9. Premature and avoidable mortality

Premature death rates in South Australia over the period 2001 to 2005 were higher for males than females in each of the age groups examined. The largest differentials were in the 15 to 24 and 25 to 44 year age groups, where the rates for males were more than twice those for females. Overall, premature death rates for males were 68% higher than for females (a rate ratio of 1.68) (Table 9.1).

Cancer was the leading cause of death for both males and females at these ages in South Australia, followed by deaths from diseases of the circulatory system (Figure 9.1). External causes and diseases of the respiratory system were the next highest identifiable contributors. For all major causes, the rate of premature mortality was higher for males than for females: for external causes, it was more than three times the rate (a rate ratio of 3.12) and, for circulatory system diseases, it was more than twice the rate for females (2.26).

There are also sub-groups of males in the population who are more likely to die prematurely, especially Aboriginal males (whose life expectancy is much lower), those with low educational attainment, those who are un- or underemployed, homeless males, those living in rural and remote areas, and those with low socioeconomic status (4, 38). Almost three-quarters of deaths among people aged less than 75 years are considered to be largely avoidable (4).

Premature mortality in this analysis includes deaths occurring before the age of 75 years. In 2006, deaths at these ages comprised 40.1% of all male deaths in South Australia, and 24.2% of female deaths (ABS 2006). These relatively low proportions emphasise, perhaps, more than the data for life expectancy, that deaths before age 75 are premature: the life expectancy, at birth, in 2006 was 78.6 years for men and 83.6 years for women (35).

Premature deaths are more useful for a geographic analysis than total deaths for a number of reasons. From a technical point of view, fewer people are likely to have moved from the type of area that they have lived in over much of their life: by 'type of area' we mean the socioeconomic status of the area. Such movement often occurs when people move to live in group, or supported, accommodation, or in a nursing home, which is often in an area with a population with different socioeconomic characteristics. From a policy perspective, understanding the geographic distribution of premature deaths can assist in developing preventive care strategies, as well as in planning the delivery of services.

Table 9.1: Premature mortality 0 to 74 years, by age, sex and major cause, South Australia, 2001-2005

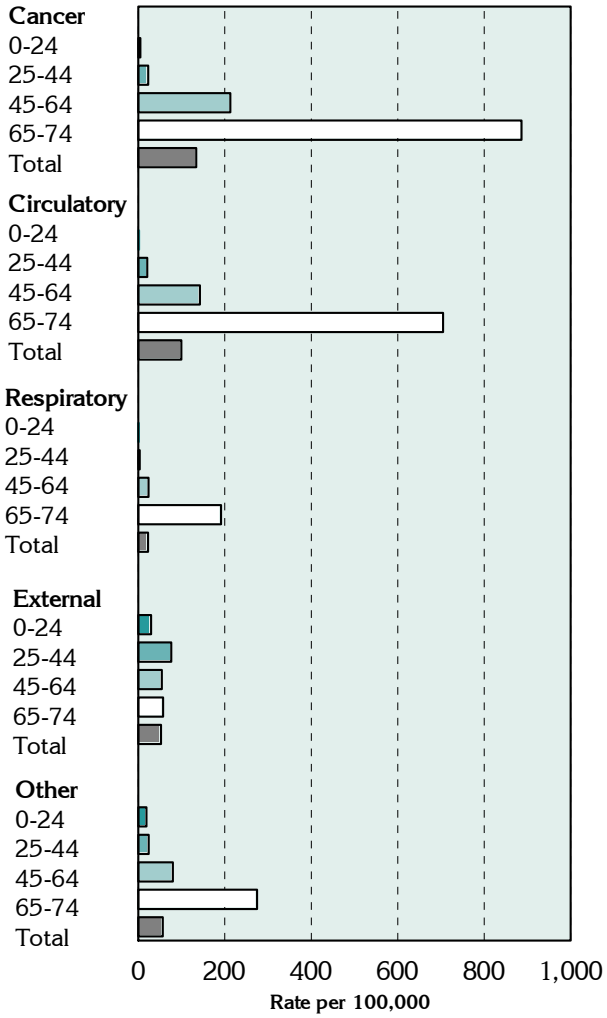
Variable	Males		Females		RR M:F[1]
	No.	Rate[2]	No.	Rate[2]	
Age (years)					
0-14	308	208.8	261	186.0	1.12
15-24	409	393.4	162	164.7	2.39
25-44	1,607	740.5	756	354.5	2.09
45-64	4,838	2,579.6	2,922	1,530.5	1.69
65-74	5,885	10,587.5	3,553	5,896.4	1.80
All ages	**13,047**	**1,833.5**	**7,654**	**1,088.6**	**1.68**
Major cause					
Cancer	4,770	134.1	3,606	102.6	1.31
Circulatory system	3,545	99.6	1,547	44.0	2.26
Respiratory system	808	22.7	523	14.9	1.52
External causes	1,876	52.7	595	16.9	3.12
Other	2,017	56.7	1,364	38.8	1.46
All causes	**13,016**	**1,829.1**	**7,635**	**1,072.9**	**1.70**

[1] RR M:F is the ratio of the rate for males to that for females
[2] Rate is the number of deaths per 100,000 population

Figure 9.1 shows premature mortality rates for males for selected causes and age groups over the period 2001 to 2005. For the majority of these causes, the highest rates were seen in the 65 to 74 year age group; the exception was for external causes, where the highest rate occurred in the 25 to 44 year age group. The data from which this chart was produced are in Table A2, in the Appendix.

Figure 9.1: Male deaths at ages 0 to 74 years by selected causes and ages, 2001-05

Average annual rates



Premature mortality – all causes

As noted above, death rates before 75 years of age are higher for males than females in each age group shown, with the largest differentials in the 15 to 24 and 25 to 44 year age groups, where the rates for males are more than twice those for females (Figure 9.2). The rate of premature death increases with age, with the growth between age groups becoming larger at each older age.

Rates of premature death also increased with increasing socioeconomic disadvantage, for both males and females, with rates in the most disadvantaged areas more than one and a half times higher than in the least disadvantaged areas (70% higher for males and 57% higher for females) (Figure 9.3). Rates were higher for men in all socioeconomic status groups.

Similarly, premature death rates were much higher among men than females in each remoteness area (Figure 9.4). Rates in the Very Remote areas were almost twice those in the Major Cities areas for both males and females (male rate ratio, 1.95; female rate ratio, 1.83).

Premature mortality, South Australia, 2001-05 average yearly rates

Figure 9.2: By age and sex

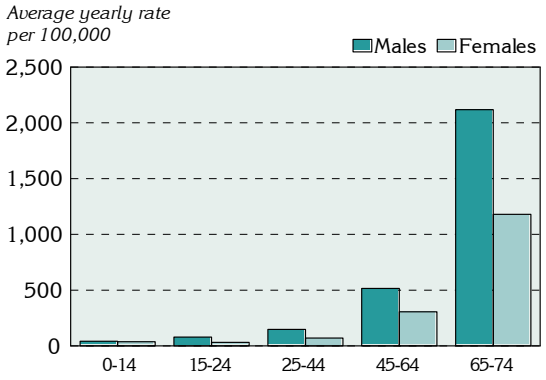


Figure 9.3: By socioeconomic status of area and sex

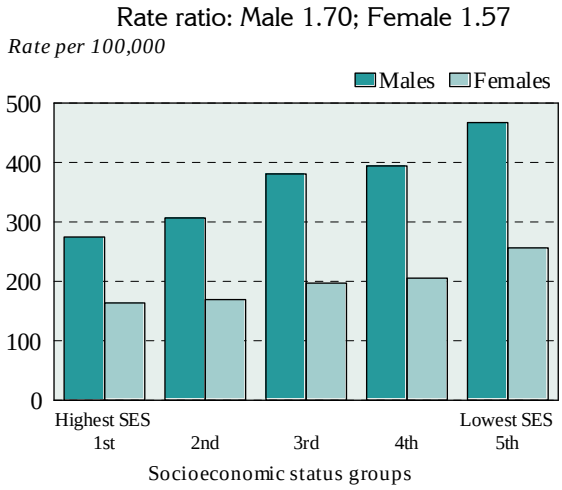
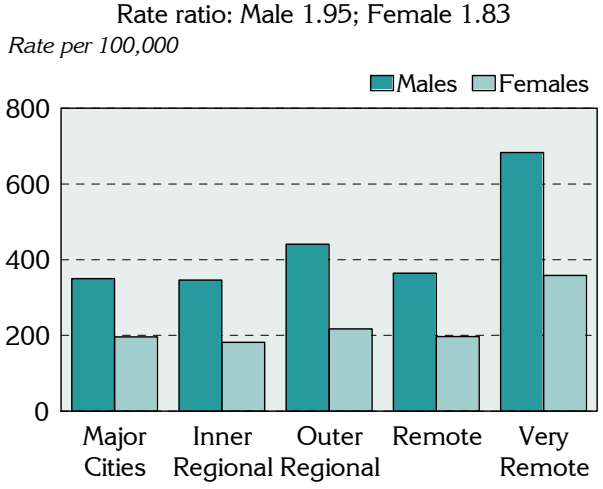


Figure 9.4: By remoteness and sex



Deaths of males aged 0-74 years, all causes, 2001 to 2005

In the Central Northern Adelaide Health Region, male mortality before 75 years of age was marginally below the level expected from the State rate for this five-year period (a standardised ratio (SR) of 99, 6,377 deaths), while in the Southern Adelaide Health Region, the ratio was 15% lower than expected (an SR of 85**, 2,308 deaths). At the sub-region/district level, the lowest ratio was in Hills District, with 42% fewer deaths than expected (an SR of 58**); and the highest was in Western sub-region, with 10% more deaths than expected (an SR of 110**).

With the exception of Hills Mallee Southern (an SR of 94*, 1,040 deaths), all country South Australia health regions had elevated ratios for male premature mortality. The most highly elevated ratios were in Northern & Far Western (150**) and Mid North (131**).

Table 9.2: Deaths of males, all causes, 0 to 74 years, by Health Region, South Australia, 2001-2005

Health Region	Number	Rate[1]	SR[2]
Central Northern Adelaide	**6,377**	**364.4**	**99**
Northern sub-region	2,711	373.7	102
Western sub-region	2,035	402.0	110**
Central East sub-region	1,631	314.8	86**
Southern Adelaide	**2,308**	**311.1**	**85****
Urban Beaches District	1,067	334.1	91**
Hills District	375	214.0	58**
Outer Southern District	866	350.0	95
Metropolitan Adelaide (excl. Gawler)	**8,685**	**348.5**	**95****
Hills Mallee Southern	**1,040**	**343.4**	**94***
South East	**566**	**395.3**	**108**
Wakefield	**973**	**373.3**	**102**
Mid North	**402**	**482.0**	**131****
Riverland	**338**	**420.4**	**115***
Eyre	**354**	**434.0**	**118****
Northern & Far Western	**627**	**549.0**	**150****
Country South Australia (incl. Gawler)	**4,300**	**403.3**	**110****

[1] Rate is the number of deaths per 100,000 population

[2] SR = Standardised Ratio, percentage of variation in the region from the ratio of 100 in South Australia

Metropolitan Adelaide

The SLAs with the most highly elevated ratios of premature mortality for males were Playford - Elizabeth (an SR of 148**, 330 deaths) and - West Central (144**, 133); Port Adelaide Enfield - Coast (147**, 355) and - Park (137**, 172); Charles Sturt - North-East (138**, 279); and Adelaide (135**, 160) (Map 9.1).

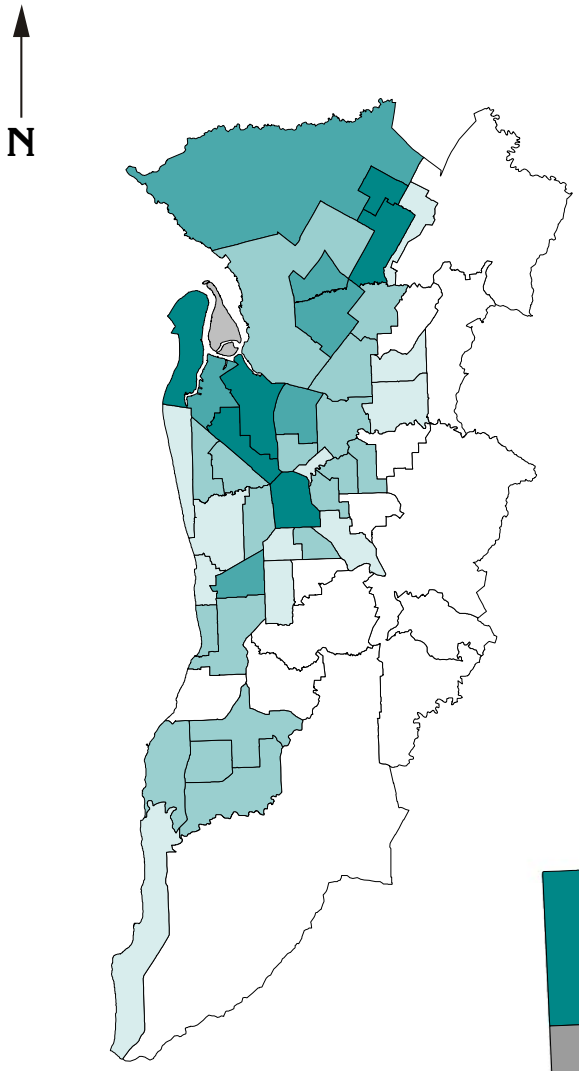
The areas with the lowest ratios included Adelaide Hills - Ranges and - Central; Mitcham - North-East and - Hills; Marion - South; Onkaparinga - Reservoir and - Hills; Tea Tree Gully - Hills and - North; Burnside - North-East; Campbelltown - East; and Playford - Hills.

Country SA

In country SA (Map 9.2), the highest ratios were in Anangu Pitjantjatjara (an SR of 272**, 37 deaths), Unincorporated West Coast (237**, 10), Ceduna (206**, 59), Unincorporated Far North (204**, 46), Flinders Ranges (193**, 37), Coober Pedy (187**, 55), Peterborough (178**, 41), Tumby Bay (160**, 48), Wattle Range - East (158**, 41), Port Augusta (157**, 180), Unincorporated Whyalla (149, 5), Port Pirie Districts - City (146**, 183), Orroroo/Carrieton (144, 13), Berri & Barmera - Barmera (136*, 57), Loxton Waikerie - West (133*, 56) and Barunga West (132, 41).

Areas with lower than expected ratios included Cleve, Alexandrina - Strathalbyn, Mount Barker Balance and Adelaide Hills - North.

Map 9.1 and Map 9.2: Deaths of males aged 0-74 years, all causes, Metropolitan Adelaide and country SA, 2001 to 2005

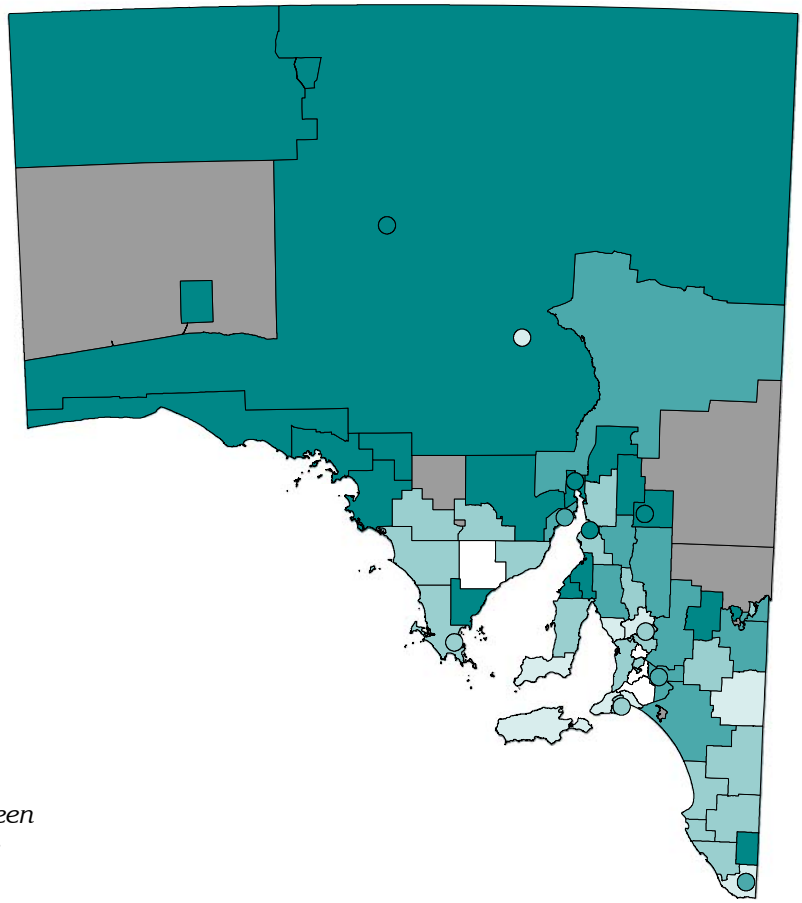


Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129*
- *90 to 109*
- *70 to 89*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on totals for the metropolitan region*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100



Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129*
- *90 to 109*
- *70 to 89*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on SA totals*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100

Premature mortality – Cancer

Cancer is the leading cause of premature death in Australia (39). In 2003, the five most common cancer deaths in males were from lung cancer (4,506 deaths), prostate cancer (2,837), colorectal cancer (2,382), unknown primary site (1,567), and pancreatic cancer (942). These five cancers accounted for 58% of all deaths from cancer in males (4).

Death rates from cancer were low before 45 years of age, from when rates increased markedly for both men and women (Figure 9.5). The higher rate for men in the 45 to 64 year age group was substantially larger in the 65 to 74 year age group.

Rates increased in a stepwise fashion with increasing disadvantage, to be 47% higher in the lowest SES areas than in the highest SES areas, for males; and 24% higher for females (Figure 9.6).

Premature deaths of males from cancer also increased with remoteness, with rates in the Very Remote areas just over 30% higher than in the Major Cities areas (a rate ratio of 1.31) (Figure 9.7). For females, the differential was only small, at 7%.

Premature mortality – Cancer causes, South Australia, 2001-05 average yearly rates

Figure 9.5: By age and sex

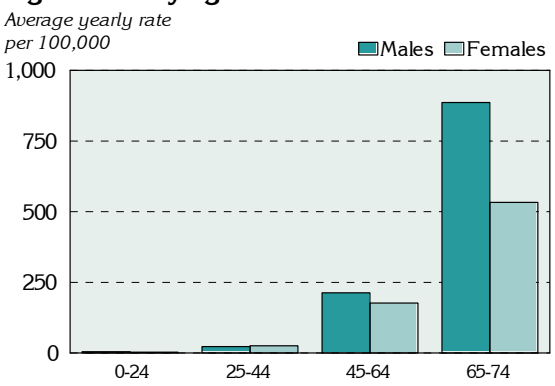


Figure 9.6: By socioeconomic status of area

Rate ratio: Male 1.47; Female 1.24

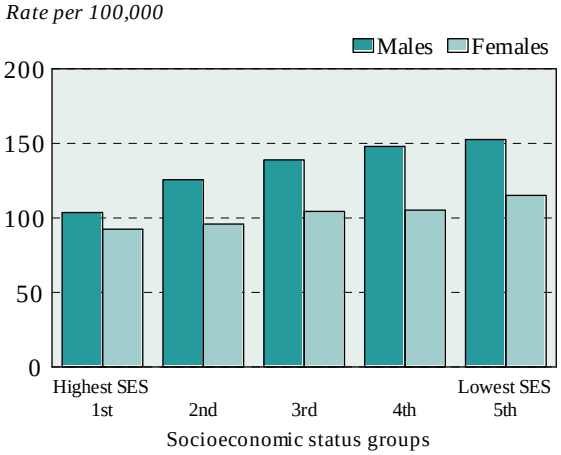
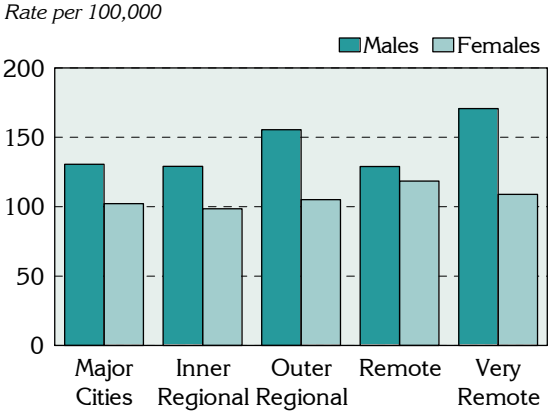


Figure 9.7: By remoteness

Rate ratio: Male 1.31; Female 1.07



Deaths of males aged 0-74 years from cancer, 2001 to 2005

In both the Central Northern Adelaide (with a standardised ratio (SR) of 99, 2,311 deaths) and Southern Adelaide (an SR of 93*, 921 deaths) Health Regions, premature death rates from cancer over this five-year period were below the State average for males aged 0 to 74 years. There was considerable variation in rates at the sub-region/district level in both regions.

There were more deaths of males from cancer before 75 years of age than were expected from the State rate in country health regions, other than in Hills Mallee Southern and Wakefield, although only the ratio in Northern & Far Western was statistically significant.

Table 9.3: Deaths of males aged 0-74 years from cancer, by Health Region, South Australia, 2001-2005

Health Region	Number	Rate[1]	SR[2]
Central Northern Adelaide	**2,311**	**133.2**	**99**
Northern sub-region	970	136.9	102
Western sub-region	753	148.4	111**
Central East sub-region	588	113.4	85**
Southern Adelaide	**921**	**124.3**	**93****
Urban Beaches District	426	132.8	99
Hills District	162	91.5	68**
Outer Southern District	333	137.2	102
Metropolitan Adelaide (excl. Gawler)	**3,232**	**130.6**	**97**
Hills Mallee Southern	**408**	**130.8**	**98**
South East	**213**	**150.3**	**112**
Wakefield	**345**	**128.7**	**96**
Mid North	**135**	**156.1**	**116**
Riverland	**126**	**156.2**	**117**
Eyre	**124**	**152.1**	**113**
Northern & Far Western	**184**	**163.9**	**122****
Country South Australia (incl. Gawler)	**1,535**	**141.8**	**106***

[1] Rate is the number of deaths per 100,000 population

[2] SR = Standardised Ratio, percentage of variation in the region from the ratio of 100 in South Australia

Metropolitan Adelaide

The SLAs with the most highly elevated levels of cancer deaths for men at ages 0 to 74 years (Map 9.3) included Port Adelaide Enfield - Coast (an SR of 146**, 128 deaths) and - Park (126, 57); Charles Sturt - North-East (137**, 98) and - Inner East (116, 81); Playford - Elizabeth (126*, 103) and - West Central (115, 37); Onkaparinga - Woodcroft (126*, 110); and Salisbury - Inner North (122, 62) and - North-East (117, 78).

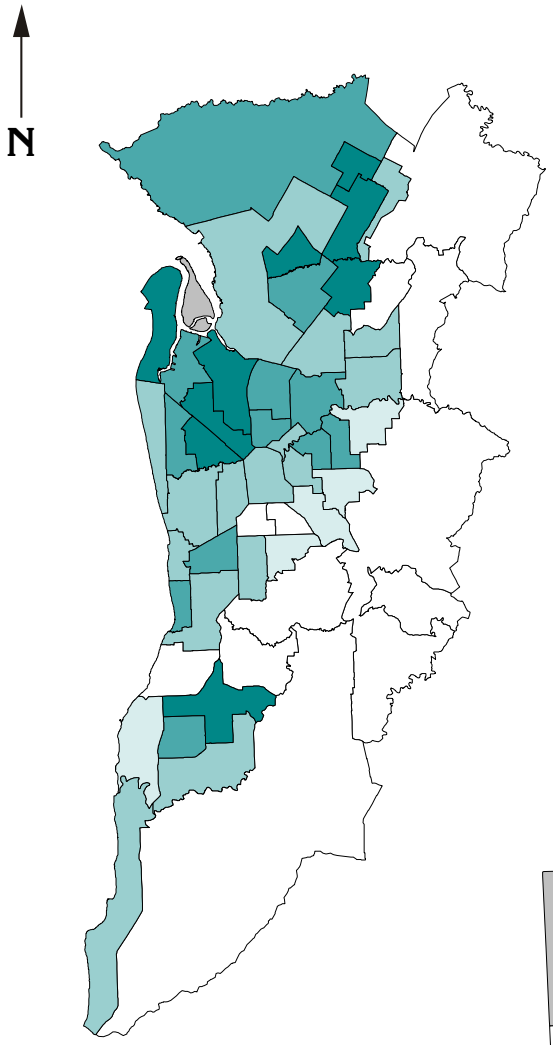
The lowest ratios recorded were in Adelaide Hills - Central and - Ranges; Onkaparinga - Hills and - Reservoir; Mitcham - Hills; Unley - East and - West; Marion - South; Tea Tree Gully - Hills and - North; and Playford - Hills.

Country SA

For country SA (Map 9.4), SLAs with the highest ratios included Loxton Waikerie - West (an SR of 167**, 26 deaths); Ceduna (166*, 17); Unincorporated Flinders Ranges (162, 5); Renmark Paringa - Paringa (150, 10); Wattle Range - East (149, 14); Coober Pedy (147, 17); Mid Murray (147**, 56); Le Hunte (143, 6); Streaky Bay (140, 9); Port Pirie Districts Balance (139, 18) and - City (135*, 63); Tumby Bay (138, 16); Flinders Ranges (136, 10); Barunga West (132, 16); Whyalla (129*, 89); Robe (128, 7); Yorke Peninsula - North (123, 46); Port Augusta (122, 51); and Peterborough (122, 11).

The lowest ratios were recorded in Kangaroo Island, Light, Southern Mallee and Northern Areas.

Map 9.3 and Map 9.4: Deaths of males aged 0-74 years from cancer, Metropolitan Adelaide and country SA, 2001 to 2005

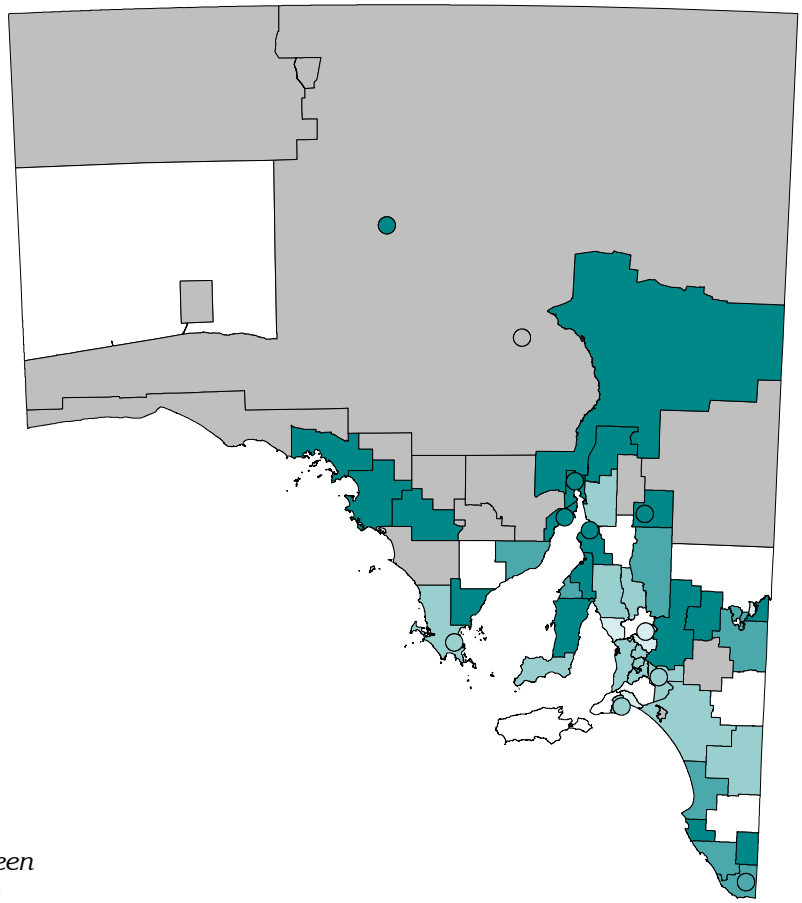


Standardised ratio (as an index)*, by SLA

- *115 and above*
- *105 to 114.9*
- *85 to 104.9*
- *75 to 84.9*
- *below 75*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on totals for the metropolitan region*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100



Standardised ratio (as an index)*, by SLA

- *120 and above*
- *110 to 119.9*
- *90 to 109.9*
- *70 to 89.9*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on SA totals*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100

Premature mortality – Circulatory system diseases

Circulatory system diseases are those related to the heart and blood vessels, including heart, stroke and vascular diseases. Among the specific causes of death, coronary heart disease is the greatest contributor to premature mortality among males; and tobacco smoking is the leading preventable cause of premature mortality from cardiovascular disease (4).

Of all males in Australia, Aboriginal men suffer the greatest burden of premature mortality, with diseases of the circulatory system being the leading cause of death (5). In 2001-2005, in Queensland, Western Australia, South Australia and the Northern Territory combined, approximately 75% of Indigenous males died before the age of 65 years. This was in stark contrast to the non-Indigenous population where only 26% of males died aged less than 65 years (5). The premature mortality (and higher morbidity) in Aboriginal Australians are mainly due to chronic diseases primarily attributable to social, economic and educational disadvantage, with associated higher prevalence of negative health-related behaviours (38).

Deaths from circulatory system diseases have a notable impact in the 45 to 64 year age group for men, with rates increasing substantially in the 65 to 74 year age group (Figure 9.8). Rates for women follow the same pattern, although at less than half the level for men.

Deaths increased with increasing socioeconomic disadvantage for both males and females (Figure 9.9). Rates for males were over twice those for females; however, the differential in death rates between the lowest and highest SES areas was slightly greater for females (a rate ratio of 2.07) than for males (1.94). Male rates were much higher than female rates in all SES groups.

Deaths of males from circulatory system diseases before 75 years of age showed a gradient in rates by remoteness, with a 49% higher death rate in the most remote areas than in Major Cities (Figure 9.10). For females, the reverse was the case across the first four remoteness areas, although the rate increased substantially to give a rate differential of 3.14.

Premature mortality - Circulatory system diseases, South Australia, 2001-05 average yearly rates

Figure 9.8: By age and sex

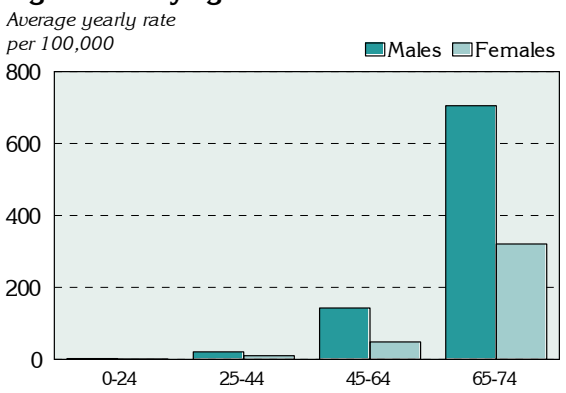


Figure 9.9: By socioeconomic status of area and sex

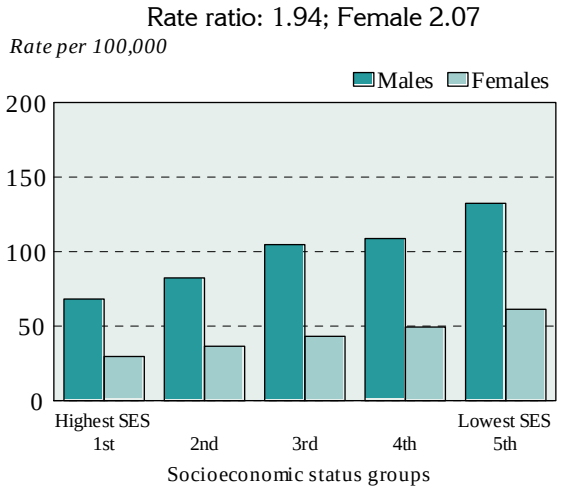
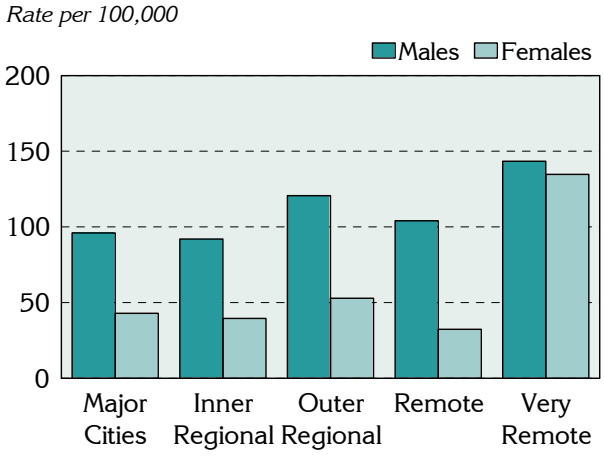


Figure 9.10: By remoteness and sex



Deaths of males aged 0-74 years from circulatory system diseases, 2001 to 2005

Males living in the Southern Adelaide Health Region had 16% fewer premature deaths from circulatory system diseases over this five-year period than expected (a standardised ratio (SR) of 84**, 616 deaths): the number in Central Northern Adelaide Health Region was as expected (an SR of 101, 1,745 deaths).

In country South Australia, there were more male deaths from these causes than expected in all health regions with the exception of Hills Mallee Southern (an SR of 87*, 271 deaths) and South East (100, 141): the highly elevated ratios in Northern & Far Western and Mid North were statistically significant.

Table 9.4: Deaths of males aged 0-74 years from circulatory system diseases, by Health Region, South Australia, 2001-2005

Health Region	Number	Rate[1]	SR[2]
Central Northern Adelaide	**1,745**	**100.5**	**101**
Northern sub-region	737	104.3	105
Western sub-region	576	112.6	113**
Central East sub-region	432	83.4	84**
Southern Adelaide	**616**	**83.3**	**84****
Urban Beaches District	301	92.9	93
Hills District	78	44.7	45**
Outer Southern District	237	98.2	99
Metropolitan Adelaide (excl. Gawler)	**2,361**	**95.3**	**96***
Hills Mallee Southern	**271**	**87.0**	**87****
South East	**141**	**99.6**	**100**
Wakefield	**291**	**108.5**	**109**
Mid North	**124**	**143.2**	**144****
Riverland	**93**	**115.1**	**116**
Eyre	**90**	**110.4**	**111**
Northern & Far Western	**167**	**149.7**	**150****
Country South Australia (incl. Gawler)	**1,177**	**108.8**	**109****

[1] Rate is the number of deaths per 100,000 population

[2] SR = Standardised Ratio, percentage of variation in the region from the ratio of 100 in South Australia

Metropolitan Adelaide

There were highly elevated ratios for male deaths from circulatory system diseases at these ages (Map 9.5) in the SLAs of Playford - West Central (an SR f 176**, 42 deaths) and - Elizabeth (154**, 95); Port Adelaide Enfield - Coast (156**, 102), - Park (144*, 49) and - Port (126, 29); Marion - North (149**, 87); Adelaide (145*, 44); Charles Sturt - North-East (143**, 77); and Onkaparinga - North Coast (127, 60).

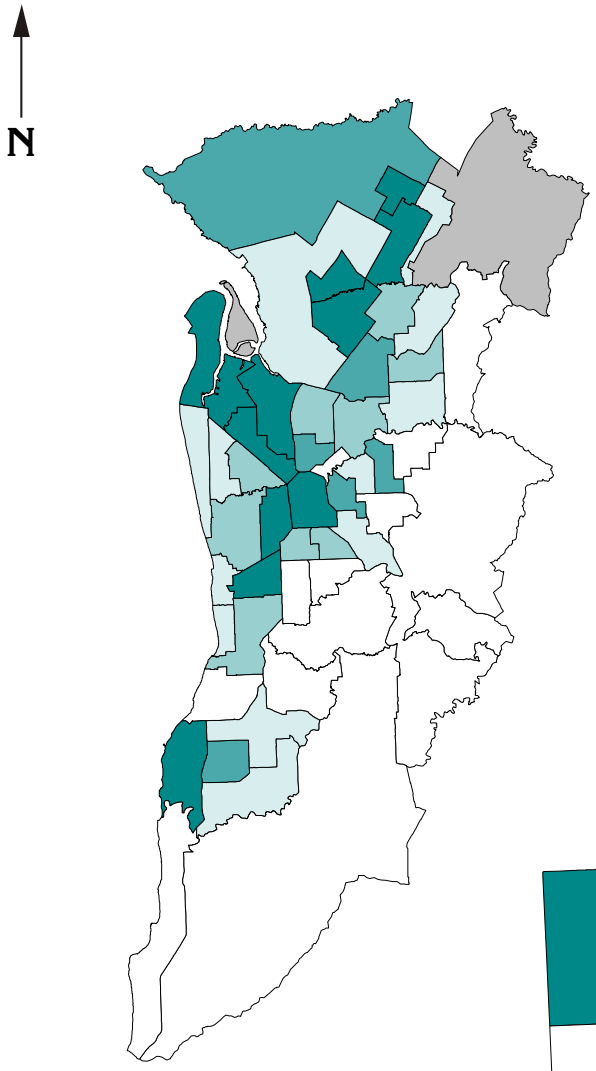
SLAs with the lowest ratios include Mitcham - Hills and - North-East; Adelaide Hills - Central and - Ranges; Marion - South; Burnside - North-East; Onkaparinga - Reservoir and - Hills; Campbelltown - East; Playford - Hills; Walkerville; and Tea Tree Gully - Hills.

Country SA

In country South Australia (Map 9.6), the highest recorded ratios were for Anangu Pitjantjatjara (an SR of 269**, 8 deaths); Orroroo/Carrieton (238*, 6); Peterborough (208**, 14); Tumby Bay (196**, 17); Unincorporated Far North (193*, 10); Flinders Ranges (181, 10); Port Augusta (179**, 55); Barunga West (177*, 16); Copper Coast (165**, 62); Wattle Range - East (161,11); Coober Pedy (156, 13); Port Pirie Districts - City (153**, 53); Streaky Bay (148, 7); Berri & Barmera - Barmera (144, 17) and - Berri (133, 20); Northern Areas (139, 18); Barossa - Angaston (138, 26); Goyder (137, 17); and Mount Gambier (137*, 67).

Areas with the lowest ratios were Le Hunte; Alexandrina - Strathalbyn and - Coastal; Adelaide Hills - North; Mount Barker Balance; Franklin Harbour; Cleve; Grant; Yorke Peninsula - South; Roxby Downs; Light; and Naracoorte and Lucindale.

Map 9.5 and Map 9.6: Deaths of males aged 0-74 years from circulatory system diseases, Metropolitan Adelaide and country SA, 2001 to 2005

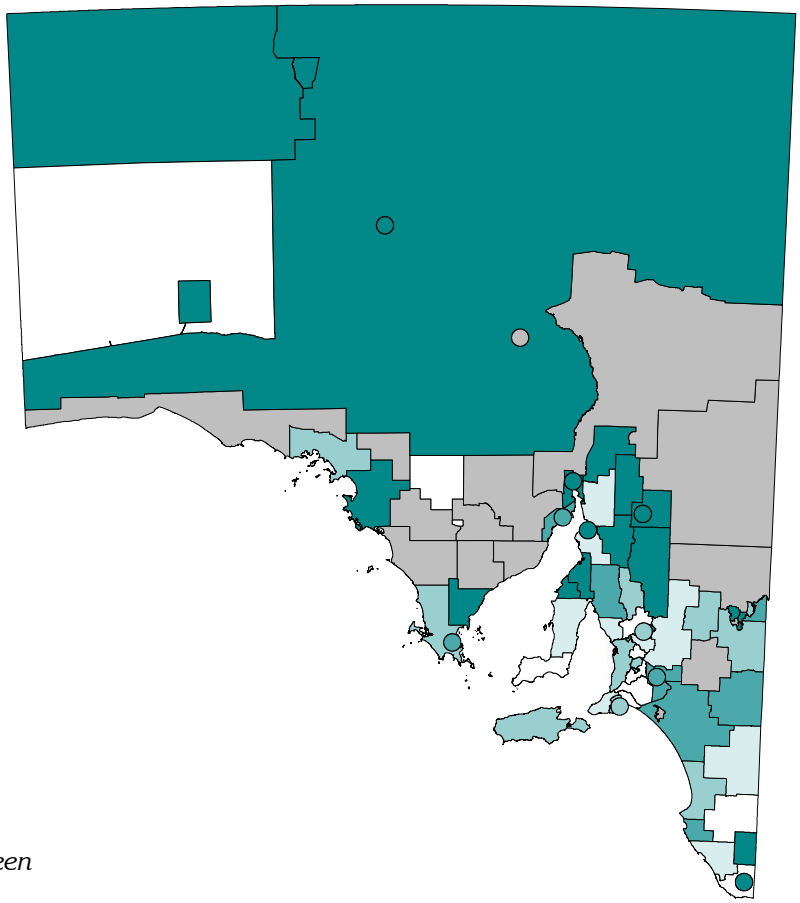


Standardised ratio (as an index)*, by SLA

- *120 and above*
- *110 to 119.9*
- *90 to 109.9*
- *80 to 89.9*
- *below 80*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on totals for the metropolitan region*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100



Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129.9*
- *90 to 109.9*
- *70 to 89.9*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on SA totals*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100

Premature mortality – Respiratory system diseases

Respiratory system diseases include influenza and pneumonia, and chronic lower respiratory diseases (such as asthma, bronchitis and emphysema). Tobacco smoking is the leading preventable cause of premature mortality from chronic obstructive pulmonary disease (COPD).

Respiratory system diseases affect the Indigenous population at younger age groups than is the case for the non-Indigenous population, and this is reflected in the differences in age-specific death rates from these diseases. In 2001 to 2005, Indigenous males aged 35-54 years died from influenza and pneumonia at 18 times the rates of non-Indigenous males of the same age for these conditions. There were also large discrepancies between Indigenous and non-Indigenous mortality rates for chronic lower respiratory diseases (with a ratio of 14) (5).

Before 45 years, death rates from respiratory system diseases were low for both men and women (Figure 9.11). In both the 45 to 64 and 65 to 74 age groups, rates were higher for men, most notably in the latter age group, with a rate for men of 191.4 per 100,000 population, compared with a rate of 105.5 per 100,000 for women.

There was a clear socioeconomic gradient in mortality rates for both males and females, with rates increasing with increasing socioeconomic disadvantage (Figure 9.12). While the increase was relatively even for males, apart from the lower rate in the second SES group, for females it was largely confined to people in the lowest SES areas. Rates for males were higher than for females in all socioeconomic groups.

Premature death rates from respiratory system diseases were substantially higher in the Very Remote areas than in any other remoteness class, with a rate for males over two and a half times that in Major Cities (a rate ratio of 2.62); and, for females, almost twice the rate (1.99) (Figure 9.13).

Premature mortality - Respiratory system diseases, South Australia, 2001-05 average yearly rates

Figure 9.11: By age and sex

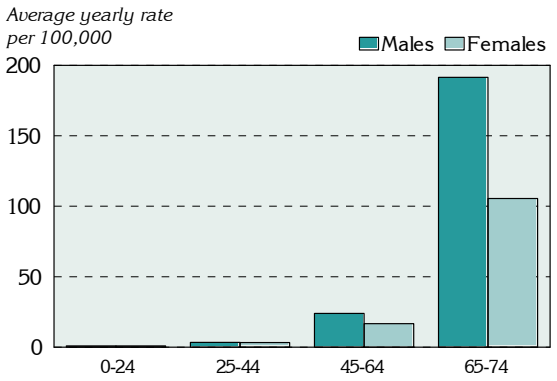


Figure 9.12: By socioeconomic status of area and sex

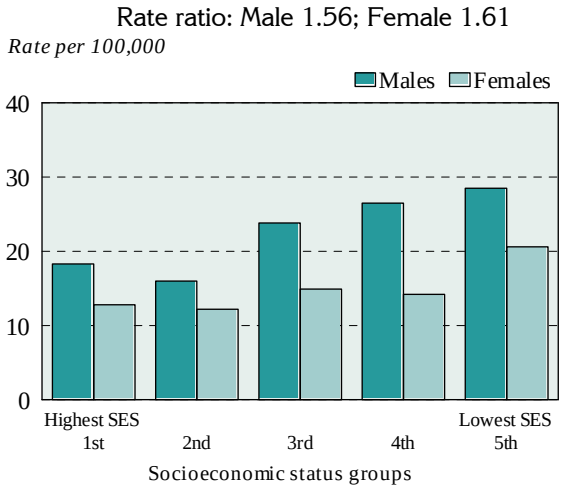
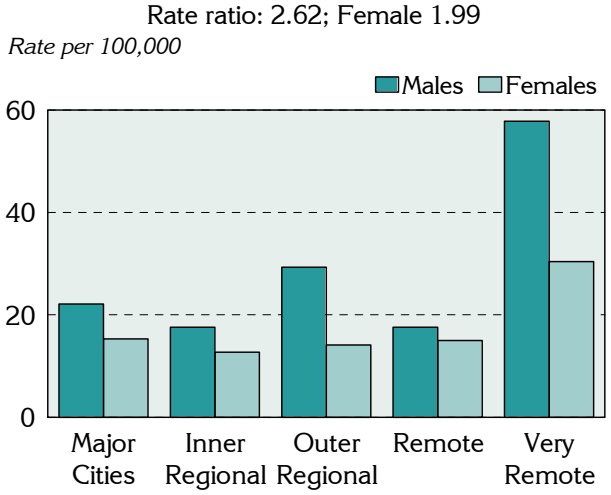


Figure 9.13: By remoteness and sex



Deaths of males aged 0-74 years from respiratory system diseases, 2001 to 2005

In the Central Northern Adelaide Health Region, premature deaths of males due to respiratory system diseases were 8% higher than the expected (an standardised ratio (SR) 108, 425 deaths): however the SR was not statistically significantly elevated. In Southern Adelaide Health Region, the ratio was 29% below the expected (an SR of 71**, 119 deaths), with the Hills District and Outer Southern District also with numbers of deaths well below the expected level.

In country South Australia, ratios in the Mid North (136, 27), Eyre (125, 23) and Northern & Far Western (212**, 53) Health Regions were all above the expected level, although only the latter was of statistical significance.

Table 9.5: Deaths of males aged 0-74 years from respiratory system diseases, by Health Region, South Australia, 2001-2005

Health Region	Number	Rate[1]	SR[2]
Central Northern Adelaide	**425**	**24.4**	**108**
Northern sub-region	**175**	**24.9**	**110**
Western sub-region	**134**	**25.8**	**114**
Central East sub-region	**116**	**22.4**	**99**
Southern Adelaide	**119**	**16.2**	**71****
Urban Beaches District	**69**	**21.0**	**92**
Hills District	**16**	**9.4**	**41****
Outer Southern District	**34**	**14.3**	**63****
Metropolitan Adelaide (excl. Gawler)	**544**	**22.0**	**97**
Hills Mallee Southern	**55**	**17.6**	**77**
South East	**27**	**19.2**	**85**
Wakefield	**61**	**22.6**	**100**
Mid North	**27**	**30.9**	**136**
Riverland	**17**	**21.1**	**93**
Eyre	**23**	**28.4**	**125**
Northern & Far Western	**53**	**48.2**	**212****
Country South Australia (incl. Gawler)	**8,113**	**614.3**	**101**

[1] Rate is the number of deaths per 100,000 population

[2] SR = Standardised Ratio, percentage of variation in the region from the ratio of 100 in South Australia

Metropolitan Adelaide

SLAs with ratios above the level expected (Map 9.7) included Unley - East (an SR of 281**, deaths 24); Charles Sturt - Inner East (177**, 22) and - North-East (162*, 20); Port Adelaide Enfield - East (177**, 29), - Coast (142, 21), and - Inner (139, 14); Playford - West Central (165, 9), and - Elizabeth (149, 22); Salisbury - Central (163*, 20); Norwood Payneham St Peters - West (162, 13) and - East (153, 14); Marion - North (146, 20); and Walkerville (137, 6).

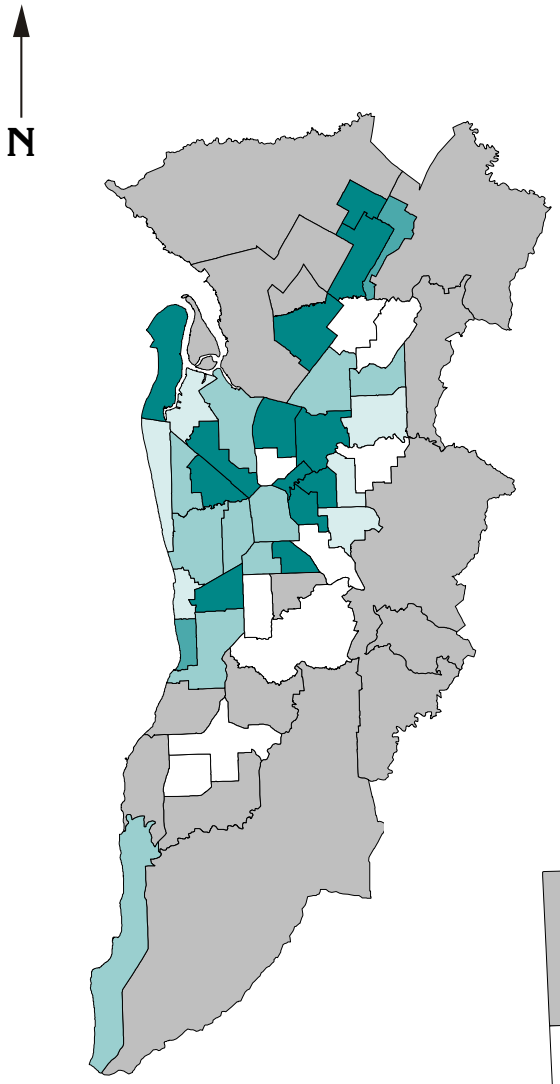
Areas with the lowest ratios were Onkaparinga - Woodcroft and - Morphett; Mitcham - West and - Hills; Prospect; Campbelltown - East; Tea Tree Gully - North; Salisbury - North-East; and Burnside - South-West.

Country SA

In country South Australia (Map 9.8), ratios were highly elevated for Ceduna (an SR of 599**, 10 deaths), Flinders Ranges (462**, 6), Mount Remarkable (345**, 8), Whyalla (206**, 24) and Port Augusta (203**, 14). Ratios were also higher than the expected for Wakefield (an SR of 179, 7 deaths), Loxton Waikerie - East (177, 7), Copper Coast (170*, 15) and Port Pirie Districts - City (138, 11).

SLAs with lower than expected ratios were Alexandrina - Coastal and Victor Harbor.

Map 9.7 and Map 9.8: Deaths of males aged 0-74 years from respiratory system diseases, Metropolitan Adelaide and country SA, 2001 to 2005

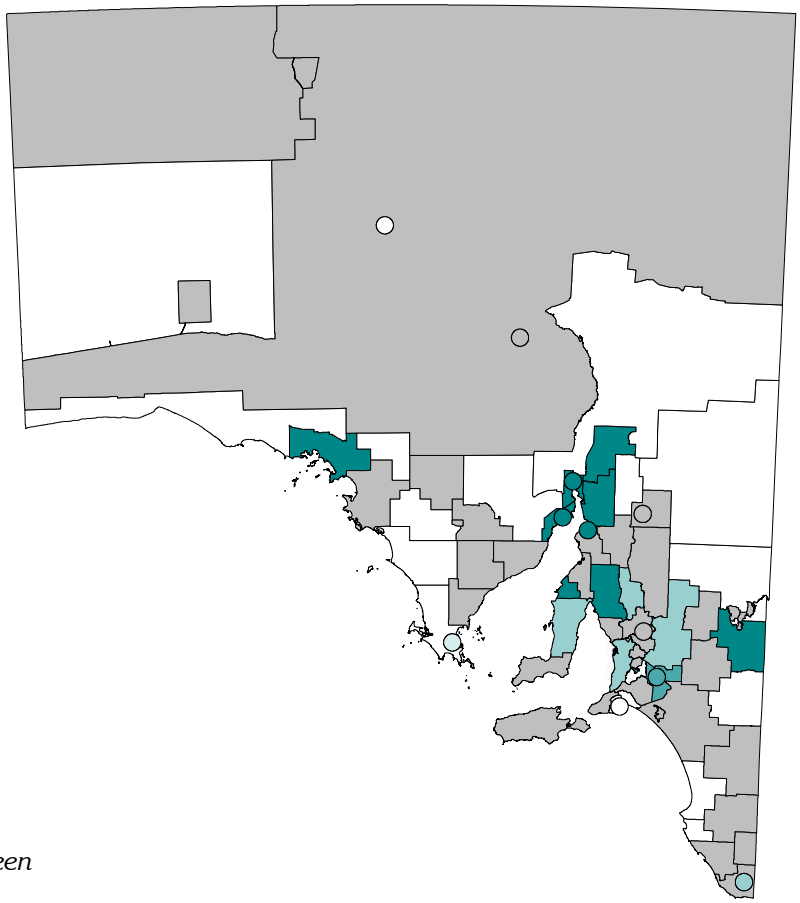


Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129.9*
- *90 to 109.9*
- *70 to 89.9*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on totals for the metropolitan region*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100



Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129.9*
- *90 to 109.9*
- *70 to 89.9*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on SA totals*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100

Premature mortality - External causes

External causes relate to cases where the underlying cause of death is determined to be one of a group of causes external to the body. Examples are suicides, transport accidents, falls, poisoning and drownings (40).

For the period 2001-2005, deaths due to external causes accounted for 16% of all Indigenous deaths, compared with 6% of all deaths among non-Indigenous Australians (5). For both populations, males accounted for around 70% of the total deaths due to external causes. For Indigenous males, the leading causes of death from external causes were intentional self-harm (35%), transport accidents (27%) and assault (8%). For most age groups, the age-specific death rates for Indigenous males were two to three times the corresponding rates for non-Indigenous males (5).

Premature mortality from external causes is far more common for males than for females in each of the age groups shown, with the largest difference at ages 25 to 44 years, where males have four times the rate of females (Figure 9.14). This was also the age group with the highest rate for men: for women, the rate was highest in the 65 to 74 year age group.

Rates of premature mortality showed a clear pattern of increases in deaths from external causes with increasing socioeconomic disadvantage (Figure 9.15). For females, rates in the lowest SES areas were just over twice those in the highest SES areas; for males, the differential was smaller, although it was still a substantial 57%.

Mortality from external causes was much higher in the Very Remote areas than for other areas, being more than three times the rate in the Major Cities areas for males (a rate ratio of 3.30), and over twice the rate for females (2.11) (Figure 9.16). Rates in the intervening remoteness classes were also much lower than in the Very Remote areas.

Premature mortality - External causes, South Australia, 2001-05 average yearly rates

Figure 9.14: By age and sex

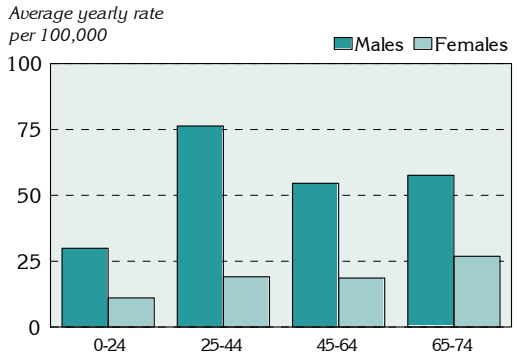


Figure 9.15: By socioeconomic status of area and sex

Rate ratio: Male 1.57 Females 2.02

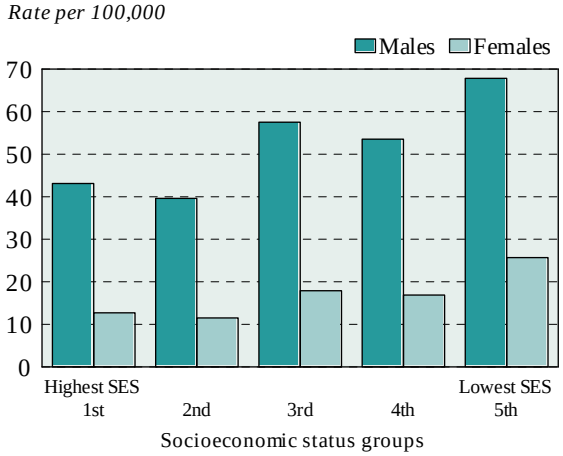
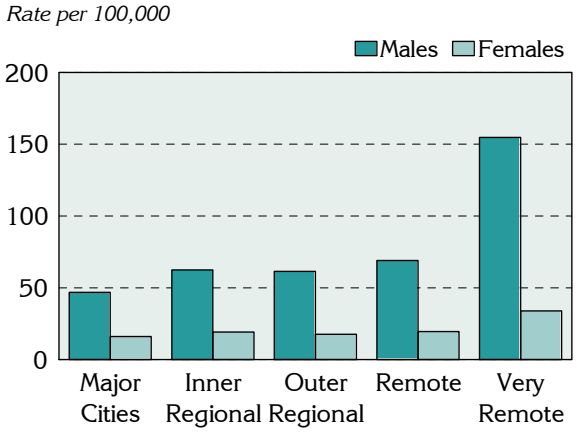


Figure 9.16: By remoteness and sex

Rate ratio: Male 3.30; Female 2.11



Deaths of males aged 0-74 years from external causes, 2001 to 2005

Fewer males died from external causes before age 75 years than expected for both Central Northern Adelaide (a standardised ratio (SR) 90**, 867 deaths) and Southern Adelaide (82**, 326) Health Regions.

In country South Australia, all health regions had elevated ratios, although only those in Northern & Far Western and South East were statistically significant.

Table 9.6: Deaths of males aged 0-74 years from external causes, by Health Region, South Australia, 2001-2005

Health Region	Number	Rate[1]	SR[2]
Central Northern Adelaide	**867**	**47.7**	**90****
Northern sub-region	382	48.0	91
Western sub-region	260	52.5	100
Central East sub-region	225	42.7	81**
Southern Adelaide	**326**	**43.4**	**82****
Urban Beaches District	125	40.6	77**
Hills District	67	38.6	73**
Outer Southern District	134	49.8	95
Metropolitan Adelaide (excl. Gawler)	**1,193**	**46.4**	**88****
Hills Mallee Southern	**159**	**60.5**	**115**
South East	**109**	**73.8**	**140****
Wakefield	**136**	**59.8**	**113**
Mid North	**45**	**65.1**	**123**
Riverland	**52**	**66.5**	**126**
Eyre	**69**	**85.6**	**162****
Northern & Far Western	**97**	**78.7**	**149****
Country South Australia (incl. Gawler)	**667**	**67.4**	**128****

[1] Rate is the number of deaths per 100,000 population

[2] SR = Standardised Ratio, percentage of variation in the region from the ratio of 100 in South Australia

Metropolitan Adelaide

Elevated ratios in Metropolitan Adelaide (Map 9.9) were mainly found among the most disadvantaged SLAs as described by the IRSD (Map 4.3). The major exceptions were the SLA of Adelaide (where deaths of indigent men contributed to the number) and Onkaparinga - Hills. The SLAs of Adelaide (an SR of 178**, 40 deaths); Port Adelaide - Inner (173**, 41), and - Coast (157**, 55); Playford - Elizabeth (155**, 46) and - West Central (136, 21); Salisbury Balance (149, 14); and Onkaparinga - Hills (135, 18) had the most highly elevated standardised ratios.

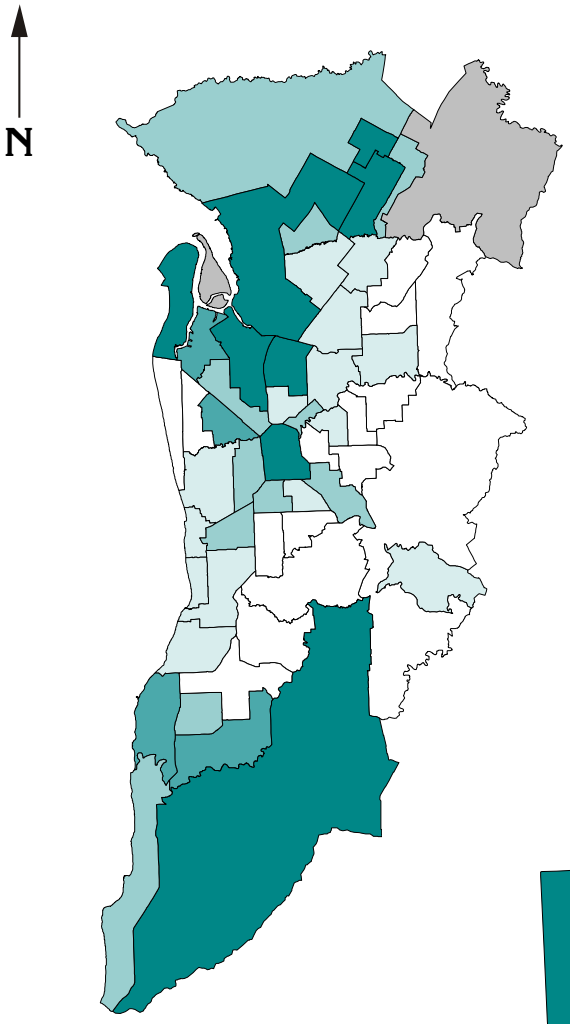
Areas with fewer deaths than expected from external causes included Mitcham - West, - North-East and - Hills; Adelaide Hills - Ranges; Tea Tree Gully - Hills, - Central and - North; Campbelltown - East and - West; Norwood Payneham St Peters - West; Charles Sturt - Coastal and - Inner West; Onkaparinga - Reservoir and - Woodcroft; and Burnside - North-East.

Country SA

In country South Australia (Map 9.10), there were more premature male deaths than expected from these causes in Unincorporated West Coast (an SR of 563**, 5 deaths), Anangu Pitjantjatjara (478**, 15), Unincorporated Far North (393**, 19), Peterborough (348**, 8), Le Hunte (270*, 5), Berri & Barmera - Barmera (233**, 12), Tumby Bay (220*, 7), Coober Pedy (213*, 7), Ceduna (204*, 9), Wattle Range - East (197*, 8), Mid Murray (192**, 21), Naracoorte and Lucindale (164*, 17), Adelaide Hills Balance (164*, 18), Mount Gambier (156**, 44), Barossa - Barossa (150, 14), Alexandrina - Coastal (147, 18), Kangaroo Island (146, 8), Yorke Peninsula - South (144, 7), Loxton Waikerie - East (140, 13), Gawler (139, 31) and Port Lincoln (134, 23).

SLAs with fewer than expected deaths included Adelaide Hills - North and Loxton Waikerie - West.

Map 9.9 and Map 9.10: Deaths of males aged 0-74 years from external causes, Metropolitan Adelaide and country SA, 2001 to 2005

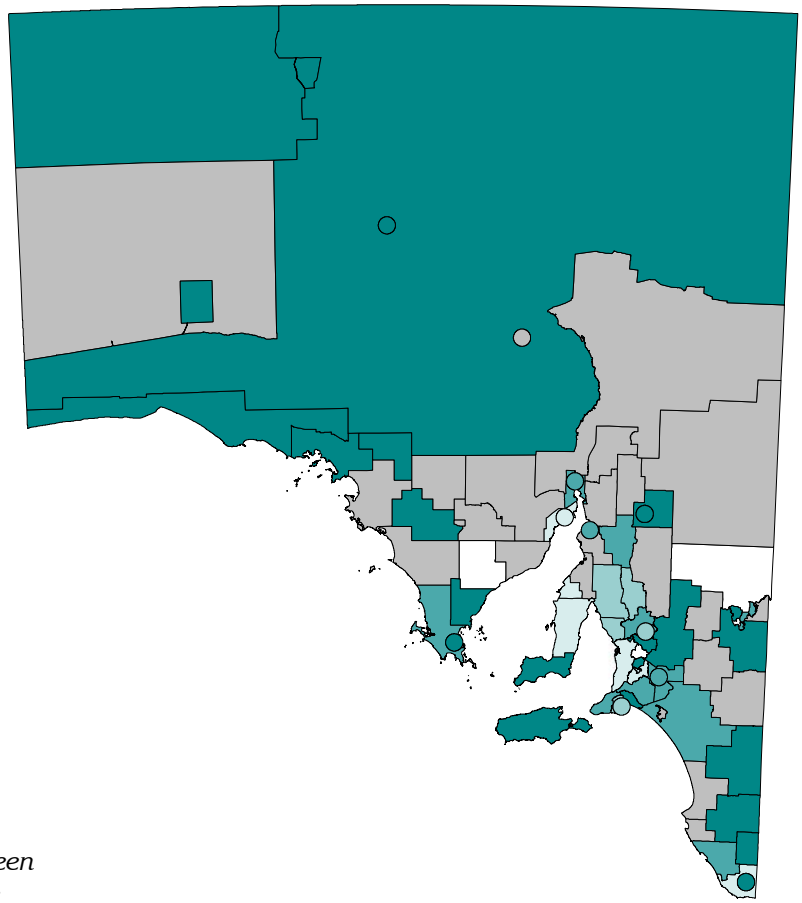


Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129*
- *90 to 109*
- *70 to 89*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on totals for the metropolitan region*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100



Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129*
- *90 to 109*
- *70 to 89*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on SA totals*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100

Premature mortality – Other causes

Other causes includes all causes of death at ages 0 to 74 years other than those described above, of cancer, circulatory system diseases, respiratory system diseases and external causes.

Other than in the 0 to 24 year age group (where deaths of females were marginally higher than those for males), deaths of males from these other causes had higher rates across the age groups shown (Figure 9.17).

For males, rates of death from other causes increased in two major steps, between the second and third and between the fourth and fifth socioeconomic groupings of areas, with quite small increases between the other SES groups (Figure 9.18). The overall differential in rates between the lowest and highest SES areas for males was 2.08 (or just over double). For females, after a drop between the first two area groupings, rates increased between each quintile, with an overall higher rate in the lowest SES areas of 83%.

When examined by remoteness, premature mortality from other causes showed marked variation across the first four remoteness classes. However, for both males and females the rate in the Very Remote areas was more than twice that in the Major Cities areas (Figure 9.19).

Premature mortality - Other causes, South Australia, 2001-05 average yearly rates

Figure 9.17: By age and sex

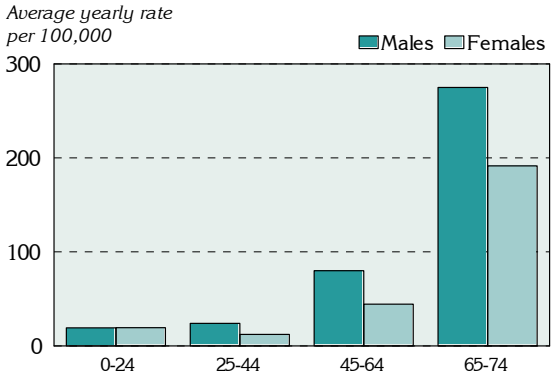


Figure 9.18: By socioeconomic status of area and sex

Rate ratio: Male 2.08; Female 1.83

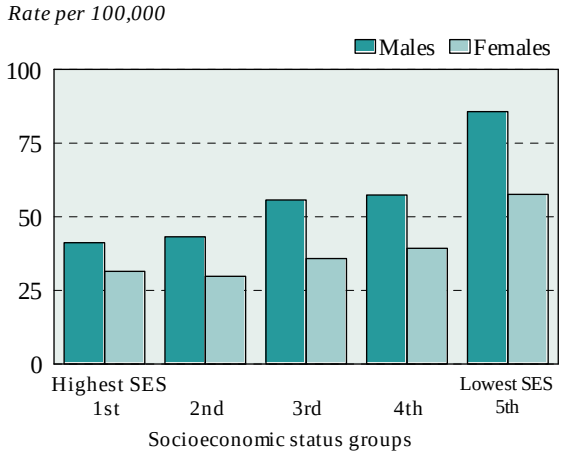
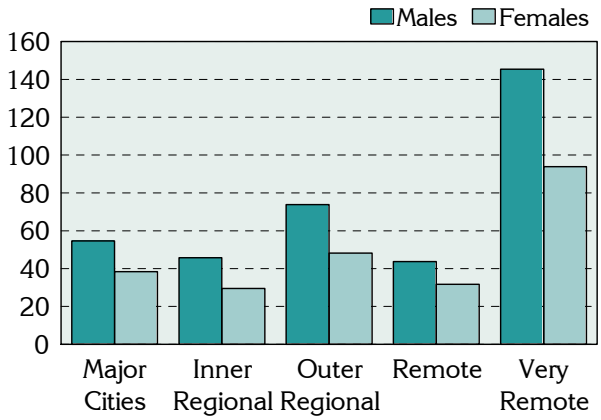


Figure 9.19: By remoteness and sex

Rate ratio: Male 2.66; Female 2.45



Deaths of males aged 0-74 years from other causes, 2001 to 2005

In Central Northern Adelaide Health Region, the premature mortality ratio of males due to other causes over this five-year period was slightly above the level expected (a standardised ratio (SR) of 104, 1,029 deaths); in the Southern Adelaide Health Region, the ratio was 23% below the level expected (an SR of 77**, 326 deaths).

The only health region in country South Australia with statistically significantly more than the expected number of deaths from other causes was Northern & Far Western: none of the rates below the State average was statistically significant.

Table 9.7: Deaths of males aged 0-74 years from other causes, by Health Region, South Australia, 2001-2005

Health Region	Number	Rate[1]	SR[2]
Central Northern Adelaide	**1,029**	**58.8**	**104**
Northern sub-region	447	60.3	106
Western sub-region	312	62.5	110
Central East sub-region	270	53.1	94
Southern Adelaide	**326**	**43.8**	**77****
Urban Beaches District	146	46.4	82**
Hills District	52	29.7	52**
Outer Southern District	128	50.5	89
Metropolitan Adelaide (excl. Gawler)	**1,355**	**54.4**	**96**
Hills Mallee Southern	**147**	**49.2**	**87**
South East	**76**	**51.9**	**92**
Wakefield	**140**	**54.4**	**96**
Mid North	**71**	**86.4**	**152****
Riverland	**50**	**61.6**	**109**
Eyre	**48**	**58.0**	**102**
Northern & Far Western	**126**	**107.9**	**190****
Country South Australia (incl. Gawler)	**658**	**61.7**	**109***

Metropolitan Adelaide

The geographic distribution of male premature deaths from other causes (Map 9.11) was highly consistent with the distribution of the socioeconomically disadvantaged population as described by the IRSD (Map 4.3). The main variations were the elevated ratios in the SLAs of Adelaide, Unley - East and, to a lesser extent, in Norwood Payneham St Peters - West, where the deaths of indigent men contributed to the number.

There were elevated ratios in the SLAs of Playford - Elizabeth (an SR of 185**, 64 deaths), - West Central (156*, 24) and - West (139, 16); Adelaide (184**, 32); Port Adelaide Enfield - Inner (170**, 42), - Park (169**, 33), - Port (146, 20), - East (135*, 53) and - Coast (131, 49); Charles Sturt - North-East (136**, 52); Onkaparinga - North Coast (148*, 38); and Unley - East (147*, 33).

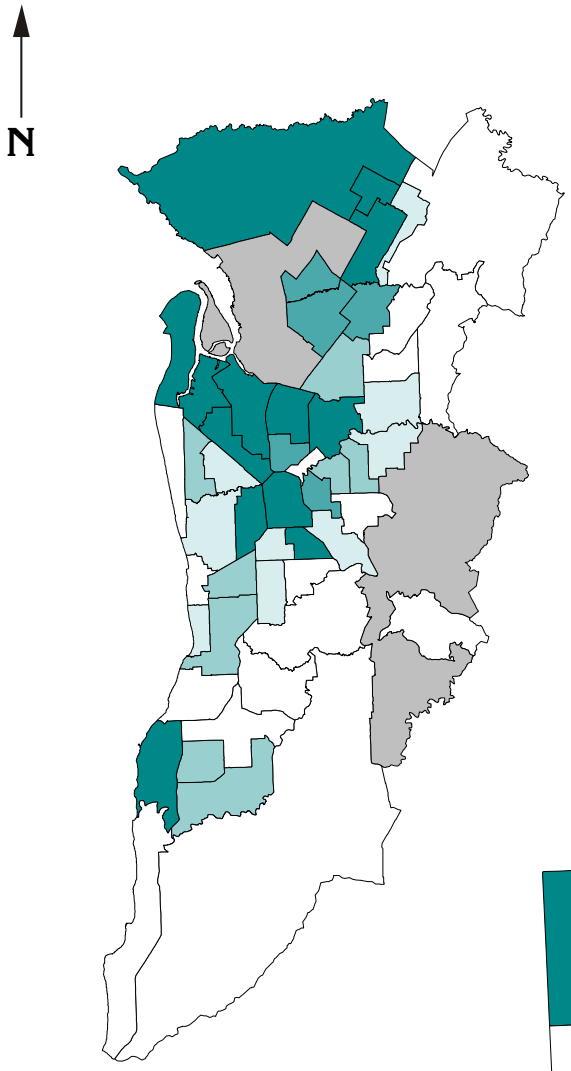
Mitcham - North-East; Adelaide Hills - Central; Marion - South; Burnside - North-East; Charles Sturt - Coastal; Holdfast Bay - North; Onkaparinga - Hills, - Reservoir, - South Coast and - Woodcroft; Tea Tree Gully - Central, - North and - Hills; and Walkerville each had lower than expected ratios of premature death from these causes.

Country SA

Premature mortality rates for other causes were highly elevated in Anangu Pitjantjatjara (an SR of 414**, 9 deaths), Ceduna (345**, 16), Unincorporated Far North (320**, 11), Coober Pedy (275**, 12), Flinders Ranges (241*, 7), Port Augusta (216**, 39), Port Pirie Districts - City (186**, 36), Barossa - Tanunda (184*, 11), Peterborough (176, 6), The Coorong (169, 15), Loxton Waikerie - West (167, 11), Wakefield (159, 15), Northern Areas (157, 11), Tumby Bay (157, 7), Wattle Range - East (146, 6) and Whyalla (142*, 42).

Areas with lower than expected ratios included Alexandrina - Coastal and - Strathalbyn; Barossa - Angaston; Adelaide Hills Balance and - North; Grant; and Mount Gambier.

Map 9.11 and Map 9.12: Deaths of males aged 0-74 years from other causes, Metropolitan Adelaide and country SA, 2001 to 2005

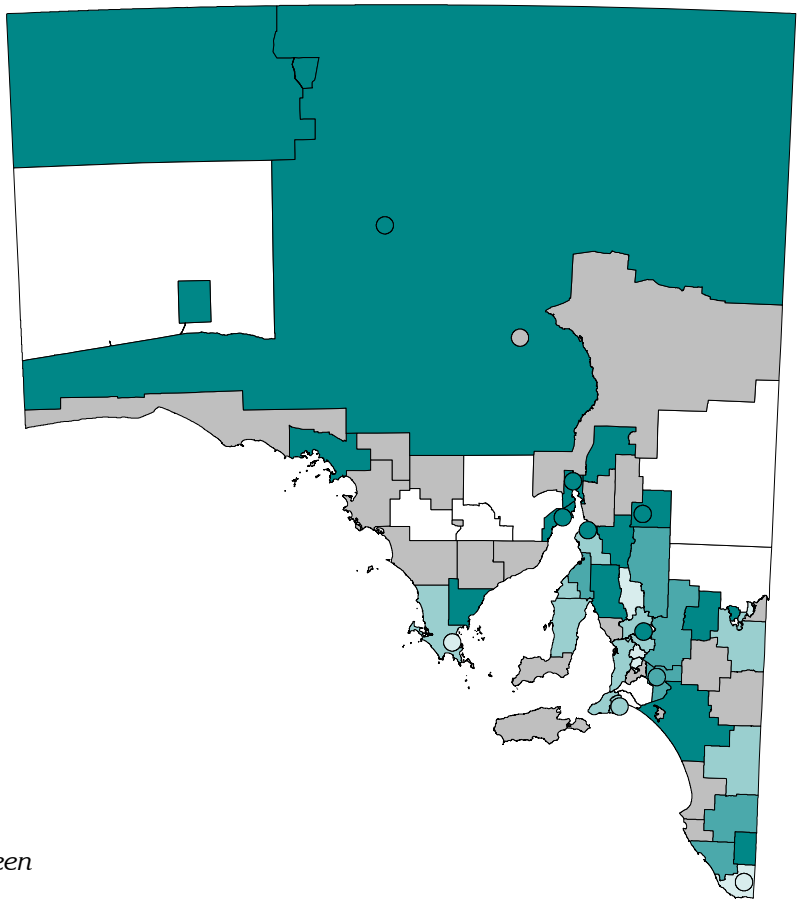


Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129*
- *90 to 109*
- *70 to 89*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on totals for the metropolitan region*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100



Standardised ratio (as an index)*, by SLA

- *140 and above*
- *120 to 139.9*
- *80 to 119.9*
- *60 to 79.9*
- *below 60*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on SA totals*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100

Avoidable mortality

'Avoidable mortality' comprises those causes of death that are potentially avoidable at the present time, given available knowledge about social and economic policy impacts, health behaviours, and health care (the latter relating to a subset of causes referred to as 'amenable mortality' – that amenable to health care) (41).

The purpose of using the concept of avoidable mortality as an indicator is to assist in monitoring the quality, effectiveness and productivity of the Australian health system (41).

Only deaths of individuals aged under 75 years are considered to be potentially avoidable. At older ages, many people have several different health problems, and assigning a single underlying cause of death is difficult. This makes classifying deaths as 'avoidable' or 'unavoidable' less valid in those aged 75 and over (4).

Reductions in avoidable deaths have contributed greatly to the fall in overall mortality rates in Australia. Between 1987 and 2001, avoidable mortality rates among people aged under 75 years declined by almost 40%, whereas mortality rates from unavoidable causes in this age group fell by 14% (41). The reduction was seen in both sexes and across all age groups under 75 years.

Over three quarters of deaths at ages 0 to 74 years are considered to be avoidable – 79.3% for males and 73.5% for females. The death rate for these avoidable causes is substantially (85%) higher for males than for females. The major causes of avoidable mortality are deaths from cardiovascular diseases and cancer: this is the reverse of the order seen for premature mortality (above), for which the category of circulatory system diseases is more broadly defined than cardiovascular diseases.

Of note is that a smaller proportion of the male avoidable mortality is estimated to be amenable to health care: 35.3% of all avoidable deaths for males and 52.1% for females.

Avoidable mortality *…cont*

In 2001 to 2005, across all age groups, death rates of males from avoidable causes were higher than those for females, with the largest differentials being in the 15 to 24 (male rate 3.0 times the female rate), 25 to 44 (2.34) and 65 to 74 (1.93) year age groups (Figure 9.20).

There were clear socioeconomic gradients for both male and female rates of avoidable mortality, with rates increasing with each increase in socioeconomic disadvantage (Figure 9.21). Rates for both males and females in the lowest SES areas were almost 70% higher than in the highest SES areas, and rates for males were substantially higher than for females in all SES areas.

Rates also increased with increasing remoteness, being 45% higher in the Very Remote areas, when compared to the Major Cities areas, for both males and females (Figure 9.22).

Figure 9.20: Avoidable mortality by age and sex, 2001-05

Rate per 100,000

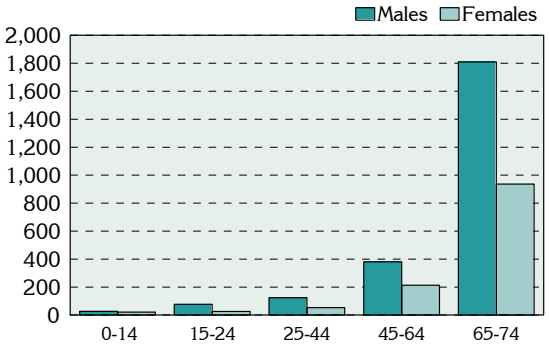


Figure 9.21: Avoidable mortality by socioeconomic status and sex

Rate ratio: Male 1.69; Female 1.67

Rate per 100,000

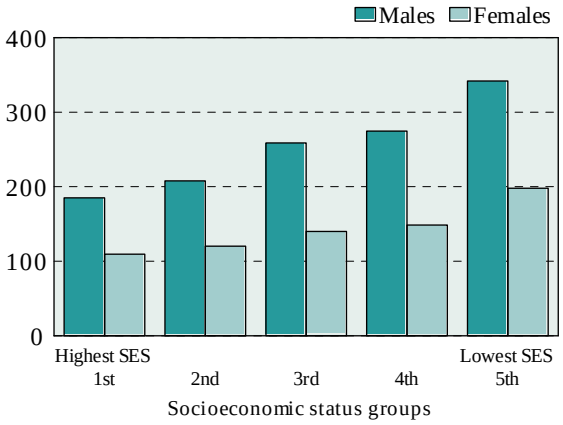
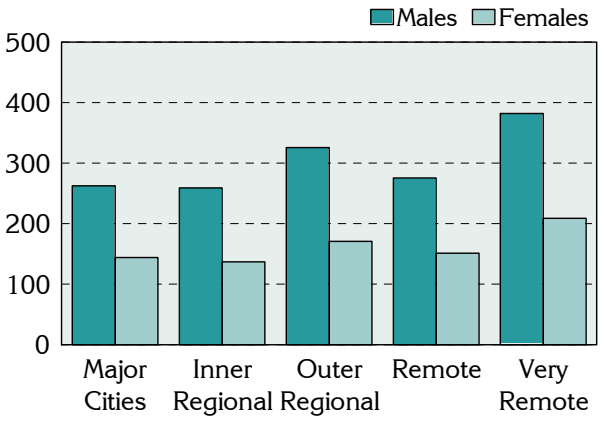


Figure 9.22: Avoidable mortality by remoteness and sex

Rate ratio: Male 1.45; Female 1.45

Rate per 100,000



Avoidable mortality, males aged 0-74 years, 2001 to 2005

Avoidable mortality rates for males aged 0 to 74 years in Central Northern Adelaide Health Region over this five-year period were consistent with the State rate (a standardised ratio (SR) of 100), while in the Southern Adelaide Health Region, there were 17% fewer of these deaths than expected from the State rate (an SR of 83**). There were marked variations at the sub-region level, and even more marked in Southern Adelaide.

The only health region in country South Australia with statistically fewer avoidable deaths than expected was Hills Mallee Southern: the most highly elevated ratios in the other regions were in Northern & Far Western and Mid North, with SRs of 158** and 139**, respectively.

Table 9.8: Avoidable mortality, males, by Health Region, South Australia,

Health Region	Number	Rate[1]	SR[2]
Central Northern Adelaide	4,466	255.1	100
Northern sub-region	447	60.3	106
Western sub-region	312	62.5	110**
Central East sub-region	270	53.1	94**
Southern Adelaide	1,552	210.0	83**
Urban Beaches District	146	46.4	82**
Hills District	52	29.7	52**
Outer Southern District	128	50.5	89
Metropolitan Adelaide (excl. Gawler)	6,018	241.7	95**
Hills Mallee Southern	718	235.0	92*
South East	396	273.5	108
Wakefield	668	255.5	100
Mid North	298	353.8	139**
Riverland	239	294.5	116*
Eyre	239	290.5	114*
Northern & Far Western	464	401.5	158**
Country South Australia (incl. Gawler)	3,022	281.1	111**

[1] Rate is the number of avoidable deaths per 100,000 population

[2] SR = Standardised Ratio, percentage of variation in the region from the ratio of 100 in South Australia

Metropolitan Adelaide

The geographic distribution of avoidable deaths of males at ages 0 to 74 years (Map 9.13) was consistent with the distribution of the socioeconomically disadvantaged population as described by the IRSD (Map 4.3). Ratios elevated by one third or more were recorded in the SLAs of Port Adelaide Enfield - Coast, - Port, - Park and - Inner (with SRs of 155**, 141**, 140** and 133**, respectively); Playford - Elizabeth and - West Central (both 151**); Adelaide (145**); and Charles Sturt - North-East (144**).

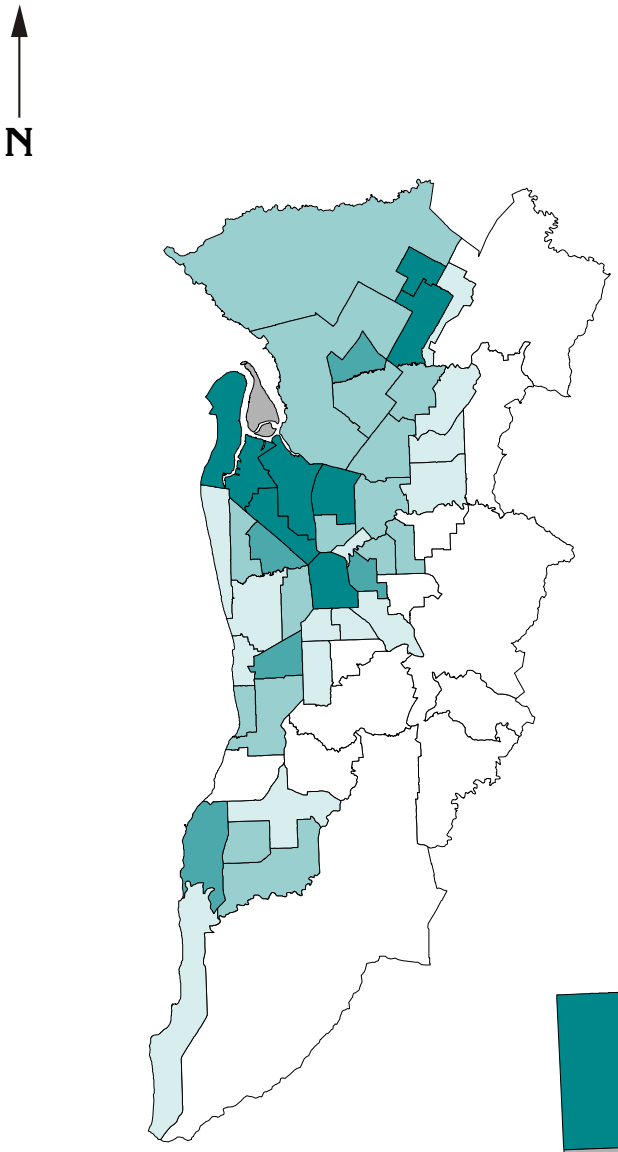
Ratios of 33% or more below the State rate were recorded for males in Adelaide Hills - Ranges and - Central (with SRs of 46** and 49**, respectively); Mitcham - North-East and - Hills (47** and 48**); Onkaparinga - Reservoir and - Hills (51** and 62**); Campbelltown - East (57**); Playford - Hills (60); Marion - South (61**); Burnside - North-East (61**); and Tea Tree Gully - Hills (64**).

Country SA

Elevated ratios were recorded across much of the State, in particular in the north and west, and in a majority of the towns (Map 9.14). SLAs with the most highly elevated ratios (and at least 20 deaths over this five-year period) included Anangu Pitjantjatjara (with an SR of 311** and 32 deaths); Unincorporated Far North (292**, 40), Peterborough (217**, 35), Coober Pedy (164**, 40), Ceduna (185**, 38), Flinders Ranges (171**, 24), Barunga West (168**, 35), Port Augusta (163**, 132), Tumby Bay (154**, 32) and Port Pirie Districts - City (149**, 133) in the north and west; and Wattle Range - East (176**, 33) in the south of the State.

The few very low ratios (and at least 20 deaths) were near the city in Adelaide Hills - North (an SR of 60**, 24 deaths), Mount Barker Balance (64**, 31) and Alexandrina Strathalbyn (64**, 38); and Grant, in the south-east (61**, 30)

Map 9.13 and Map 9.14: Avoidable mortality, males aged 0-74 years, Metropolitan Adelaide and country SA, 2001 to 2005

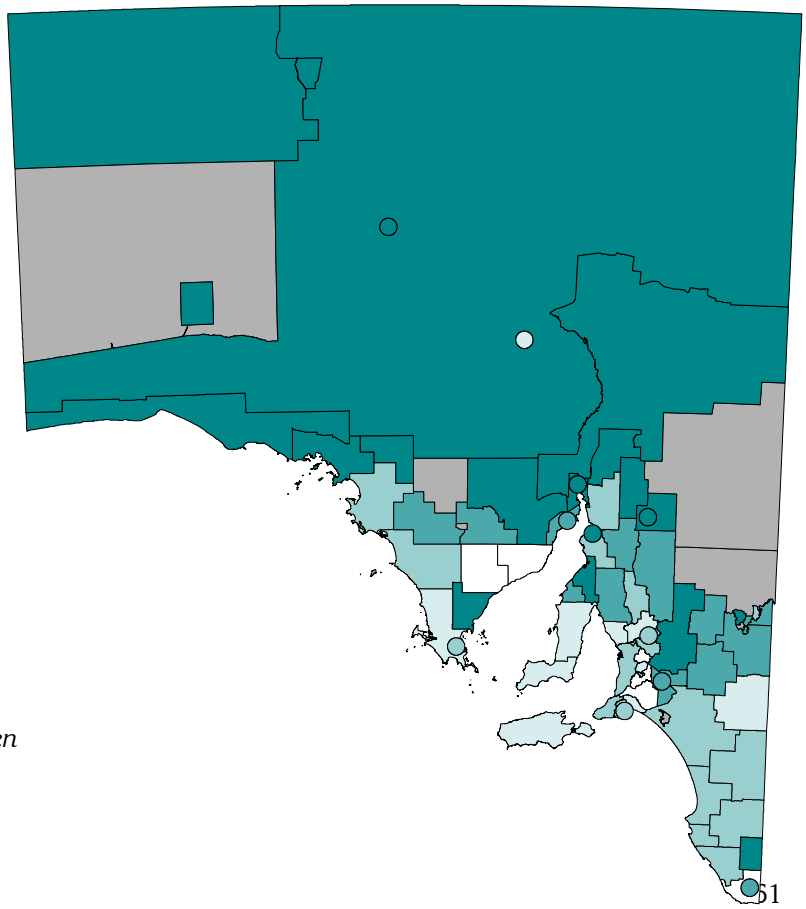


Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129*
- *90 to 109*
- *70 to 89*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on totals for the metropolitan region*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100



Standardised ratio (as an index)*, by SLA

- *130 and above*
- *110 to 129*
- *90 to 109*
- *70 to 89*
- *below 70*
- *data not mapped#*

** Expected numbers were derived by indirect standardisation, based on SA totals*

 # Data not mapped because there were between one to four deaths over the time period; or the SLA has a population of less than 100