2] See Chapter 2, *Methods*

All causes: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from avoidable mortality ranged from a rate of 150.1 deaths per 100,000 population in Canberra to a rate of 246.9 in Darwin (Table 4.9), with the rate for Hobart also high (200.0). The rate for all capitals combined was 166.1 deaths per 100,000 population.

Table 4.9: Avoidable mortality from all causes, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
166.4	161.0	176.1	169.1	157.7	200.0	246.9	150.1	166.1

Other major urban centres

Rates in the other major urban centres were all higher than the 'All capitals' average, ranging from 160.7 in the Sunshine Coast SSD to 209.7 in Townsville-Thuringowa (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

For **Sydney**, the highest rate was in Inner City (234.0 deaths per 100,000 population), followed by Blacktown (201.1) (Map 4.1). The lowest rates were in the inner northern SSDs of Central Northern Sydney (111.8 – the lowest of the capital city SSDs), Northern Beaches (129.0) and Lower Northern Sydney (133.5).

Rates at the SSD level in **Melbourne** were relatively low, with the highest rates in Inner Melbourne (205.6 deaths per 100,000 population), Greater Dandenong (191.1) and Frankston City (188.9). The lowest rates were in Boroondara City (128.1) and Eastern Middle Melbourne (128.5).

The highest rates in **Brisbane** were in Redcliffe City (223.6 deaths per 100,000 population) and Gold Coast City Part A (211.2). The lowest rates were in Redland Shire (147.6), Pine Rivers Shire (149.8) and Beaudesert Shire Part A (163.9).

Avoidable mortality rates in **Adelaide** varied from a rate of 188.1 deaths per 100,000 population in Western Adelaide to 150.5 in Southern Adelaide.

The rates in **Perth** at the SSD level were relatively evenly spread, with the highest rates in South East Metropolitan (169.4) and East Metropolitan (168.2), and the lowest rate in North Metropolitan (142.6).

Residents of **Hobart** had the second highest rate (200.0 deaths per 100,000 population) of all the capital cities (after Darwin).

The rates in **Darwin** were high, with 254.5 deaths per 100,000 population in Palmerston–East Arm (the highest of the capital city SSDs), 246.8 in Darwin City, and 239.5 in Litchfield Shire.

Canberra had the lowest overall rate, and generally low rates, apart from South Canberra (178.9 deaths per 100,000 population), and North Canberra (175.2). Gungahlin-Hall (122.9) had the lowest rate in Canberra.

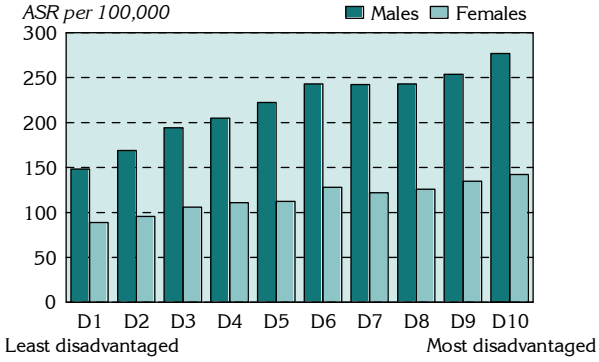
By socioeconomic status

For all capital cities and other major urban centres combined, there was a socioeconomic gradient in rates of death from avoidable mortality, for both males and females (Figure 4.3). The gradients were continuous, with the exception of higher rates in Decile 6.

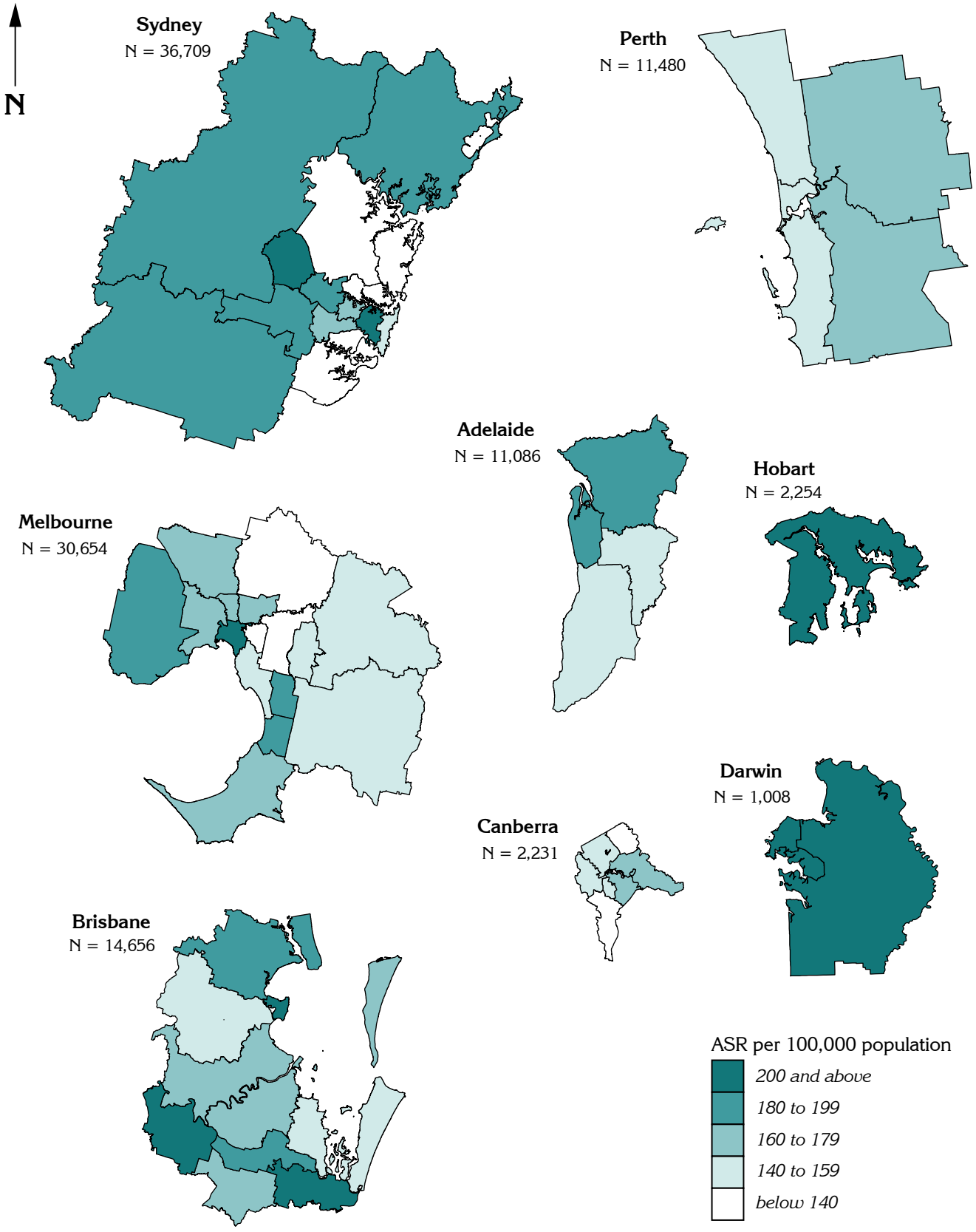
Rates for males were over one and a half times those for females in each decile, ranging from 148.4 deaths per 100,000 population in the least disadvantaged areas to 277.0 in the most disadvantaged areas. For females the range was from 88.7 in the least disadvantaged areas to 142.4 in the most disadvantaged areas.

The differential in rates of death from avoidable mortality between the most disadvantaged areas and least disadvantaged areas was 1.87** for males and 1.61** for females.

Figure 4.3: Avoidable mortality from all causes by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.1
All causes: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

All causes: avoidable mortality (0 to 74 years), Australia, 1997-2001

States/ Territories

Death rates from avoidable mortality were higher in the rest of state/ territory areas than in the capital cities except in Tasmania (Table 4.10), and higher than in the other major urban centres in New South Wales and Queensland. The influence on these rates of deaths of Aboriginal and Torres Strait Islander people is discussed in Section 4.6. The rate for the rest of the territory areas in the Northern Territory was twice (a rate ratio of 1.99**) that for Darwin (492.3 deaths per 100,000 population, compared to 246.9 in Darwin). The differentials in rates between the rest of state areas and capital cities were 1.23** in Western Australia, 1.17** in New South Wales, 1.14** in Victoria, and 1.13** in Queensland and South Australia. In Tasmania, the rate for the rest of the state was 0.93** (9%) lower than that in Hobart.

Table 4.10: Avoidable mortality from all causes by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	166.4	161.0	176.1	169.1	157.7	200.0	246.9	150.1	166.1
Other major urban centres	190.8	184.3	171.1	..	..	..	..	..	181.5
Rest of state/ territory areas	195.2	183.7	199.8	190.7	193.8	185.7	492.3	#	195.7
Whole of state/ territory	**178.2**	**167.9**	**184.0**	**175.5**	**167.6**	**192.0**	**361.3**	**150.2**	**176.6**

By Statistical Subdivision (SSD)

High rates of avoidable mortality covered much of inland **New South Wales**, with the highest in Upper Darling (331.3 deaths per 100,000 population) and Macquarie-Barwon (286.7) (Map 4.2). The lowest rates were in Port Macquarie (168.4) and Illawarra (175.0) SSDs.

For **Victoria**, rates were highest in North Wimmera (213.5) and La Trobe (212.0), and lowest in East Barwon (150.2) and South Loddon (151.0).

The highest rates in **Queensland** were in North West (346.1 deaths per 100,000 population) and Central West (254.3). The lowest rates were in Sunshine Coast (160.7), Moreton SD Balance (164.4), and Gold Coast City Part B (164.8).

The rates in **South Australia** were highest in the Far North (279.6), West Coast (273.0), and Flinders Ranges (248.9) SSDs. Rates were lowest in Mt Lofty Ranges (141.9 - the lowest rate of all the rest of state/ territory areas) and Fleurieu (151.8).

Several of the SSD rates in **Western Australia** were substantially higher, with the highest rates in Ord (469.2), Fitzroy (405.9) and Lefroy (303.6). The lowest rates were in Lakes (148.3) and Greenough River (153.6) SSDs.

In **Tasmania**, rates varied from 242.4 deaths per 100,000 population in Lyell to 157.3 in North Western Rural.

The majority of the rates of avoidable mortality at the SSD level in the **Northern Territory** were extremely high, with the highest in Bathurst-Melville (797.4), Alligator (688.7), Daly (614.7), Barkly (543.0) and Lower Top End (534.9) (the five highest SSD rates across Australia). Finniss (221.5 deaths per 100,000 population) had the lowest rate.

By remoteness

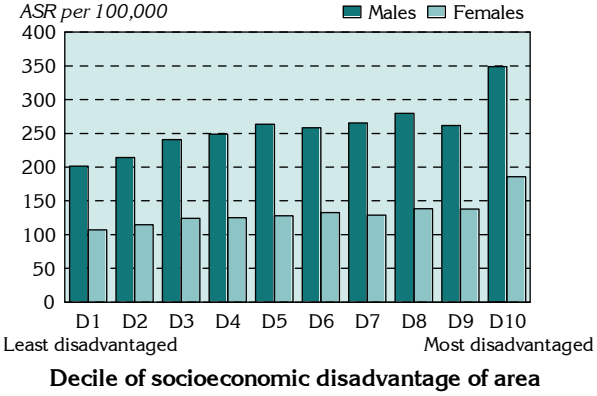
The graph of rates of avoidable mortality by remoteness shows (opposite page) a marginal increase between the Major Cities and the Inner Regional areas, followed by a steady increase to the Remote areas and a much larger increase to the Very Remote areas. The number of deaths decline rapidly across the remoteness classes.

By socioeconomic status

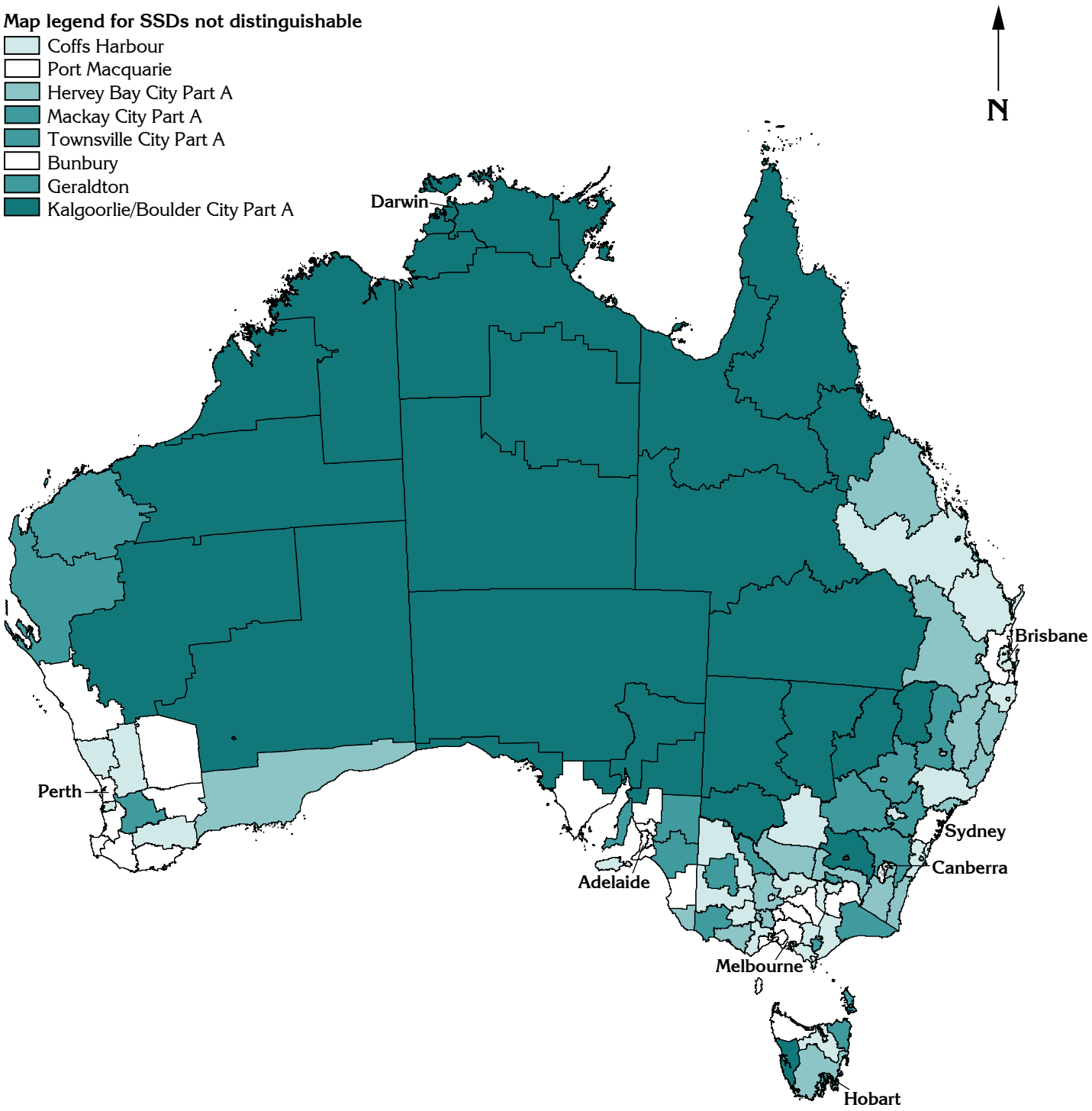
For all rest of state/ territory areas combined, there was a largely uninterrupted socioeconomic gradient in death rates from avoidable mortality, for both males and females (Figure 4.4).

Rates for males were higher than females, ranging from 201.5 in the least disadvantaged areas to 348.8 in the most disadvantaged areas. The female rates ranged from 107.3 in the least disadvantaged areas to 185.9 in the most disadvantaged areas. The differential in rates of avoidable mortality between the most disadvantaged and least disadvantaged areas was 1.73** for both males and females.

Figure 4.4: Avoidable mortality from all causes by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001

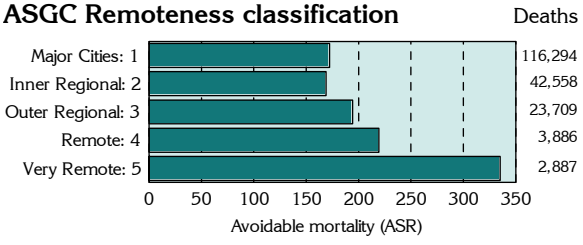


Map 4.2
All causes: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



ASR per 100,000 population

- *215 and above*
- *200 to 214*
- *185 to 199*
- *170 to 184*
- *below 170*
- *data not mapped (<5 deaths)*



Details of map boundaries are in Appendix 1.4

Major condition group – Cancer: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, the death rate from cancers considered to be avoidable (see *Methods*) ranged from 50.5 deaths per 100,000 population in Canberra to a rate of 66.4 in Hobart (Table 4.11). The rate for all capitals combined was 56.2 deaths per 100,000 population.

Table 4.11: Avoidable mortality from cancer, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
52.9	54.9	58.4	54.3	54.3	66.4	64.0	50.5	56.2

Other major urban centres

Rates in the other major urban centres ranged from 51.5 deaths per 100,000 population in Sunshine Coast to 67.2 in Townsville-Thuringowa (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

People in **Sydney** had relatively low rates of avoidable mortality from cancers, with the highest rates in Gosford-Wyong (62.1 deaths per 100,000 population), Blacktown (61.6) and Inner Sydney (61.5) (Map 4.3). The lowest rates were in Central Northern Sydney (42.6 - the lowest capital city SSD rate), Northern Beaches (44.8) and Lower Northern Sydney (45.4).

Within a generally low overall rate, rates at the SSD level in **Melbourne** were highest in Inner Melbourne (64.9), Melton-Wyndham (63.9) and Greater Dandenong City (63.0), and lowest in Boroondara City (47.3), Eastern Middle Melbourne (48.4) and Yarra Ranges Shire Part A (49.1).

In **Brisbane**, rates were somewhat higher, with the highest in Redcliffe City (76.2 deaths per 100,000 population - the highest rate of all capital city SSDs), Gold Coast City Part A (68.8) and Ipswich City (Part in Brisbane SD) (67.2). The lowest rate was in Redland Shire (51.3).

The lower overall rates in **Adelaide** ranged from 57.9 deaths per 100,000 population in Northern Adelaide to a low of 48.2 in Eastern Adelaide.

The rates in **Perth** were evenly spread at the SSD level, with the highest in South East Metropolitan (56.4) and South West Metropolitan (56.1), and the lowest rate in Central Metropolitan (51.4).

Residents of **Hobart** had the highest rate of the capital cities, 66.4 deaths per 100,000 population.

In **Darwin,** the highest rate was in Litchfield Shire (69.5 deaths per 100,000 population) and the lowest was in Palmerston-East Arm (56.2).

For **Canberra**, with the lowest national death rates, the range was from 55.1 in North Canberra and 54.6 in South Canberra, to a low of 43.5 in Tuggeranong.

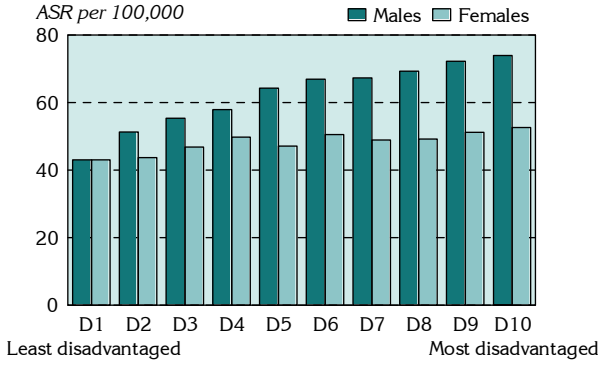
By socioeconomic status

For males, there was a socioeconomic gradient in rates of death from avoidable mortality from cancers for all capital cities and other major urban centres combined: for females, the pattern was less clear, although rates were highest in the most disadvantaged areas (Deciles 9 and 10) (Figure 4.5).

Rates for males ranged from 43.0 deaths per 100,000 population in the least disadvantaged areas to 73.9 in the most disadvantaged areas. The female rates ranged from 43.0 (the same as the male rate) in Decile 1 (advantaged) to 52.6 in Decile 10 (disadvantaged).

The differential in rates of avoidable mortality from cancers between the most disadvantaged areas and least disadvantaged areas was 1.72** for males and 1.22** for females.

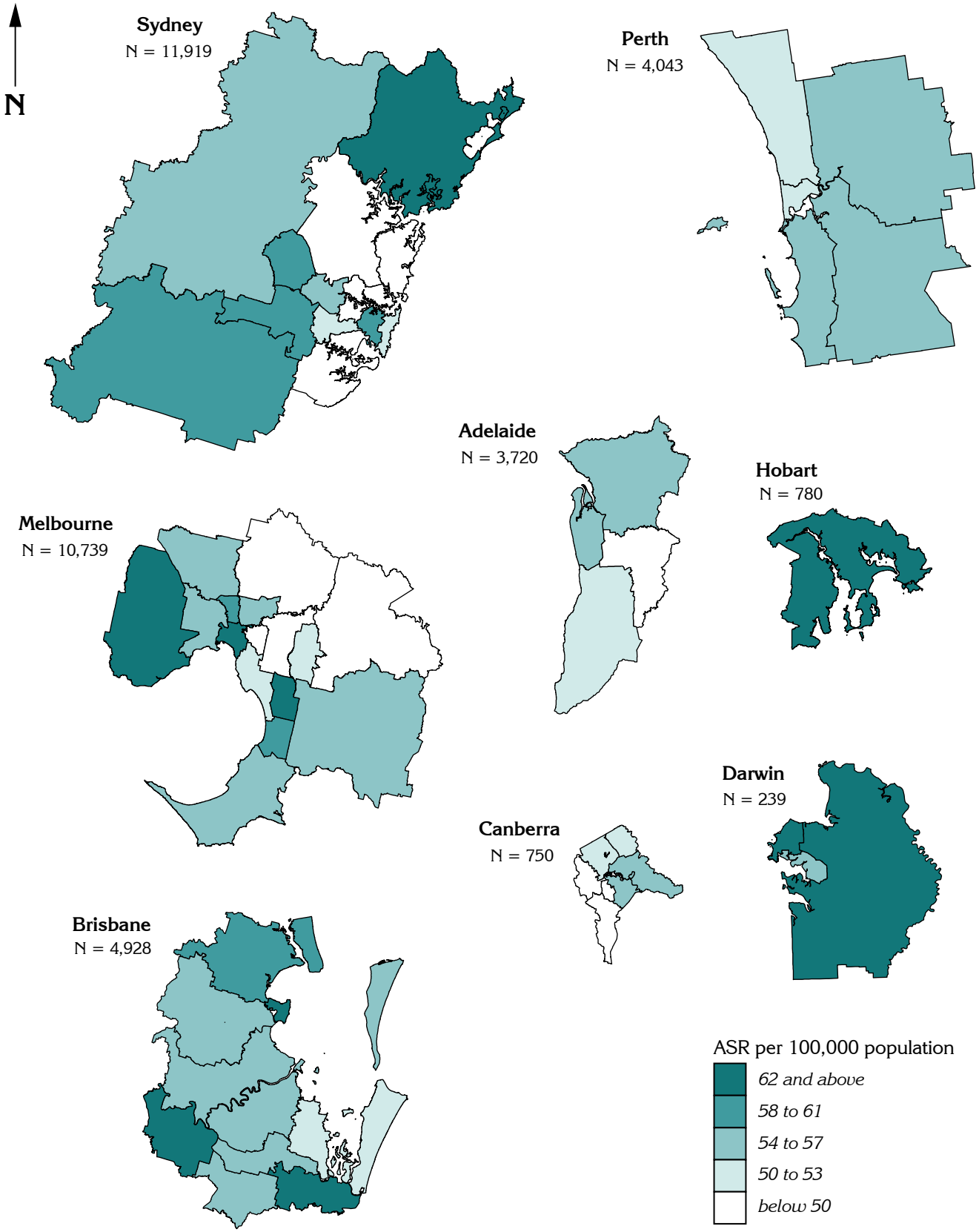
Figure 4.5: Avoidable mortality from cancer by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.3

Major condition group – Cancer: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Major condition group – Cancer: avoidable mortality (0 to 74 years), Australia, 1997-2001

State/ Territory comparison

Over the period 1997 to 2001, death rates from avoidable cancers (see *Methods*) were higher in the rest of state/ territory areas than in the capital cities in all jurisdictions except Tasmania (Table 4.12). The rate for the rest of territory areas in the Northern Territory was almost one third higher (1.31**) than in Darwin. In New South Wales and Victoria, rates in the rest of state areas were approximately 10% higher (1.08**, 1.09**, respectively) than in the capital cities, with the reverse in Tasmania, (13% lower, a rate ratio of 0.87**).

Table 4.12: Avoidable mortality from cancer by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	52.9	54.9	58.4	54.3	54.3	66.4	64.0	50.5	54.7
Other major urban centres	59.9	62.7	55.5	..	..	..	..	..	58.2
Rest of state/ territory areas	57.2	59.6	60.8	56.1	56.1	57.8	83.9	#	58.6
Whole of state/ territory	55.1	56.4	58.6	54.8	54.8	61.3	73.3	50.5	56.2

By Statistical Subdivision (SSD)

In **New South Wales**, the highest rates of avoidable mortality from cancers were in the northern SSDs of Upper Darling (103.0 deaths per 100,000 population) and Macquarie-Barwon (73.3) SSDs; and in the south-west in Murray-Darling (77.9) (Map 4.4). Northern Tablelands (45.6), Bathurst-Orange (49.7) and Snowy (51.0) had the lowest rates.

The highest rates in **Victoria** were in SSDs located across the State, in North Wimmera (73.2), La Trobe Valley (69.7) and Mildura Rural City Part A (67.9); the lowest were in East Ovens-Murray (46.4) and South Loddon (49.9).

In **Queensland**, rates were highest across the northern and western SSDs of North West (72.7 deaths per 100,000 population), Mackay City Part A (71.0), Rockhampton (69.6), Thuringowa City Part A (69.5) and Far North (69.2). Sunshine Coast (51.5) and Wide Bay-Burnett SD Balance (52.9) had the lowest rates.

Death rates in **South Australia** were highest in Whyalla (78.6 deaths per 100,000 population) and West Coast (69.3). The lowest rates were in Far North (35.8; 16 deaths), Barossa (41.4) and Mt Lofty Ranges (43.3).

The rates in **Western Australia** were highest in Kalgoorlie/Boulder City Part A (89.1) and Geraldton (77.2), and lowest in Lakes (29.5; 8 deaths), Pallinup (39.2) and Blackwood (45.4).

In **Tasmania**, rates were highest in Lyell (68.9) and North Eastern (60.8), and lowest in Southern (52.7) and Central North (54.0).

The **Northern Territory** rates were comparatively high, the highest being in Bathurst-Melville (126.7 deaths per 100,000 population and 7 deaths) and East Arnhem (123.0) (the two highest rates of all SSDs). Barkly (54.0) and Central (56.9) SSDs had the lowest rates.

By remoteness

The graph of death rates shows (opposite) a weak relationship with remoteness, with the lowest rate (53.2) in the Inner Regional areas and the highest rate (61.7) in the Very Remote areas. The number of deaths decline rapidly across the remoteness classes.

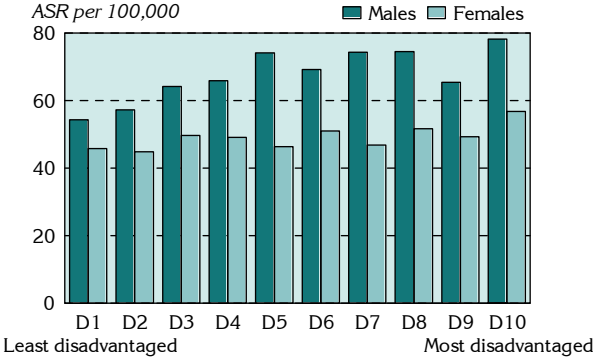
By socioeconomic status

For both males and females, the rates of death from cancers considered to be avoidable for all rest of state/ territory areas combined vary by socioeconomic status (Figure 4.6).

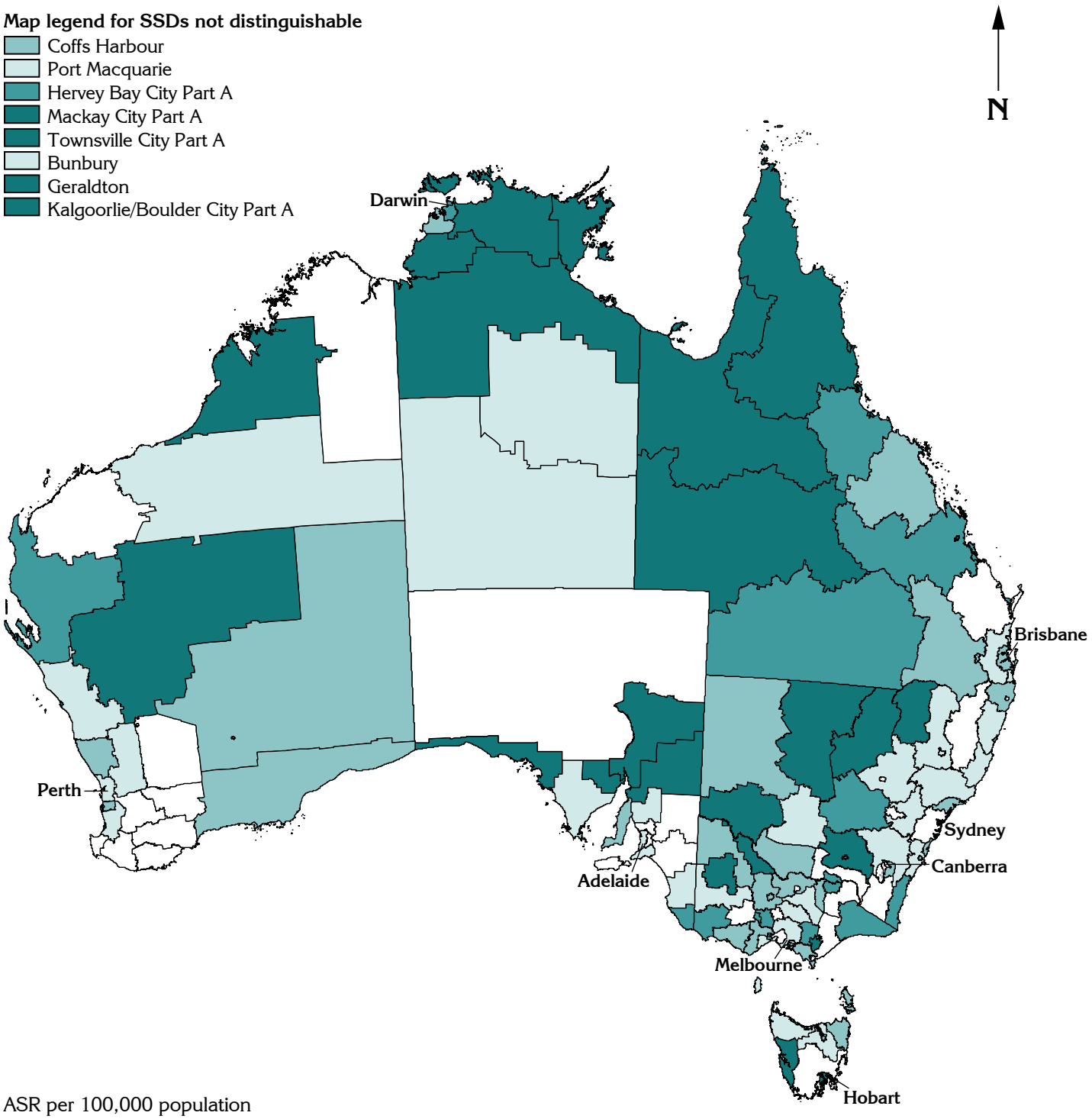
Rates for males were higher than for females, ranging from 54.3 in the least disadvantaged areas to 78.2 in the most disadvantaged areas. The female rates ranged from 44.8 in Decile 2 to 56.8 in the most disadvantaged areas (Decile 10).

The differential between the most disadvantaged areas and least disadvantaged areas in rates of cancers considered to be avoidable was 1.44** for males and 1.24** for females.

Figure 4.6: Avoidable mortality from cancer by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



Map 4.4
Major condition group – Cancer: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Colorectal cancer: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from colorectal cancer ranged from a rate of 8.5 per 100,000 population in Darwin to a rate of 15.1 in Hobart (Table 4.13). The rate for all capitals combined was 11.2.

Table 4.13: Avoidable mortality from colorectal cancer, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
10.6	11.3	11.5	11.6	11.5	15.1	8.5	11.0	11.2

Other major urban centres

Rates in the other major urban centres ranged from 10.4 deaths per 100,000 population from colorectal cancer in the Sunshine Coast to 13.9 in Geelong (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

Death rates from colorectal cancer were generally average or below average in **Sydney** (Map 4.5), with Gosford-Wyong (12.6 deaths per 100,000 population) the only area with a rate in the highest range mapped. The lowest rates were in Lower Northern Sydney (9.2), Inner Western Sydney and Canterbury-Bankstown (both 9.8).

In **Melbourne**, rates were highest in the inner city and southern coastal SSDs, with the highest rates in Northern Middle Melbourne (13.2) and Moreland City (13.0). Rates were lowest in the Yarra Ranges Shire Part A (8.4) and Hume City (9.1).

Rates in **Brisbane** were highest in the SSDs of Redcliffe City (14.8 deaths per 100,000 population), Gold Coast City Part A (12.9) and Caboolture Shire Part A (12.6). The lowest rates were in Logan City (8.3) and Pine Rivers Shire (9.0).

Death rates in the **Adelaide** SSDs were relatively high, ranging from 12.0 deaths per 100,000 population in Western Adelaide to 11.0 in Eastern Adelaide.

For **Perth**, the highest rate was in the South West Metropolitan SSD (13.8), with North Metropolitan (10.0) having the lowest rate.

The rate of deaths from colorectal cancer for residents in **Hobart** was high, at 15.1 deaths per 100,000 population.

The death rate for colorectal cancer in the SSD of **Darwin City** (the only SSD rate mapped) was 9.2 deaths per 100,000 population.

In **Canberra**, death rates varied the most, with the highest death rate of all the capital city SSDs mapped in North Canberra (16.3), and 12.9 deaths per 100,000 population in South Canberra. The two lowest capital city rates mapped were also in Canberra, in Weston Creek-Stromlo (5.5; 8 deaths) and Tuggeranong (8.6).

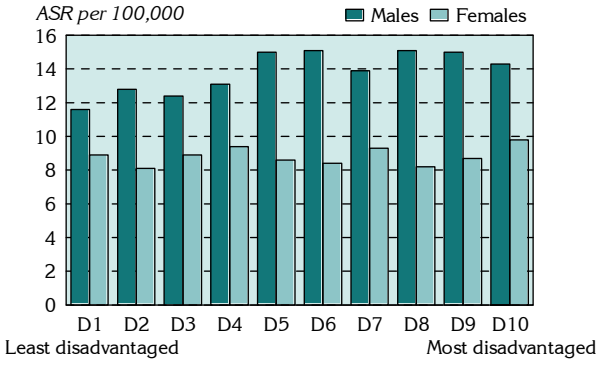
By socioeconomic status

For males, there was a socioeconomic pattern in rates of death from colorectal cancer for all capital cities and other major urban centres combined, although the pattern was variable: for females, there was no relationship evident (Figure 4.7).

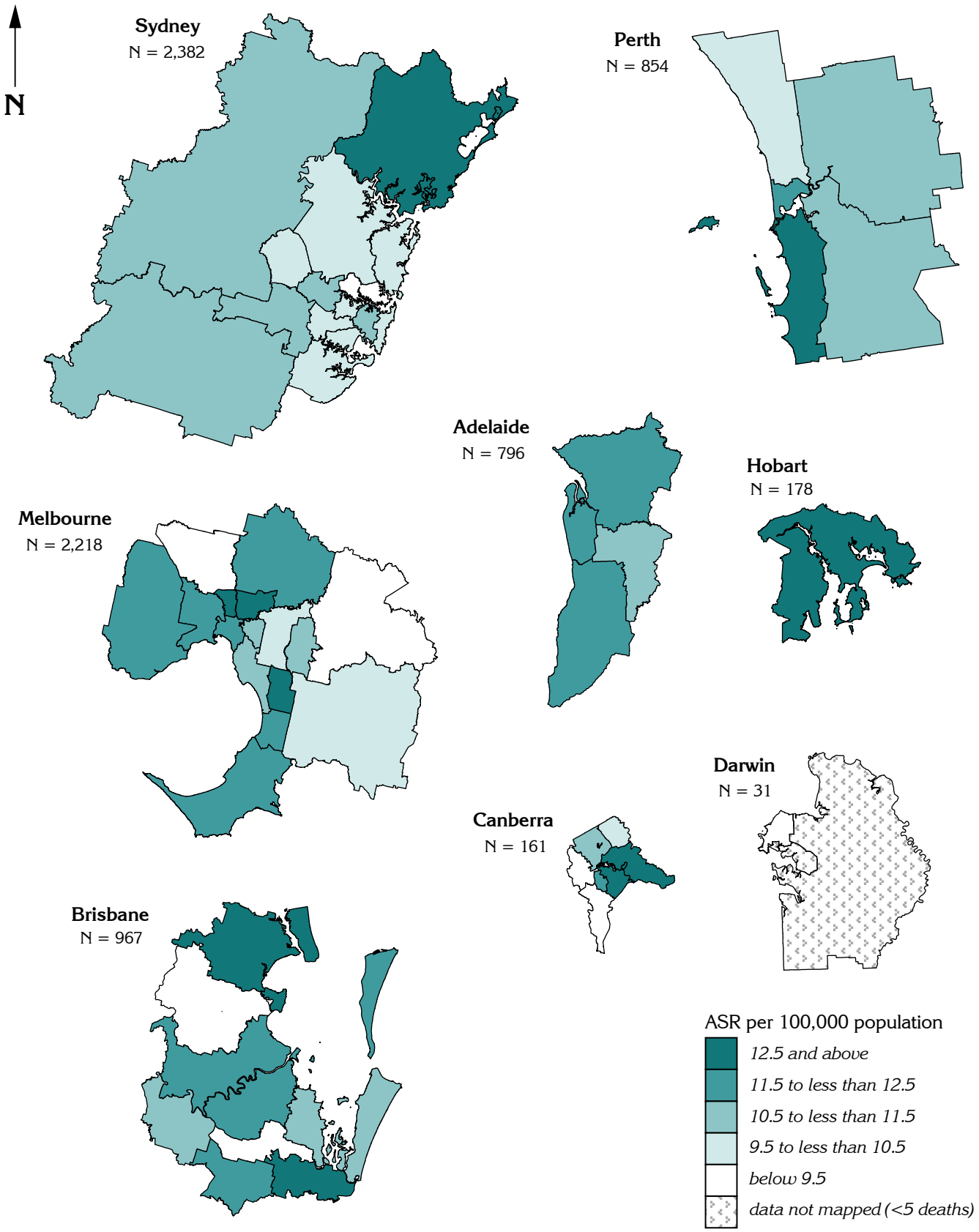
Rates for males were higher than females in each decile, with male rates ranging from 11.6 deaths per 100,000 population in the least disadvantaged areas to 14.3 in the disadvantaged areas in Decile 9. The female rates ranged from 8.1 in Decile 2 to 9.8 in Decile 10.

The differential in the death rates from colorectal cancer between the most disadvantaged areas and least disadvantaged areas was 1.23** for males and 1.10 for females.

Figure 4.7: Avoidable mortality from colorectal cancer by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.5
Selected cause – Colorectal cancer: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Colorectal cancer: avoidable mortality (0 to 74 years), Australia, 1997-2001

States/ Territories

Death rates from colorectal cancer were higher in the other major urban centres and rest of state/ territory areas than in the capital cities, except in Northern Territory (where the rates differed only slightly) and Tasmania (Table 4.14). Rates in the rest of state/ territory areas were highest in Victoria, with 13.2 deaths per 100,000 population, compared to 11.3 in Melbourne (a rate ratio of 1.17**). The differentials in rates for New South Wales (1.11**), Queensland (1.11*), South Australia (1.11) and Western Australia (1.10) were all around 10%, while the rates in Tasmania were 15% lower outside of the capital city (0.85). Both rates in the Northern Territory were substantially lower than in the states and the ACT.

Table 4.14: Avoidable mortality from colorectal cancer by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	10.6	11.3	11.5	11.6	11.5	15.1	8.5[1]	11.0	11.2
Other major urban centres	12.6	13.9	11.7	..	..	..	..	..	12.3
Rest of state/ territory areas	11.8	13.2	12.8	12.9	12.6	12.8	8.2[1]	#	12.5
Whole of state/ territory	**11.2**	**11.9**	**12.0**	**11.9**	**11.8**	**13.7**	**8.4**	**11.0**	**11.7**

[1]**Note: rates are based on 21 deaths in Darwin and 31 in the rest of the Northern Territory**

By Statistical Subdivision (SSD)

For **New South Wales**, death rates from colorectal cancer were highest in a strip of SSDs running north-south (Map 4.6). These included Lachlan (17.2 deaths per 100,000 population), Wagga Wagga (16.2) and Central Murrumbidgee (16.0). Central Macquarie (7.2) had the lowest rate.

The highest rates of death in **Victoria** were spread across the state, with the highest in the SSDs of Glenelg (17.0 deaths per 100,000 population) and East Gippsland Shire (16.2). Rates were lowest in East Ovens-Murray (7.9; 10 deaths) and Greater Shepparton City Part A (8.5).

In **Queensland**, rates were highest in Gladstone (19.2), Mackay City Part A (16.3) and Mackay SD Balance (15.9) and lowest in Wide Bay - Burnett SD Balance (9.5) and Sunshine Coast (10.4).

Deaths from colorectal cancer in **South Australia** were highest in Kangaroo Island (17.9 deaths per 100,000 population), Port Pirie and Whyalla (both 17.7), and lowest in Mt Lofty Ranges (9.0; 18 deaths) and Lincoln (9.5; 17 deaths).

The rates in **Western Australia** were highest in Kalgoorlie/ Boulder City Part A (23.2) and Johnston (17.4; 15 deaths). The lowest rates were in Hotham (8.4; 7 deaths) and Fitzroy (8.5; 5 deaths).

For **Tasmania**, the highest rates were in the North Eastern (14.2; 15 deaths), Burnie-Devonport (13.6) and Greater Launceston (13.5) SSDs. Central North (9.9; 13 deaths) and North Western Rural (10.4; 14 deaths) had the lowest rates.

Of the two **Northern Territory** SSDs with sufficient deaths to be mapped, the higher rate was18.9 per 100,000 population (9 deaths) in Lower Top End and the lower rate was 4.3 (5 deaths) in Central.

By remoteness

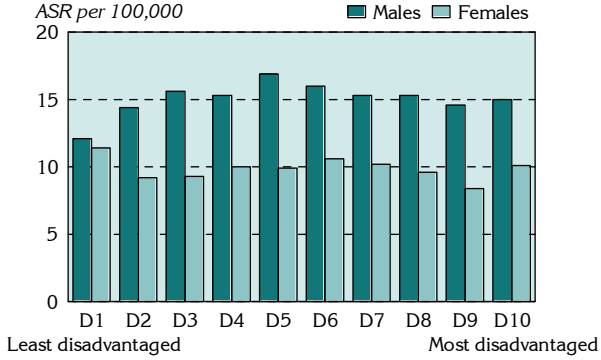
The graph of death rates from colorectal cancer shows (opposite page) an inverse relationship with remoteness, with rates of 11.7 in the Major Cities, 11.5 in the Inner Regional areas, increasing to 12.3 in the Outer Regional areas, before decreasing to 7.7 in the Very Remote areas. The number of deaths decline rapidly across the remoteness classes.

By socioeconomic status

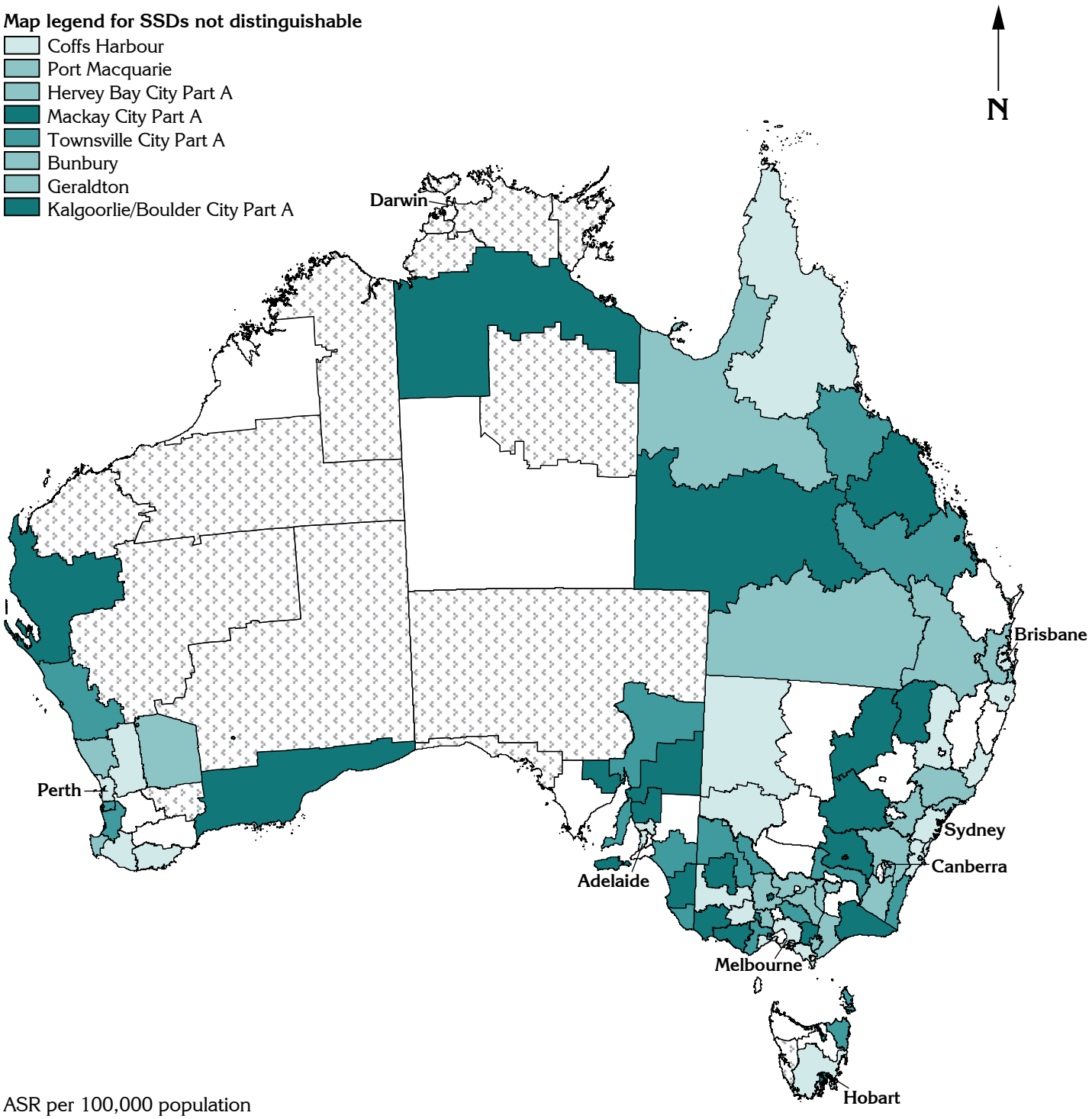
There is no clear socioeconomic pattern in the rates for either males or females for all rest of state/ territory areas combined (Figure 4.8).

Rates for males were higher than for females, ranging from 12.1 in the least disadvantaged areas to 16.9 in Decile 5. The female rates ranged from 8.4 in Decile 9 to 10.6 in Decile 6. The differential in death rates between the most disadvantaged areas and least disadvantaged areas was 1.24** for males and 0.89 for females, with variable rates in the intervening deciles, in particular for males.

Figure 4.8: Avoidable mortality from colorectal cancer by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



Map 4.6
Selected cause – Colorectal cancer: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Lung cancer: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from lung cancer ranged from a rate of 14.9 per 100,000 population in Canberra to a rate of 23.6 in Hobart (Table 4.15). The rate for all capitals combined was 18.2.

Table 4.15: Avoidable mortality from lung cancer, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
17.6	17.8	20.7	18.0	17.9	23.6	24.6	14.9	18.2

Other major urban centres

Rates in the other major urban centres ranged from 16.6 deaths per 100,000 population from lung cancer in the Sunshine Coast to 26.1 in Townsville-Thuringowa (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

Death rates from lung cancer were highest in the **Sydney** SSDs of Blacktown (24.8 deaths per 100,000 population), Gosford-Wyong (23.1) and Inner Sydney (23.0) (Map 4.7). In contrast to these high rates, over one third of SSDs had rates in the lowest range mapped, with the lowest rate in Central Northern Sydney (10.8 - the lowest rate of all capital cities).

For **Melbourne**, the highest rates were in Melton-Wyndham (25.6), Inner Melbourne (22.9) and Greater Dandenong City (22.4), with the lowest rate in Boroondara City (11.0).

In **Brisbane**, death rates from lung cancer were generally higher, with no SSD rates below the middle range mapped. The highest rates (and the second and third highest of all the capital city SSDs) were in Gold Coast City Part A (29.1) and Redcliffe City (28.8). Redland Shire (18.5) and Brisbane City (19.3) had the lowest rates.

The rates in **Adelaide** for lung cancer ranged from a high of 20.8 deaths per 100,000 population in Northern Adelaide to 13.3 in Eastern Adelaide.

In **Perth**, death rates were fairly evenly spread, ranging from 19.6 deaths per 100,000 population in South East Metropolitan to 15.2 in Central Metropolitan.

The rate of deaths from lung cancer for residents in **Hobart**, at 23.6 deaths per 100,000 population, was in the highest range mapped.

Darwin also had high rates**,** with the highest rate of all the capital cities in Litchfield Shire (38.7 deaths per 100,000 population). The lowest rate was in Darwin City (21.6).

In **Canberra**, death rates from lung cancer were low at the SSD level, reflecting the city's overall low rate: the highest rate was in Weston Creek-Stromlo (19.4 per 100,000 population) and the lowest were in South Canberra (11.4) and Tuggeranong (12.1).

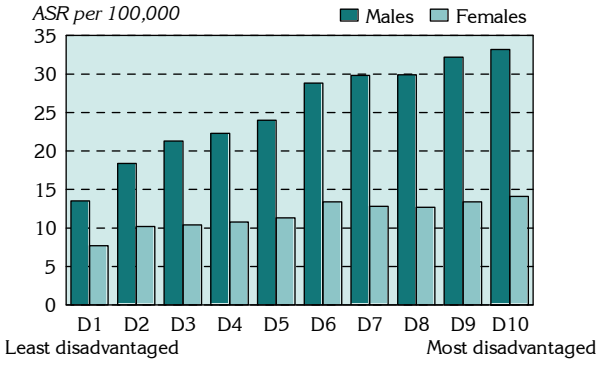
By socioeconomic status

For all capital cities and other major urban centres combined there were largely uninterrupted socioeconomic gradients in the rates of death from lung cancer for both males and females (Figure 4.9).

Rates for males were more than one and a half times those for females in each decile, ranging from 13.5 deaths per 100,000 population in the least disadvantaged areas to 33.2 in the most disadvantaged areas. The female rates ranged from 7.7 in the least disadvantaged areas to 14.1 in Decile 10 (disadvantaged).

The differential in the rates of death from lung cancer between the most disadvantaged areas and least disadvantaged areas was greater for males (2.46**), than for females (1.83**).

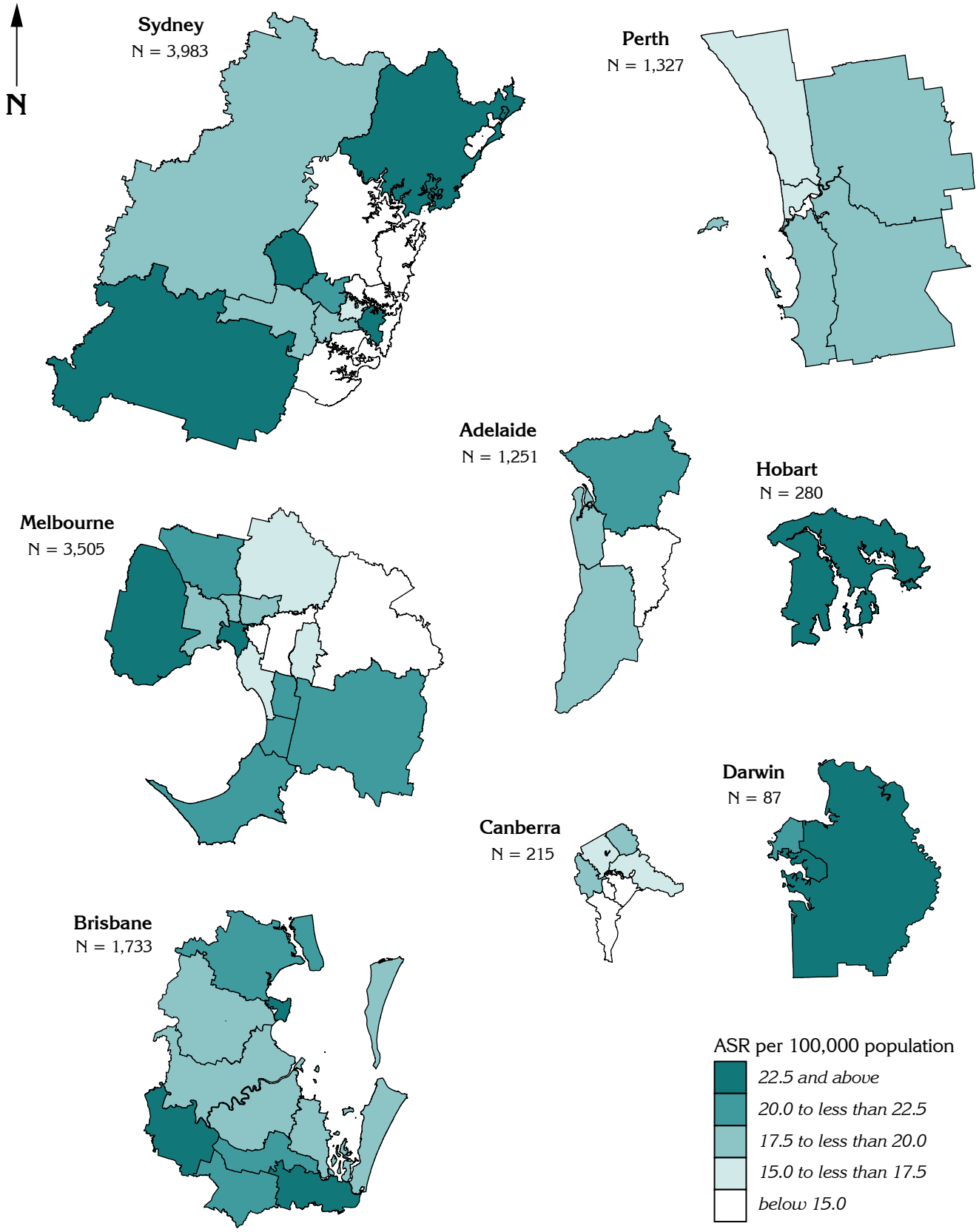
Figure 4.9: Avoidable mortality from lung cancer by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.7

Selected cause – Lung cancer: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Lung cancer: avoidable mortality (0 to 74 years), Australia, 1997-2001

States/ Territories

In New South Wales and Victoria, death rates from lung cancer were highest in the other major urban centres, followed by the rest of state/ territory areas and the capital cities (Table 4.16). Rates in the rest of state/ territory areas were also higher in Western Australia, and substantially higher in the Northern Territory, with 34.9 deaths per 100,000 population, compared to 24.6 in Darwin, a rate ratio of 1.42*. The rates in the rest of state areas were above those in the capital cities in New South Wales and Victoria (both 1.11**), and Western Australia (1.07), and lower in Queensland (0.99), South Australia (0.97) and Tasmania (0.86*).

Table 4.16: Avoidable mortality from lung cancer by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	17.6	17.8	20.7	18.0	17.9	23.6	24.6	14.9	18.2
Other major urban centres	21.4	21.5	19.5	..	..	..	..	..	20.6
Rest of state/ territory areas	19.6	19.8	20.5	17.4	19.1	20.2	34.9	#	19.8
Whole of state/ territory	**18.7**	**18.5**	**20.3**	**17.8**	**18.2**	**21.6**	**29.5**	**14.9**	**18.9**

By Statistical Subdivision (SSD)

Relatively high death rates covered much of inland **New South Wales**, with the highest rates in Upper Darling (45.4 deaths per 100,000 population) and Murray-Darling (33.7) (Map 4.8), which, with the exception of the Northern Territory, were the two highest in the rest of state/ territory areas. The lowest rates were in Snowy (11.8; 15 deaths) and Northern Tablelands (14.5).

The highest death rates from lung cancer in **Victoria** were in North Wimmera (27.6 deaths per 100,000 population) and La Trobe Valley (25.3), with the lowest rates in East Ovens-Murray (13.0; 17 deaths) and Wellington Shire (14.3).

In **Queensland,** the highest rates were in the SSDs of Thuringowa City Part A (30.8) and North West (30.5). Moreton SD Balance (16.3) and Sunshine Coast (16.6) had the lowest rates.

Death rates in **South Australia** were highest in West Coast (31.3; 10 deaths) and Whyalla (30.1). Over half of the SSD rates were in the lowest range mapped, with the lowest in Mt Lofty Ranges (9.5; 19 deaths - the lowest rate of all areas), Upper South East (12.3; 15 deaths) and Barossa (12.8).

The rates in **Western Australia** were highest in Kalgoorlie/Boulder City Part A (33.4 deaths per 100,000 population), Fortescue (29.9; 13 deaths), Carnegie (28.7; 5 deaths) and Geraldton (27.0), and lowest in Pallinup (12.4; 8 deaths) and Campion (13.6; 9 deaths).

In **Tasmania,** death rates were highest in Lyell (30.5; 9 deaths), and lowest in North Eastern (18.4) and Burnie-Devonport (18.8).

In the **Northern Territory**, rates in the SSDs were high, ranging from 78.5 deaths per 100,000 population in East Arnhem and 68.5 (10 deaths) in Alligator to 22.3 in Central SSD.

By remoteness

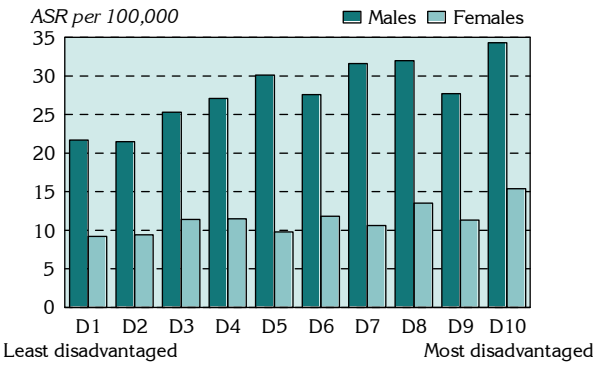
The graph of death rates from lung cancer by remoteness shows (opposite page) the lowest rate in the Inner Regional areas, with a rate of 17.7, increasing to 25.2 in the Very Remote areas. The number of deaths from lung cancer decline rapidly across the remoteness classes.

By socioeconomic status

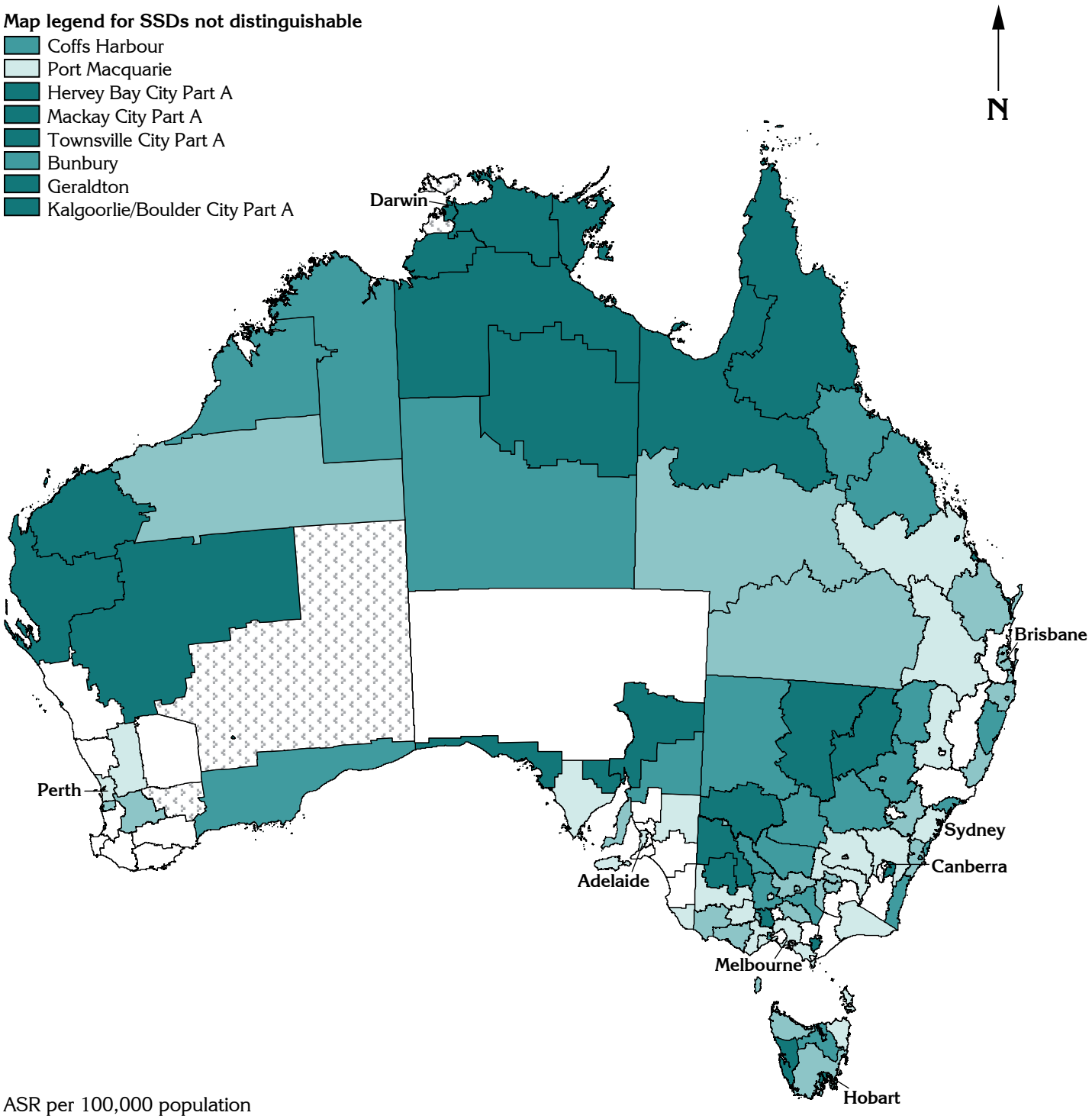
For all rest of state/ territory areas combined there is a largely uninterrupted socioeconomic gradient in death rates for lung cancer for both males: the pattern for females is less clear (Figure 4.10).

Rates for males were more than 80% higher than those for females in each decile, ranging from 21.5 in Decile 2 (less disadvantaged) to 34.3 in the most disadvantaged areas. The female rates ranged from 9.2 in the least disadvantaged areas to 15.4 in the most disadvantaged areas. The differential in rates between the most disadvantaged areas and least disadvantaged areas was 1.58** for males and 1.67** for females.

Figure 4.10: Avoidable mortality from lung cancer by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



Map 4.8
Selected cause – Lung cancer: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Major condition group – Cardiovascular diseases: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, the death rate from cardiovascular diseases considered to be avoidable (see *Methods*) ranged from 42. 8 per 100,000 population in Canberra to a rate of 70.1 in Darwin (Table 4.17). The rate for all capitals combined was 49.6 deaths per 100,000 population.

Table 4.17: Avoidable mortality from cardiovascular diseases, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
51.2	44.6	54.3	51.2	43.6	57.9	73.3	42.9	48.9

Other major urban centres

Rates in the other major urban centres ranged from 47.0 deaths per 100,000 population in Sunshine Coast to 66.5 in Townsville-Thuringowa (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

In **Sydney**, death rates from avoidable cardiovascular diseases varied substantially, with the majority of the SSD rates in the two highest ranges (Map 4.9). The highest rates were in Inner Sydney (69.4 deaths per 100,000 population) and Blacktown (69.3) and the lowest rates were in Central Northern Sydney (32.8) and Northern Beaches (34.4).

The rates in **Melbourne** at the SSD level were relatively low, with the highest rates in Melton-Wyndham (55.9) and Inner Melbourne (55.8). The lowest rates were in Boroondara City (33.8) and Eastern Middle Melbourne (35.6).

The rates in **Brisbane** were highest in Logan City (64.8 deaths per 100,000 population) and Gold Coast City Part A (64.6) and lowest in Beaudesert Shire Part A (45.7) and Redland Shire (46.8).

The rates in **Adelaide** varied little at the SSD level, from a rate of 57.1 deaths per 100,000 population in Western Adelaide to 45.8 in Southern Adelaide.

In **Perth**, death rates at the SSD level were all relatively low, with the highest rate in East Metropolitan (49.3) and the lowest in North Metropolitan (39.0).

For **Hobart** residents**,** the death rate was 57.9 deaths per 100,000 population.

The rates were high in the three SSDs in **Darwin**, ranging from 81.9 deaths per 100,000 population in Palmerston-East Arm (the highest rate of all capital city SSDs) to a low of 64.8 in Litchfield Shire.

Rates in **Canberra** were comparatively low, with the highest rate in South Canberra (49.9). The lowest rates were in Gungahlin-Hall (27.5; 13 deaths - the lowest rate of all capital city SSDs) and Tuggeranong (37.7).

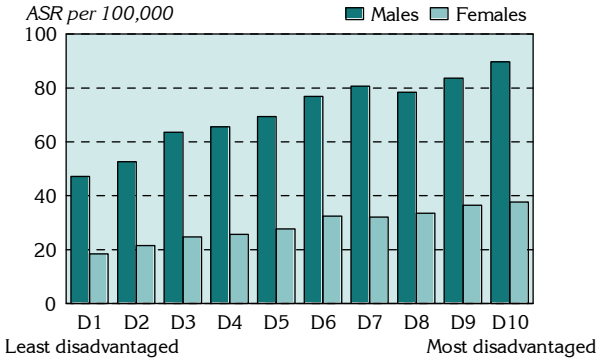
By socioeconomic status

For all capital cities and other major urban centres combined, there was a largely uninterrupted socioeconomic gradient in rates of death from cardiovascular diseases considered avoidable, for both males and females (Figure 4.11).

Rates for males were more than twice those for females in each decile, ranging from 47.2 deaths per 100,000 population in the least disadvantaged areas to 89.7 in the most disadvantaged areas. The female rates ranged from 18.4 in the least disadvantaged areas to 37.7 in the disadvantaged areas.

The differential in avoidable death rates from cardiovascular diseases between the most disadvantaged areas and least disadvantaged areas was greater for females (2.05**) than for males (1.90**).

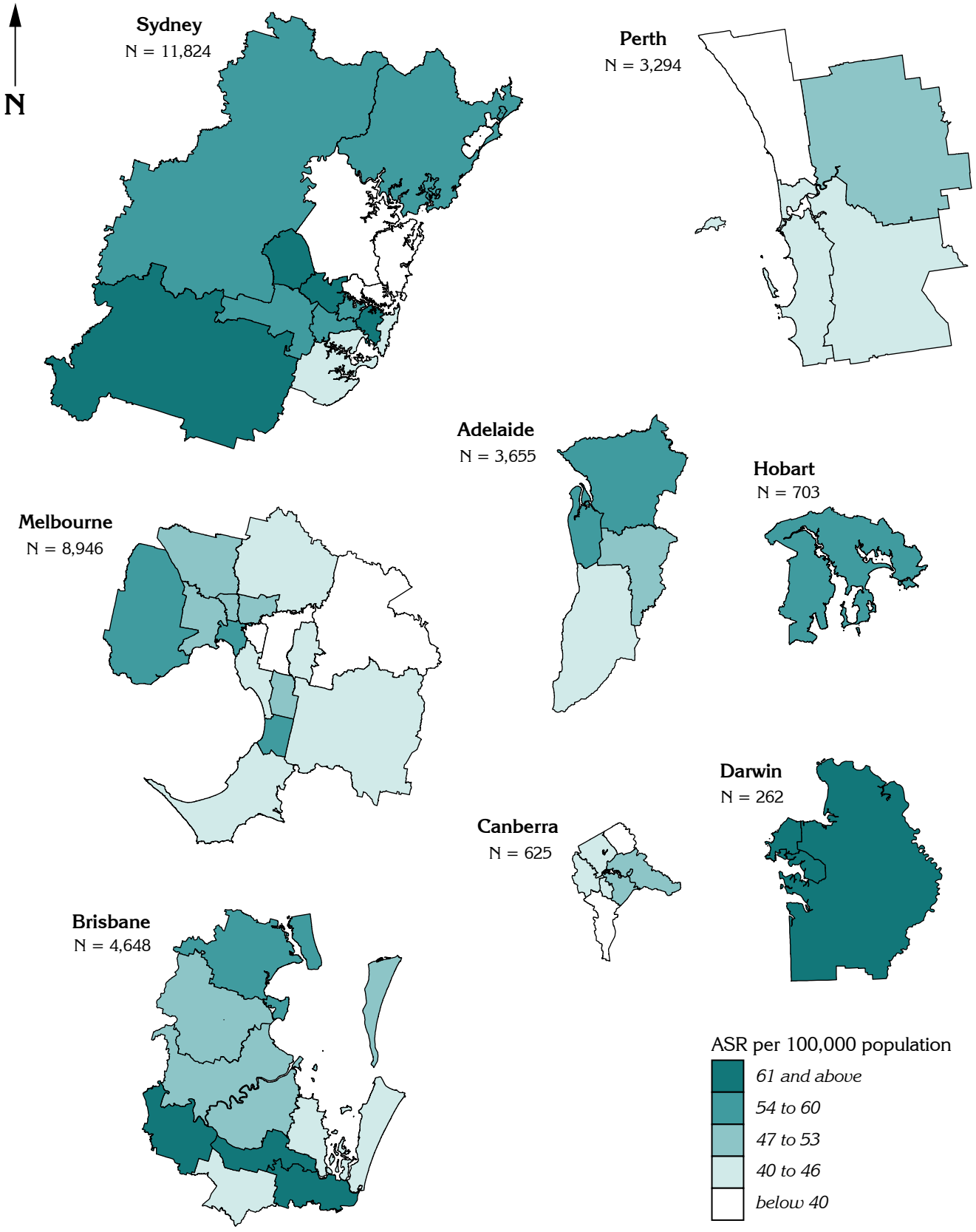
Figure 4.11: Avoidable mortality from cardiovascular diseases by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.9

Major condition group – Cardiovascular diseases: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Major condition group – Cardiovascular diseases: avoidable mortality (0 to 74 years), Australia, 1997-2001

State/ Territory comparison

Death rates from potentially avoidable cardiovascular diseases (see *Methods*) in the rest of state/ territory areas were approximately 10% to 20% (all significant at the 0.01 level) above those in the capital cities, other than in the Northern Territory (where they were substantially higher) and Tasmania (2% lower, a rate ratio of 0.98) (Table 4.18). In the Northern Territory, the death rate outside of Darwin was more than twice (2.17**) that in Darwin (149.9 deaths per 100,000 population and 70.1 per 100,000 population, respectively).

Table 4.18: Avoidable mortality from cardiovascular diseases by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	51.2	44.6	54.3	51.2	43.6	57.9	73.3	42.9	48.9
Other major urban centres	61.0	54.4	51.8	..	..	..	..	..	56.3
Rest of state/ territory areas	59.8	52.3	59.2	59.8	53.1	56.8	159.2	#	58.1
Whole of state/ territory	**55.1**	**47.0**	**55.6**	**53.7**	**46.2**	**57.4**	**110.8**	**43.0**	**52.4**

By Statistical Subdivision (SSD)

Death rates from potentially avoidable cardiovascular diseases were comparatively high in **New South Wales** (Map 4.10), with the highest rates in Upper Darling (102.1 deaths per 100,000 population) and North Central Plain (90.0). Rates were lowest in Coffs Harbour (47.0), Port Macquarie (49.5) and Central Murray (49.6).

The rates in **Victoria** were generally lower, with the highest rates in North Wimmera (65.9) and La Trobe Valley (63.9), and the lowest in South Goulburn (33.0) and East Barwon (38.4) (the two lowest SSD rates across Australia, outside of the capital cities).

In **Queensland**, rates were substantially higher in the North West (101.1 deaths per 100,000 population), South West (94.4) and Central West (89.5) SSDs. The lowest rates were in Hervey Bay City Part A (45.6), Sunshine Coast (47.0) and Moreton SD Balance (47.1).

Death rates in **South Australia** were highest in the West Coast (92.8 deaths per 100,000 population), Flinders Ranges (79.6) and Whyalla (79.3) SSDs. The lowest rates were in Lower North (43.0) and Fleurieu (43.3).

In **Western Australia**, rates were substantially higher in Ord (118.4), Fitzroy (116.2) and De Grey (91.5). The lowest rates were in the SSDs of Avon (40.2), Moore (43.3) and King (45.6).

The rates in **Tasmania** were within a smaller range, with the highest rates in Lyell (78.3) and North Eastern (64.0), and the lowest in North Western Rural (45.5) and Greater Launceston (55.2).

The rates in the **Northern Territory** SSDs were all notably higher than in the other states, with the highest rates in Bathurst-Melville (325.2; 16 deaths) and Alligator (302.9), and the lowest in Central (126.7).

By remoteness

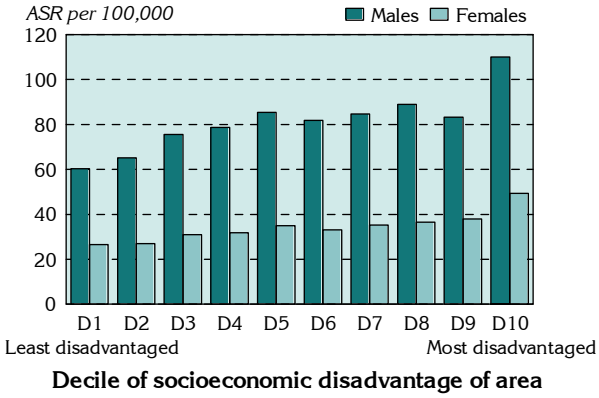
The graph of death rates by remoteness shows (opposite page) the lowest rates in the Major Cities and Inner Regional, with rates of 51.1 and 50.5, respectively, increasing to 63.6 in the Remote areas, followed by a sharp increase to 100.8 in the Very Remote areas. The number of deaths decline rapidly across the remoteness classes.

By socioeconomic status

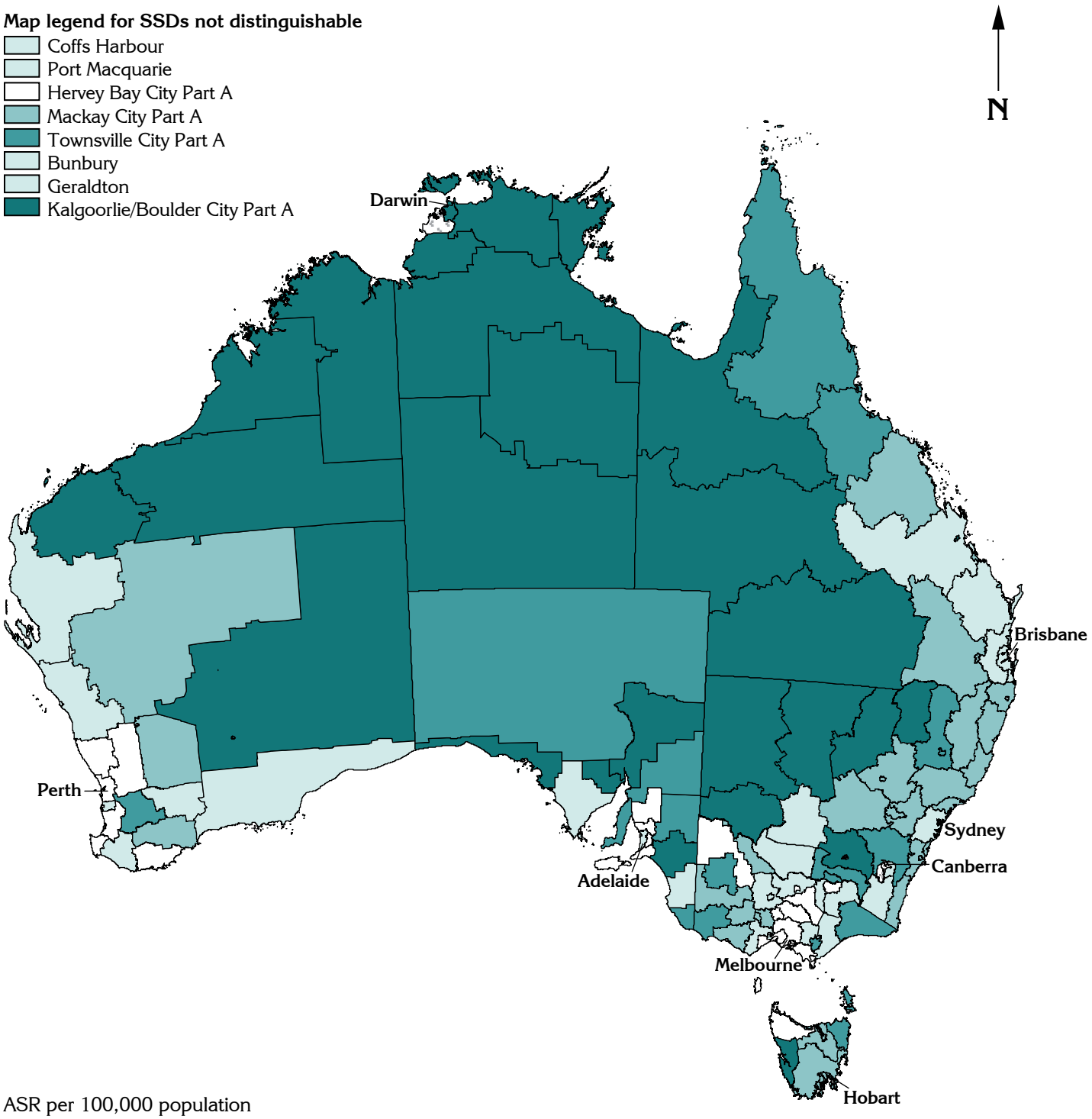
For all rest of state/ territory areas combined, there were largely uninterrupted socioeconomic gradients in the rates for both males and females (Figure 4.12).

Rates for males were more than twice those for females in each decile, ranging from 60.3 in the least disadvantaged areas to 110.1 in the most disadvantaged areas. The female rates ranged from 26.5 in the least disadvantaged areas to 49.4 in the most disadvantaged areas. The differential in rates between the most disadvantaged areas and least disadvantaged areas was 1.83** for males and 1.86** for females.

Figure 4.12: Avoidable mortality from cardiovascular diseases by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



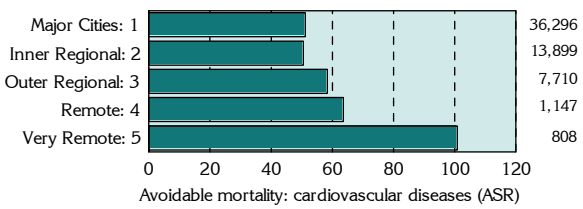
Map 4.10
Major condition group – Cardiovascular diseases: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



ASR per 100,000 population

- *71 and above*
- *63 to 70*
- *55 to 62*
- *47 to 54*
- *below 47*
- *data not mapped (<5 deaths)*

ASGC Remoteness classification



Details of map boundaries are in Appendix 1.4

Selected cause – Ischaemic heart disease: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from ischaemic heart disease ranged from a rate of 30.1 per 100,000 population in Canberra to a rate of 48.8 in Darwin (Table 4.19). The rate for all capitals combined was 35.5.

Table 4.19: Avoidable mortality from ischaemic heart disease, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
36.8	31.9	40.2	37.5	31.8	41.1	50.0	30.2	35.3

Other major urban centres

Rates in the other major urban centres were all higher than the 'All capitals' average, ranging from 35.8 deaths per 100,000 population from ischaemic heart disease in the Sunshine Coast to 50.9 in Townsville-Thuringowa (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

Over one third of the SSDs in **Sydney** had death rates from ischaemic heart disease in the highest range mapped (Map 4.11), with the highest rates in Inner Sydney (51.9 deaths per 100,000 population) and Blacktown (50.0), and the lowest rate in Central Northern Sydney (23.2).

For **Melbourne**, the SSD-level rates were all lower, with the highest rates in Melton-Wyndham (43.0) and Inner Melbourne (40.2), and the lowest rates in Boroondara City (22.3) and Eastern Middle Melbourne (25.9).

The highest death rates from ischaemic heart disease in **Brisbane** were in the north and the south, with rates of 49.7 in Logan City and 48.7 in Caboolture Shire Part A. The lowest rates were in Beaudesert Shire Part A (33.0) and Redland Shire (33.1).

In **Adelaide**, rates varied from a high of 41.2 deaths per 100,000 population in Northern Adelaide to a low of 33.2 in Southern Adelaide.

Within the low overall rate for **Perth**, rates at the SSD level were also low, ranging from 35.8 deaths per 100,000 population in East Metropolitan to 29.1 and 29.7 in North Metropolitan and Central Metropolitan, respectively.

The rate in **Hobart** was relatively high, at 41.1 deaths per 100,000 population.

The rates at the SSD level were also relatively high in **Darwin**, with the highest SSD rate of all the capital cities in Palmerston-East Arm (57.2 deaths from ischaemic heart disease per 100,000 population). The lowest rate was in Litchfield Shire (42.9).

Death rates in **Canberra** from ischaemic heart disease were comparatively low, with the highest rate in North Canberra (33.3). The lowest rate was in Gungahlin-Hall (21.2), which had the lowest rate of the capital city SSDs.

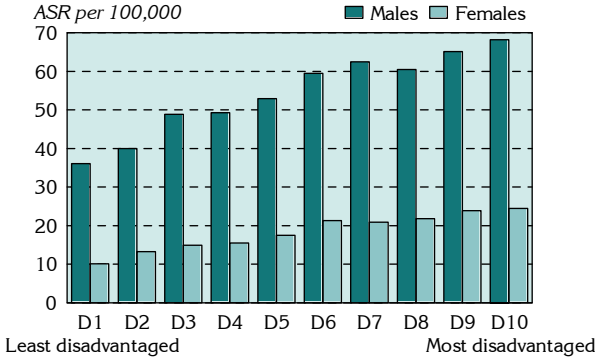
By socioeconomic status

For all capital cities and other major urban centres combined, there was a largely uninterrupted socioeconomic gradient in rates of death from ischaemic heart disease for both males and females (Figure 4.13).

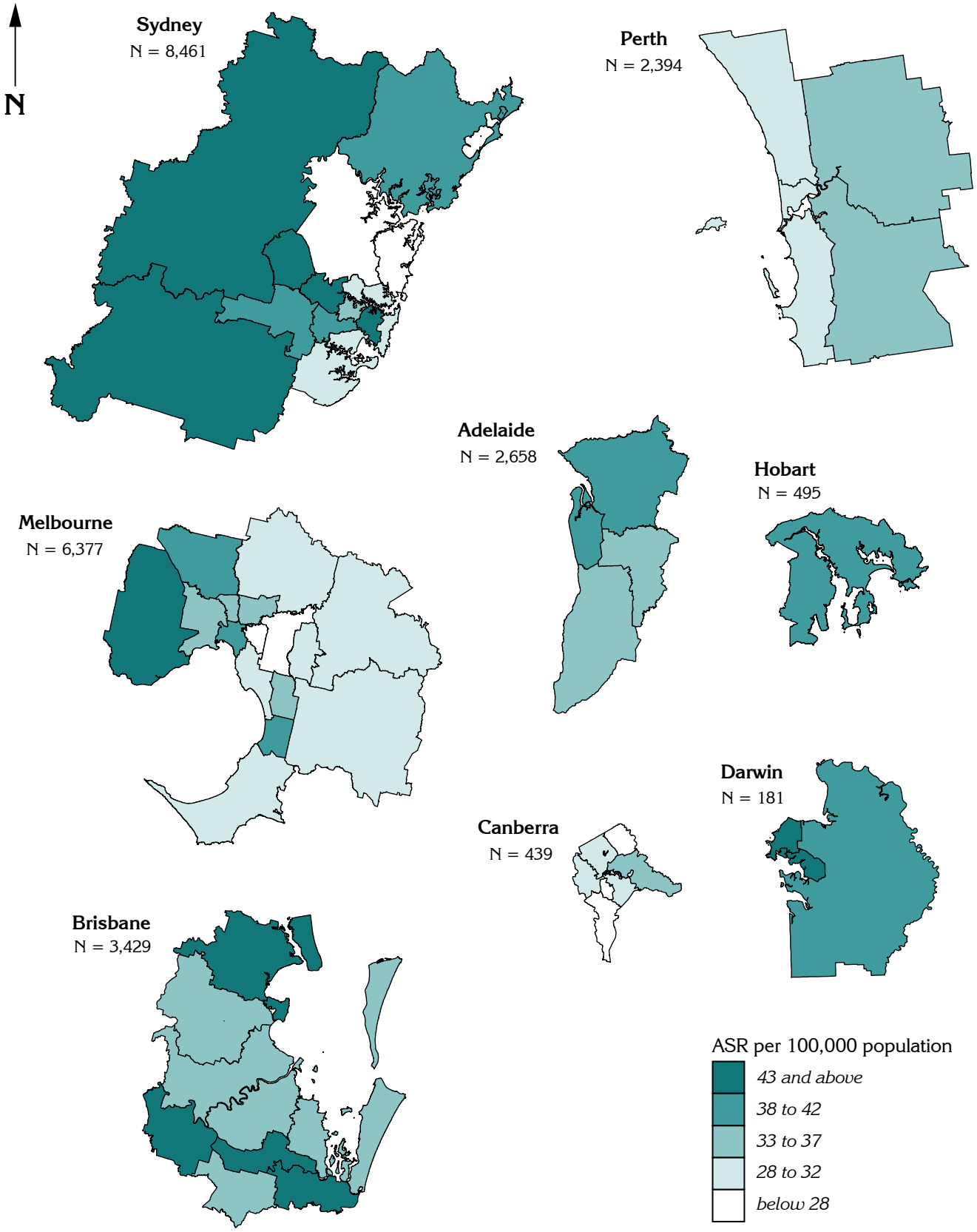
Rates for males were more than twice those for females in each decile, ranging from 36.1 deaths per 100,000 population in the least disadvantaged areas to 68.2 in the most disadvantaged areas. The female rates ranged from 10.1 in the least disadvantaged areas to 24.5 in the most disadvantaged areas (Decile 10).

The differential in rates of death from ischaemic heart disease between the most disadvantaged areas and least disadvantaged areas was greater for females (2.43**) than for males (1.89**).

Figure 4.13: Avoidable mortality from ischaemic heart disease by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.11
Selected cause – Ischaemic heart disease: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Ischaemic heart disease: avoidable mortality (0 to 74 years), Australia, 1997-2001

States/ Territories

Over the period 1997 to 2001, death rates from ischaemic heart disease were higher in the rest of state/ territory areas than in the capital cities in all jurisdictions, except Tasmania (Table 4.20). In the Northern Territory, the rate for the rest of territory areas was substantially higher than the rate in Darwin, with 109.9 deaths per 100,000 population, compared with 50.0 deaths per 100,000 population, respectively, a rate ratio of 2.20**. The differentials in rates between the rest of state areas and capital cities in the other states were all around 1.2**, other than in Queensland (1.1**) and Tasmania (where there was very little difference in the rates).

Table 4.20: Avoidable mortality from ischaemic heart disease by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	36.8	31.9	40.2	37.5	31.8	41.1	50.0	30.2	35.3
Other major urban centres	46.1	39.1	39.5	..	..	..	..	..	42.5
Rest of state/ territory areas	44.1	38.7	44.4	45.2	39.1	41.0	109.9	#	43.0
Whole of state/ territory	**40.2**	**34.0**	**41.6**	**39.7**	**33.8**	**41.1**	**75.6**	**30.2**	**38.4**

By Statistical Subdivision (SSD)

For **New South Wales**, the pattern is of higher rates throughout the north and north-west (Map 4.12), with the highest rates in Upper Darling (71.3) and North Central Plain (65.0). The lowest rates were in Coffs Harbour (34.7) and Snowy (36.4) SSDs.

In **Victoria,** the rates at the SSD level were lower, with the highest rates in Mildura Rural City Part A (50.6), La Trobe Valley (48.3) and Glenelg (48.2). The lowest rate (and the lowest in any rest of state/ territory area) was in South Goulburn (22.2).

The highest rates in **Queensland** were in the far west of the State, in the Central West (76.0), South West (68.8) and North West (68.7) SSDs. Hervey Bay City Part A (34.7) and Moreton Balance (35.7) had the lowest rates.

In **South Australia,** the highest rates were largely in SSDs in the north and north-west, with the highest rate in West Coast (77.0). The lowest rate was in Kangaroo Island (27.6; 8 deaths), followed by Fleurieu (32.4) and Mount Lofty Ranges (32.7).

The rates in **Western Australia** were highest in Ord (73.3) and Fitzroy (68.6) in the far north of the state. The lowest rates were in Avon (30.1) and Vasse (31.4).

For **Tasmania**, the highest rate was in Lyell (63.9 deaths per 100,000 population and 19 deaths), with the lowest rate in North Western Rural (30.6).

In the **Northern Territory**, the rates were all relatively high, with the highest rates in Bathurst-Melville (265.4; 13 deaths - the highest rate in Australia) and Alligator (236.3). All of the SSD rates mapped in the Northern Territory were higher than the other rest of state/ territory rates.

By remoteness

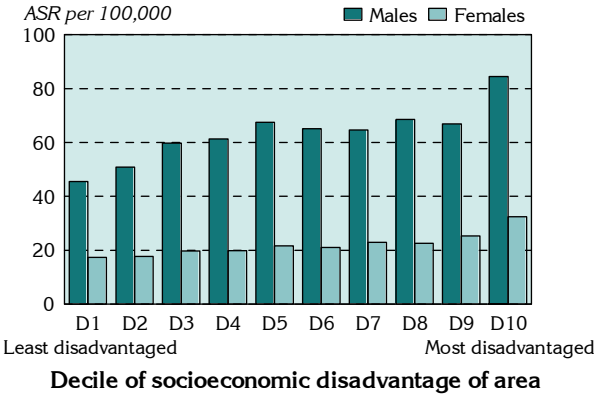
The graph of death rates from ischaemic heart disease by remoteness shows (opposite page) a marginal increase between the Major Cities, with a rate of 37.1, and the Inner Regional areas (37.5), followed by a steady increase to 43.1 in the Remote areas and a larger increase to 72.9 in the Very Remote areas. The number of deaths decline rapidly across the remoteness classes.

By socioeconomic status

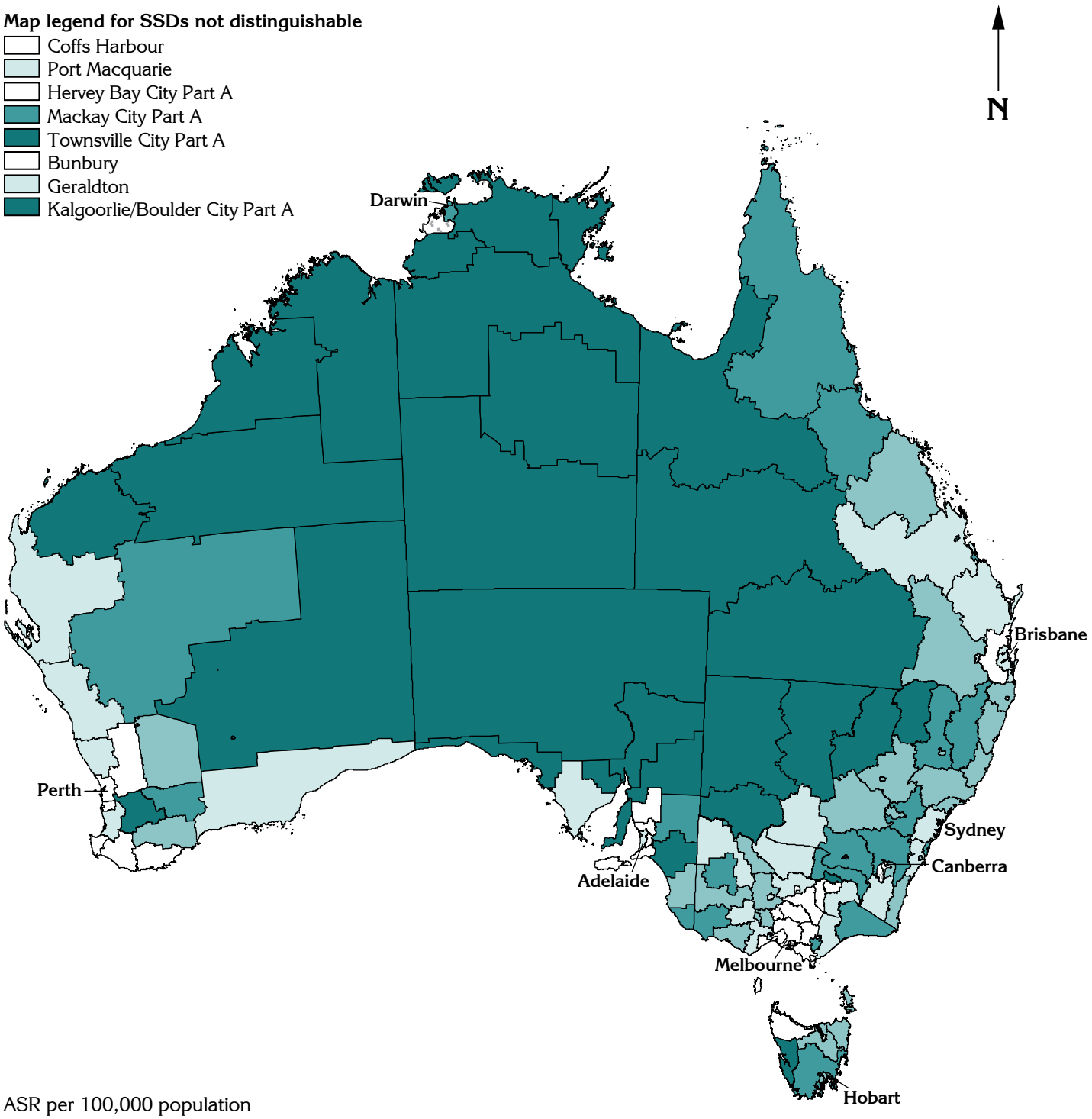
For all rest of state/ territory areas combined, there was a gradient in the rates by decile of socioeconomic disadvantage of area, for both males and females (Figure 4.14)

Rates for males were higher, ranging from 45.5 in the least disadvantaged areas to 84.4 in the most disadvantaged areas. The female rates ranged from 17.4 in the least disadvantaged areas to 32.5 in the most disadvantaged areas. The differential in rates between the most disadvantaged areas and least disadvantaged areas was marginally larger for females (1.87**) than for males (1.85**).

Figure 4.14: Avoidable mortality from ischaemic heart disease by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



Map 4.12
Selected cause – Ischaemic heart disease: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Cerebrovascular diseases: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from cerebrovascular diseases ranged from a rate of 9.6 per 100,000 population in Perth to a rate of 15.6 in Darwin (Table 4.21). The rate for all capitals combined was 11.0.

Table 4.21: Avoidable mortality from cerebrovascular diseases, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
11.3	9.9	10.9	10.5	9.3	12.5	16.9	9.8	10.5

Other major urban centres

Rates in the other major urban centres ranged from 8.6 deaths per 100,000 population from cerebrovascular diseases in the Sunshine Coast to 12.0 in Townsville-Thuringowa (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

Death rates from cerebrovascular diseases in **Sydney** were highest in the inner and south-western SSDs (Map 4.13), in Blacktown and Fairfield-Liverpool (both 15.3 deaths per 100,000 population) and Inner Western Sydney (14.2). Northern Beaches (6.8 - the lowest rate of all the capital city areas) and Central Northern Sydney (7.1) had the lowest rates.

In **Melbourne**, the rates were comparatively low, with the highest rates in Inner Melbourne (12.0 deaths per 100,000 population), Frankston City (11.7) and Hume City (11.5). Almost half of the SSDs had rates in the lowest two ranges mapped, with the lowest rates in Yarra Ranges Shire Part A and Eastern Middle Melbourne (both 7.6).

The rates of death in **Brisbane** were highest in Gold Coast City Part A (13.6 deaths per 100,000 population) and Redcliffe City (12.9), with the lowest rate in Pine Rivers Shire (7.8).

The pattern for **Adelaide** showed the highest rate to be in Western Adelaide (12.5) and the lowest rate in Northern Adelaide (9.5).

Death rates from cerebrovascular diseases in **Perth** were relatively evenly spread at the SSD level, with the highest rate in East Metropolitan (10.9 deaths per 100,000 population) and the lowest rate in North Metropolitan (7.5).

For residents in **Hobart**, the death rate was 12.5 deaths per 100,000 population.

In **Darwin**, the rates were all high, with 20.8 deaths per 100,000 population (10 deaths) in Palmerston-East Arm, 16.3 (8 deaths) in Litchfield Shire and 16.2 in Darwin City.

The rates in **Canberra** varied substantially, with the second highest rate of all capital city SSDs in South Canberra (16.4 deaths per 100,000 population), and the lowest rate in Tuggeranong (7.0; 19 deaths).

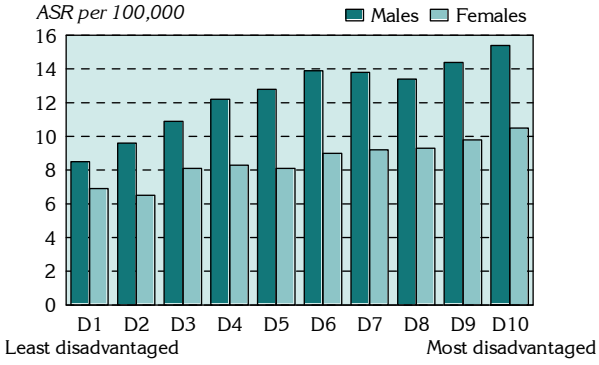
By socioeconomic status

For all capital cities and other major urban centres combined, there was a largely uninterrupted socioeconomic gradient in the rates of death from cerebrovascular diseases for both males and females (Figure 4.15).

Rates for males were higher than females in each decile, ranging from 8.5 deaths per 100,000 population in the least disadvantaged areas to 15.4 in the most disadvantaged areas. The female rates ranged from 6.5 in Decile 2 (advantaged) to 10.5 in the most disadvantaged areas.

The differentials in rates of death from cerebrovascular diseases between the most disadvantaged and least disadvantaged areas were 1.81** for males and 1.52** for females.

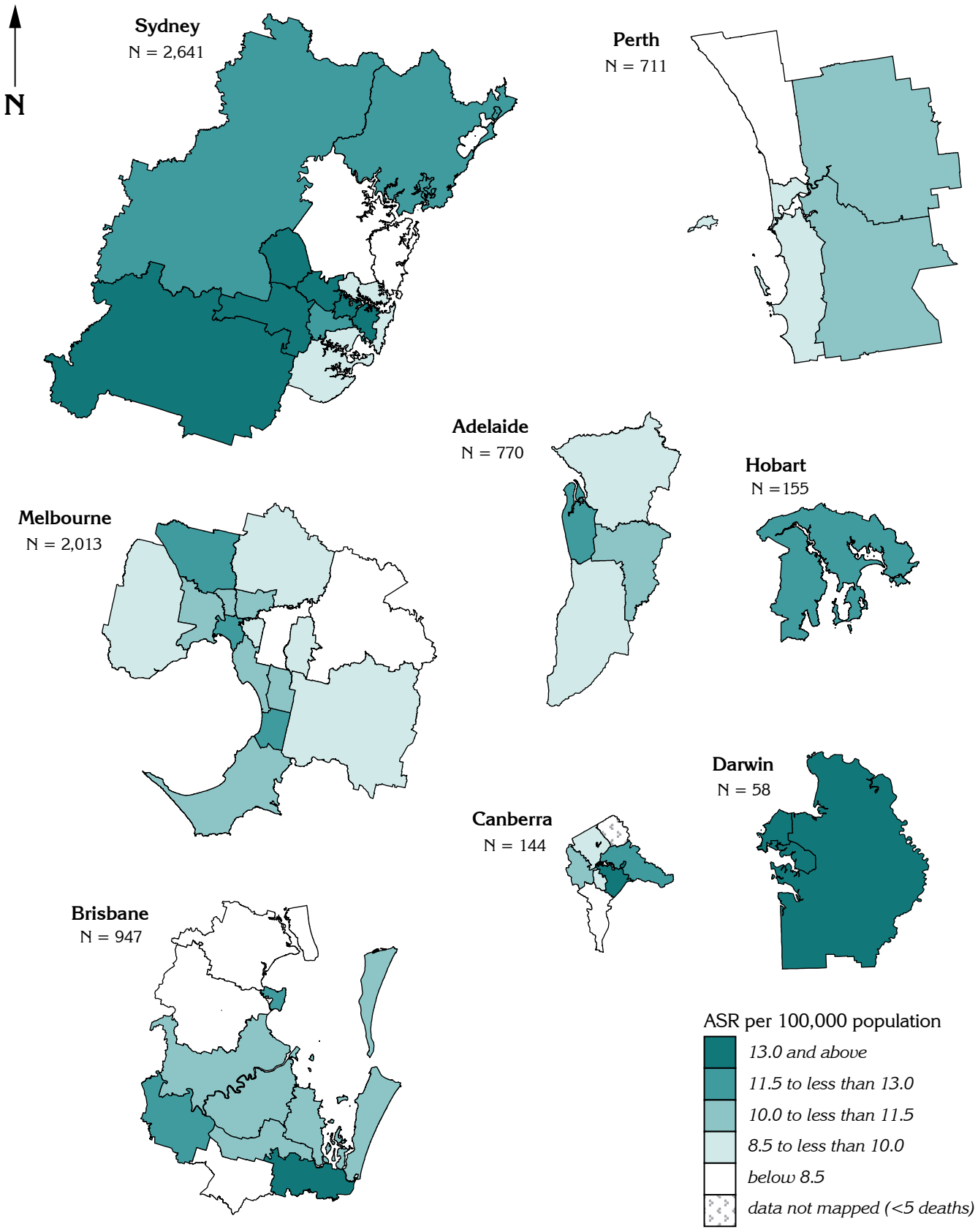
Figure 4.15: Avoidable mortality from cerebrovascular diseases by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.13

Selected cause – Cerebrovascular diseases: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Cerebrovascular diseases: avoidable mortality (0 to 74 years), Australia, 1997-2001

States/ Territories

Over the period 1997 to 2001, death rates from cerebrovascular diseases were higher in the rest of state/ territory areas than in the capital cities in all states except Tasmania (Table 4.22). In the Northern Territory, the rate for the rest of territory areas was substantially higher, with 27.6 deaths per 100,000 population, compared with 15.6 deaths per 100,000 population in Darwin, a rate ratio of 1.81**. The differentials in rates between the rest of state areas and capital cities in the other states were all around 1.0, other than in Western Australia, which was higher (1.15*), and Tasmania, with a marginally lower rate outside of the capital city (0.98).

Table 4.22: Avoidable mortality from cerebrovascular diseases by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	11.3	9.9	10.9	10.5	9.3	12.5	16.9	9.8	10.5
Other major urban centres	11.4	11.1	9.5	..	..	..	..	..	10.6
Rest of state/ territory areas	12.0	10.3	11.3	11.2	10.7	12.3	30.6	#	11.5
Whole of state/ territory	**11.5**	**10.0**	**10.8**	**10.7**	**9.7**	**12.5**	**22.7**	**9.8**	**10.8**

By Statistical Subdivision (SSD)

For **New South Wales**, rates of cerebrovascular diseases were highest in Upper Darling (29.0 deaths per 100,000 population and 16 deaths), Central Murrumbidgee (17.6) and Upper Murray (17.0) (Map 4.14). The lowest rates were in Tweed Heads (8.2) and Queanbeyan (8.3; 16 deaths).

Death rates in **Victoria** were generally lower at the SSD level, with the highest rates in West Central Highlands (14.5) and North Wimmera (13.8). Almost half of the SSD rates were in the two lowest ranges mapped, with the lowest in East Ovens-Murray (5.3; 7 deaths) and East Barwon (5.8).

In **Queensland**, the highest rates were in North West (21.1 deaths per 100,000 population) and South West (21.0) SSDs. Hervey Bay City Part A (7.1) and Fitzroy SD Balance (8.4) had the lowest rates.

The rates in **South Australia** were highest in the north, in the SSDs of Flinders Ranges (20.9 deaths per 100,000 population) and Whyalla (19.4). The lowest rates were in Lower North (6.9; 10 deaths) and Upper South East (7.2; 9 deaths).

The pattern of rates in **Western Australia** was of higher rates in the north and north-eastern SSDs, with the highest rates of death from in Ord (36.6; 12 deaths) and Fitzroy (32.6; 19 deaths). Half of the SSD rates mapped were in the lowest two ranges, with the lowest rates in Preston (5.9; 10 deaths) and Avon (6.7; 12 deaths).

In **Tasmania,** deaths were highest in the North Eastern (20.1 deaths per 100,000 population) SSD and lowest in the Southern (8.6) area.

Death rates were high in all SSDs in the **Northern Territory**, with rates varying from 43.4 deaths per 100,000 population (8 deaths) in Barkly to 31.3 in Central SSD.

By remoteness

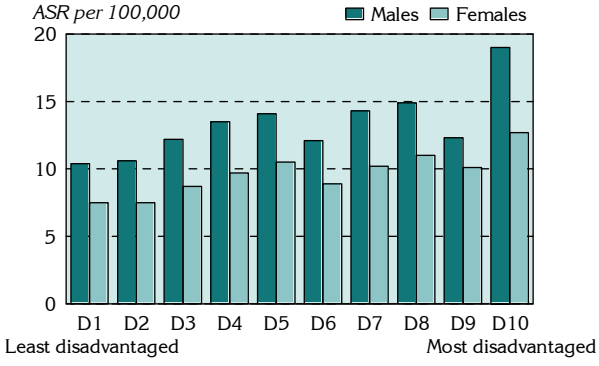
The graph of death rates from cerebrovascular diseases by remoteness shows (opposite page) the lowest rate in the Inner Regional area with a rate of 10.0, and a marginal increase to a rate of 11.9 in both the Remote area, followed by a larger increase to 19.9 in the Very Remote areas. The number of deaths decline rapidly across the remoteness classes.

By socioeconomic status

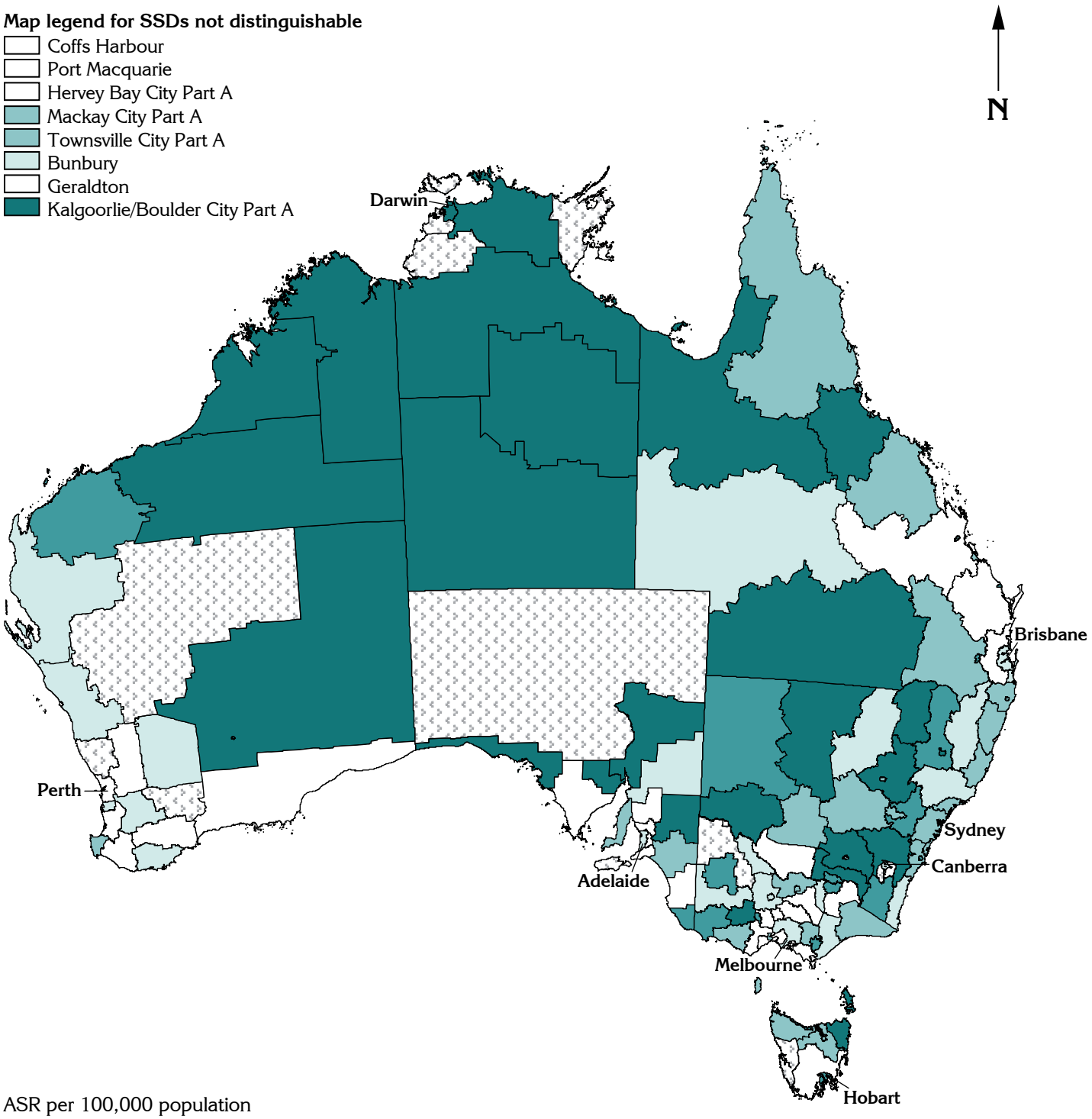
For all rest of state/ territory areas combined, there were largely uninterrupted gradients in ARS across the deciles of socioeconomic disadvantage of area for both males and females (Figure 4.16).

Rates for males were higher than females, ranging from 10.4 in the least disadvantaged areas to 19.0 in the most disadvantaged areas, compared with rates of 7.5 and 12.7 for females, respectively. The differentials in rates between the most and least disadvantaged areas were 1.83** for males and 1.69** for females.

Figure 4.16: Avoidable mortality from cerebrovascular diseases by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



Map 4.14
Selected cause – Cerebrovascular diseases: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Major condition group – Respiratory diseases: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from respiratory diseases considered avoidable ranged from a rate of 7.9 per 100,000 population in Perth to almost double (1.9) the rate in Hobart (15.0) (Table 4.23). The rate for all capitals combined was 9.0 deaths per 100,000 population.

Table 4.23: Avoidable mortality from respiratory diseases, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
9.4	8.1	10.6	8.6	7.9	15.0	15.1	8.9	9.0

Other major urban centres

Rates in the other major urban centres ranged from 7.5 deaths per 100,000 population in Gold Coast-Tweed Heads to 12.7 in Townsville-Thuringowa (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

For **Sydney**, there is a clear distinction between high and low rates at the SSD level (Map 4.15). The highest rates were in Outer South Western Sydney (15.1 deaths per 100,000 population), Blacktown (14.8) and Inner Sydney (13.8); the lowest rates were in Central Northern Sydney (4.9) and Lower Northern Sydney (6.9).

The SSD level rates in **Melbourne** are also clearly differentiated, being highest in Frankston City (13.3), Melton-Wyndham (12.4) and Hume City (11.9). The lowest rates were in Eastern Middle Melbourne (4.7) and Boroondara City (4.8), the two lowest rates of all capital city SSDs.

In **Brisbane,** the highest rates were in Redcliffe City (17.4 deaths per 100,000 population) (the second highest rate of all capital city SSDs), Logan City (14.3) and Ipswich City (Part in BSD) (14.0). The lowest rate was in Pine Rivers Shire (6.9).

The rates in **Adelaide** were within a smaller range, varying from a high of 10.2 deaths per 100,000 population in Northern Adelaide to a low of 6.9 in Southern Adelaide.

Rates in **Perth** were more uniform, with the highest rates in the eastern SSDs of East Metropolitan and South East Metropolitan (both 9.3), and the lowest in North Metropolitan (6.5).

The highest capital city rate (15.0 deaths per 100,000 population) was in **Hobart**, 67% higher than the overall rate for the capital cities.

The rates in **Darwin** were high, ranging from 22.9 (10 deaths) - the highest rate of all capital city SSDs - in Palmerston-East Arm, to a low of 11.2 (5 deaths) in Litchfield Shire.

In **Canberra**, the rates were highest in South Canberra (14.0) and North Canberra (8.8). Belconnen (7.9) and Weston Creek-Stromlo (8.1) had the lowest rates.

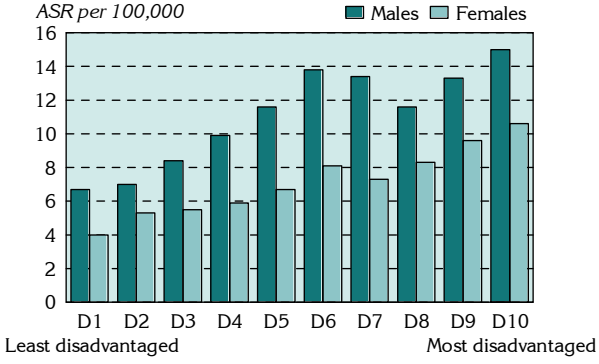
By socioeconomic status

For all capital cities and other major urban centers combined, there was a relatively uninterrupted socioeconomic gradient in the rates of death from avoidable respiratory diseases for both males and females (Figure 4.17).

Rates for males were higher than for females in each decile, ranging from 6.7 deaths per 100,000 population in the least disadvantaged areas to 15.0 in the most disadvantaged areas. The female rates ranged from 4.0 in the least disadvantaged areas to 10.6 in the most disadvantaged areas.

The differential in the rates of death from avoidable respiratory diseases between the most disadvantaged areas and least disadvantaged areas was greater for females (2.65**) than for males (2.24**).

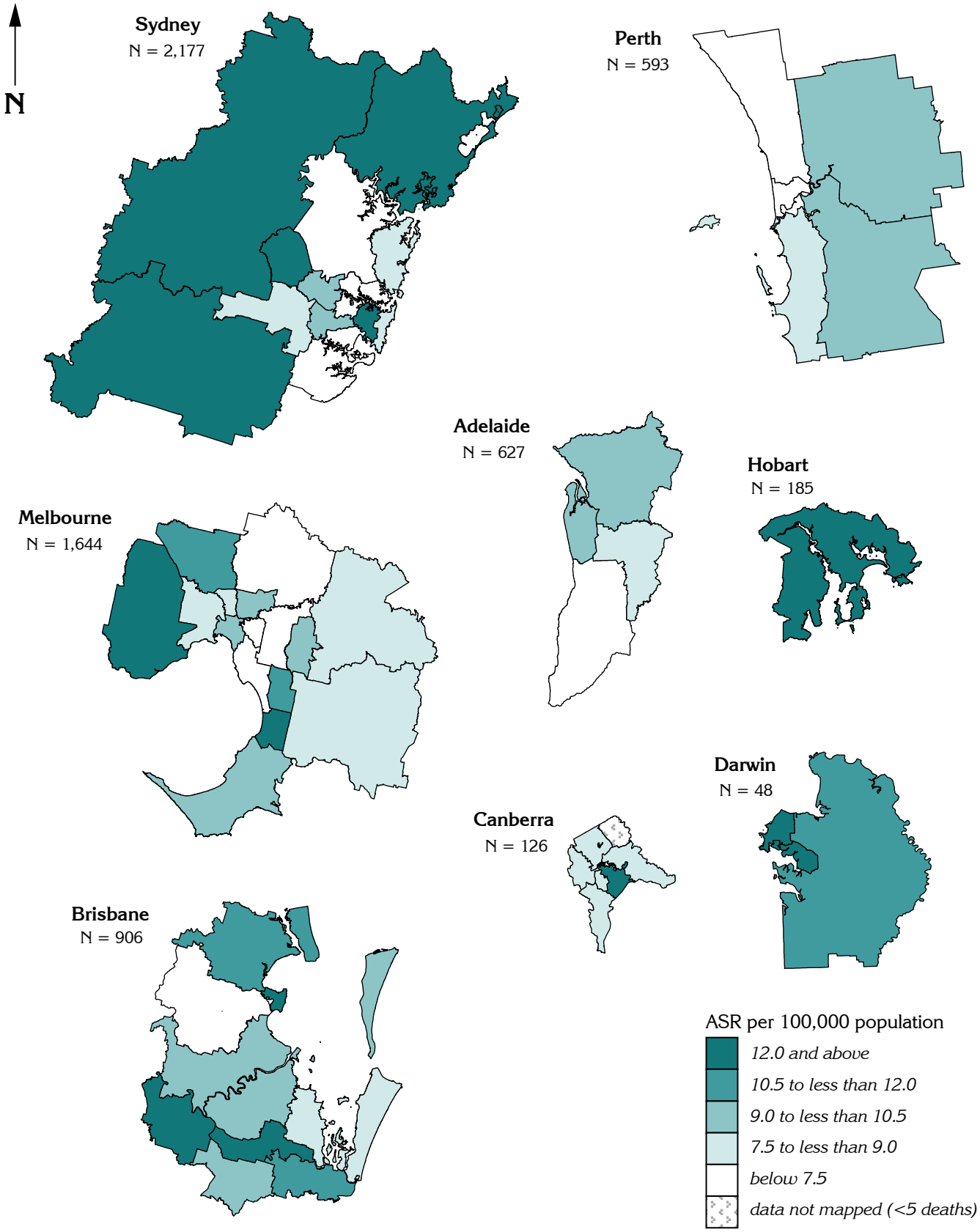
Figure 4.17: Avoidable mortality from respiratory diseases by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.15

Major condition group – Respiratory diseases: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Major condition group – Respiratory diseases: avoidable mortality (0 to 74 years), Australia, 1997-2001

State/ Territory comparison

Death rates from respiratory diseases considered avoidable were higher in the rest of state/ territory areas than in the capital cities and other major urban centres (Table 4.24). In Northern Territory, the rate was substantially higher in the rest of territory areas, with 39.3 deaths per 100,000 population, compared with a rate of 15.1 in Darwin, a rate ratio of 2.60**. For the other states, rates in the rest of state areas were between 5% (a rate ratio of 1.05, in Tasmania) and 40% (1.40**, in New South Wales) above those in the capital cities.

Table 4.24: Avoidable mortality from respiratory diseases by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	9.4	8.1	10.6	8.6	7.9	15.0	15.1	8.9	9.0
Other major urban centres	10.5	10.0	8.6	..	..	..	..	..	9.6
Rest of state/ territory areas	13.2	10.8	11.8	9.6	10.3	15.8	39.3	#	12.2
Whole of state/ territory	**10.7**	**8.9**	**10.7**	**8.9**	**8.5**	**15.5**	**25.8**	**8.9**	**10.1**

By Statistical Subdivision (SSD)

High rates of death from respiratory diseases considered avoidable occurred across much of **New South Wales**, and were highest in North Central Plain (32.4 deaths per 100,000 population), Upper Darling (25.5; 14 deaths) and Macquarie-Barwon (23.7) (Map 4.16). The lowest rates were in Lismore (7.7; 14 deaths), Tweed Heads (8.1) and Lower South Coast (8.5).

The rates in **Victoria** were lower, with the highest rates in West Ovens-Murray (14.5), East Mallee (13.5) and La Trobe Valley (12.9). The lowest rates were in South Loddon (7.2; 13 deaths) and Warrnambool City (7.3; 13 deaths).

In **Queensland**, rates were high in the western SSDs of North West (31.4 deaths per 100,000 population), Central West (24.9; 19 deaths) and South West (20.8), and low in Gladstone (6.7; 11 deaths) and Gold Coast City Part B (7.4).

Death rates in **South Australia** were highest in Far North (17.1; 7 deaths) and Whyalla (15.9), and lowest in Lincoln (4.8; 9 deaths) and Fleurieu (5.0; 18 deaths) (the two lowest rates of all SSDs).

Rates in **Western Australia** were high in Ord (32.0 deaths per 100,000 population and 10 deaths), Carnegie (31.1; 5 deaths) and Lefroy (25.0; 6 deaths). King (6.2; 17 deaths) and Preston (6.7; 12 deaths) had the lowest rates.

In **Tasmania**, rates were relatively high, with the highest rates in Lyell (21.3; 6 deaths) and Greater Launceston (17.4) and the lowest in North Western Rural (10.5; 14 deaths) and Southern (13.6).

The **Northern Territory** rates were all notably high, ranging from 108.2 in Alligator (15 deaths), 78.2 (18 deaths) in East Arnhem, and 77.6 in Daly (7 deaths) (the three highest rates of all the SSDs) to 22.1 deaths per 100,000 population in Central.

By remoteness

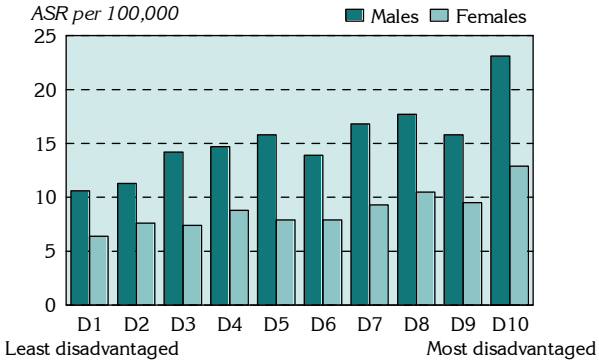
The graph of death rates by remoteness shows (opposite page) a steady increase between the Major Cities areas, with a rate of 9.3, and the Remote areas (13.7), followed by a larger increase to 23.5 in the Very Remote areas. The number of deaths decline rapidly across the remoteness classes.

By socioeconomic status

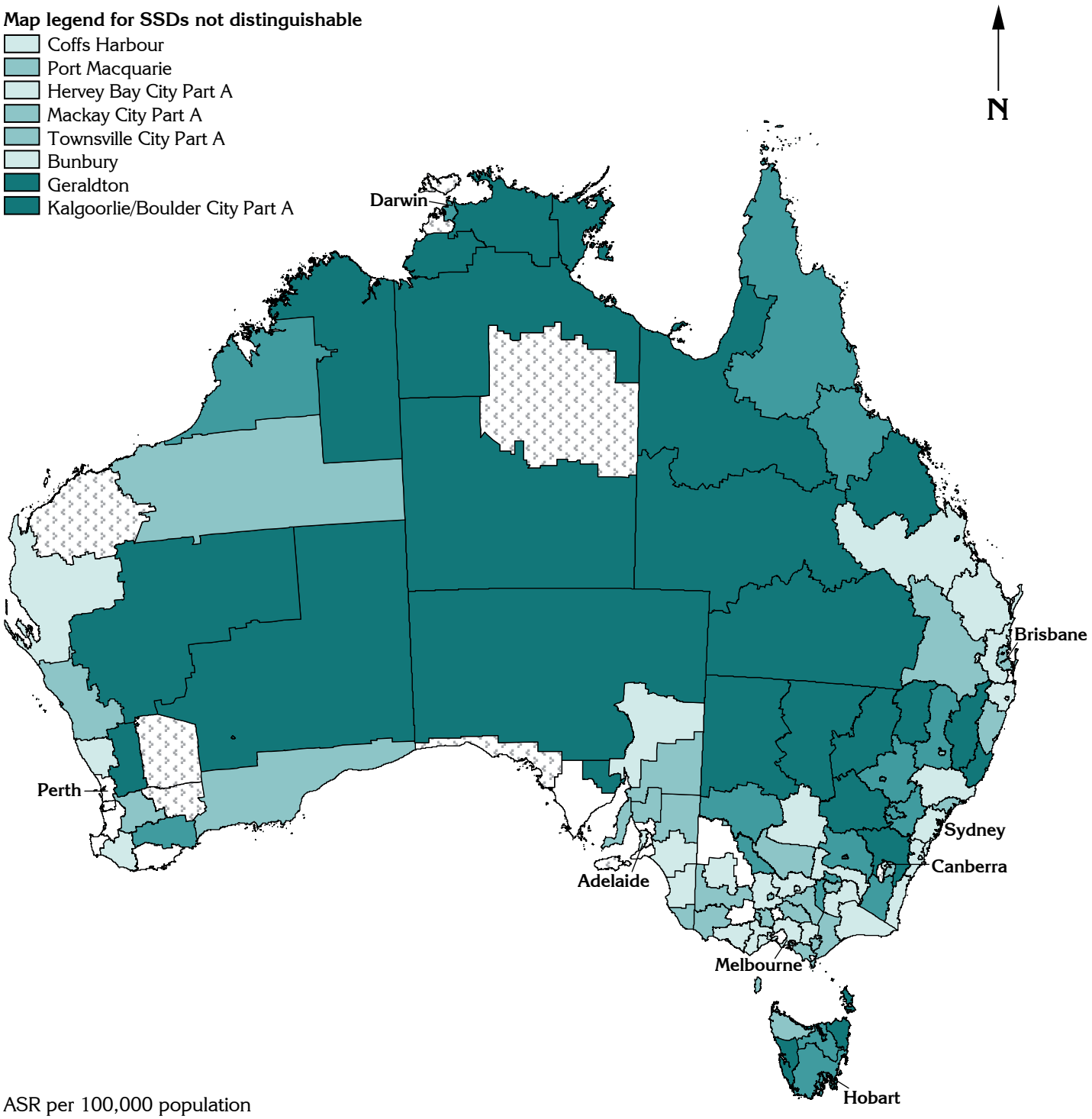
For all rest of state/ territory areas combined, there was a largely uninterrupted gradient in death rates by decile of socioeconomic disadvantage of area for males and for females (Figure 4.18).

Rates for males were more than one and a half times those for females in each decile, ranging from 10.6 in the least disadvantaged areas to 23.1 in the most disadvantaged areas. The female rates ranged from 6.4 in the least disadvantaged areas to 12.9 in the most disadvantaged areas. The differential in the rates between the most disadvantaged areas and least disadvantaged areas was 2.18** for males and 2.02** for females.

Figure 4.18: Avoidable mortality from respiratory diseases by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



Map 4.16
Major condition group – Respiratory diseases: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Chronic obstructive pulmonary disease: avoidable mortality (45 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from chronic obstructive pulmonary disease (COPD) ranged from a rate of 6.7 per 100,000 population in Perth to more than double (2.3) in Darwin, a rate of 15.3 (Table 4.25). The rate for all capitals combined was 7.9.

Table 4.25: Avoidable mortality from COPD, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
8.2	7.1	9.5	7.3	6.7	13.9	15.3	7.5	7.9

Other major urban centres

Rates in the other major urban centres ranged from 6.6 in Gold Coast-Tweed Heads to 11.5 deaths from COPD per 100,000 population in Townsville-Thuringowa (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

Death rates from COPD varied widely in **Sydney**, with the highest in Blacktown (13.4 deaths per 100,000 population), Outer South Western Sydney (12.7) and Inner Sydney (12.4) SSDs (Map 4.17). In contrast, there was a very low rate in Central Northern Sydney SSD (4.1), with low rates also in St George-Sutherland and Inner Western Sydney (both 6.1) and Lower Northern Sydney (6.2) SSDs.

The rates in **Melbourne** also varied across the city, but were generally lower, with the highest being in Hume City (11.7) and Frankston City (11.6). The lowest rates were in Eastern Middle Melbourne (4.0 - the lowest rate of all capital city SSDs) and Boroondara City (4.2).

Over half of the SSDs in **Brisbane** had death rates from COPD in the highest range mapped, with the highest rates in Redcliffe City (15.4 deaths per 100,000 population) and Logan City (13.6), and the lowest rate in Pine Rivers Shire (5.6).

There was little variation at the SSD level in **Adelaide**, with rates ranging from a high of 8.5 deaths per 100,000 population in Northern Adelaide to a low of 6.1 in Southern Adelaide.

The rates were also relatively even, and comparatively low, in **Perth**, varying from 8.1 deaths per 100,000 population in East Metropolitan to 5.4 per 100,000 in North Metropolitan.

Hobart residents had a high rate of deaths from COPD, 13.9 deaths per 100,000 population.

For **Darwin**, the rates were all high, with 22.0 deaths per 100,000 population (9 deaths) in Palmerston-East Arm (the highest of all SSDs), 14.7 in Darwin City and 12.0 (5 deaths) in Litchfield Shire.

The rates in **Canberra** varied from 11.8 deaths per 100,000 population in South Canberra (19 deaths) to 5.8 in Weston Creek-Stromlo (8 deaths) and 6.2 in Tuggeranong (14 deaths).

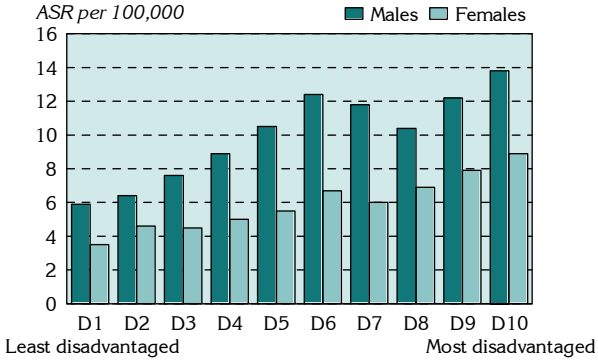
By socioeconomic status

For all capital cities and other major urban centres combined, there was a largely uninterrupted socioeconomic gradient in the rates of death from COPD for both males and females (Figure 4.19).

Rates for males were higher than females in each decile, ranging from 5.9 deaths per 100,000 population in the least disadvantaged areas to 13.8 in the most disadvantaged areas. The female rates ranged from 3.5 in the least disadvantaged areas to 8.9 in the most disadvantaged areas.

The differential in the rates of death from COPD between the most disadvantaged areas and least disadvantaged areas was greater for females (2.54**) than for males (2.34**).

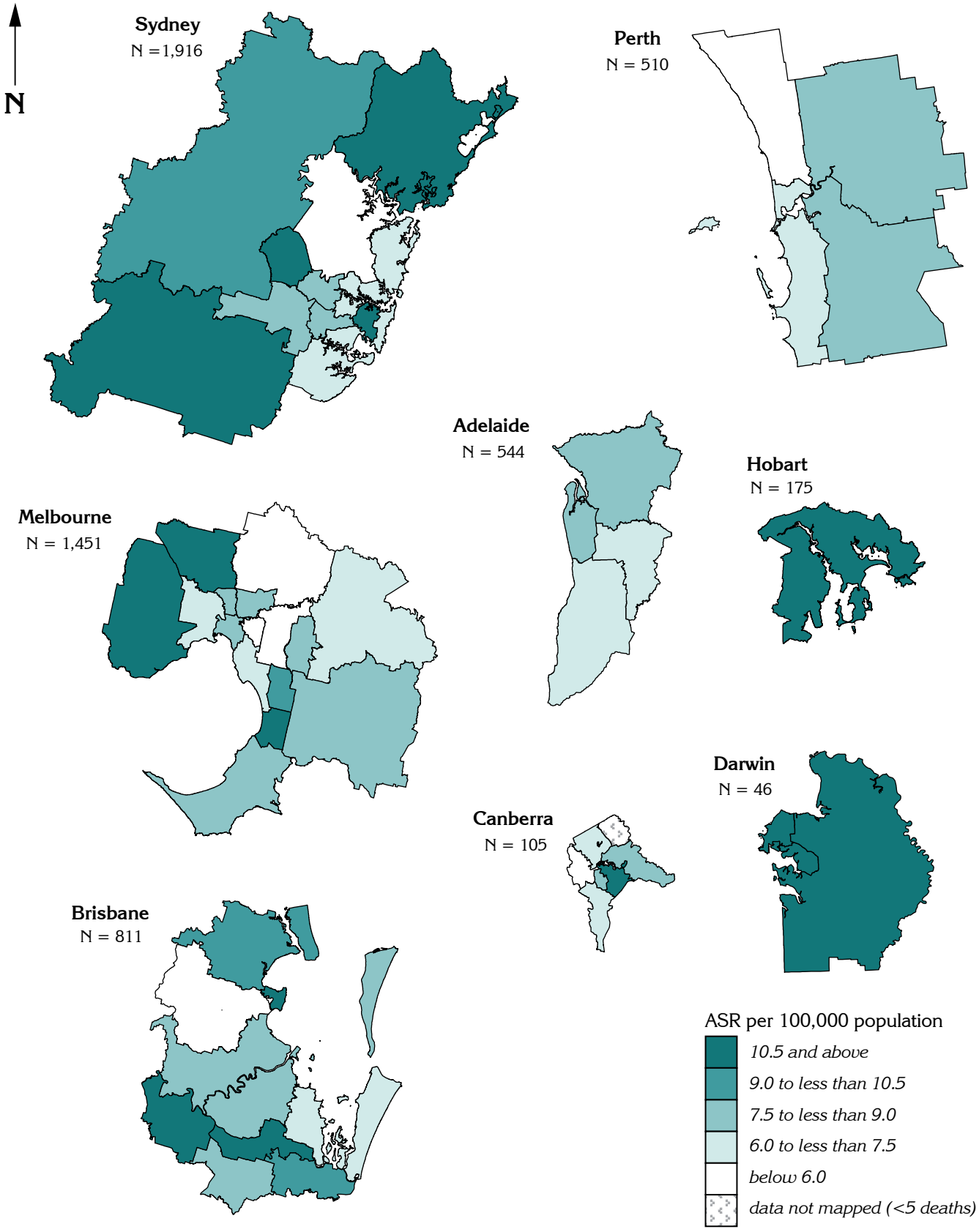
Figure 4.19: Avoidable mortality from COPD by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.17

Selected cause – Chronic obstructive pulmonary disease: avoidable mortality (45 to 74 years), capital cities, Australia, 1997-2001

age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Chronic obstructive pulmonary disease: avoidable mortality (45 to 74 years), Australia, 1997-2001

States/ Territories

Over the period 1997 to 2001, death rates from COPD were higher in the rest of state/ territory areas than in the capital cities and other major urban centres in all states, except Tasmania (Table 4.26). Rates in Northern Territory were substantially higher in the rest of territory areas, with 39.8 deaths per 100,000 population, compared with 15.3 deaths per 100,000 population in Darwin, a rate ratio of 2.60**. The rates in the rest of state areas ranged from 13% (a rate ratio of 1.13*, in Queensland) to 45% (1.45**, New South Wales) above those in the capital cities, other than in Tasmania (where there was a very small difference in rates).

Table 4.26: Avoidable mortality from COPD by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	8.2	7.1	9.5	7.3	6.7	13.9	15.3	7.5	7.9
Other major urban centres	9.3	8.9	7.7	..	..	..	..	..	8.5
Rest of state/ territory areas	11.9	9.6	10.7	8.3	8.7	13.8	39.8	#	10.9
Whole of state/ territory	**9.5**	**7.8**	**9.6**	**7.6**	**7.2**	**13.9**	**26.1**	**7.5**	**8.9**

By Statistical Subdivision (SSD)

The pattern of COPD deaths in **New South Wales** is one of higher rates across much of the inland areas of the State (Map 4.18), with the highest rates in North Central Plain (30.3 deaths per 100,000 population), Upper Darling (23.7; 13 deaths) and Macquarie-Barwon (21.7). The lowest rates were in Tweed Heads (7.0) and Lismore (7.3; 13 deaths).

The rates were lower, and more uniform, in **Victoria**, with the highest rates in West Ovens-Murray (12.7) and East Mallee (12.3). West Central Highlands (8 deaths), and South Loddon (11 deaths) (both 6.1) and West Gippsland (6.4; 13 deaths) had the lowest rates.

In **Queensland**, the highest death rates from COPD were also inland, in North West (32.3 deaths per 100,000 population), Central West (21.8; 17 deaths) and South West (20.5) SSDs, with the lowest rate in Gold Coast City Part B (6.5).

The highest rates in **South Australia** were in the Far North (15.1; 6 deaths) and Whyalla (14.2) SSDs. The lowest rates were in Fleurieu (4.0; 15 deaths) (the lowest of all the SSDs), Lincoln (4.1; 8 deaths) and Mt Lofty Ranges (5.6; 11 deaths).

For **Western Australia**, the highest rates were in Ord (33.8; 10 deaths), Carnegie (32.7; 5 deaths), Lefroy (28.0; 6 deaths) and Kalgoorlie/Boulder City Part A (20.9; 16 deaths). King (4.6 deaths) and Preston (5.5; 10 deaths) had the lowest rates.

The rates in **Tasmania** were highest in Lyell (17.8; 5 deaths) and Greater Launceston (15.6). The lowest rates were in the SSDs of North Western Rural (10.4; 14 deaths) and Southern (12.0).

In the **Northern Territory**, the rates were substantially higher overall, with the highest rates in Alligator (121.1; 15 deaths) and East Arnhem (92.3; 18 deaths), and the lowest in Central (23.8).

By remoteness

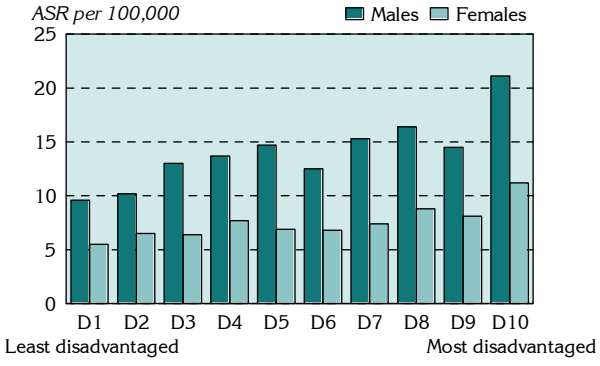
The graph of death rates from COPD by remoteness shows (opposite page) a steady increase between the Major Cities areas, with rate of 8.1, and the Remote areas (12.4), followed by a larger increase to 22.0, in the Very Remote areas. The number of deaths from COPD decline rapidly across the remoteness classes.

By socioeconomic status

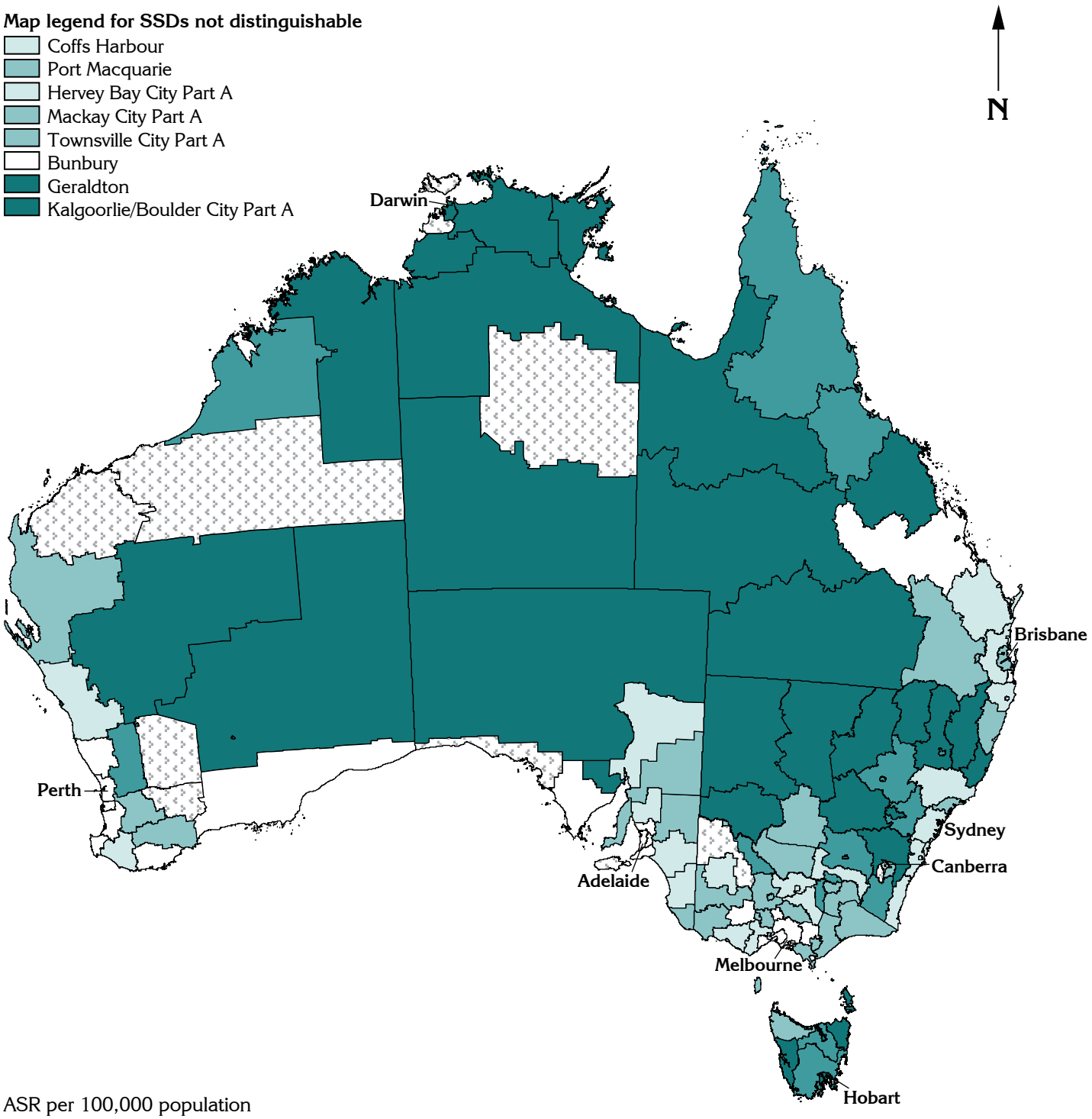
For all rest of state/ territory areas combined, there were largely uninterrupted socioeconomic gradients in death rates from COPD for both males and females (Figure 4.20).

Rates for males were more than 70% higher than those for females in each decile, ranging from 9.6 in the least disadvantaged areas to 21.1 in the most disadvantaged areas. The female rates ranged from 5.5 in the least disadvantaged areas to 11.2 in the most disadvantaged areas. The differential in the rates between the most disadvantaged areas and least disadvantaged areas was 2.20** for males and 2.04** for females.

Figure 4.20: Avoidable mortality from COPD by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



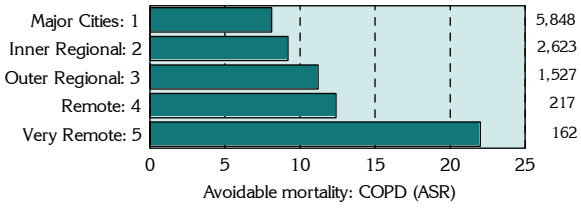
Map 4.18
Selected cause – Chronic obstructive pulmonary disease: avoidable mortality (45 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



ASR per 100,000 population

- *13.5 and above*
- *11.5 to less than 13.5*
- *9.5 to less than 11.5*
- *7.5 to less than 9.5*
- *below 7.5*
- *data not mapped (<5 deaths)*

ASGC Remoteness classification



Details of map boundaries are in Appendix 1.4

Selected cause – Road traffic injuries: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from road traffic injuries, ranged from a rate of 6.1 per 100,000 population in both Canberra to a rate of 16.6 in Darwin (Table 4.27). The rate for all capitals combined was 6.9 deaths per 100,000 population.

Table 4.27: Avoidable mortality from road traffic injuries, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
6.4	7.2	6.6	7.4	7.3	7.2	16.6	6.1	6.9

Other major urban centres

Rates in the other major urban centres ranged from 6.4 deaths per100,000 population in Wollongong to 9.1 in Newcastle (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

The pattern of avoidable mortality from road traffic injuries is similar for the larger capital cities (excluding Hobart, Canberra and Darwin), with the lowest rates in the inner city, increasing to the highest rates in the outer SSDs (Map 4.19).

In **Sydney**, rates of avoidable mortality from road traffic injuries were highest in the Outer Western Sydney (9.8 deaths per 100,000 population) and Outer South Western Sydney (9.3) SSDs. The two lowest rates of all SSDs were in Eastern Suburbs (3.1) and Lower Northern Sydney (3.6).

The highest rates in **Melbourne** were in Frankston City (12.9) and Mornington Peninsula Shire (11.8), and the lowest rates were in Boroondara City (4.6) and Inner Melbourne (4.9).

In **Brisbane**, the highest rates were in Caboolture Shire Part A (11.4 deaths per 100,000 population) and Gold Coast City Part A (9.5). Pine Rivers Shire (4.9) and Brisbane City (5.2) had the lowest rates.

Death rates from road traffic injuries in **Adelaide** varied from 8.6 deaths per 100,000 population in Northern Adelaide to 6.0 in Eastern Adelaide.

For **Perth**, the highest rate was in South East Metropolitan SSD (9.4). The lowest rates were in North Metropolitan (5.3) and Central Metropolitan (4.7).

The death rate for residents of **Hobart** was 7.2 deaths per 100,000 population.

The rates in **Darwin** were all comparatively high, with rates of 29.4 in Litchfield Shire, 18.1 in Palmerston-East Arm, and 13.4 in Darwin City.

In **Canberra**, the highest rates were in Woden Valley (8.8 deaths per 100,000 population and 14 deaths) and Belconnen (7.3), and the lowest were in South Canberra (4.5; 5 deaths), Tuggeranong (4.7) and Weston Creek-Stromlo (5.1; 6 deaths).

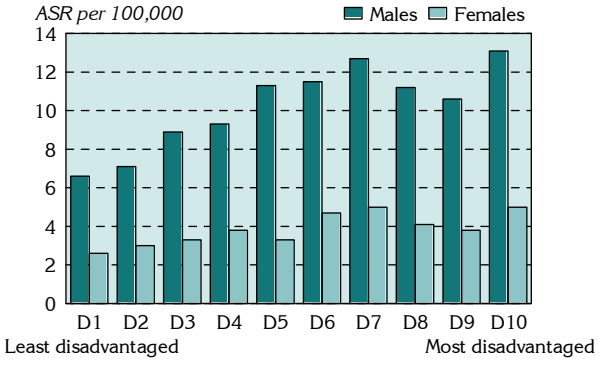
By socioeconomic status

For all capital cities and other major urban centres combined, there was a largely uninterrupted socioeconomic gradient in the rates of death from road traffic injuries, for both males and females (Figure 4.21).

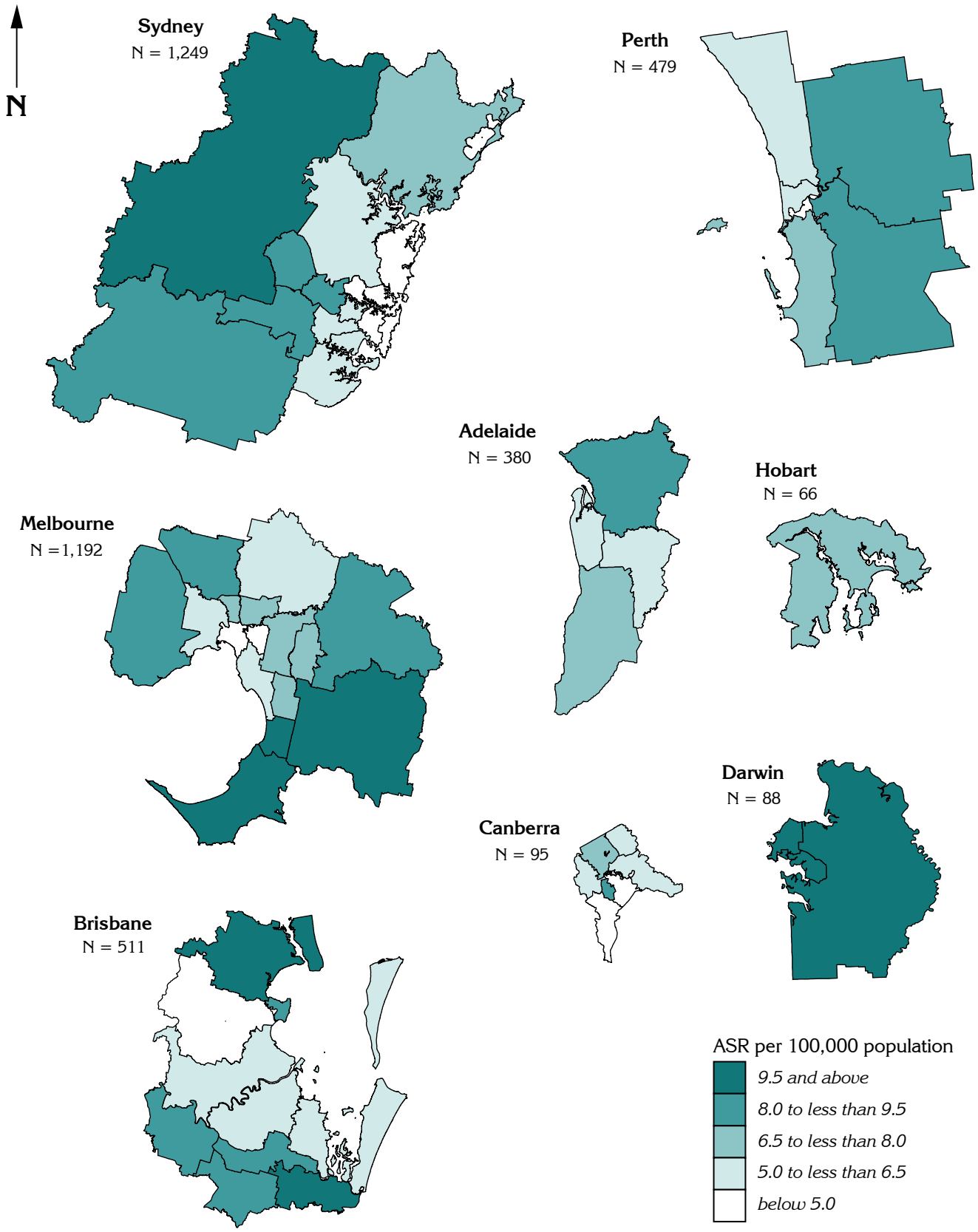
Rates for males were more than twice those for females in each decile, ranging from 6.6 deaths per 100,000 population in the least disadvantaged areas to 13.1 in the most disadvantaged areas. The female rates ranged from 2.6 in the least disadvantaged areas to 5.0 in the most disadvantaged areas.

The differential in rates between the most disadvantaged areas and least disadvantaged areas was 1.98** for males and 1.92** for females.

Figure 4.21: Avoidable mortality from road traffic injuries, by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.19
Selected cause – Road traffic injuries: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Road traffic injuries: avoidable mortality (0 to 74 years), Australia, 1997-2001

States/ Territories

Death rates from road traffic injuries were notably higher for residents in the rest of state/ territory areas than for those in the capital cities and other major urban centres in all states (Table 4.28). Rates in the Northern Territory were substantially higher in the rest of territory areas, with 29.0 deaths per 100,000 population, compared to 16.6 in Darwin, a rate ratio of 1.75**. The differential in rates between the rest of state areas and capital cities was highest in Western Australia (2.55**), followed by South Australia (2.23**), New South Wales (2.09**) and Queensland (2.08**). Lower differentials applied in Victoria (1.82**) and Tasmania (1.38**).

Table 4.28: Avoidable mortality from road traffic injuries by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	6.4	7.2	6.6	7.4	7.3	7.2	16.6	6.1	6.9
Other major urban centres	8.1	7.0	7.5	..	..	..	..	..	7.7
Rest of state/ territory areas	13.4	13.1	13.7	16.5	18.6	9.9	29.0	#	14.2
Whole of state/ territory	**8.3**	**8.6**	**9.3**	**9.8**	**10.3**	**8.8**	**22.7**	**6.1**	**9.0**

By Statistical Subdivision (SSD)

For **New South Wales**, the highest death rates from road traffic injuries were in North Central Plain (20.7 deaths per 100,000 population) and Macquarie-Barwon (19.4; 18 deaths) (Map 4.20). The lowest rates were in Wollongong (6.4), Coffs Harbour (6.7; 13 deaths) and Tweed Heads (7.5; 14 deaths).

The highest rates in **Victoria** were in East Central Highlands (19.9) and North Wimmera (19.4; 14 deaths), with the lowest rates in Mildura Rural City Part A (6.1; 12 deaths) and Ballarat City (6.2).

Rates in **Queensland** were highest in Central West (22.2 deaths per 100,000 population and 13 deaths) and Darling Downs SD Balance (18.9). The lowest rates were in the SSDs of Townsville City Part A (5.6) and Gold Coast City Part B (7.1).

In **South Australia**, the highest rates were in West Coast (31.6; 9 deaths), Far North (24.8; 15 deaths) and Barossa (23.2). The SSDs of Whyalla (5.4; 6 deaths), Lincoln (11.3; 14 deaths), Lower North (11.7; 10 deaths) and Fleurieu (12.6) had the lowest rates.

Death rates from road traffic injuries were high throughout much of **Western Australia**, with the highest rates in Ord (48.1 deaths per 100,000 population), Lefroy (41.0) and Moore (40.1). The lowest rates were in Fortescue (6.7; 7 deaths) and Greenough River (9.9; 7 deaths).

Rates in **Tasmania** varied from a high of 17.2 deaths per 100,000 population in the Southern SSD to a low of 6.9 in Greater Launceston.

In the **Northern Territory** the rates were all high, with the highest rates in Daly (52.6; 10 deaths), Finniss (52.0; 5 deaths) and Lower Top End (34.0). The lowest rates were in East Arnhem (12.4; 8 deaths) and Central (28.6).

By remoteness

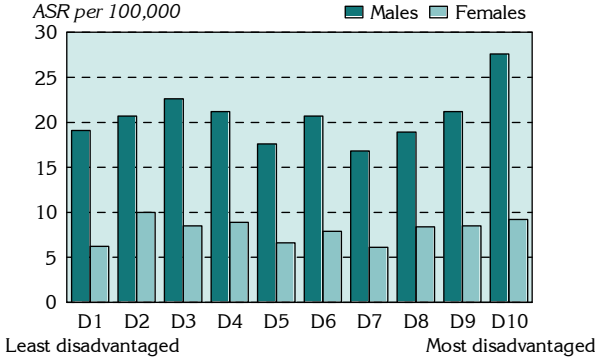
The graph of death rates from road traffic injuries shows (opposite page) a strong relationship with remoteness, increasing steadily across the remoteness areas, from a rate of 7.0 in the Major Cities areas to 22.5 in the Very Remote areas. The number of deaths from road traffic injuries considered to be avoidable decline rapidly across the remoteness classes.

By socioeconomic status

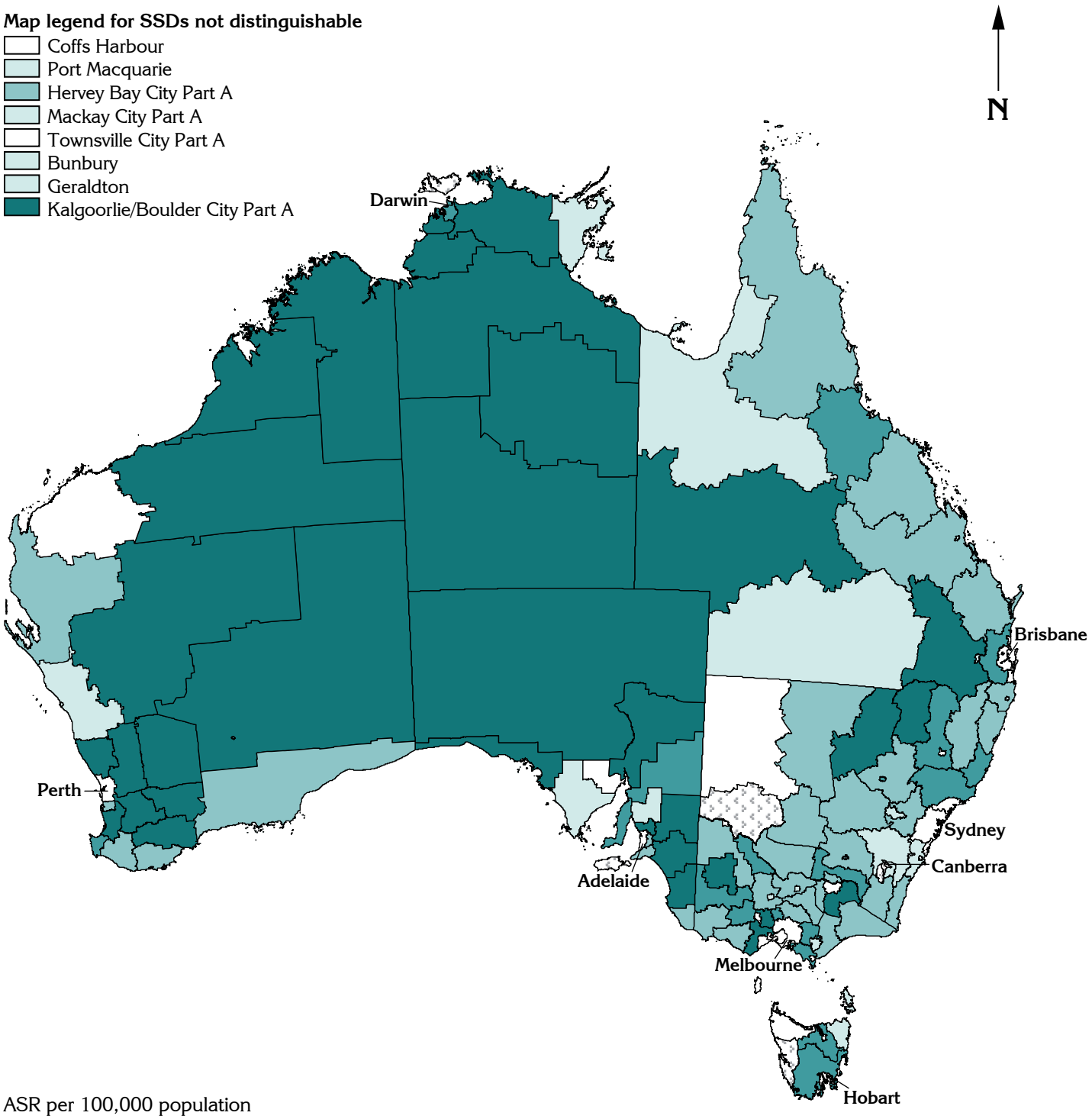
There is no clear pattern by decile in the rates of socioeconomic disadvantage for all rest of state/ territory areas combined (Figure 4.22).

Rates for males were notably higher than for females, ranging from 19.1 deaths per 100,000 population in the least disadvantaged areas to 27.6 in the most disadvantaged areas. Rates for females ranged from 6.2 in the least disadvantaged areas to 9.2 in the most disadvantaged areas. The differential in rates between the most disadvantaged areas and least disadvantaged areas was slightly greater for females (1.48**) than for males (1.45**).

Figure 4.22: Avoidable mortality from road traffic injuries by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



Map 4.20
Selected cause – Road traffic injuries: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Suicide and self inflicted injuries: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

Capital cities

Over the period 1997 to 2001, deaths from suicide and self inflicted injuries ranged from a rate of 10.6 per 100,000 population in Sydney to a rate of 18.6 in Darwin (Table 4.29). The rate for all capitals combined was 11.8.

Table 4.29: Avoidable mortality from suicide and self inflicted injuries, capital cities, Australia, 1997-2001

ASR per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
10.6	10.7	14.7	13.3	12.7	14.6	18.6	11.7	11.8

Other major urban centres

Rates in the other major urban centres ranged from 11.8 deaths per 100,000 population from suicide and self inflicted injuries in Geelong to 17.4 in the Sunshine Coast (details in Table A4, Appendix 1.3).

By Statistical Subdivision (SSD)

Rates for suicide and self inflicted injuries in **Sydney** were relatively low, with the highest rates in the SSDs of Inner Sydney (14.1) and Gosford-Wyong (13.8 deaths per 100,000 population) (Map 4.21). Central Northern Sydney (7.8) and St George-Sutherland (8.6) had the lowest rates.

At the SSD level in **Melbourne**, rates were also low, with the highest rates in Greater Dandenong City (14.3) and Mornington Peninsula Shire (13.9), and the lowest rates in Eastern Middle Melbourne (7.9) and Boroondara City (8.6).

The rates in **Brisbane** were relatively high, with the highest rates in Gold Coast City Part A (22.3) and Beaudesert Shire Part A (18.1). The lowest rate was in Redland Shire (12.2 deaths per 100,000 population).

In **Adelaide,** death rates from suicide and self inflicted injuries varied from 14.6 deaths per 100,000 population in Western Adelaide to 11.6 in South Adelaide.

The SSDs in **Perth** with the highest death rates were East Metropolitan (14.1) and Central Metropolitan (13.9); the lowest rate was in South West Metropolitan (11.7).

For those living in **Hobart**, the rate of deaths from suicide and self inflicted injuries was 14.6 deaths per 100,000 population.

The rates were high in each of **Darwin's** SSDs, with 23.4 deaths per 100,000 population in Palmerston-East Arm (the highest rate of the capital city SSDs), 18.0 in Darwin City, and 16.2 (14 deaths) in Litchfield Shire.

The SSD in **Canberra** with the highest rate was North Canberra (16.1), with the lowest rates in Gungahlin-Hall (9.9; 10 deaths) and Tuggeranong (10.2).

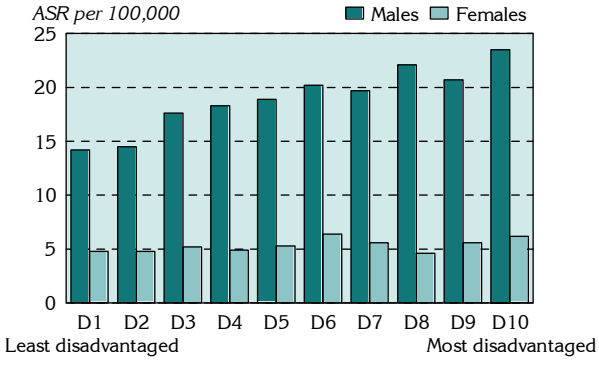
By socioeconomic status

For all capital cities and other major urban centres combined, there was a largely uninterrupted socioeconomic gradient in the rates of death from suicide and self inflicted injuries, for both males and females (Figure 4.23).

Rates for males in the most disadvantaged areas (23.5 deaths per 100,000 population) were more than two and a half times those in the least disadvantaged areas (14.2). The female rates ranged from 4.8 in the least disadvantaged areas (D1) to 6.4 in Decile 6.

The differentials in rates between the most disadvantaged and least disadvantaged areas was 1.65** for males and 1.29** for females.

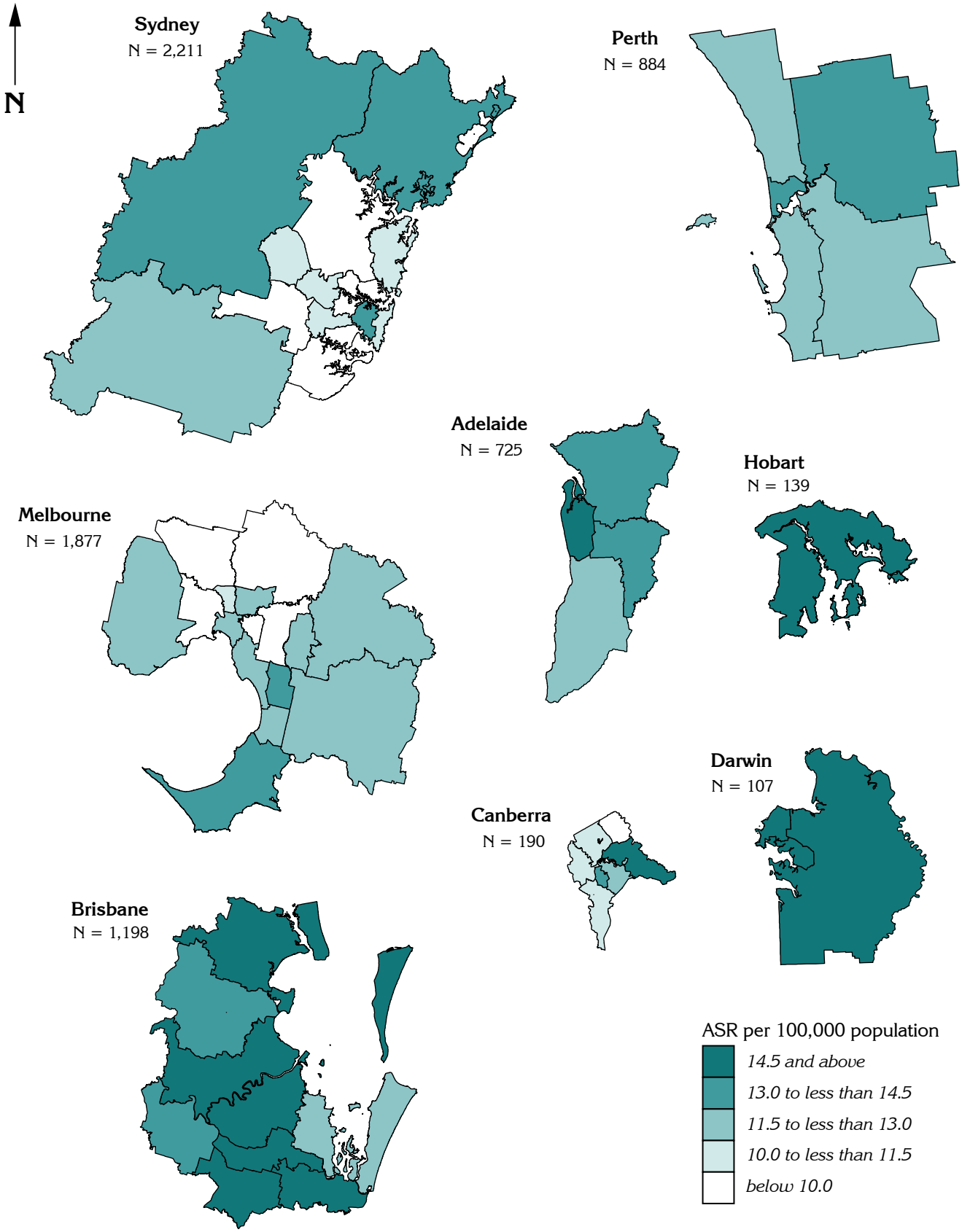
Figure 4.23: Avoidable mortality from suicide and self inflicted injuries by socioeconomic status and sex, capital cities and other major urban centres, Australia, 1997-2001



Map 4.21

Selected cause – Suicide and self inflicted injuries: avoidable mortality (0 to 74 years), capital cities, Australia, 1997-2001

age standardised deaths per 100,000 population by Statistical Subdivision



Details of map boundaries are in Appendix 1.4

Selected cause – Suicide and self inflicted injuries: avoidable mortality (0 to 74 years), Australia, 1997-2001

State/ Territory comparison

Over the period 1997-2001, death rates from suicide and self inflicted injuries were higher in the rest of state/ territory areas than in the capital cities and other major urban centres in all jurisdictions, except for Tasmania (Table 4.30). The rate in the rest of territory areas was highest in the Northern Territory, with 21.3 deaths per 100,000 population, compared to 18.6 in Darwin, a rate ratio of 1.15**. The differentials in rates between the rest of state areas and capital cities were largest in New South Wales (1.45**) and Victoria (1.33**), with rate ratios of 1.19** in Western Australia, 1.08** in Queensland and South Australia, and 0.78** in Tasmania, reflecting the lower rate outside of the capital city.

Table 4.30: Avoidable mortality from suicide and self inflicted injuries by area, Australia, 1997-2001

ASR per 100,000 population

Area	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	All
Capital city	10.6	10.7	14.7	13.3	12.7	14.6	18.6	11.7	11.8
Other major urban centres	13.6	11.8	15.7	..	..	..	..	..	14.4
Rest of state/ territory areas	15.4	14.2	15.9	14.3	15.1	11.4	21.3	#	15.0
Whole of state/ territory	**12.2**	**11.6**	**15.4**	**13.6**	**13.4**	**12.7**	**20.2**	**11.8**	**13.0**

By Statistical Subdivision (SSD)

For **New South Wales,** the highest rates were in the SSDs of Lismore (24.4 deaths per 100,000 population) and Far West (23.7) (Map 4.22). The lowest rates were in Bathurst-Orange (10.9) and Lower Murrumbidgee (11.8).

Rates of death from suicide and self inflicted injuries in **Victoria** were highest in North Loddon (18.2) and Wellington Shire (18.0). South Loddon (9.3; 16 deaths), West Barwon (9.8; 18 deaths) and East Ovens-Murray (10.1; 8 deaths) had the lowest rates.

In **Queensland,** the highest rates were in North West (33.0) and Hervey Bay City Part A (25.4). The lowest rates were in Thuringowa City Part A (9.1; 19 deaths) and Central West (9.6; 6 deaths).

The highest rates in **South Australia** were in the north, with high rates in Flinders Ranges (24.2), Far North (18.1; 12 deaths) and Pirie (16.5). Yorke (6.0; 7 deaths), the Upper South East (9.6; 9 deaths) and Fleurieu (10.6) had the lowest rates.

Rates in **Western Australia** were highest in Ord (44.4 deaths per 100,000 population) (the second highest rate of all areas) and Fitzroy (26.1). The SSDs of Moore (9.0; 6 deaths), and Vasse (10.0; 15 deaths) and Preston (10.2; 16 deaths) had the lowest rates.

In **Tasmania**, rates were highest in the North Eastern (16.3; 11 deaths), North Western Rural (17 deaths) and Southern (both 14.1) SSDs. The rates were lowest in Central North (8.9; 9 deaths) and Greater Launceston (9.8).

For the **Northern Territory**, rates in all SSDs were, with the highest in Bathurst-Melville (70.6; 8 deaths) and Alligator (27.3; 9 deaths), and the lowest rate in the Lower Top End (14.2; 13 deaths).

By remoteness

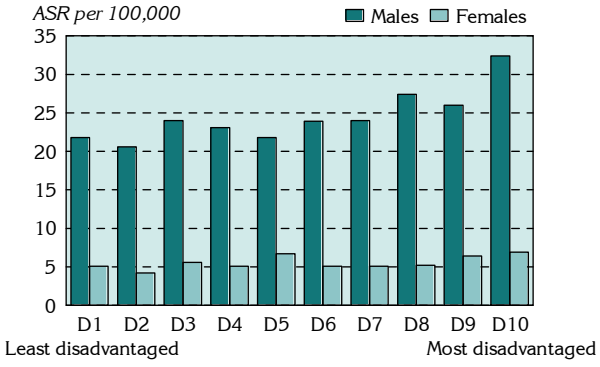
The graph of death rates from suicide and self inflicted injuries by remoteness shows (opposite page) the lowest rate in the Major Cities areas, with a rate of 12.2, followed by a steady increase to the Remote areas and a larger increase to 20.1 in the Very Remote areas. The number of deaths decline rapidly across the remoteness classes.

By socioeconomic status

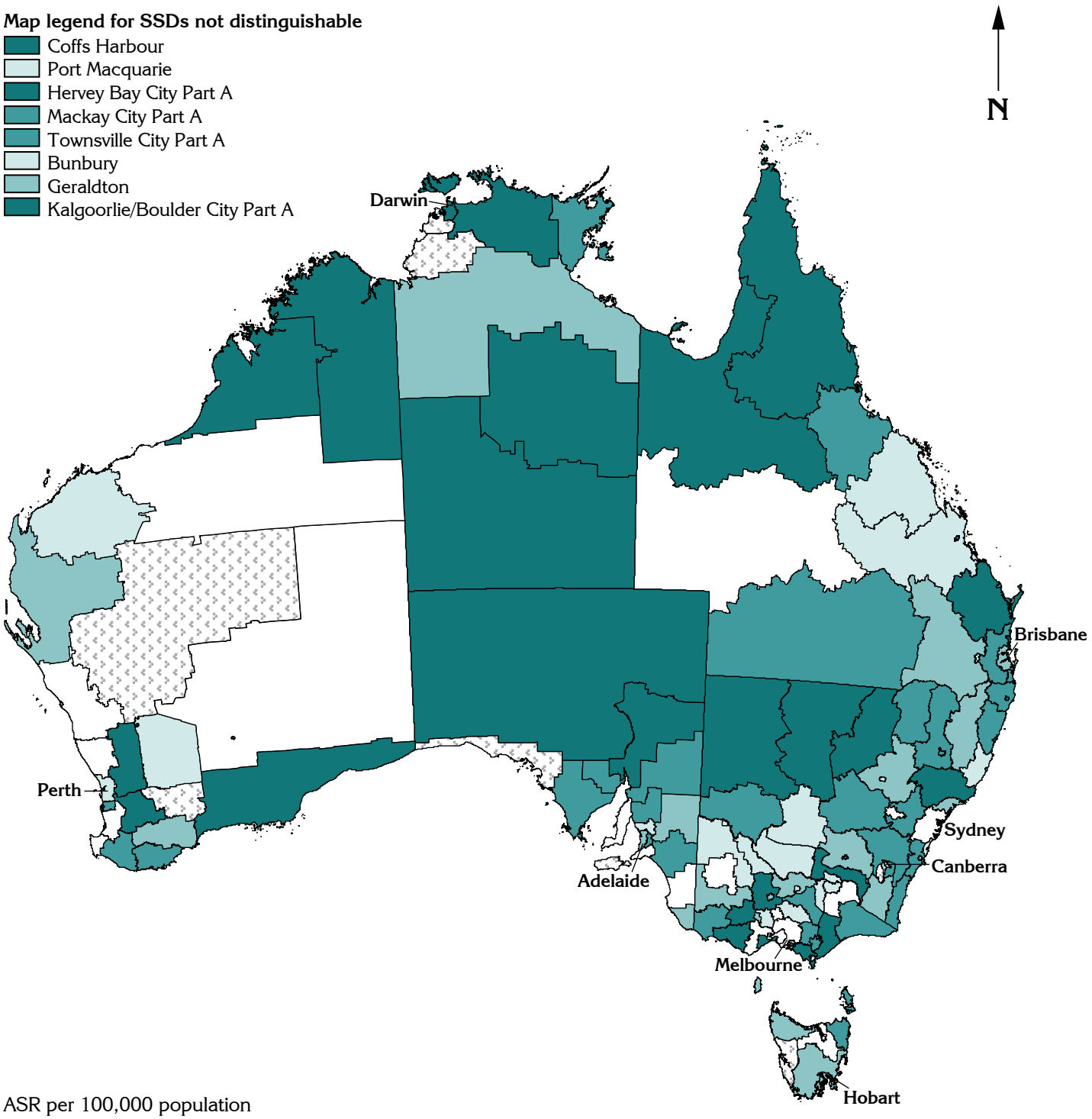
For all rest of state/ territory areas combined, the pattern in the rates by decile of socioeconomic disadvantage of area was unclear for both males and, in particular, for females (Figure 4.24).

Rates for males were higher than females, ranging from 20.6 in Decile 2 (less disadvantaged) to 32.4 in the most disadvantaged areas. The female rates ranged from 4.2 in Decile 2 to 6.9 in the most disadvantaged areas. The differentials in rates between the most disadvantaged areas and least disadvantaged areas was1.49** for males and 1.35 for females.

Figure 4.24: Avoidable mortality from suicide and self inflicted injuries by socioeconomic status and sex, rest of states/ territories, Australia, 1997-2001



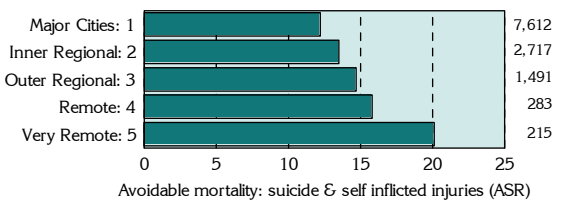
Map 4.22
Selected cause – Suicide and self inflicted injuries: avoidable mortality (0 to 74 years), Australia, 1997-2001
age standardised deaths per 100,000 population by Statistical Subdivision



ASR per 100,000 population

- *17 and above*
- *15 to 16*
- *13 to 14*
- *11 to 12*
- *below 11*
- *data not mapped (<5 deaths)*

ASGC Remoteness classification



Details of map boundaries are in Appendix 1.4

4.5 Avoidable mortality by socioeconomic status

This section examines avoidable mortality by socioeconomic status. The calculation of rates by decile, and the particular measure of socioeconomic disadvantage used (the IRSD), are described in Chapter 2, *Methods*.

By area

Table 4.31 shows avoidable mortality by decile of socioeconomic disadvantage of area for the capital cities and other major urban centres combined, and the rest of state/ territory areas combined; it also shows the ratio of rates between these geographic areas for each decile.

For more than half of the deciles, there is a differential in rates between the rest of state/ territory areas and the capital cities and other major urban centres of around 15% to 30%: Deciles 6 to 9 have smaller differentials.

In both the capital cities and rest of state/ territory areas, there is an almost continuous socioeconomic gradient in the rates of avoidable death. The rate ratios in the last row of Table 4.31 highlight the differentials in rates between the most and least disadvantaged populations for each of the capital cities and other major urban centres, rest of states/ territories, and for the whole of Australia.

Table 4.31: Avoidable mortality (0 to 74 years) by socioeconomic status and area, Australia, 1997-2001

Decile	Capital cities (CC) and other major urban centres (MUC)		Rest of states/ territories (ROS)		Rate ratio ROS: CC/MUC	Australia	
	Number	ASR	Number	ASR		Number	ASR
1: Least disadvantaged	9,149	118.9	4,647	154.4	1.30**	12,798	122.6
2	9,903	132.3	5,004	164.3	1.24**	15,189	141.5
3	11,736	150.2	5,345	182.6	1.22**	15,840	154.9
4	11,498	158.0	5,824	187.0	1.18**	17,489	166.7
5	12,449	167.2	6,033	196.0	1.17**	19,381	182.1
6	14,002	185.6	6,461	195.4	1.05**	20,190	185.6
7	14,116	182.2	6,354	197.2	1.08**	20,681	187.5
8	14,523	184.4	6,686	208.9	1.13**	21,353	189.1
9	15,043	194.3	6,578	199.7	1.03	22,286	201.5
10: Most disadvantaged	16,353	209.7	7,622	267.3	1.27**	24,119	225.8
Total	**128,198**	**168.1**	**61,130**	**195.7**	**1.16****	**189,845**	**176.6**
RR–Decile 10:Decile 1	..	**1.76****	..	**1.73****	..	..	**1.84****

By selected major condition group/ cause and area

The charts in Figure 4.25 also show almost continuous socioeconomic gradients in the rates of avoidable death for the majority of selected major condition groups and causes: the exception is deaths from road traffic injuries in the rest of state/ territory areas, where there is no clear pattern. However, although there was no discernable pattern, there was a substantial differential, of 1.46**, between rates in the most disadvantaged and least disadvantaged areas. The differential for deaths from road traffic injuries in the capital cities and other major urban centres was larger, being 1.96**.

The differentials in rates for all causes of avoidable mortality were 1.76** in the capital cities and other major urban centres, and 1.73** in the rest of state/ territory areas.

For respiratory diseases, the rates in the most disadvantaged areas in the capital cities and other major urban centres, and rest of states/territories, were more than twice those in the least disadvantaged areas (2.43** and 2.12**, respectively).

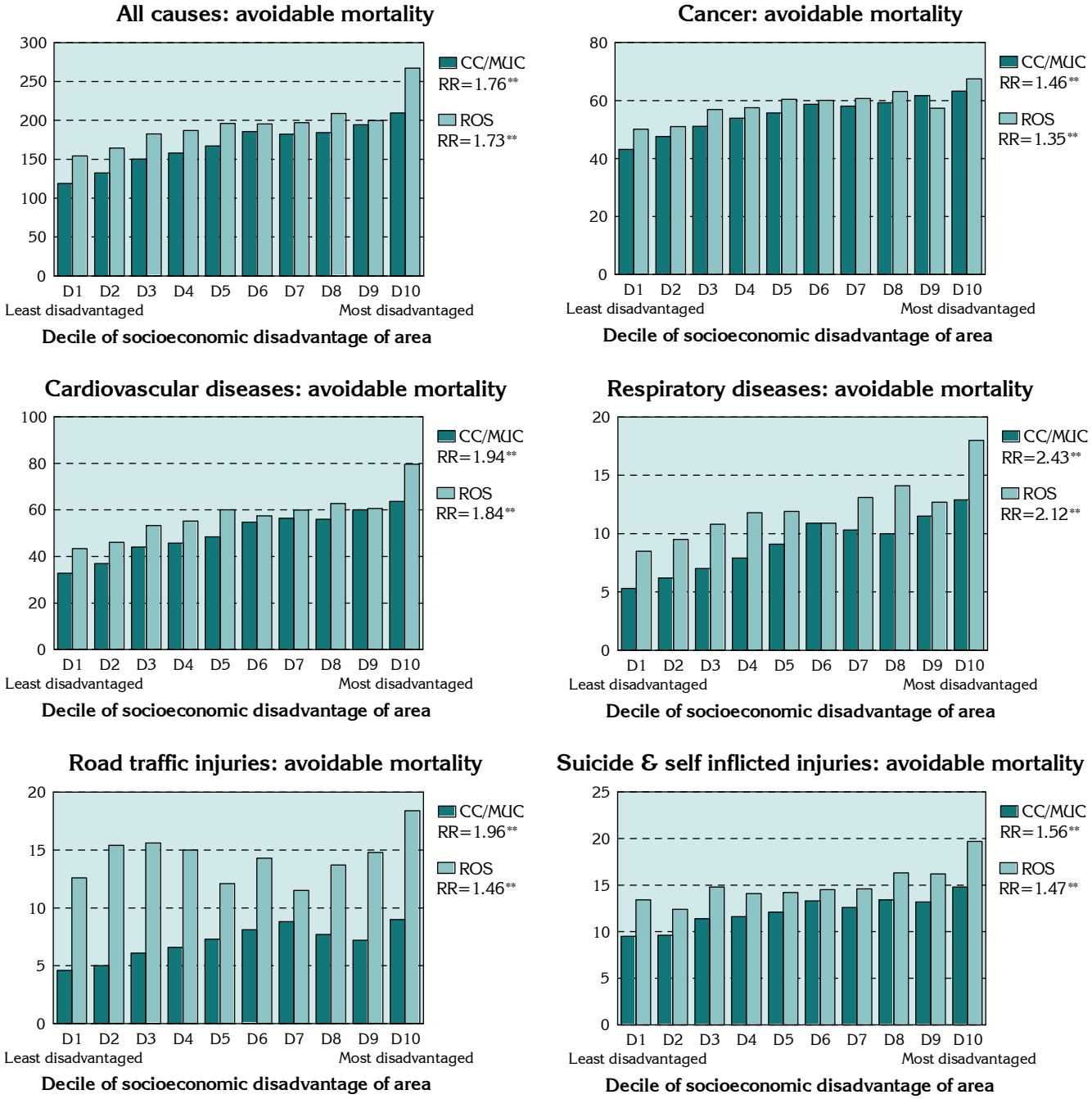
The differentials in rates from cardiovascular diseases were 1.94** in the capital cities and other major urban centres, and 1.84** in the rest of state/ territory areas.

Rates for suicide and self inflicted injuries differed by 1.56** between the most and least disadvantaged areas for capital cities and other major urban centres, and by 1.47** in the rest of state/ territory areas.

For avoidable cancer deaths, the differentials were 1.46** and 1.35** for the capital cities and other major urban centres, and rest of states/ territories, respectively.

Figure 4.25: Avoidable mortality (0 to 74 years) by socioeconomic status, selected major condition group/ cause and area, Australia, 1997-2001

ASR per 100,000 population: Note the different scales



Note: Rate ratio (RR) is the ratio of the rate in Decile 10 areas compared to the rate in Decile 1

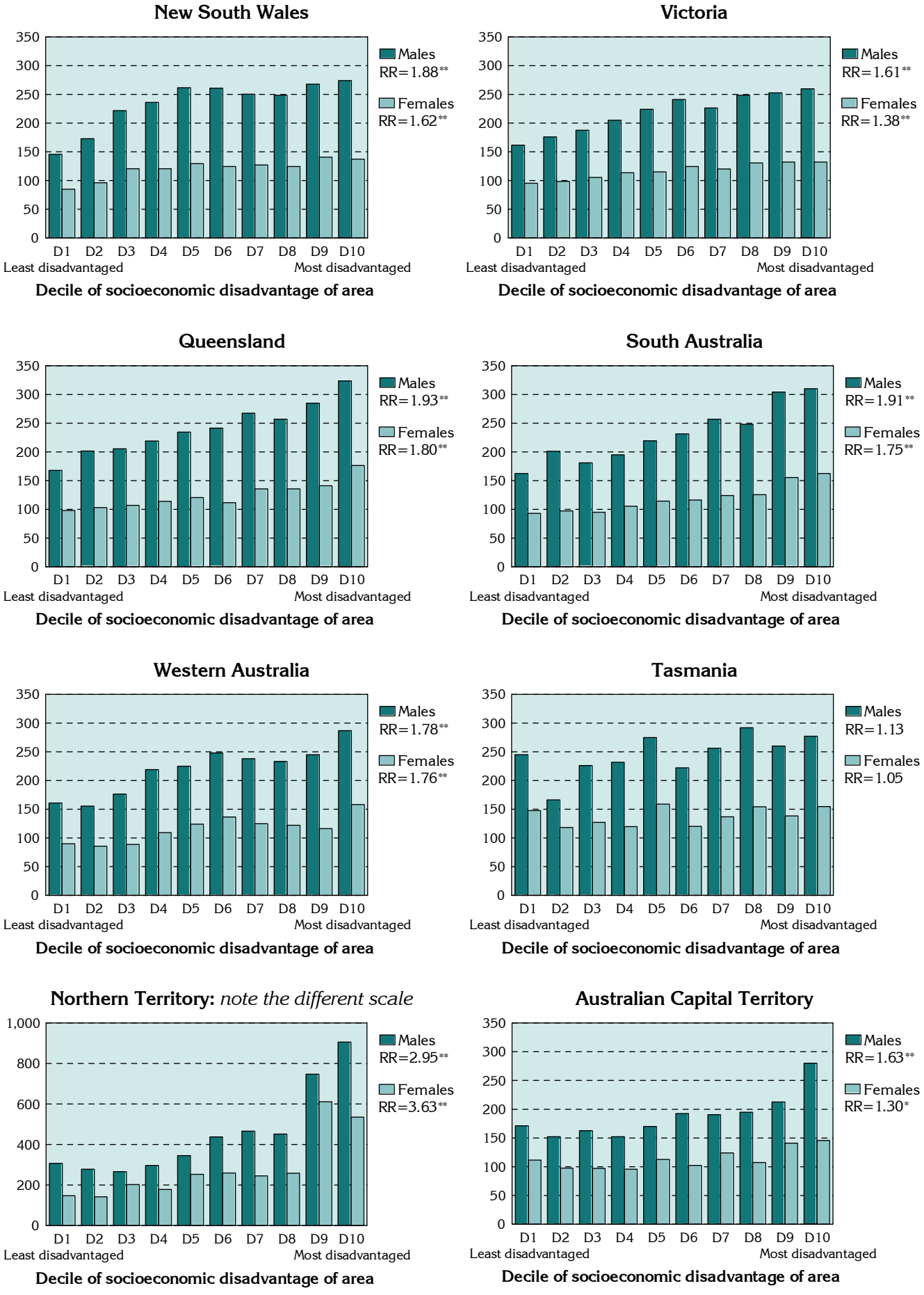
By state/ territory and sex

The charts in Figure 4.26 show death rates for avoidable mortality by socioeconomic status, state/ territory and sex. For all jurisdictions apart from Tasmania, there is a pattern of the least disadvantaged areas having the lowest rates and the most disadvantaged areas having the highest rates. For the majority of jurisdictions there is a socioeconomic gradient in death rates; the exceptions are the variable patterns in Tasmania, the Northern Territory (for females) and the Australian Capital Territory.

The differentials in rates were greater for males than for females in all jurisdictions, apart from the Northern Territory (and only slightly higher in Western Australia). The largest differentials between rates in the most disadvantaged areas and the least disadvantaged areas were in the Northern Territory, with rates almost three times (2.95**) higher for males and more than three and a half times (3.63**) for females. Differentials were also substantially higher (around 1.90 times) for males in New South Wales, Queensland and South Australia.

Figure 4.26: Avoidable mortality (0 to 74 years) by socioeconomic status, state/ territory and sex, Australia, 1997-2001

ASR per 100,000 population



Note: Rate ratio (RR) is the ratio of the rate in Decile 10 areas compared to the rate in Decile 1

By state/ territory and area

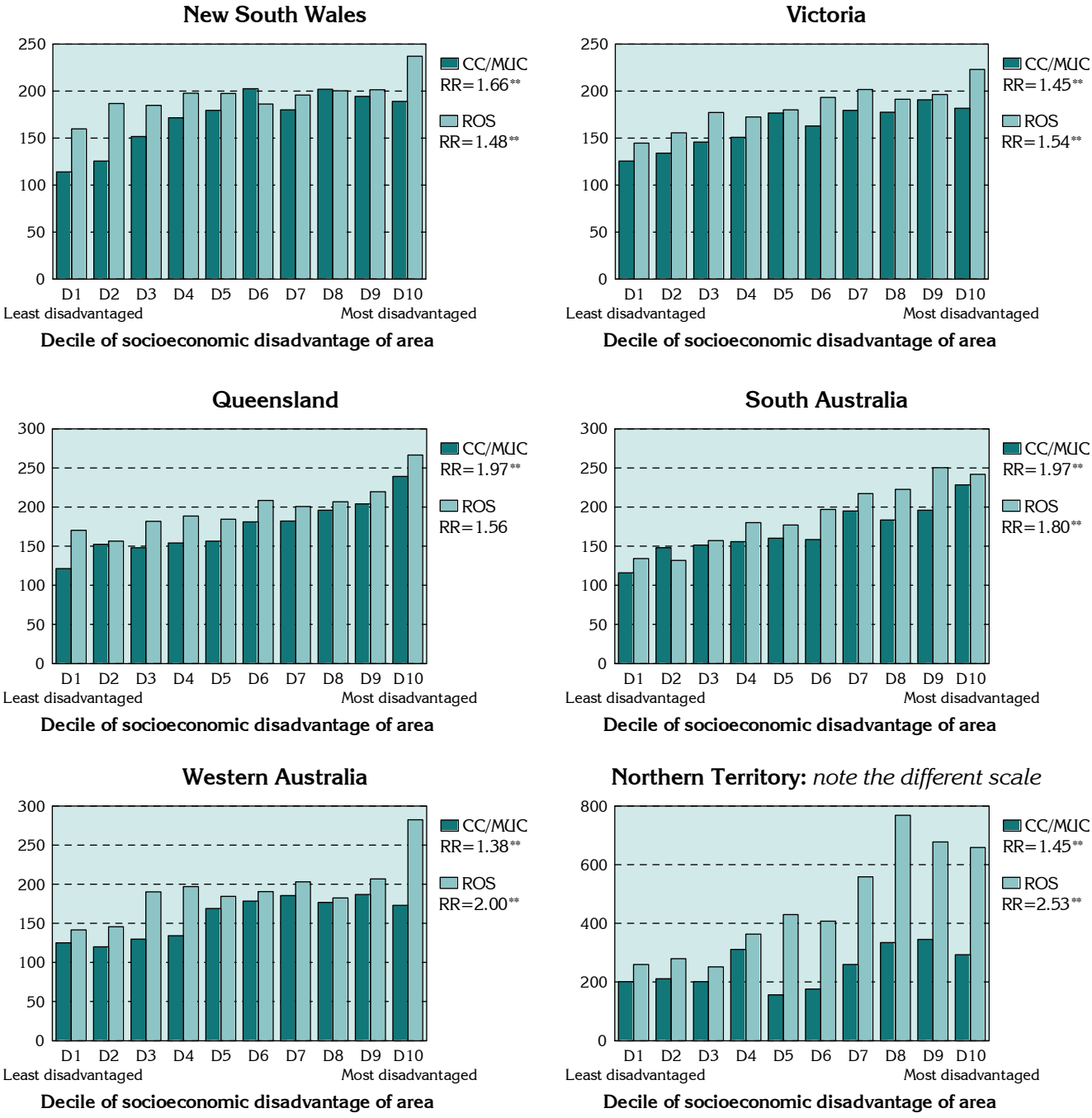
Figure 4.27 shows death rates for avoidable mortality by socioeconomic status, state/ territory, capital city and other major urban centres, and rest of state/ territory areas. For all areas, there is a pattern of the least disadvantaged areas having the lowest rates and the most disadvantaged areas having the highest rates. There are also clear socioeconomic gradients in rates for most of these area levels: however, this was less clear at the capital city level in Western Australia and for both areas shown in the Northern Territory.

The differentials in rates were higher in the rest of state/ territory areas than in the capital city and other major urban centres areas in Victoria, Western Australia and Northern Territory, and lower in the remaining states.

The largest differential was in the rest of territory areas in Northern Territory, with rates two and a half times (2.53**) in the most disadvantaged areas. Large differentials were also recorded for the capital cities and other major urban centres in Queensland and South Australia (both 1.97**), and in the rest of state areas in Western Australia (2.00**).

Figure 4.27: Avoidable mortality (0 to 74 years) by socioeconomic status, state/ territory and area, Australia, 1997-2001

ASR per 100,000 population



Note: Rate ratio (RR) is the ratio of the rate in Decile 10 areas compared to the rate in Decile 1

By excess deaths[3]

The number of excess deaths increased with increasing socioeconomic disadvantage, with the fewest excess deaths in Quintile 2 and the largest number in Quintile 5 (most disadvantaged) (Table 4.32).

The size of the impact of socioeconomic inequality is noteworthy: if avoidable mortality in all socioeconomic groups equalled that of the least disadvantaged group (those in Quintile 1), total avoidable deaths would be reduced from 189,845 (see Table 4.31, page 84) to 142,887. The 46,958 excess deaths that occurred over the observation period accounted for almost one quarter (24.7%) of total avoidable mortality.

Males accounted for 33,013 excess deaths, almost two and a half times the total for females, of 13,945. Excess deaths for males were also more than twice those for females in each quintile.

[3] See Chapter 2, *Methods*

Table 4.32: Excess deaths[1] from avoidable mortality (0 to 74 years) by quintile of socioeconomic status and sex, Australia, 1997-2001

Sex	Number					Total	Per cent
	Q1	Q2	Q3	Q4	Q5	(Q2:Q5)	of total
Males	(0)	4,309	7,861	8,894	11,949	**33,013**	70.3
Females	(0)	1,630	3,193	3,543	5,579	**13,945**	29.7
Total	**(0)**	**5,939**	**11,054**	**12,437**	**17,528**	**46,958**	**100.0**
Ratio–M:F	**..**	**2.64**	**2.46**	**2.51**	**2.14**	**2.37**	**..**

[1] **Excess deaths are the difference between the observed and expected number of deaths, calculated between Quintile 1 (least disadvantaged) and the quintile under analysis**

By excess deaths and age

Total excess deaths increased with age, with 36,849 excess deaths (78.5% of excess deaths) in the two oldest age groups, and the lowest (1,247) in the youngest age group (Table 4.33).

In the 65 to 74 year age group there were 18,533 excess deaths around two fifths (39.5%) of total excess deaths, and marginally more than in the 45 to 64 year age group, with 18,316 (39.0%). In the younger age groups, there were 1,247 excess deaths (2.7%) in those aged 0 to 14 years, and 1,982 (4.2%) in the 15 to 24 year age group. The 25 to 44 year age group recorded 6,860 excess deaths (14.6%).

The pattern of excess deaths within each socioeconomic status grouping was similar to that for the Australia as a whole, with the largest numbers (between 36% and 40% of excess deaths in each Quintile) in the 45 to 64 year and 65 to 74 year age groups, and the smallest (less than 5%) in the 0 to 14 year age group.

In Quintile 2, excess deaths in the 45 to 64 year (2,366) and 65 to 74 year (2,159) age groups accounted for 4,525 deaths, or 76.2% of total deaths. There were 307 excess deaths in the 15 to 24 year (5.2%) and 1,013 (17.1%) in the 25 to 44 year age group.

In Quintile 3, the 65 to 74 year age group had 4,429 excess deaths, two fifths (40.1%) of total excess deaths in these areas, and marginally more than the 4,192 deaths (37.9%) in those aged 45 to 64 years.

Excess deaths in the 65 to 74 year (5,031 deaths) and 45 to 64 year (4,918) age groups in Quintile 4 represented 80% of total excess deaths in these areas. There were fewer excess deaths in the 25 to 44 year age group in Quintile 4 (1,662; 13.4%) than in Quintile 3 (1,692; 15.3%).

In Quintile 5, the 65 to 74 year (6,933 excess deaths) and 45 to 64 year age groups (6,839) comprised four fifths (80.0%) of total excess deaths. The smallest number of deaths was in the 0 to 14 year age group (572 deaths), comprising 3% of excess deaths in Quintile 5.

Table 4.33: Excess deaths from avoidable mortality by quintile of socioeconomic status and age, Australia, 1997-2001

Age (years)	Number					Total	Per cent
	Q1	Q2	Q3	Q4	Q5	(Q2:Q5)	of total
0-14	(0)	94	211	370	572	**1,247**	2.7
15-24	(0)	307	531	455	689	**1,982**	4.2
25-44	(0)	1,013	1,692	1,662	2,494	**6,860**	14.6
45-64	(0)	2,366	4,192	4,918	6,839	**18,316**	39.0
65-74	(0)	2,159	4,429	5,031	6,933	**18,533**	39.5
Total	**(0)**	**5,939**	**11,054**	**12,437**	**17,528**	**46,958**	**100.0**

By excess deaths, age and sex

Total excess deaths for males were between two and three and a half times those for females in each age group of the analysis (Table 4.34). The pattern of excess deaths across age groups differed between the sexes, with the highest number of excess deaths for males (13,005; 39.4% of male excess deaths) in the 45 to 64 year age group in each socioeconomic grouping, compared to the 65 to 74 year age group (6,228; 44.6%) for females.

The 45 to 64 year and 65 to 74 year age groups accounted for more than three quarters of male excess deaths (76.7%; 25,330 deaths) and over four fifths of female excess deaths (82.7%; 11,539). Male excess deaths were two and a half times those for females in the 45 to 64 year age group, and twice those for females aged 65 to 74 years (the smallest differential of the age groups).

While male excess deaths in the 0 to 24 year age group (2,295) were two and a half times the excess deaths for females (934), the proportions were similar (7.0% of male deaths and 6.7% for females).

The largest differential in the number of male and female excess deaths was in the 25 to 44 year age group, where males deaths (5,388; 16.3%) were over three and a half times those for females (1,472; 10.6%).

Similarly, Quintile 2 had the largest differential in male and female excess deaths in any age group, with male deaths in the 25 to 44 year age group (905) more than eight times those for females (108). The 0 to 24 year age group also had a large differential, with excess deaths for males (330) over four and a half times those for females (70).

In Quintile 3, male deaths in the 25 to 44 year age group (1,289) were more than three times those for females (403). Differentials for the other age groups ranged between just over two (in the 65 to 74 year age group) to two and two thirds (45 to 64 years).

Excess deaths for males aged 25 to 44 years in Quintile 4 (1,321) were almost four times those for females (341). In the 45 to 64 year age group, excess deaths for males (3,610) were two and three quarters times those for females (1,309).

In Quintile 5, male excess deaths were three times higher than for females in the 25 to 44 year age group (1,874, compared to 620). Differentials in the other age groups ranged from just under two in the 65 to 74 year age group (4,517, compared to 2,416) to over two in the 0 to 24 year age group (884, and 378).

Table 4.34: Excess deaths from avoidable mortality by quintile of socioeconomic status, age and sex, Australia, 1997-2001

Age (years) and sex	Number					Total (Q2:Q5)	Per cent of total
	Q1	Q2	Q3	Q4	Q5		
Males							
0-24	(0)	330	509	571	884	**2,295**	7.0
25-44	(0)	905	1,289	1,321	1,874	**5,388**	16.3
45-64	(0)	1,673	3,048	3,610	4,675	**13,005**	39.4
65-74	(0)	1,400	3,015	3,392	4,517	**12,325**	37.3
Total	**(0)**	**4,308**	**7,861**	**8,894**	**11,950**	**33,013**	**100.0**
Females							
0-24	(0)	70	232	254	378	**934**	6.7
25-44	(0)	108	403	341	620	**1,472**	10.6
45-64	(0)	693	1,144	1,309	2,165	**5,311**	38.1
65-74	(0)	759	1,414	1,639	2,416	**6,228**	44.6
Total	**(0)**	**1,630**	**3,193**	**3,543**	**5,579**	**13,945**	**100.0**
Ratio–M:F							
0-24	..	4.71	2.19	2.25	2.34	**2.46**	..
25-44	..	8.38	3.20	3.87	3.02	**3.66**	..
45-64	..	2.41	2.66	2.76	2.16	**2.45**	..
65-74	..	1.84	2.13	2.07	1.87	**1.98**	..
Total	..	**2.64**	**2.46**	**2.51**	**2.14**	**2.37**	..

4.6 Avoidable mortality by Indigenous status

Introduction and data quality issues

It is useful to identify the extent to which the variations evident in these data between men and women, when examined by age group and geographically, reflect the differing experience of Aboriginal and Torres Strait Islander people, and of the non-Indigenous population. This is necessary to determine whether avoidable mortality in Australia is largely an Indigenous issue, or one of relevance to both Indigenous and non-Indigenous populations.

Despite the limitations of death registrations in identifying Indigenous deaths, the available data provide at least an order of magnitude of the difference between Indigenous and non-Indigenous deaths from avoidable causes.

The analysis in this section has been limited to data from the jurisdictions considered by the Australian Bureau of Statistics to have the most complete coverage of Indigenous deaths: that is, they are considered to have the highest proportions of Indigenous deaths that are registered as such.

These jurisdictions, highlighted in Table 4.35, are the Northern Territory, Western Australia, South Australia and Queensland: estimated coverage for the years covered by this analysis vary from 100% in the Northern Territory to 54% in Queensland.

Table 4.35: Estimated coverage[1] of Indigenous deaths in death registration records

Per cent

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust
1997	9	43	**58**	**68**	**70**	4	**100**	20	49
1998	47	56	**63**	**64**	**74**	10	**88**	14	61
1999	43	59	**55**	**57**	**68**	8	**83**	27	56
2000	46	48	**54**	**69**	**77**	6	**92**	–	59
2001	45	41	**56**	**59**	**62**	22	**85**	–	55

[1] **Based on 1996 Census populations**

Source: ABS *Deaths Australia, 2001*, cat. no. 3302.0

The ABS has calculated death rates for the Indigenous and non-Indigenous populations for Australia as a whole, and for the four jurisdictions, to illustrate the likely effect of under-reporting of Indigenous status at the national level. They report an indirectly standardised death rate for the Indigenous population for Australia as a whole of 12 deaths per 1,000 population at all ages, twice the rate of the non-Indigenous population: when calculated for the four jurisdictions, the Indigenous rate is 15 deaths per 1,000 population, compared with the non-Indigenous rate of 6, a differential in the rates of two and a half (ABS 2002).

Repeating this comparison for avoidable mortality (and limited to ages 0 to 74) produces a similar result, although the differentials in Indigenous/ non-Indigenous death rates are larger. When all jurisdictions are included, the Indigenous rate is almost three times that for the non-Indigenous (2.86**, not shown in table); and, when limited to the jurisdictions with the most complete coverage, it is almost four times (3.70**, Table 4.36).

Overall impact by Indigenous status

The proportion of deaths at ages 0 to 74 years from avoidable causes is slightly higher among the Indigenous population, being 76.2% of all deaths at these ages, compared with 71.9% for the non-Indigenous population (Table 4.36).

This is a relatively small difference, in particular when compared with the difference in rates between the Indigenous and non-Indigenous populations (the Indigenous rate is 3.70** times that for the non-Indigenous population). As such, it highlights the substantial impact of deaths from avoidable causes on both Indigenous and non-Indigenous populations.

Similar proportions of all deaths are considered to be amenable to health care for both the Indigenous (31.1%) and non-Indigenous (29.0%) populations.

Table 4.36: Avoidable mortality (0 to 74 years) by Indigenous status, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Mortality category	Number			% of total	ASR per 100,000 population			Rate ratio Indig: Non-Indig
	Indigenous	Non-Indigenous	Total		Indigenous	Non-Indigenous	Total	
Avoidable mortality	4,838	65,793	70,631	72.2	636.6	172.1	181.1	3.70**
(Amenable mortality)	(1,974)	(26,419)	(28,392)	(29.0)	(264.7)	(68.8)	(72.5)	(3.85**)
Unavoidable mortality	1,510	25,740	27,250	27.8	197.7	67.4	69.9	2.93**
Total mortality	**6,348**	**91,533**	**97,881**	**100.0**	**834.1**	**239.4**	**251.0**	**3.48****

By sex

As noted, the overall death rate from avoidable causes for the Indigenous population (636.6 deaths per 100,000 population) was more than three and half times (3.70**) the rate for the non-Indigenous population (172.1) (Table 4.37).

The rate for Indigenous males (787.1 deaths per 100,000 males) was 64% above the rate for Indigenous females (481.3), and 3.45** times the rate for non-Indigenous males (227.9 deaths per 100,000 males).

The differential in death rates for Indigenous and non-Indigenous females was even larger, at 4.14** (481.3 Indigenous female deaths per 100,000 females and 116.2 for non-Indigenous females).

Table 4.37: Avoidable mortality (0 to 74 years) by Indigenous status and sex, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Sex	Number			ASR per 100,000 population			Rate ratio
	Indigenous	Non-Indigenous	Total	Indigenous	Non-Indigenous	Total	I:Non-I
Males	2,888	43,282	46,170	787.1	227.9	238.5	3.45**
Females	1,950	22,511	24,461	481.3	116.2	123.7	4.14**
Total	**4,838**	**65,793**	**70,631**	**636.6**	**172.1**	**181.1**	**3.70****
RR–M:F	**..**	**..**	**..**	**1.64****	**1.96****	**1.93****	**..**

By age

Indigenous avoidable mortality rates were from two and a half to just under five times the rates for the non-Indigenous population for all of the age groups in the analysis (Figure 4.28, Table 4.38). Whilst the highest rate for both populations was in the 65 to 74 year age group, the largest rate differentials were in the 45 to 64 year (4.82**) and the 25 to 44 year (4.63**) age groups, where the Indigenous rates were 1,428.6 and 363.4 deaths per 100,000 population, respectively, compared to 296.6 and 78.5 deaths per 100,000 population, respectively, for the non-Indigenous population.

Figure 4.28: Avoidable mortality by Indigenous status and age, Qld, SA, WA and NT, 1997-2001

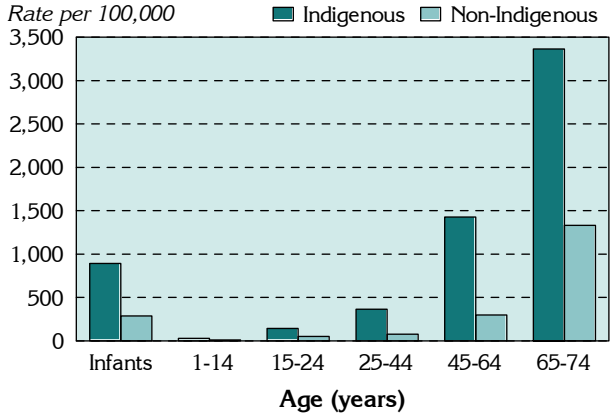


Table 4.38: Avoidable mortality by Indigenous status and age, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Age (years)	Number		Rate per 100,000 population[1]		Rate ratio
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indig:Non-Indig
Infants (<1)	267	1,218	893.4	287.6	3.11**
1-14	137	673	27.5	10.3	2.67**
15-24	362	2,550	142.3	52.1	2.73**
25-44	1,379	8,279	363.4	78.5	4.63**
45-64	1,831	22,379	1,428.6	296.6	4.82**
65-74	862	30,694	3,364.0	1,330.1	2.53**
Total	**4,838**	**65,793**	**636.6**	**172.1**	**3.70****

[1] **Rates are age standardised within age categories, except under 1 year**

The impact of avoidable mortality on the Indigenous population is most evident at ages below 45 years; for the non-Indigenous population the impact is more noticeable at older ages. For example, the proportion of years of life lost (YLL) from avoidable causes for Indigenous infants under one year of age (7.8%) and from children aged 1 to 14 years (3.9%) were over twice (2.42** and 2.24**) those for non-Indigenous children (Table 4.39). The ratios of the proportions in the 15 to 24 year (1.57**) and 25 to 44 year (1.83**) age groups were also above one, indicating higher proportions of YLL from avoidable causes among the Indigenous population.

In the remaining age groups analysed, the differentials in YLL are reversed. The proportion of YLL for the Indigenous population aged 45 to 64 years (34.3%) was less than that of the non-Indigenous population (36.7%), and the proportion of YLL in the Indigenous population in the 65 to 74 year age group (10.9%) was less than one third that of the non-Indigenous population (33.9%).

Table 4.39: YLL from avoidable mortality by Indigenous status and age, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Age (years)	Number		Per cent		Ratio
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indig:Non-Indig
Infants (<1)	8,152	37,186	7.8	3.2	2.42**
1-14	4,097	20,167	3.9	1.7	2.24**
15-24	10,250	72,098	9.8	6.3	1.57**
25-44	34,833	209,373	33.3	18.2	1.83**
45-64	35,865	422,530	34.3	36.7	0.94**
65-74	11,410	391,147	10.9	33.9	0.32**
Total	**104,607**	**1,152,501**	**100.0**	**100.0**	**..**

Indigenous deaths by age and sex

Rates of death from avoidable mortality were higher for Indigenous males than for Indigenous females in all age groups (Figure 4.29, Table 4.40). While the highest rate for both males and females were in the 65 to 74 year age group, the largest differentials in rates were in the 15 to 24 year and 25 to 44 year age groups. The rate for Indigenous males aged 15 to 24 years (208.7 deaths per 100,000 males) was almost three times (2.75**) that for Indigenous females (75.8); and Indigenous males aged 25 to 44 years (479.9) were almost twice (1.95**) as likely to die from avoidable causes than Indigenous females (246.1) at these ages.

Figure 4.29: Avoidable mortality by age and sex, Indigenous population, Qld, SA, WA and NT, 1997-2001



Table 4.40: Avoidable mortality by age and sex, Indigenous population, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Age (years)	Number			% of total avoidable mortality	Rate per 100,000 population[1]			Rate ratio Males: Females
	Males	Females	Total		Males	Females	Total	
Infants (<1)	149	118	267	5.5	984.3	802.7	893.4	1.23
1-14	73	64	137	2.8	28.8	26.3	27.5	1.10
15-24	265	97	362	7.5	208.7	75.8	142.3	2.75**
25-44	903	476	1379	28.5	479.9	246.1	363.4	1.95**
45-64	1,049	782	1831	37.8	1,722.8	1,121.5	1,428.6	1.54**
65-74	449	413	862	17.8	3,856.3	2,743.1	3,364.0	1.41**
Total	**2,888**	**1,950**	**4,838**	**100.0**	**787.1**	**481.3**	**636.6**	**1.64****

[1] **Rates are age standardised within age categories, except under 1 year**

By cause

Ischaemic heart disease was the highest ranking cause of avoidable death for both the Indigenous and non-Indigenous populations, resulting in over one fifth of deaths in both population groups (21.1% and 23.2%, respectively) (Table 4.41).

However, two of the next three causes have quite different rankings between the Indigenous and non-Indigenous populations. Diabetes, the second ranked cause of death for Aboriginal and Torres Strait Islander peoples, accounted for 10.6% of deaths from avoidable causes. For the non-Indigenous population, diabetes was ranked ninth, and the Indigenous ASR of 87.8 deaths per 100,000 population was almost twenty times the non-Indigenous rate of 4.9.

Deaths from alcohol related disease accounted for 6.1% of Indigenous deaths and were ranked fourth, compared with a ranking of eleventh for the non-Indigenous population. The ASR of 40.9 deaths per 100,000 population was ten times the non-Indigenous rate. Deaths from cerebrovascular diseases, ranked third for the Indigenous population, were similarly ranked for the non-Indigenous population, with the fifth highest ASR, and accounted for similar proportions of avoidable deaths (5.5% and 6.3%, respectively).

Two other causes of death that are much more evident for the non-Indigenous population in this broad age group are selective invasive bacterial and protozoal infections (rank of 8, compared with 15 for the non-Indigenous population) and nephritis and nephrosis (ranks of 9 and 24, respectively).

Conversely, deaths from suicide and self-inflicted injuries have a lower ranking of seventh most important cause for the Indigenous population, compared with third for the non-Indigenous population. Other avoidable causes with notably lower rankings for the Indigenous population are road traffic injuries (10), colorectal cancer (16) and breast cancer (18).

However, readers should note the impact of particular causes by age group (Table 4.42, below).

Table 4.41: Avoidable mortality (0 to 74 years) by Indigenous status and major cause, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Cause	Indigenous				Non-Indigenous			
	Number	ASR	Per cent[1]	Rank[2]	Number	ASR	Per cent[1]	Rank[2]
Ischaemic heart disease	1,020	183.5	21.1	1	15,264	37.7	23.2	1
Diabetes	515	87.8	10.6	2	1,972	4.9	3.0	9
Cerebrovascular diseases	264	45.6	5.5	3	4,165	10.2	6.3	5
Alcohol related disease	297	40.9	6.1	4	1,500	3.9	2.3	11
Lung cancer	212	38.7	4.4	5	7,596	19.1	11.5	2
COPD (45-74 years)	179	35.9	3.7	6	3,454	8.4	5.2	7
Suicide and self-inflicted injuries	366	31.8	7.6	7	4,850	14.1	7.4	3
Selected invasive bacterial and protozoal infections	228	27.7	4.7	8	986	2.6	1.5	15
Nephritis and nephrosis	154	26.4	3.2	9	518	1.3	0.8	24
Road traffic injuries	305	23.9	6.3	10	3,087	9.5	4.7	6
Birth defects	155	8.9	3.2	14	1,143	4.2	1.7	10
Colorectal cancer	42	7.2	1.8	16	4,733	12.0	7.2	4
Breast cancer (female)	52	7.0	1.2	18	2,963	7.7	4.5	8

[1] **Per cent is the proportion of total avoidable deaths within the Indigenous and non-Indigenous population groups**
[2] **Rank is the rank order of ASRs for the top ten causes of death for Indigenous and non-Indigenous populations**

Indigenous deaths by cause and age

The three major causes of avoidable death in Indigenous infants were complications of the perinatal period (a rate of 384.4 deaths per 100,000 population, 43.1% of deaths in this age group), birth defects (365.0, 40.8%) and selected invasive bacterial and protozoal infections (103.7, 11.6%) (Table 4.42).

In the 1 to 14 year age group, the major causes of avoidable death were road traffic injuries (9.1 deaths per 100,000 population, 32.8% of deaths in this age group), birth defects (3.4, 12.4%), drownings (3.1, 11.7%) and infections (2.8, 10.2%).

Suicide and self inflicted injuries were the primary cause of avoidable death for Indigenous youth aged 15 to 24 years (a rate of 60.4 deaths per 100,000 population), comprising 42.3% of deaths in this age group. Road traffic injuries (32.8 deaths per 100,000 population) resulted in just under one quarter of deaths (23.2%), with violence the third rated cause (11.8 deaths per 100,000 population, 8.3%).

In the 25 to 44 year age group, ischaemic heart disease resulted in just under one fifth of deaths (72.5 deaths per 100,000 population, 18.3%), with suicide and self inflicted injuries (47.1, 13.3%) the next ranked cause of avoidable mortality.

Alcohol related disease (43.6 deaths per 100,000 population, 11.2%) and road traffic injuries (32.1, 9.2%) together accounted for one fifth of deaths from avoidable causes in this age group.

Ischaemic heart disease was also the leading cause of these deaths for the Indigenous population in the 45 to 64 year age group (430.8 deaths per 100,000 population, 28.8%). Diabetes was the second ranked cause (243.4, 16.6%), followed by lung cancer (111.3, 7.4%) and cerebrovascular diseases (91.8, 6.3%).

The main cause of death in the 65 to 74 year age group was again ischaemic heart disease (927.3 deaths per 100,000 population, 26.9%), followed by diabetes (497.8, 15.0%). Cerebrovascular diseases was the third rated cause of deaths (384.6 deaths per 100,000 population) resulting in 11.3% of deaths, followed by COPD (349.5), with one tenth (10.2%) of deaths in this age group.

Table 4.42: Avoidable mortality by major cause and age, Indigenous population, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Age (years)	Cause	Number	Rate per 100,000[1]	% of total in age group	YLL
Infants (<1)	Complications of perinatal period	115	384.4	43.1	3,511
	Birth defects	109	365.0	40.8	3,328
	Selected invasive bacterial and protozoal infections	31	103.7	11.6	946
1-14	Road traffic injuries	45	9.1	32.8	1,345
	Birth defects	17	3.4	12.4	508
	Drownings	16	3.1	11.7	483
	Selected invasive bacterial and protozoal infections	14	2.8	10.2	422
15-24	Suicide and self inflicted injuries	153	60.4	42.3	4,332
	Road traffic injuries	84	32.8	23.2	2,377
	Violence	30	11.8	8.3	850
25-44	Ischaemic heart disease	253	72.5	18.3	6,254
	Suicide and self inflicted injuries	183	47.1	13.3	4,773
	Alcohol related disease	154	43.6	11.2	3,853
	Road traffic injuries	127	32.1	9.2	3,262
45-64	Ischaemic heart disease	528	430.8	28.8	10,344
	Diabetes	304	243.4	16.6	5,836
	Lung cancer	135	111.3	7.4	2,555
	Cerebrovascular diseases	116	91.8	6.3	2,219
65-74	Ischaemic heart disease	232	927.3	26.9	3,104
	Diabetes	129	497.8	15.0	1,724
	Cerebrovascular diseases	97	384.6	11.3	1,258
	COPD	88	349.5	10.2	1,146

[1] **Rates are age standardised within age categories, except under 1 year**

Table 4.43 provides estimates of years of life lost (YLL) for the Indigenous population for the ten causes with the greatest impact under this measure.

From 1997 to 2001, deaths from ischaemic heart disease resulted in the highest total number of YLL from avoidable causes (19,899 years) at ages 0 to 74 years: this was the top ranking cause of YLL in the 25 to 44 (6,254 YLL), 45 to 64 (10,344) and 65 to 74 (3,104) year age groups (see Table 4.42 above).

The second highest cause of YLL was suicide and self inflicted injuries (9,841 YLL), which was ranked first in the 15 to 24 year age group (4,332 YLL) and second in the 25 to 44 year age group (4,773).

The third ranked cause of YLL from avoidable causes, diabetes, accounted for an estimated 9,577 YLL, and was ranked second in both the 45 to 64 year (5,836 YLL) and 65 to 74 (1,724) year age groups.

Deaths from road traffic injuries resulted in a total of 7,983 YLL in the Indigenous population. Road traffic injuries were the highest ranked cause of YLL in the 1 to 14 year age group (1,345 YLL), second highest in the 15 to 24 year age group (2,377), and fourth in the 25 to 44 year age group (3,262).

Table 4.43: YLL from avoidable mortality (0 to 74 years) by major cause, Indigenous population, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Cause	Number	ASR	YLL
Ischaemic heart disease	1,020	183.5	19,899
Suicide and self inflicted injuries	366	31.8	9,841
Diabetes	515	87.8	9,577
Road traffic injuries	305	23.9	7,983
Alcohol related disease	297	40.9	6,740
Selected invasive bacterial and protozoal infections	228	27.7	5,145
Cerebrovascular diseases	264	45.6	4,751
Birth defects	155	8.9	4,543
Violence	155	12.2	4,013
Lung cancer	212	38.7	3,723

By socioeconomic status

There is a clear socioeconomic gradient in the rates of avoidable mortality for both the Indigenous and non-Indigenous populations, with the exception of Quintile 4 for the Indigenous population (Figure 4.30). The gradient is much more pronounced for the Indigenous than the non-Indigenous population, with differentials in rates ranging from almost double (1.90**) in the least disadvantaged areas (Quintile 1) to just over four times (4.01**) in the most disadvantaged (Quintile 5).

The highest ASR for the Indigenous population was 877.5 deaths per 100,000 population in Quintile 5 and the lowest was 248.1 in Quintile 1, a differential in rates of 3.54** between the most disadvantaged areas and the least disadvantaged areas. For the non-Indigenous population, the differential in ASRs between the most and least disadvantaged areas was 1.68**, ranging from 219.1 deaths per 100,000 population in the most disadvantaged areas to 130.7 in the least disadvantaged areas. The greatest differential in rates between the Indigenous and non-Indigenous populations was in the most disadvantaged areas (Quintile 5), where the Indigenous rate (877.5 deaths per 100,000 population) was four times (4.01**) that of the non-Indigenous population (219.1). In the least disadvantaged areas, the Indigenous rate of 248.1 deaths per 100,000 population was just less than twice (1.90**) the rate for the non-Indigenous population (130.7).

Figure 4.30: Avoidable mortality (0 to 74 years) by Indigenous status and socioeconomic status, Qld, SA, WA and NT, 1997-2001

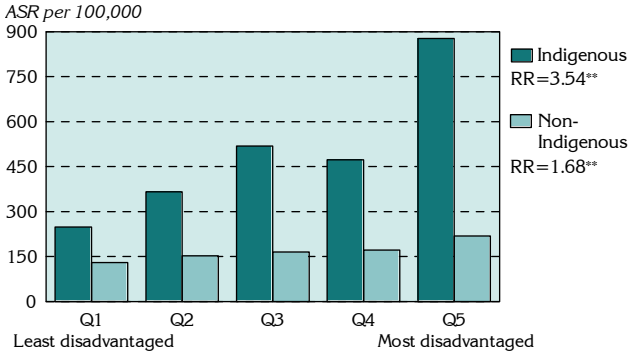


Table 4.44: Avoidable mortality (0 to 74 years) by Indigenous status and socioeconomic status, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Quintile	Number		ASR per 100,000 population		Rate ratio
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indig:Non-Indig
1: Least disadvantaged	87	7,255	248.1	130.7	1.90**
2	402	12,528	366.1	153.0	2.39**
3	633	11,364	518.9	165.4	3.14**
4	808	15,097	472.6	172.2	2.74**
5: Most disadvantaged	2,825	19,417	877.5	219.1	4.01**
Total	**4,838**	**65,793**	**636.6**	**172.1**	**3.70****
RR–Quintile 5:Quintile 1	**..**	**..**	**3.54****	**1.68****	**..**

By socioeconomic status and sex

The patterns of the socioeconomic gradients for males and females (Table 4.45) follow those for the total Indigenous and non-Indigenous populations shown above, with the ASRs in Quintile 4 of the Indigenous population lower than that in Quintile 3.

The gradient for Indigenous males is much more pronounced than that for Indigenous females (Figure 4.31). The highest ASR for Indigenous males was 1,085.5 deaths per 100,000 population in Quintile 5, and the lowest was 293.6 in the least Quintile 1, a differential of 3.70** between the most disadvantaged and the least disadvantaged areas.

The ASRs for Indigenous females ranged from 663.0 deaths per 100,000 population in the most disadvantaged areas to 200.1 in the least disadvantaged areas, a differential of 3.31**.

For the non-Indigenous population, ASRs for males ranged from 290.2 deaths per 100,000 population in the most disadvantaged areas to 168.0 in the least disadvantaged areas (a differential of 1.73**), and for females from 148.0 to 93.3 (1.59**).

Figure 4.31: Avoidable mortality (0 to 74 years) by socioeconomic status and sex, Indigenous population, Qld, SA, WA and NT, 1997-2001

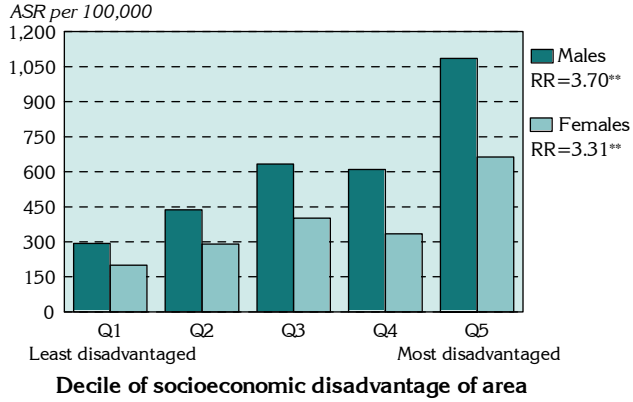


Table 4.45: Avoidable mortality (0 to 74 years) by Indigenous status, socioeconomic status and sex, Queensland, South Australia, Western Australia and Northern Territory, 1997-2001

Quintile	Number		ASR per 100,000 population		Rate ratio
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indig:Non-Indig
Males					
1: Least disadvantaged	50	4,555	293.6	168.0	1.75**
2	231	8,232	437.1	203.1	2.15**
3	377	7,511	632.9	217.9	2.90**
4	500	10,048	610.1	230.4	2.65**
5: Most disadvantaged	1,686	12,817	1,085.5	290.2	3.74**
Total	**2,888**	**43,282**	**787.1**	**227.9**	**3.45****
RR–Quintile 5:Quintile 1	**..**	**..**	**3.70****	**1.73****	**..**
Females					
1: Least disadvantaged	37	2,700	200.1	93.3	2.14**
2	171	4,296	290.7	102.9	2.83**
3	256	3,853	401.6	112.9	3.56**
4	308	5,049	333.9	114.0	2.93**
5: Most disadvantaged	1,139	6,600	663.0	148.0	4.48**
Total	**1,950**	**22,511**	**481.3**	**116.2**	**4.14****
RR–Quintile 5:Quintile 1	**..**	**..**	**3.31****	**1.59****	**..**