

A Social Health Atlas of South Australia

**John Glover
Diana Hetzel
Lucinda Glover
Sarah Tennant
and Anthea Page**

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Enquiries about or comments on this publication should be addressed to:

PHIDU, The University of Adelaide, South Australia 5005
Phone: 08-8303 6239 or e-mail: PHIDU@publichealth.gov.au

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Foreword

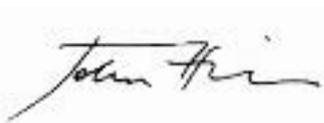
A Social Health Atlas of South Australia is an important resource available to policy makers, planners, service providers and community members working towards the future health and wellbeing of South Australians. In particular, it will assist in achieving improvements in healthy life expectancy for all South Australians and a reduction of inequalities in health, which are both important aims of South Australia's Strategic Plan and the Department of Health's *Strategic Directions*.

The atlas is one of a number of Department of Health initiatives which seek to ensure those providing health services have the best possible information to support them in their work. It provides an overview of the health status and the patterns of use of health and welfare services of the population in different areas of the State, with a focus on the newly formed health regions, and does so in the context of socioeconomic status.

The release of the first edition sixteen years ago provided, for the first time, a compilation of data presented in maps about the health of the population by small areas of the State. Since then, these atlases have been widely used by health professionals, including general medical practitioners, clinicians, and community health nurses, as well as government agencies with a responsibility for the provision of health, welfare and education services in the State. Importantly, the atlases have been equally accessible to the wider community, to those on health service boards, to students and to other interested members of the public.

This third edition of the atlas is accompanied by Internet-based interactive software that provides easily accessible maps and charts of data included in the atlas.

For South Australia to remain an inclusive community, we need to continue to address inequalities in health and wellbeing at a regional and statewide level. This new edition of *A Social Health Atlas of South Australia* is one of the key tools that will help determine where further efforts are needed.



HON JOHN HILL MP
MINISTER FOR HEALTH

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Chapter 3, Regional profile, is a shortened version of a chapter written by Professor Graeme Hugo, Federation Fellow, The University of Adelaide.

Elizabeth Fisher at PHIDU checked all of the data reported in the text against the original datasheets and assisted in other ways in finalising the project.

We thank all of these people for their assistance and expertise in advising us. Finally, we wish to emphasise that the views expressed in the atlas and the conclusions drawn are those of the authors, and not necessarily those of the people who have assisted us with its production.

Overview

The level of health and wellbeing of the South Australian population is high when compared to the populations of many overseas countries. Examples include our life expectancy and overall infant mortality rates. However, these summary statistics hide substantial differences in the health and wellbeing of specific groups within our population.

There is now substantial evidence for the impact of socioeconomic factors on the health of South Australians. Using data from the first edition of the atlas, it was estimated that in Adelaide in the early 1990s, socioeconomic disadvantage explained between ten and fifty per cent of the variation in mortality between geographic areas, depending on gender and cause of death. Overall, 34 per cent of male deaths and at least 14 per cent of female deaths could be directly linked to disadvantage (CSAES 1993).

This third edition of the atlas updates the information on social, economic and health inequalities presented in the earlier editions, and provides a range of new indicators. From the time of the publication of the first atlas, the data in this atlas show demographic change in population groups, and both improvements in socioeconomic circumstances and evidence of greater inequality. In order to demonstrate the extent of the social and health inequalities shown in the maps in the atlas, many of the indicators are also presented in chart form in Chapter 9.

Population trends

There are a number of notable demographic trends evident in **Metropolitan Adelaide** over the 15-year period between the first and third editions of the atlas: the sizeable increases in the number of people aged 65 years and over (up 35%), single parent (54%) and low income families (40%), and the number of people identifying in the Population Census as being of Aboriginal or Torres Strait Islander origin (90%). Also of note, over the twelve years from 1992 to 2004, are the increases in numbers of disability support (61%) and female sole parent pensioners (36%). Since 1991, female labour force participation has increased (up by 24%), and there has been a small increase in participation of 16 year old people in full-time education (four per cent).

The largest declines over the period are in the numbers of unskilled and semi-skilled workers (down by eleven per cent) and of people recorded in the Census as being unemployed (nine per cent). Although the decline in the number of dwellings rented from the SA Housing Trust is relatively low, at six per cent over 15 years, it is of particular importance, as it has occurred at a time of overall

growth in the size of the welfare-dependent population, who have traditionally been a major part of the client group for public housing.

By far the largest decline is in the number of unemployment beneficiaries, although this decline of 42% must be seen in light of the 61% increase in the number of people on a Disability Support Pension (DSP). This is a turnaround from 1992, when the DSP numbers were just over half those of unemployment beneficiaries, being almost 50% higher in 2004.

The small decline (of four per cent) in the total fertility rate is reflected in the decline in the number of 0 to 4 year old children and the stable number aged 5 to 14 years.

In 2004, a total of 82,900 people in **Metropolitan Adelaide** were in receipt of a disability pension or unemployment payment, 12% of the eligible population (15 to 64 years for males, to 59 years for females); a further 24,300 females were receiving a sole parent pension, giving a total of 15% of the eligible population receiving one of these welfare payments; that is, one in seven people at these ages was reliant on welfare benefits: this does not include their dependants, or other low income families who receive an income from employment.

In **country South Australia**, the increases, albeit over a shorter period, are generally smaller and the declines more pronounced. Of note are the large declines in the 0 to 4 year age group (down 13%); the substantial decline in people recorded in the Census as being unemployed (25%); the increase (four per cent) in unskilled and semi-skilled workers (compared with a decrease of eleven per cent in Metropolitan Adelaide); a smaller increase in people reporting being of Aboriginal or Torres Strait Islander origin (46%); and a much more substantial decline in the number of dwellings rented from the SA Housing Trust (34%).

There was also a larger increase in country areas in the number of age pensioners (12%), and smaller increases in disability support and sole parent pensioner numbers (both 15%), than for Metropolitan Adelaide. The substantial decline of 17% in the number of children in welfare-dependent and other low income families is consistent with the change in the population in this age group. It should be noted that these figures exclude children in Aboriginal families receiving unemployment benefits through the CDEP scheme.

Trends in social and health inequalities

Since publication of the first edition of the Social Health Atlas, there has been considerable change in the extent of inequality between population groups, both increasing and decreasing; in addition, some indicators show persisting levels of inequality. The following pages provide a summary of inequality for South Australians in as far as it can be measured by the available data.

Inequality is measured here by comparing, for each indicator, the most disadvantaged 20% of the population with the most advantaged 20% of the population. The differential in rates between these socioeconomic groups is expressed as a ratio, where a value of 1.00 represents equality: ratios above 1.00 show poorer outcomes for the disadvantaged group and ratios below 1.00 show poorer outcomes for the advantaged group.

The data in Table A (for social inequality) and Table B (for health inequality) show the indicators for which the greatest change in inequality has been measured, for both declining and increasing inequality. The table also includes indicators for which high levels of inequality have persisted, without widening or declining (stable inequality).

In addition, the tables show the extent of increase or decline in the proportion (or rate) for the indicator in the population as a whole. Thus, it is possible to examine movements both in the absolute level and in the relative level of an indicator.

For example, from Table B we can see that at a time of declining premature death rates for males in country South Australia (down by 28.0% over a ten-year period), the difference in death rates in the most disadvantaged areas compared with the most advantaged has risen to 1.87 times higher, an increase of 46.1% over the ten years. However, for people in Metropolitan Adelaide on the Disability Support Pension, although the overall proportion of these pensioners has increased by 39.6% over a 12-year period, there has been a decline of 20.8% in the difference across the socioeconomic groupings of areas.

Full details of trends in inequality are presented in Chapter 9.

Declining inequality

Social inequality

In **Metropolitan Adelaide**, the largest decline in social inequality was recorded in the location of dwellings rented from the South Australian Housing Trust (SAHT) (Table A). However, there are a number of factors influencing the lower difference in rates, other than simply a decline in the unequal

location of public housing. There has been an overall decline in the number of SA Housing Trust dwellings, as well as a growth in housing stock, which resulted in a 23.7% decline in the proportion of housing in **Metropolitan Adelaide** rented from the SA Housing Trust over the 15 years to 2001. The Australian Government also provides housing support through rent assistance to low income private renters. With the net reduction in public housing, more low income households are now reliant on private rental accommodation (comparable trend data are not available for people receiving rent assistance).

There was a substantial decline (58.0% over 15 years) in the inequality of the distribution of dwellings without a motor vehicle. Despite a large decline in the proportion of the most disadvantaged population without a motor vehicle (28.2%), the majority of the reduction in inequality is due to an increase in the proportion of the most advantaged households without a motor vehicle. The trend of fewer advantaged households with a motor vehicle is most likely due to an ageing population and a lesser need as a consequence of access to public transport and services.

Large declines in inequality were also evident for people born overseas and reporting a poor proficiency in English, and for those resident in Australia for five years or more, as well as for disability support pensioners. However, the current estimated extent of inequality remained extremely high for these indicators.

There was no evidence of declining social inequality for residents of **country South Australia** from the indicators for which trend data are available (see Table 9.8).

Health inequality

The level of inequality associated with the health indicators is generally lower than for the social indicators (Table B), and declines over time were smaller.

Although the difference in rates for a number of indicators in **Metropolitan Adelaide** has narrowed, the current estimated extent of inequality has remained very high for lung cancer incidence, premature female deaths and hospital booking lists. Marked increases were recorded in the total proportion of four year old boys assessed as being overweight, and the standardised rate of hospital admissions of males, although for the former the inequality differential no longer exists, and for the latter, it is now much lower.

Despite a substantial increase (100%) over a six-year period in the proportion of four year old boys in **country South Australia** assessed as being overweight, the difference in rates across the socioeconomic groupings has declined. However,

the difference in rates between the second most disadvantaged areas (Quintile 4) and the most advantaged areas (Quintile 1) has increased (see chart in Figure 9.8).

There was a notable decline both in the estimated extent of inequality and in the overall rate

associated with infant deaths. Despite this decline, and declining inequality in admissions to private hospitals, admissions of females and admissions to public acute and private hospitals, the current level of inequality remains high for these indicators.

Table A: Trends in social inequalities in South Australia

Indicator (see relevant chapter for data definitions)	Change ¹ in indicator for total population		Estimated extent of inequality ²		
	Period (yrs)	% ¹	Period 1	Period 2	% change
Declining inequality					
Metropolitan Adelaide					
SA Housing Trust rented dwellings	15	-23.7	27.12**	10.99**	-59.5
Dwellings without a motor vehicle	15	-17.2	4.14**	1.74**	-58.0
Poor proficiency in English ³	10	-13.7	6.71**	3.56**	-46.9
People born overseas ³ , resident in Australia for five years or more	10	1.8	2.00**	1.55**	-22.5
Disability support pensioners	12	39.6	4.53**	3.59**	-20.8
Country South Australia					
Nil
Stable inequality					
Metropolitan Adelaide					
Aboriginal & Torres Strait Islander people	15	72.9	8.25**	8.24**	-0.1
Children in welfare-dependent and other low income families ⁴	12	6.9	2.88**	2.96**	2.8
Unemployment rate	15	-51.6	3.00**	2.78**	-7.3
Single parent families	15	43.3	2.14**	2.11**	-1.4
Total fertility rate	10	-3.6	1.16**	1.23**	6.0
Country South Australia					
Aboriginal & Torres Strait Islander people	10	36.4	13.60**	13.40**	-1.5
Dwellings without a motor vehicle	10	-8.6	3.35**	3.61**	7.8
Disability support pensioners	10	48.9	2.49**	2.64**	6.0
Single parent families	10	48.5	1.92**	1.98**	3.1
Unskilled and semi-skilled workers	10	5.4	1.21**	1.30**	7.4
Increasing inequality					
Metropolitan Adelaide					
Unskilled & semi-skilled workers	15	-21.2	2.38**	3.85**	61.8
Female labour force participation (20 to 54 years)	15	10.0	0.84**	0.69**	17.9
Female sole parent pensioners	12	24.6	3.72**	4.35**	16.9
People receiving an unemployment benefit (includes CDEP ⁵)	12	-48.3	3.21**	3.72**	15.9
Age pensioners	12	-17.5	1.28**	1.46**	14.1
Country South Australia					
Poor proficiency in English ²	10	-36.2	3.32**	8.53**	156.9
People receiving an unemployment benefit (includes CDEP ⁵)	10	-41.3	2.58**	5.79**	124.4
SA Housing Trust rented dwellings	10	-45.9	9.00**	15.50**	72.2
Unemployment rate	10	-58.3	1.88**	2.58**	37.2
Children in welfare-dependent and other low income families ⁴	10	-15.8	1.35**	1.77**	31.1

¹ Change in proportion eg. 23.7% drop in dwellings rented from the SA Housing Trust, as a proportion of all dwellings

² Inequality as measured by the ratio between the rate/ per cent in most disadvantaged and most advantaged areas. Trend in inequality is classified as stable where the ratio between the rates differs by less than 10% between the periods

³ Includes only people who were born in a predominantly non-English speaking country

⁴ Excludes children in families under CDEP (Community Development Employment Project)

⁵ CDEP: Community Development Employment Project

* indicates statistical significance: see page 24 for details

Stable inequality

The level of inequality remained stable in over half of the indicators for which trend data are available.

Of the indicators that remained stable, those with the greatest level of inequality are shown in Tables A and B.

Social inequality

The most extreme and persistent inequality is evident for Aboriginal and Torres Strait Islander people, both in **Metropolitan Adelaide** (a differential across the socioeconomic groupings of 8.24**) and in **country South Australia** (13.40**).

The proportion of single parent families in **Metropolitan Adelaide** and **country South Australia** increased by nearly 50%. This growth was relatively consistent across the socioeconomic groupings of areas, with single parent families still twice as likely to live in the most disadvantaged areas.

In **Metropolitan Adelaide**, children in the most disadvantaged areas remained nearly three times (2.96**) as likely to live in welfare-dependent and other low income families. Despite declining by half (51.6%) overall, the inequality among unemployed people persisted, with an unemployment rate in the most disadvantaged quintile 2.78 times that in the most advantaged quintile. The overall rate and extent of inequality remained stable for total fertility rate.

In **country South Australia**, the estimated extent of inequality associated with dwellings without a motor vehicle remained extremely high (a differential of 3.61**), despite a marginal decline in the overall rate. There was a very large increase in the proportion of the population receiving the Disability Support Pension; however, this increase was relatively consistent across the quintiles, with those in the most disadvantaged quintile over two and a half times more likely to receive this pension.

Health inequality

Despite declining overall rates and proportions for several indicators in **Metropolitan Adelaide**, high levels of health inequality continued to be evident for premature male deaths, GP services to males and females, and Child and Adolescent Mental Health Services' clients (although the overall decline was marginal for clients of this service, Table B).

The overall rate of termination of pregnancy increased by nearly one quarter (22.9%); however, the estimated extent of inequality remained stable, although very high, with a rate ratio of 1.58**.

In **country South Australia**, inequality associated with lung cancer also persisted, with people in the most disadvantaged quintile 73% more likely to

develop lung cancer than those in the most advantaged quintile. The marked increases in admissions of males to hospital and in terminations of pregnancy had varying effects on the level of inequality associated with these indicators, decreasing for admissions and increasing marginally for terminations. There were small changes in the overall rates of GP services to females and low birthweight babies, with both of these indicators having a less pronounced rate ratio of 1.16.

Increasing inequality

Social inequality

Despite an overall decline of 21.2% in the proportion of workers in unskilled and semi-skilled occupations in **Metropolitan Adelaide**, there was a substantial (61.8%) increase in inequality, as the majority of this decline occurred in the most advantaged population group. The rate of females in the most disadvantaged quintile participating in the labour force has declined, in contrast to the increase in the most advantaged quintile, resulting in increasing inequality. The proportion of female sole parent pensioners increased by approximately one quarter, with this growth disproportionately occurring in the most disadvantaged quintile, resulting in increasing inequality. People receiving an unemployment benefit declined by half (48.3%). This decline was evident in each quintile, although more so in the most advantaged quintile. There was also an increase in inequality for age pensioners, despite an overall decline in their proportion of the population.

For indicators in **country South Australia**, the largest increases in inequality were associated with large declines in the overall rate, reflecting increasing concentration of these population groups in disadvantaged areas. The extent of inequality more than doubled both for people with a poor proficiency in English and people receiving an unemployment benefit.

The decline in dwellings rented from the SAHT was associated with fewer dwellings rather than declining need. Over three quarters of SAHT houses are located in the most disadvantaged areas (77.8% in Quintiles 4 and 5), as reflected by the extremely high rate ratio of 15.50**. The most disadvantaged areas are likely to have poorer access to public transport and other services including health services. The concentration of these dwellings in disadvantaged areas in country areas (largely towns) is problematic, as those who are dependent on this form of accommodation are already likely to have difficulty in accessing services, for reasons of lack of adequate and reliable transport and the concentration of many of these services in Adelaide.

The decline in unemployment was relatively consistent across the first four socioeconomic groupings of areas (Quintiles 1 to 4, with declines of between 45% and 51%); however, there was a smaller decline (26.4%) in the most disadvantaged quintile (Quintile 5) resulting in greater inequality. This suggests that current strategies to reduce unemployment are less effective for the most disadvantaged 20% of the population.

The proportion of children in welfare-dependent and other low income families declined by over one quarter in the most advantaged quintile (28.3%), compared to a marginal reduction of just six per cent in the most disadvantaged quintile, resulting in increasing inequality.

Table B: Trends in health inequalities in South Australia

Indicator (see relevant chapter for data definitions)	Change ¹ in indicator for total population		Estimated extent of inequality ²		
	Period (yrs)	% ¹	Period 1	Period 2	% change
Declining inequality					
Metropolitan Adelaide					
Cancer incidence: lung	11	-5.9	2.05**	1.57**	-23.4
Overweight four year old boys	6	44.9	1.27*	0.98	-22.8
Premature female deaths: ages 15-64 years	10	-16.5	1.82**	1.51**	-17.0
Hospital booking lists	12	6.3	3.00**	2.58**	-14.0
Admissions of males	12	26.7	1.25**	1.12**	-10.4
Country South Australia					
Infant deaths	10	-66.2	1.86*	1.44*	-22.6
Overweight four year old boys	6	100.0	1.34	1.19	-11.2
Admissions to private hospitals	8	74.2	0.38	0.42**	-10.5
Admissions of females	8	15.7	1.44**	1.29**	-10.4
Admissions to public acute & private hospitals	8	14.8	1.43**	1.29**	-9.8
Stable inequality					
Metropolitan Adelaide					
Child and Adolescent Mental Health Services	4	-1.5	2.36**	2.34**	-0.8
Premature male deaths: ages 15-64 years	10	-26.1	1.88**	1.90**	1.1
Termination of pregnancy	10	22.9	1.69**	1.58**	-6.5
GP services to males	7	-13.0	1.34**	1.38**	3.0
GP services to females	7	-13.6	1.33**	1.35**	1.5
Country South Australia					
Cancer incidence: lung	11	1.6	1.68	1.73**	3.0
Admissions of males	8	26.7	1.42	1.30	-8.5
Termination of pregnancy	10	32.0	1.23	1.25	1.6
GP services to females	6	-5.8	1.09	1.16	6.4
Low birthweight babies	10	7.4	1.20	1.16	-3.3
Increasing inequality					
Metropolitan Adelaide					
Community health service clients	10	-14.5	4.58**	8.31**	81.4
Domiciliary care service clients	14	33.4	1.97**	2.63**	33.5
Obese four year old boys	10	28.6	1.50**	1.88**	25.3
Low birthweight babies	6	2.6	1.27	1.57	23.6
Outpatient department attendances	22	n.a.	1.61**	1.98**	23.0
Admissions to private hospitals	8	43.9	0.58**	0.46**	20.7
Country South Australia					
Premature male deaths: ages 15-64 years	10	-28.0	1.28**	1.87**	46.1
Premature female deaths: ages 15-64 years	10	-10.2	1.22	1.55	27.0
Obese four year old boys	6	66.7	1.13	1.31	15.9
GP services to males	6	-6.7	1.14	1.25	9.6

¹ Change in rate/ proportion eg. 5.9% drop in the incidence of lung cancer

² Inequality as measured by the ratio between the rate/ per cent in Quintile 5 and Quintile 1 (see page v). Trend in inequality is classified as stable where the ratio between the rates differs by less than 10% between the two periods

** indicates statistical significance: see page 24 for details

Health inequality

The overall rate of use of community health services in **Metropolitan Adelaide** decreased, with the decline primarily evident among the most advantaged 20% of the population. The current differential in client rates is extremely large, reflecting the dependence of disadvantaged population groups on these services. Other services for which there were large increases in inequality, as well as large overall increases, were domiciliary care and admissions to private hospitals.

Inequality increased by nearly one quarter for low birthweight babies, and just over one quarter for four year old boys assessed as being obese; also of note is the 28.6% increase in the number of boys in this category.

Increasing inequality in health among residents of **country South Australia** was evident for just four indicators for which time series data were available.

The overall decline of 28.0% in premature male death rates was restricted to the two most advantaged quintiles of the country population. As a result of these declines, and increases in rates in Quintiles 3 to 5 (with the largest increase in Quintile 5), the level of inequality has increased substantially. Currently, men in the most disadvantaged areas are 87% more likely to die prematurely than those in the most advantaged areas.

Premature deaths of female residents of country South Australia also declined overall (down by 10.2%), again with increases in rates for residents in Quintiles 3 and 5. The rate ratio is a high 1.55.

There was a substantial (66.7%) increase in the proportion of four year old boys assessed as being obese, and an increase (15.9%) in the differential in rates across the socioeconomic groupings of areas.

There was also an increase in inequality associated with GP services to males, together with a small decline in the overall rate of these services.

Using A Social Health Atlas of South Australia

A Social Health Atlas of South Australia

This section provides general background information about the atlas, as well as a guide to using the atlas.

Content

The atlas has nine chapters, an appendix, a bibliography and an index. The chapters are:

1. Introduction
2. Methods
3. Regional profile
4. Demography and socioeconomic status
5. Income support payments
6. Health status and risk factors
7. Use of services
8. Correlation analysis
9. Summary of trends

Chapter 1 provides an overview of the socioeconomic and health systems' context in which the data are presented. Chapter 2 describes the approach taken in analysing and mapping the data: this chapter contains important information on the limitations of the mapped data. The Appendix provides additional background information, and the Glossary, at the end of this section, defines some of the terms used.

Chapter 3 contains a demographic and regional profile of South Australia, based upon the new metropolitan health regions and the existing country regions.

Chapters 4 to 7 include the maps for each indicator, as well as associated commentary and data: an introduction to the topic(s) being mapped is also provided at the beginning of each chapter.

Chapter 8 shows the results of the correlation analysis. Chapter 9 contains details of the major changes in the data between this third and the first and second editions, as well as summary measures of the health differentials or inequalities (calculated from the health status and service utilisation data mapped in Chapters 6 and 7).

Using the atlas

Some people will use the atlas as a reference source, either going to particular maps (eg. a map of hospital admissions), or to the index to find a particular topic (eg. obesity) or indicator (eg. jobless families).

Others may choose to examine the correlation matrices and to then view the maps for indicators for which the data are highly correlated. Or they may access the data in a spreadsheet (available on the PHIDU web site) and regroup the areas to suit their own purpose, recalculating the percentages or standardised ratios to represent the new spatial groupings.

To assist users in reading the maps, the layout of the two map types used most frequently is described below. The more detailed discussion in Chapter 2 on the way in which the data have been analysed and presented is, however, important in terms of gaining an understanding of how best to use the data and maps. Users of the atlas are particularly encouraged to read this chapter to ensure they are aware of the deficiencies in the datasets presented, as well as in the mapping approach used.

Data measures mapped

The legend on the map pages indicates the format in which the data are presented. In the majority of cases, data are mapped as either a percentage or age standardised ratio (the process of standardisation is described in Appendix 1.3, *Analysis and presentation of data*). The legend also shows the data ranges used to indicate the spatial distribution of the characteristics being mapped.

Footnotes on the map page draw attention to particular aspects of the mapped data.

Description by regions

Each indicator has an introduction to the topic, including relevant contextual information. The introduction is based on all areas mapped (i.e. metropolitan regions and country South Australia, or just metropolitan regions, where data for country South Australia was not available, or was not of sufficient quality – eg. there were insufficient numbers of cases). The table in the introduction includes a comparison over time, where data from previous years are available.

The small area data are presented under the headings 'Metropolitan regions' and 'Country South Australia' and are based on the health regions, in order to provide the most relevant information to planners and service providers. The metropolitan regions are the Central Northern Adelaide Health Service and Southern Adelaide Health Service. The seven regions in country South Australia are Hills Mallee Southern, Wakefield, South East, Northern and Far Western, Eyre, Mid North and Riverland.

In previous editions of the Social Health Atlas, the metropolitan data were based on Metropolitan Adelaide, which included the Municipality of Gawler. However, the new metropolitan health regions exclude Gawler (it is now part of the country region of Wakefield). In order to make the data shown in this edition comparable with the earlier data which included Gawler, the table in the introduction shows totals for Metropolitan Adelaide (including Gawler), country South Australia (excluding Gawler) and South Australia.

The sections under the headings 'Metropolitan regions' and 'Country South Australia' provide a summary of the data, including a description of the spatial pattern of data. Results of the correlation analysis are then summarised, where correlation is the degree to which one indicator is statistically associated with another. Results of the correlation analysis are provided in Chapter 8.

Data for each region are discussed with a focus on areas with rates or proportions that vary the most from the average, e.g. those with the largest and smallest proportions, or most elevated and lowest ratios. Areas with large numbers (although not necessarily above the level expected given the population size and structure) are also listed. Where large numbers are discussed, the numbers are mentioned first in parentheses following the area name; otherwise the first number is the proportion or ratio followed by the population number. The numbers (as well as the percentages, rates and ratios) for all of the areas are available in electronic form (see Appendix 1.1).

Metropolitan regions

Background

The area covers the two metropolitan health regions. The spatial unit mapped is generally the Statistical Local Area (SLA), an area designed by the Australian Bureau of Statistics for the presentation of data (see Glossary). For the Burden of Disease estimates and infant deaths, where there are small numbers of cases, areas have been aggregated to larger groupings to enable spatial analysis (referred to as Burden of Disease areas).

A key map to assist in the location and identification of particular SLAs is on a fold-out card at the end of the atlas.

The map

The map opposite for jobless families (Map A) is an example of the map shown most commonly throughout the atlas for the metropolitan regions. It shows data mapped to SLAs, where the darkest green shade is used in areas with the highest proportions of families, with children under 15 years of age, where no parent is employed. The

lighter shading shows areas with lower proportions, with the lowest left white.

Data ranges by region

The map page also includes a graph summarising the extent of variation at the SLA level in each region and in the total metropolitan regions, with comparative totals for country South Australia and the State. The vertical line shows the average proportion or rate for each region, and the horizontal line shows the lowest and highest values in the region. This provides an indication of the extent of inequality, where greater variation in the proportion or rate reflects greater inequality.

Country South Australia

The area outside of the metropolitan regions is referred to in the report as 'country South Australia'. The spatial unit mapped is the SLA, other than for the metropolitan regions, for which the average rate or proportion is mapped, to enhance comparisons between the metropolitan regions and country areas.

Towns with a population of 1,500 or more (and which can be identified in the data) are represented on the maps as circles.

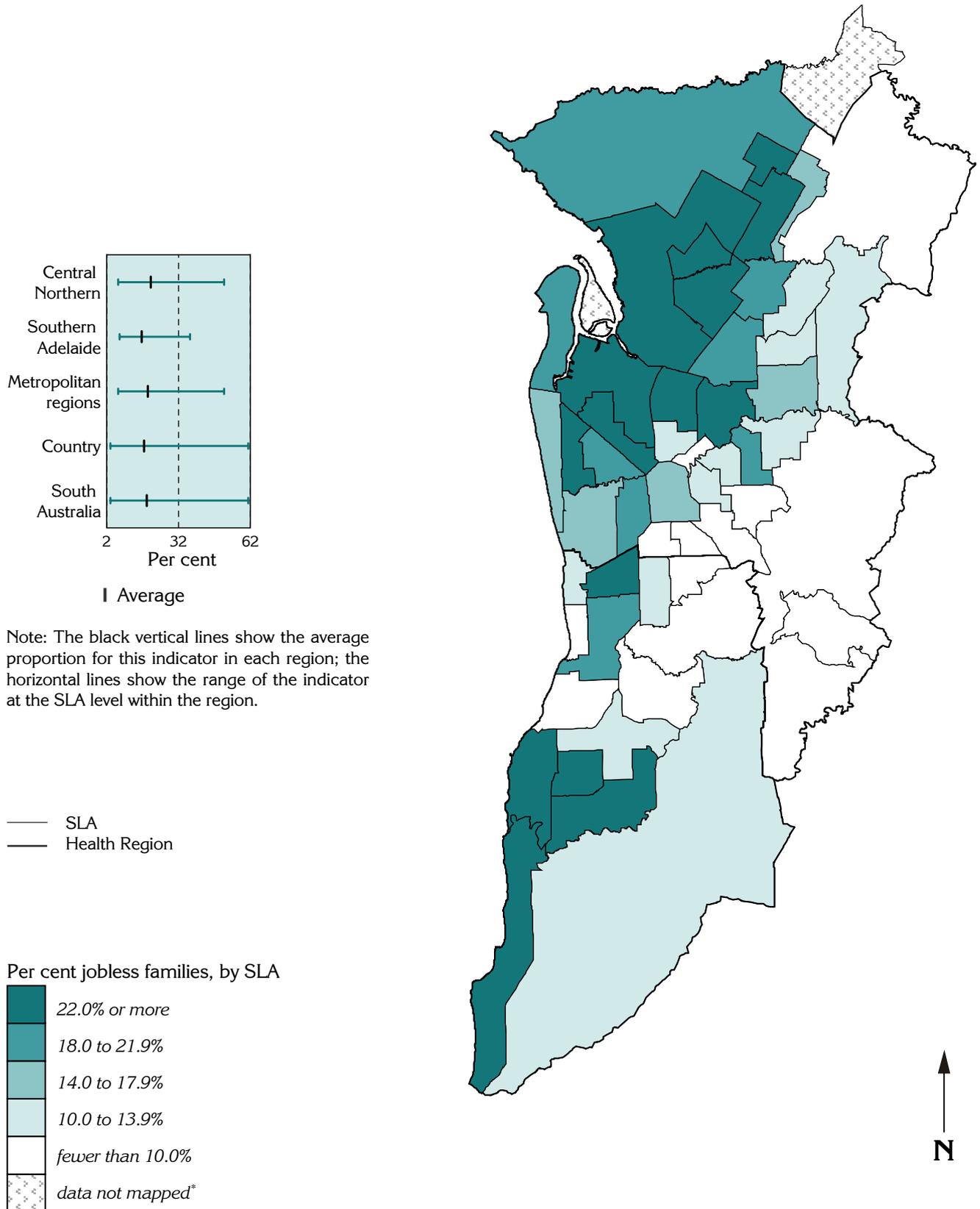
As noted above in relation to the map of metropolitan regions, a key map to assist in the location and identification of particular SLAs is on a fold-out card at the end of the atlas.

The map overleaf (Map B) is an example of the map shown most commonly for South Australia. It shows data mapped to SLAs, where the darkest green shade is used in areas with the highest standardised ratios (SRs). The data have been age standardised to allow comparisons to be made of the rates of women smoking in pregnancy, regardless of variations in the geographic distribution of this population group. In brief, the process of standardisation compares the rate in an SLA for an event (eg. smoking in pregnancy) with the state-wide rates: in this map, the results are shown as an index, with the State or, in some cases, the metropolitan regions, set to 100. Standardised ratios of over 100 show that the number of pregnant women who reported smoking is higher than would have been the case had the state-wide rates applied in the SLA. Ratios below 100 indicate there were fewer women smoking while pregnant.

For example the SLA of Murray Bridge has a standardised ratio (SR) of 131**, calculated for 325 women. This SR shows that there were 31% more women in Murray Bridge who smoked during their pregnancy than would have been the case if the state-wide average rate of smoking in pregnancy had applied: this is a poorer outcome than the average across the State.

Map A

Jobless families with children aged less than 15 years, metropolitan regions, 2001



*Data for Torrens Island have been mapped with Port Adelaide:
Gawler has been mapped in the State map

Source: Calculated on data from ABS Census 2001

Details of map boundaries are in Appendix 1.2
A Social Health Atlas of South Australia, 2006

To the north-west of Murray Bridge, the SLA of Adelaide Hills Balance, mapped in white, has an SR of 64**, calculated for 63 women. That is, there were 36% fewer women smoking during their pregnancy than would have been the case if the state-wide average rate of smoking in pregnancy had applied: this is a good outcome.

Where the standardised ratio (SR) is significantly different from the State rate under a test of statistical significance, this is indicated by an asterisk(s) attached to the SR – for example, 131**. One asterisk indicates that the SR is statistically significant at the five per cent level, that is, the likelihood of that ratio being due to chance is five per cent; two asterisks indicate that the SR is significant at the one per cent level, or that there is a smaller, one per cent chance of that SR occurring by chance.

Data ranges by region

The map page also includes a graph summarising the extent of variation at the SLA level in each region, and for county South Australia in total. The vertical line shows the average proportion or rate for each region, and the horizontal line shows the lowest and highest values in the region. This provides an indication of the extent of inequality, where greater variation in the proportion or rate reflects greater inequality.

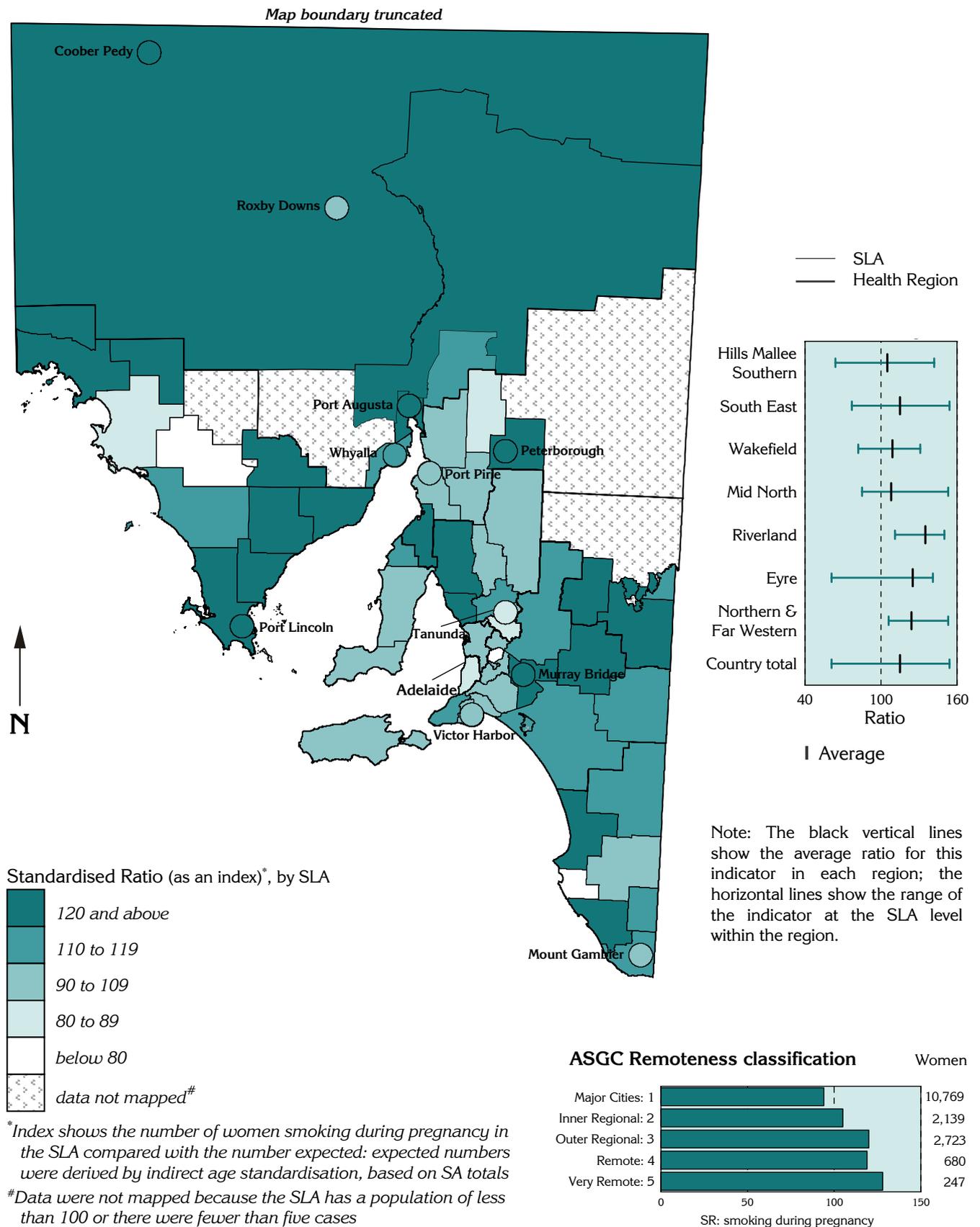
Additional information

Remoteness

In addition to the map, the map page includes a graph showing the average measure for the indicator in each of five levels of remoteness, as determined by the ASGC remoteness classification (see Map B). This classification is described in more detail in Chapter 2, under the heading Accessibility and Remoteness. In brief, each SLA in South Australia has been allocated to one of five classes, which range from Major Cities, through Inner Regional, Outer Regional and Remote, to Very Remote. The average percentage, rate or ratio for each of the five categories is then calculated for each indicator and presented as a graph. A brief comment on the distribution across the remoteness classes follows the description of country South Australia.

Map B

Smoking during pregnancy, South Australia, 1998 to 2001



Source: See data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2
A Social Health Atlas of South Australia, 2006

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Glossary

BoD Burden of Disease

IRSD Index of Relative Socio-Economic Disadvantage

SLA Statistical Local Area

SR age-standardised ratio, ratio per 100,000 population, indirectly standardised

SAR age-standardised admission ratio, ratio per 100,000 population, indirectly standardised

SCR age-standardised client ratio, ratio per 100,000 population, indirectly standardised

SDR age-standardised death ratio, ratio per 100,000 population, indirectly standardised

SIR age-standardised incidence ratio, ratio per 100,000 population, indirectly standardised

SPR age-standardised participation ratio, ratio per 100,000 population, indirectly standardised

.. not applicable

n.a. not available

– nil or less than half the digit shown

1 Introduction

Outline of the chapter

This chapter introduces the key influences on our health and wellbeing, identifies the importance of socioeconomic and related factors on health, and describes some of the key patterns that are illustrated in the range of data and maps in this third edition of the Social Health Atlas of South Australia.

The aim of the atlas is to provide policy makers, practitioners and communities with information about the health and wellbeing of South Australian people of all ages, and to illustrate some important factors that are associated with their health and wellbeing. It also highlights the substantial disparities in health that are evident across the population, within different population sub-groups, and at a regional level.

The atlas will also be useful to other State government sectors (such as education, housing, justice, welfare, environment and planning), local government, non-government and other agencies, and those in the community who are interested in health, and the socioeconomic and other factors that influence it.

Defining 'health and wellbeing'

In line with the recommendations of the Generational Health Review, the South Australian Government has embarked upon a health reform program that represents 'a shift in the way 'health' is conceptualised' (DH 2004). The approach recognises the need to define 'health' in a way that reflects its positive dimensions, rather than just 'the state of not being ill'. Newer definitions now describe health in terms of broader wellbeing, 'an everyday resource – the capacity to adapt to, respond to, or control life's challenges and changes' (Frankish et al. 1996). This corresponds better to the concept of being able to pursue the attainment of goals, skills and ongoing development, and links health and overall wellbeing closely together (DH 2004).

However, good health is not only individual 'quality of life'. There is evidence that investing in a healthy population also brings substantial benefits for the economy. It has been estimated that increasing life expectancy at birth by ten per cent will increase the economic growth rate of a nation by 0.35% a year (Sachs 2001). On the other hand, ill health is a heavy financial burden. Fifty per cent of the growth differential between rich and poor countries is estimated to be due to ill health and life expectancy (Sachs 2001). Thus, good health is also an essential element for social cohesion,

economic growth and sustainable development (Byrne 2004).

Above all, health is a fundamental human right, and a basic need that no one should be denied. It is the expectation of every citizen that they will be accorded the "right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control" (Article 25, United Nations 1948).

What determines the health and wellbeing of South Australians?

Increasingly, research shows that health is the product of many different factors (Evans & Stoddart 1990). Those factors that are believed to have the most important effects are known as 'the determinants of health and wellbeing'. These include individual characteristics, such as the genes that we inherit from our parents, and aspects of our own beliefs, behaviours and coping abilities. Other significant influences operate in our families, neighbourhoods, communities, culture or kinship groups, and society as a whole.

The key influences or 'determinants' of our health are biology and genetic endowment; healthy growth and development in childhood; personal health practices and coping skills; social support networks; health services; gender and sexuality; culture, spirituality and kinship; income and social position; education; employment and working conditions; and the physical and social environments (CIHI 2004). These factors do not exist in isolation from each other, but function as a complicated, interactive web (CIHI 2004). Many of the determinants overlap, and more remains to be learned about specific factors, and the ways in which they influence our health.

Figure 1.1 illustrates the key determinants in terms of 'layers of influence', starting with individual factors and extending to aspects of the wider community (Dahlgren & Whitehead 1991). While health services make a direct contribution to the health and wellbeing of a population, Figure 1.1 shows that many of the key determinants of our health and wellbeing are found in non-health sectors such as education, housing, employment, and the environment. Recently, it has been suggested that an outer layer incorporating global environmental changes should also be added to the diagram (McMichael 2005).

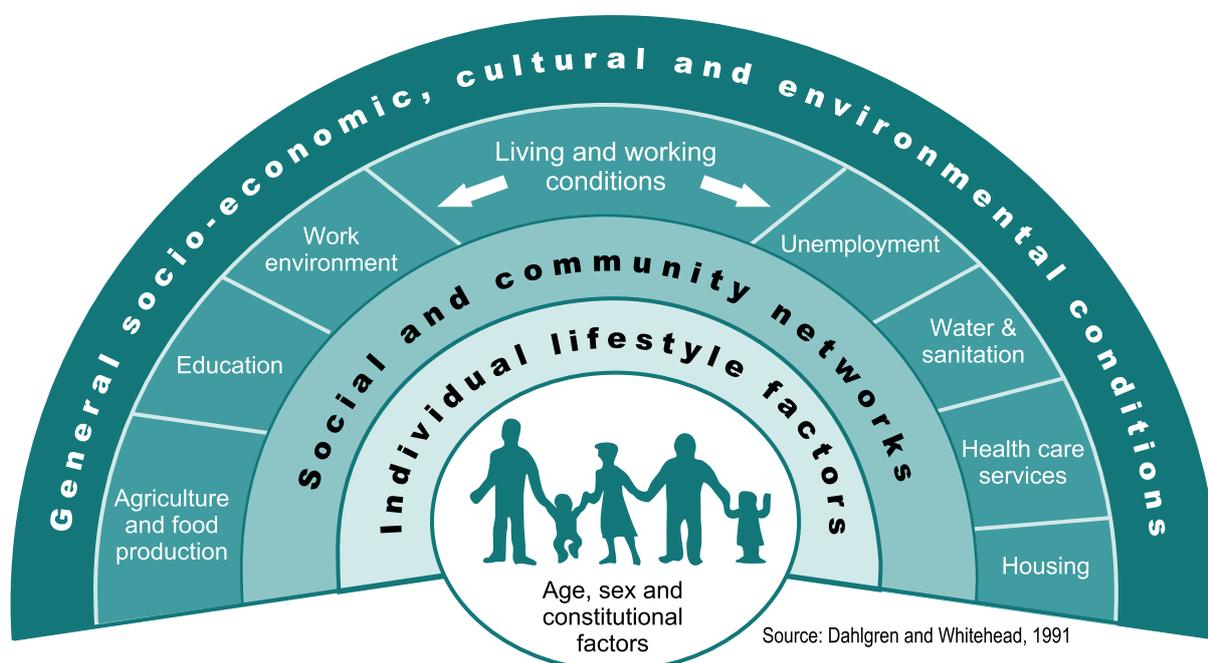
This model links influences from various levels – including society-wide factors (e.g., physical, environmental, socioeconomic), middle-level factors (e.g., health care and other services) and individual and small-group factors (e.g., tobacco use), to explain the origins of health and wellbeing (Halfon & Hochstein 2002).

Thus, health is the result of multiple determinants that operate in combination, within genetic, biological, behavioural, social, cultural and economic and ecologic contexts that have differing influences at various points in our lives (Bronfenbrenner & Ceci 1994). For example, family environment has a greater effect on the wellbeing of infants and young children early in life,

while neighbourhood and peer group factors and individual behaviours become more important as older children move towards adolescence and adulthood (Halfon & Hochstein 2002).

The life pathways that result are the product of cumulative risk and protective factors and other influences in our social environments. A single risk factor (being obese or having experienced child abuse) may contribute to a wide range of problems, just as one protective factor (good nutrition or having a supportive family) may help to defend against other problems (DCPC 1999). Environmental risks and protective factors can occur independently, or may cluster together in socially patterned ways (HC 1997).

Figure 1.1: The key determinants of health and wellbeing



Social and economic factors are among the most important individual-level determinants, and one’s overall health and wellbeing tend to improve at each step up the economic and social hierarchy. Thus, people with a higher income generally enjoy better health and longer lives than people with a lower income (Marmot et al. 1984; Marmot 2002). The rich are healthier than the middle classes, who are in turn healthier than the poor. This is known as ‘the social gradient’. Furthermore, this gradient exists for a wide range of other outcomes – from mental health and coping behaviours, to literacy and mathematical achievement (Frank & Mustard 1994). The gradient is evident whether one looks at differences in current socioeconomic status or in that of family of origin. These effects seem to persist throughout the lifespan, from birth, through adulthood and into old age, and possibly to the next generation (Keating & Hertzman 1999; Najman et al. 2004).

For most people in South Australia, the important factors in explaining these variations appear to be not only material conditions, but also the social advantages attached to those conditions. In modern societies such as ours, these have become major influences on our health and wellbeing. As such, they have a substantial impact on the costs of human suffering because of poor health, and on the financial costs borne by the health care system and society more widely.

Other models of health determinants have also been developed. In 1986, the Ottawa Charter for Health Promotion recognised that the fundamental conditions for health and wellbeing were peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice and equity.

More recently, the World Health Organization updated “*The Solid Facts*”, which identified the

following areas as important social determinants where action could be taken through public policy to improve health: the social gradient; stress; early life; social exclusion; work and unemployment; social support; addiction; food; and transport (WHO 2003).

Together, all these models identify the important roles played by public policy, history and culture, aspects of our environment, access to services, community and social support, behaviours and skills, as well as biological factors, in determining our health and wellbeing.

Thinking about ‘population health’

Health can be described at many different levels: the personal health of an individual, the health of an area or local community, or the overall health of a group of people or a population: for example, the health of children, or the health of Aboriginal people. The direction of the health reform in South Australia has a greater focus on ‘population health’, in addition to the traditional focus on individual health care.

A population health approach reflects the evidence that factors outside the health care system or sector also significantly affect health (HC 2004). The Department of Health has chosen to use a definition of population health based on the Health Canada definition (DH 2005), which views population health as a plan of action as well as a means of understanding health determinants:

Population health aims to improve the health of the entire population and to reduce health inequalities among population groups by addressing and acting upon a broad range of factors and conditions that influence health.¹

For Aboriginal and Torres Strait Islander peoples in South Australia, an extension of the definition of wellbeing proposed by the National Aboriginal Health Strategy (NAHS) Working Party in 1989 is also pertinent (NAHSWP 1989):

Not just the physical wellbeing of the individual but the social, emotional and cultural wellbeing of the whole community. This is the whole-of-life view and it also includes the cyclical concept of life-death-life.

This definition clearly indicates that achieving health and wellbeing is an attribute of communities as well as of the individuals within a community; and it identifies cultural wellbeing, along with physical, social and emotional wellbeing, as equally important (Devitt et al. 2001). Thus, the aim of a population health approach should be

‘that Aboriginal and Torres Strait Islander people enjoy a healthy life equal to that of the general population, that is enshrined by a strong living culture, dignity and justice’.² This recognises the importance of achieving improvements to Aboriginal and Torres Strait Islander health and acknowledges the particular health issues facing the Indigenous population.

Both individual and population-level influences are important in determining the factors that underpin the health and wellbeing of South Australians. However, programs to improve the health of populations differ from those designed to assist with the health problems of individuals (Schwartz & Carpenter 1999). Individual approaches use more reactive strategies, focusing on the care of a person and responding to their evident health needs; and rely on services being available, accessible, appropriate, and effective. Population health requires more proactive strategies, which use system-wide approaches to address the factors that determine the health of the population of interest. The focus is on whole populations, and on programs being available, appropriate, effective and reaching high coverage (Rose 1985; Alperstein & Nossar 2002).

A population-based approach considers the interconnectedness of all health determinants and mediating factors, and their complex interactions that influence the health of the community. Thus, ‘taking a population approach’ means establishing strong links across many different sectors and working together to take action to contribute to the community’s health overall. There are also a number of benefits that investing in a population approach offers: increased prosperity, because a well-functioning and healthy population is a major contributor to a vibrant society; reduced expenditures on health, education and other social problems; and overall community stability and wellbeing for South Australians.

Health and other inequalities

The level of health and wellbeing of the South Australian population is high when compared to the populations of many overseas countries. Examples include our life expectancy and overall infant mortality rates.

However, these summary statistics hide substantial differences in the health and wellbeing of specific groups within our population. For example, compared with other South Australians, Aboriginal people are disadvantaged across a broad range of social and economic domains, including education, health, employment, income and

¹ Health Canada, Population and Public Health Branch (2001) *The Population Health Template: Key Elements and Actions that define a Population Health Approach*, July 2001 Draft, Health Canada.

² As defined in the Strategic Framework for Aboriginal and Torres Strait Islander Health (NATSIHC 2003).

housing. This is the result of many underlying causes, including the intergenerational effects of forced separations from family and culture, and the lasting impacts of colonisation and racial discrimination. This has placed them at greater risk of poorer life outcomes; and there has been substantial evidence for decades, that the health of Aboriginal people is significantly worse than that of the non-Indigenous population (ABS & AIHW 2005).

These differences are described as 'inequalities'. Numerous inequalities exist across the population in South Australia and they tend to divide our community into different groupings. There are many types of inequality – age, sex, ethnicity and race, social and economic position, disability, geographical area, remoteness, and so on. Some dimensions of inequality, such as age, are unavoidable and unable to be altered. Other inequalities occur as a result of differences in access to education, material resources, safe working conditions, effective services, living conditions in childhood, and so on (Harris et al. 1999).

We can identify three levels of inequality in health:

- inequality in access to good health care (for example, some refugees have no access to primary health care (RACGP 2002));
- inequality of health outcomes (for example, there are around 18 years' difference in average life expectancy at birth between Aboriginal and non-Aboriginal people (ABS 2003); and
- inequality in other modifiable factors that determine our health (for example, in education, employment or housing).

Many inequalities in health are potentially avoidable and, therefore, the fact that they occur implies a degree of injustice, or inequity (Whitehead 1990). Such inequalities result because of differences that are unfair, such as unequal access to health services, nutritious food, adequate housing, or safe transport (Harris et al. 1999; Braveman 2003). Research suggests that, while the community accepts a degree of inequality in wealth across the population, there is far less tolerance of inequalities in health (Dahlgren & Whitehead 1992; Shaw et al. 2001).

As discussed earlier, 'health inequalities' generally refer, not only to variations between individuals, but to differences between social groups (Braveman et al. 2000). In the atlas, health inequalities describe the disparities in health associated with people's different and unequal positions in society; thus, the concept links the health of individuals to the structures of social and

economic inequality that shape their lives (Graham 2004).

The impact of socioeconomic inequalities on health

Throughout the atlas, there is evidence of the powerful influence of social and economic factors on the health of South Australians, and the health inequalities that are present. The term, 'socioeconomic status' is used to encompass these factors, and to illustrate their effects on health and wellbeing across the population. The words 'health inequalities' are generally used as an abbreviation for 'socioeconomic inequalities in health', whether measured at an individual or at an area level. Health inequalities that relate to other structures of inequality – like gender or ethnicity – are usually labelled as gender inequalities in health, ethnic inequalities in health and so forth (Graham 2004).

Economic inequality is apparent in the uneven distribution of wealth in society. It is seen in the unequal distribution of the ability to purchase 'goods' such as housing, education, recreation, health care and other opportunities, and the choice to do so (Preston 1999). Social inequality is the expression of the lack of access to these opportunities and represents a degree of exclusion of people from full and equal participation in what we believe is worthwhile, valued and socially desirable (Preston 1999). Thus, economic and social inequalities are interwoven, and their combined impact results in limited opportunities and life chances for many who are affected by them (Bronfenbrenner & Ceci 1994). This is particularly the case for Aboriginal people.

Such inequalities tend to stratify the community, with those who have the most resources, opportunities and power to choose, at the top; and those with increasingly less, in layers below them. The result is entrenched and inequitable differences in wellbeing across the population (Graham & Kelly 2004). For many disadvantaged groups within the population, the impact of social inequality limits their ability to influence change, and makes them more vulnerable to poorer health and wellbeing. Some of these groups include Aboriginal people; people who have disabilities; those for whom English is not their first language; young people who are or have been in the care of the state; and refugees from a range of cultures and ethnic backgrounds.

Socioeconomic disadvantage takes many forms. For some, it is the inability to obtain the essentials of life such as shelter and adequate food; for others, it is a matter of low income; for others, a problem of discrimination and exclusion from

opportunities in society (Spicker 2002). Defining disadvantage only in terms of poverty or low income minimises the importance of access to appropriate services, safe environments, and the quality of housing or level of education that is available (Najman 1993). A complete definition should extend beyond a lack of economic resources to encompass many of the serious environmental, structural and social issues faced by individuals, their families and their communities (Mathers 1996; Spencer 1996). Examples of these are under- and unemployment, homelessness or housing instability, discrimination and racism, unsupported lone parenthood, educational under-achievement, admission into state care, violence and abuse, and mental health problems (Hetzl et al. 2004).

As in other developed countries, increased national prosperity has yielded a steady improvement in the overall health of Australians (OECD 2003). Yet, in line with patterns elsewhere, socioeconomic inequalities in the risks (relative differences) of ill health and premature death between socioeconomic groups remain (Mackenbach et al. 1997, 2002). These are matched by inequalities in the rates (absolute differences) of morbidity and mortality (Lahelma et al. 2002; Graham 2004).

There is substantial evidence of the impact of socioeconomic factors on the health of South Australians. For example, in Metropolitan Adelaide in the early 1990s, it was estimated that socioeconomic disadvantage explained between ten and fifty per cent of the variation in mortality between geographic areas, depending on sex and cause of death. Overall, 34 per cent of male deaths and at least 14 per cent of female deaths could be directly linked to socioeconomic disadvantage (CSAES 1993).

Key indicators of population health

In South Australia, there are significant inequalities in health between men and women; the young and the aged; between different areas and neighbourhoods; between the city and the country; between people who have work and those without work; and between people with different incomes and levels of education (Glover et al. 1999). Some groups of people in South Australia, such as Aboriginal people, have generally much poorer health than the population as a whole.

Information is presented in the atlas to describe a number of factors that illustrate aspects of the health of the South Australian population. In particular, the aim is to identify some of the health inequalities that currently exist between different population groups and geographical areas across the State.

A summary of this information (Table 1.1), presented as a series of health indicators, highlights existing inequalities and draws attention to the influence of social, economic and environmental factors on health.

The ensuing picture is one of significant inequalities in health across the population.

- Life expectancies for South Australia and Australia are similar. The major disparities are between the Indigenous and non-Indigenous populations (Indigenous life expectancy at birth is 18.1 years lower for males and 14.8 years lower for females (ABS 2003), and by socioeconomic status.
- On a scale from 'excellent' to 'poor' (including 'very good', 'good' and 'fair'), almost one fifth of South Australians rated their health as 'fair' or 'poor' - two per cent above the Australian average (after adjusting for age difference between the South Australian and Australian populations).
- Infant mortality in South Australia is low by Australian standards, but is very high among the Indigenous population (46.2% higher than for all South Australians); and among those who are socioeconomically disadvantaged. The most disadvantaged 20% of the State's population have an infant mortality rate 62.9% higher than the most well off.
- Premature death rates (deaths before 65 years of age) are 4.1 times higher for the Indigenous compared to the non-Indigenous population, and 2.8 times higher among people living in the most disadvantaged areas of the State. For substantiated cases of child abuse and neglect, the differential is 12.8 times, a very considerable difference.
- Participation of 16 year olds in full-time education is almost one third lower, and unemployment is 5.6 times higher, in the most disadvantaged areas of the State. These differences are supported by the Index of Relative Socio-Economic Disadvantage (IRSD), a summary measure of disadvantage calculated from 2001 Census data.

Table 1.1: Selected key indicators for population health in South Australia¹

Indicator	SA	Difference ² between		
		SA cf. Aust	Indigenous cf. Total population in SA	Lowest cf. highest socioeconomic status ³ in SA
Life expectancy (yrs)				
- at birth				
- males	76.6	+0.2 yrs	-18.1 yrs	-3.6 yrs
- females	82.0	+0.3 yrs	-14.8 yrs	-1.9 yrs
- at 60 years				
- males	20.8	..	-7.4	..
- females	24.7	..	-8.5	..
Self-rated health:				
% rating health as fair or poor	18.2	+2.0%	..	+73.6%
Infant mortality (rate)	4.3	-24.6%	+46.2%	+62.9%
Premature mortality (rate)	168	-2.5%	+4.1 times	+2.8 times
Substantiated cases of child abuse and neglect (rate)	747	+12.8 times
Educational participation (%)	80.1	+4.7%	..	-31.8%
Unemployment (%)	6.8	+8.3%	..	+5.6 times
Index of Relative Socio-Economic Disadvantage (index)	995	-5%	..	-39.4%

¹Data are for various time periods: life expectancy, 1996 to 2001; self-rated health, 1995; mortality rates, 1997 to 2000; child abuse and neglect, 1996 to 1999; and educational participation, unemployment and the Index of Relative Socio-Economic Disadvantage, 2001

²'Difference' shows the variation between the first and the last variable eg. SA compared to Australia

³Socioeconomic status is based on area of residence, see Methods page 23

Note - Rates are: for infants, deaths under 12 months of age per 1,000 live births; for premature mortality, deaths before age 65 years per 100,000 population, indirectly standardised; child abuse, cases per 100,000 population, indirectly standardised. Educational participation is proportion of 16 year olds in full-time education; unemployment is the proportion of the labour force unemployed; and the Index of Relative Socio-Economic Disadvantage index is based around 1000 as the average index score for Australia

Sources: Life expectancy; ABS 2003 and Unpublished data; Tennant et al. 2003; Hetzel et al. 2004.

Indigenous disadvantage and health inequality

There are over 25,000 Aboriginal people living in South Australia in a total population of just over 1.5 million (ABS & AIHW 2003). More than half of the State's Indigenous population lives in urban areas. The Indigenous population is growing rapidly when compared with the non-Indigenous population (DAARE 2003). At 30 June 2001, the Indigenous population of South Australia had a median age of 20.8 years, compared to the non-Indigenous population's median age of 37.8 years (SA Government 2003). Thus, the Indigenous population has a much younger age profile than the rest of the population in South Australia: this is the result of higher birth rates and earlier age at death.

In South Australia, inequalities exist for Aboriginal people at all ages and in all settings, and are the cumulative result of events experienced throughout a lifetime (NATSIHC 2003; SA Government 2003). Compared with other Australians, Aboriginal people and Torres Strait Islanders are disadvantaged with regard to a broad range of socioeconomic indicators, including education, employment, income and housing, and are

therefore at greater risk of ill health and poorer outcomes (ABS & AIHW 2003). These disparities are also interdependent, and have resulted in life-long disadvantage, inequity and discrimination.

The effects of social inequality and dispossession have been profound for Aboriginal people in South Australia. The legacy of colonisation produced rapid and pervasive social and cultural change. The impact of this change resulted in complex effects on health and wellbeing, some of which have been cumulative over generations (McKendrick & Thorpe 1998; Robinson 2002). The resulting trauma, loss and disempowerment have contributed to the further erosion of culture and community, and undermined the holistic nature of Indigenous health and wellbeing as previously defined. Aboriginal and non-Aboriginal practitioners and scholars have long identified social inequality, racism and oppression as the key issues in Aboriginal health and wellbeing (Ring 1995; Devitt et al. 2001).

There are considerable differences between the health of Aboriginal and non-Aboriginal South Australians. Aboriginal people do not live as long, with their life expectancy at birth around 18 years less than for other South Australians (ABS 2003). Aboriginal people also experience a greater burden

of ill health when compared with non-Aboriginal Australians (NATSIHC 2003; ABS & AIHW 2003). Aboriginal people are more likely to die at younger ages than other South Australians, and the death rates for Aboriginal people are estimated to be more than three times those for non-Aboriginal people (SA Government 2003).

Over the last decade, the Indigenous infant mortality rate has remained well above that of the total South Australian population. Babies of Aboriginal mothers are also over twice as likely to be of low birthweight than babies born to non-Aboriginal mothers. As indicated previously, early life factors and experiences may influence growth, the ability to learn, physical and mental health, and resilience in later life, and may also have intergenerational effects.

In the South Australian Indigenous population, there is a significantly higher prevalence of diseases such as diabetes, hypertension, and a range of communicable conditions (ABS 1997). Rates of non-fatal self-harm, mental illness and substance use are also higher (Swan & Raphael 1995), and Aboriginal people experience greater levels of injury and interpersonal violence. For example, rates of hospitalisation in 2000/01 for injury or poisoning were 1.9 times higher for Aboriginal males and 2.4 times higher for Aboriginal females, compared with non-Aboriginal males and females respectively (ABS & AIHW 2003).

Aboriginal children are more likely than non-Aboriginal children to be notified for child abuse and neglect (Tennant et al. 2003). The reasons for this are complex but reflect, in part, the legacy of colonisation, discrimination and the stolen generations, and the greater socioeconomic disadvantage suffered by Aboriginal families.

The health and wellbeing of Aboriginal South Australians are also more likely to be affected by exposure to environmental risk factors such as poorer housing and inadequate environmental infrastructure (NATSIHC 2003). Many Aboriginal people in remote communities do not have access to the same range and cost options for healthy food as non-Aboriginal South Australians (ABS & AIHW 2003). The ability to store and prepare fresh food is also limited by the lack of adequate facilities and infrastructure such as kitchens, storage facilities, and a reliable source of electricity (NATSIHC 2003; ABS & AIHW 2003). Thus, there is an urgent need to improve standards of environmental health, including housing and essential services, for these Aboriginal communities (NATSIHC 2003).

Many of these factors highlight the extent of social disadvantage experienced by Aboriginal people, and the longer-term consequences for their health

and wellbeing. The recognition of the extent of disadvantage experienced by the Indigenous population has framed a number of new approaches in South Australia. *Doing it right* is the South Australian Government's policy framework for action: the Government's commitment to Aboriginal families and communities in South Australia (DAARE 2003).

Within this framework, the following goals are outlined:

- *That Aboriginal South Australians will have the same choices as other South Australians and the same opportunities to share in the social and economic advantages of living in our state.*
- *That all South Australians will continue to be enriched by Indigenous culture and values, with respect by the wider community based on a new understanding and mutual esteem.*
- *That engagement and partnership with Aboriginal communities will be the platform for sustained improvement in the well being of Aboriginal families.*

In line with this direction, improving the health of Aboriginal people is a major focus of the South Australian Government's health reform agenda.

Limitations in the coverage of the atlas

This edition of the atlas is composed of a range of available data for South Australian people of all ages. The information has been collated from across sectors and from a variety of sources. However, there are some significant gaps. These may reflect a lack of data, the inability to access data that has been collected or a lack of available data at a small area level. This has resulted in a less than complete picture of the health and wellbeing of people in South Australia.

Particular deficiencies emphasise the paucity of information about health services that are provided in South Australia. For example, there are routine data pertaining to acute hospital admissions and the reasons for those admissions but generally limited to the total number of admissions, not for individuals³. This means that one person with severe asthma may have had multiple hospital admissions, and thus is counted more than once. A similar situation arises for data on consultations with general practitioners, which are based on the number of attendances and services provided, and not on individuals.

Furthermore, there are limited available data about

³ Data collected in OACIS provide details for individuals in public acute, but not private, hospitals.

the extent or nature of the services established to provide services to particular population groups, for example, refugees or Aboriginal people. In addition, at a state level, the access and use of services by a range of socioeconomically disadvantaged people cannot be analysed, other than by their area of residence. These deficiencies have significant implications for the planning, monitoring, resourcing and evaluation of health services for people in South Australia over the longer term.

With respect to non-health services, there are also areas where data are unavailable for analysis. Examples include childcare and data for people with disabilities including the nature of services provided to them. However, the atlas documents considerable information about the demography and socioeconomic position of people, various aspects of their health status, their use of a range of services and their area of residence.

There are many datasets in Australia that include information which, when linked, can potentially

increase their value for research and policy analysis. This is equally so for small area analyses. Data linkage can also lead to changes in the way services are delivered. This method is attracting increasing attention in Australia and in South Australia. It is to be hoped that ways can be found to enable data linkage to proceed in this State in a much broader and speedier way than at present.

The indicators presented in this atlas are those for which reliable data are available, in particular data that can be mapped to show variations by area, across Adelaide and South Australia. In some cases, data are not available to show trends over time, or variations between population groups, for some aspects of the social, economic and environmental factors that we wish to show. In others, the data are not ideal but are the best available. Table 1.2 indicates data that would have been useful for a range of factors that impact on health and wellbeing, but for which there are no reliable small area datasets that describe these factors.

Table 1.2: Examples of potential indicators for which suitable local area data were not available

Topic	Potential indicators and their relevance
Physical environment	Air quality; levels of noise, dust (including from industry)
Refugees	Language competency; emotional and health issues
Social support, social networks	Ability to borrow money in a crisis; levels of trust among individuals or within specific neighbourhoods
Interpersonal violence	Levels of domestic and other forms of violence; impact on quality of life
Levels of adult literacy	Reading/writing levels: ability to read instructions, labels
Disability	Levels of different forms of disability; impact on quality of life
Financial stress	Levels of personal and household debt
Homelessness	Personal characteristics; duration of homelessness; health problems
Housing quality	Availability of electricity, running water; insulation in houses
Work environment	Sickness absence from work; sense of control over work; extent of effort-reward balance or imbalance; job security

The burden of chronic diseases

As in other developed countries, Australia is now facing an increasing social and economic burden because of the impact of chronic diseases (for example, heart disease, stroke and diabetes) and their associated biomedical risk factors (such as obesity and overweight, high blood pressure, tobacco smoking, and physical inactivity) (AIHW 2002).

Chronic diseases are major contributors to the extent of illness, disability and premature mortality in the population, and are more prevalent now than at any earlier period in human history (Crews & Gerber 1994). They are estimated to comprise the greatest proportion of the burden of disease, mental health problems and injury for the Australian population as a whole (about 80%), and for particular sub-groups (Mathers et al. 2000).

In South Australia, these diseases and conditions contribute very substantially to the burden of premature death and early loss of life, and of morbidity and disability (DH 2004). It is estimated that at least 450,000 people over the age of 20 years in the State have at least one preventable chronic disease, and the burden is growing (DH 2004). For Aboriginal communities, there are higher levels of chronic disease, which occur much earlier in life (DH 2004).

Chronic conditions also continue to exert considerable financial pressures on the South Australian health system and the community generally. More than one third of hospital casemix expenditure in SA for 2002/03 (an amount of \$300 million or 36% of the total) can be attributed to four chronic disease groups: cardiovascular health, diabetes, arthritis and musculoskeletal conditions, and asthma/chronic pulmonary disease (DH 2004).

In Australia, a disproportionate chronic disease burden is experienced by socioeconomically disadvantaged groups within the population, especially Aboriginal people (DH 2004). The prevalence of chronic disease varies across the socioeconomic gradient for a number of specific diseases, and for important disease risk factors. Significant socioeconomic inequalities are evident, and, for many diseases, there is also a strong, continuous socioeconomic gradient in the rates (Glover et al. 2004). In a recent analysis of the Australian Bureau of Statistics (ABS) National Health Survey (NHS), the largest socioeconomic inequality was for diabetes mellitus (at ages 25 to 64 years) (Glover et al. 2004). Circulatory system diseases (in particular, hypertensive disease) and digestive system diseases also exhibited a strong differential in the 25 to 64 year age group. In the 65 years and over age group, the strongest inequalities were evident for mental and behavioural problems, diabetes (with a continuous socioeconomic gradient in rates) and respiratory system diseases (Glover et al. 2004).

A number of risk factors for chronic diseases, namely self-reported smoking, alcohol misuse, physical inactivity and excess weight showed a striking association with socioeconomic status, in particular for people who were smokers and those who did not exercise (Glover et al. 2004).

Similar socioeconomic differentials are evident for many other chronic diseases, although their spread across the socioeconomic gradient depends upon the specific disease examined (Adler & Ostrove 1999; Glover et al. 2004). It is likely that age-adjusted morbidity rates may decrease over the next ten years for cardiovascular diseases and injuries, but increase for cancer, diabetes mellitus, dementia and mental health disorders (AIHW 2002). Therefore, any move to address the impact of chronic disease at population level, needs to take into account these socioeconomic inequalities (Glover et al. 2004).

As a group, chronic diseases tend to have common risk factors and determinants, and are seldom cured completely (Thacker et al. 1995). Individual and population level influences interact to determine the degree of disease burden and illness, and unhealthy risks and behaviours may be passed on through families, communities, and populations following demographic gradients (Ackland et al. 2003). At different stages in life, common risk factors include poor intra-uterine conditions; educational disadvantage; inadequate living environments that fail to promote healthy lifestyles; poor diet and lack of exercise; alcohol misuse and tobacco smoking (NPHP 2001). Risk factors are also increasingly more prevalent in areas of low socioeconomic status and in communities characterised by low levels of

educational attainment; high levels of unemployment; substantial levels of stress, discrimination, interpersonal violence and exclusion; and poverty. There is a higher prevalence of such factors among the Indigenous population (as a result of the effects of colonisation and dispossession), and among other socioeconomically disadvantaged people (NPHP 2001; Mooney 2003).

In South Australia, it is predicted that as overall health continues to improve, the number of people living into older age will increase, together with the average age of life of the population. As life expectancy rises, the chance of living long enough to suffer from age-related diseases and disability also increases (McCallum 1999). As the population continues to age, fertility rates remain low and life expectancy increases, the challenge for the South Australian health care system will lie in the management of the relationship between these new demands, the health workforce mix and the levels, types and quality of services supplied in response (McCallum 1999).

In addition to the recognition of the need for improved integration of services, there is an emerging policy view that government-funded health care should be balanced with the expectation that individuals themselves must take some responsibility for their health and its management. The opportunity for people with chronic illness to be more involved in managing their health is appropriate.

However, there is also a strong likelihood that a degree of blame or a charge of irresponsibility may be attributed to those who continue to engage in unhealthy or risky behaviours, such as tobacco smoking and substance misuse. Such attitudes fail to acknowledge the social and economic complexities that lead to risk-taking behaviour, and the ineffectiveness of many existing health promotion strategies aimed at modifying behaviour, especially for those people who are the most disadvantaged in our community (Jarvis et al. 1999).

Approaches to try to limit risky health practices or to modify lifestyle factors that impinge negatively on health have been effective mainly for those groups who have a high level of education, a degree of control over their lives and a reasonable income. However, not surprisingly, these strategies have been far less successful for those population groups who are already socioeconomically disadvantaged. This has meant that the difference in the health of these groups has widened, leading to greater inequality and inequity, not less (Jarvis et al. 1999).

The inequalities in health observed across populations are many – some of them are

inevitable and others, unnecessary and unfair. Despite significant medical advances and improved public health in recent decades, socioeconomically disadvantaged communities continue to suffer an unequal burden of chronic illness, premature death and disability. The study of socioeconomic inequalities in chronic diseases and conditions and in risk factors is important and necessary. This is particularly so if we wish to develop more effective policy mechanisms for preventing and intervening earlier in the progression of chronic diseases and their associated risk factors across the diverse Australian population, and to reduce some of the existing health inequities.

While socioeconomic inequalities in the prevalence of chronic diseases and their concomitant risk factors exist across the Australian population, the diseases with substantial socioeconomic disparities are also different for different stages in the life course.

The recurring finding of inequalities for chronic disease morbidity and risk factor prevalence across the socioeconomic gradient remains a significant concern (Glover et al. 2004). The burden in the Australian population attributable to socioeconomic inequality is large, and has far-reaching implications in terms of unnecessary disability and suffering, the loss of potentially economically productive members of society, and increased costs for the health and social care systems (CSAES 1993).

Despite the expenditure of millions of dollars to prevent and reduce the prevalence of chronic diseases and their risk factors, inequities have persisted. However, the situation in Australia is by no means unique, for inequalities in these diseases and their risk factors have been observed for most of the developed countries in which they have been studied (Beaglehole & Yach 2003).

National Health Priority Areas

The importance of chronic diseases and conditions in Australia led to the development of the National Health Priority Areas (NHPAs) initiative from 1996 to 1999. The NHPAs provide a focus for national collaboration on specific chronic diseases that have the potential for health gain and improved outcomes for consumers; that pose a significant burden of disease; and that have the support of all jurisdictions.

Seven national health priority areas have been endorsed (DoHA 2002):

- asthma
- cancer control
- cardiovascular health
- diabetes mellitus

- injury prevention and control
- mental health
- arthritis and musculoskeletal conditions.

Asthma

Asthma is one of the commonest diseases in Australia, affecting one in four children, one in seven adolescents and one in ten adults (DoHA 2003). Morbidity due to asthma is significant with high levels of symptoms, Accident and Emergency department attendances and hospital admissions. More than 40,000 Australians are admitted to hospital annually due to asthma (AIHW 2005). In South Australia, asthma is the second commonest reason for admission to a hospital bed and the leading cause of morbidity for both the 0 to 4 and 5 to 14 year age groupings, and for both sexes, responsible for over 25% of life lived with illness (DH 2004).

The estimated number of people with asthma in Metropolitan Adelaide increased from a rate of 83.8 per 1,000 in 1989 to 1991 to 140.3 in 2001, an increase of 67.4% (see Chapter 6, page 224). Overall, there was an increase in South Australia, from 82.1 per 1,000 in 1989-90, to 126.0 in 2001.

Over the last decade, many advances have been made in asthma care in Australia including improved understanding of the condition; development of evaluated management strategies; more effective drug therapies and better availability and access to treatment; and improved consumer and professional education (DoHA 2004). These advances have contributed to the steady decline in asthma-related deaths. However, Australia is faced with an increasing prevalence, and perhaps an increasing severity of asthma, and there is evidence that up to 60% of asthma deaths may be associated with avoidable factors (DoHA 2003).

Among people aged 35 years and over, rates of hospitalisation for asthma are higher in people living in more remote areas of Australia; Indigenous people have higher rates of hospitalisation for asthma than other Australians in all age groups; and rates of hospitalisation for asthma are higher among people living in more socioeconomically disadvantaged areas (AIHW 2005).

Cancer

In Australia:

- cancer currently accounts for 30.2% of male deaths and 25.2% of female deaths each year;
- each year about 345,000 people are diagnosed with cancer: approximately 270,000 of these are non-melanocytic skin cancers (the less threatening form of skin cancer);
- the most commonly detected cancers are prostate cancer in males and breast cancer in females;

- in 2000 there were 35,628 deaths in Australia from cancer and the most common cancers causing death were lung cancer in males and breast cancer in females; and
- at the prevailing cancer incidence rates, it may be expected that one in three men and one in four women could be directly affected by cancer by the age of 75 (AIHW 2002).

Cancer is a leading public health challenge. In South Australia between 1991 and 2001, cancer accounted for 26% of all deaths (28% in males and 24% in females) (DHS 2001). A total of 7,700 new invasive cancers were notified to the South Australian Cancer Registry for the diagnostic year 2001 (DHS 2001). This is equivalent to about 21 new cases of cancer diagnosed per day. The total for 2001 was approximately two per cent higher than in 2000. There were 3,272 deaths from cancer in the State in 2001 (DHS 2001). This is equivalent to about nine deaths from cancer per day. The total for 2001 was approximately 3.6% higher than in 2000 (DHS 2001).

Lung cancer is the leading cause of cancer mortality amongst men and the second highest cause of cancer mortality amongst women. The incidence of lung cancer in men is high but has decreased by 21% since 1989 to 1991, and in women increased up to 1989 to 1991 and has been stable since (DHS 2001). The incidence of lung cancer declined marginally, from 66 to 64 new cases per 100,000 population between 1986 to 1993 and 1998 to 2002 (see Chapter 6, Table 6.39). Mortality from lung cancer has followed similar trends, reducing by 17% in men since 1980 to 1982 and increasing by 46% in women between 1980 to 1982 and 1989 to 1991, and remaining stable from then on (DHS 2001).

Apart from non-melanoma skin cancer, cancer of the prostate is the most commonly diagnosed cancer among South Australian males, and it is the second commonest cause of cancer deaths in South Australian men (CCSA 2003). Prostate cancer has been associated with Western-style high fat diets, alcohol, smoking, occupational exposure to cadmium and rubber, urban residence, and a positive family history of the disease (CCSA 2003). The incidence of prostate cancer in South Australia increased by 26.7% between 1986 to 1993 and 1998 to 2002; heightened community awareness and new screening tests are likely to have contributed to this (DHS 2001). This increase in incidence was consistent in both Metropolitan Adelaide and country South Australia (see Chapter 6, Table 6.43).

Breast cancer remains the most significant cancer for women in South Australia in terms of incidence and death. The incidence of diagnosed female

breast cancer increased substantially over the period 1977 to 2000, with larger increases in the early 1990s most likely due to improved case finding after the introduction of mammographic screening (DHS 2001). The incidence of breast cancer in South Australia increased between 1986 to 1993 (176 new cases per 100,000 women aged 30 years and over), and 1998 to 2002 (212). The proportional change across Metropolitan Adelaide (20.7%) and country South Australia (21.1%) was consistent (see Chapter 6, Table 6.41).

Mortality from breast cancer increased slightly up to the period 1989 to 1991, and has decreased slightly since then. In the BreastScreen SA target group (50 to 69 years), mortality has decreased by 19% in recent years compared with the early 1980s (DHS 2001).

There are substantial socioeconomic inequalities - specific to each cancer - in their incidence, reflecting the uneven distribution of relevant risk factors across society (Glover et al. 2004). Within South Australia during 1977 to 2001, there was a higher cancer incidence in males in lower socioeconomic residential areas than in the more advantaged areas, whereas a reverse trend was apparent for females. The predominance of cancer among males in low socioeconomic areas was largely due to excesses in these areas of cancers of the lip, buccal cavity (minus lip), throat, oesophagus, stomach, gallbladder, larynx and lung. By comparison, the higher socioeconomic area for females was influenced by higher socioeconomic gradients for cancers of the breast, colon and skin (melanoma) (DHS 2001).

Cardiovascular disease

The growth of cardiovascular disease during the twentieth century was that century's greatest epidemic (AIHW 2001). Coronary heart disease changed from occurring primarily in small, affluent sections of society, to affecting very large numbers of the population, especially those who were socioeconomically disadvantaged (Marmot 1992).

The term 'cardiovascular disease' describes diseases of the heart and blood vessels and includes:

- coronary heart disease;
- stroke;
- heart failure; and
- peripheral vascular disease.

These diseases are mainly caused by a damaged blood supply to the heart, brain and/or limbs, and share a number of risk factors. Much of the burden caused by cardiovascular disease is preventable. In 1995, it was estimated that over 80% of the adult Australian population had at least one of the following cardiovascular risk factors:

tobacco smoking; physical inactivity; high blood pressure; and/or overweight (AIHW 2001).

In Australia:

- cardiovascular disease causes more deaths than any other disease, accounting for 50,797 deaths (40% of all deaths) in Australia in 1998;
- coronary artery disease (mainly heart attacks) is the leading singular cardiovascular cause of death, accounting for 27,825 deaths (22% of all deaths) in Australia in 1998;
- stroke is the major cause of serious long-term disability in adults ;
- cardiovascular disease is the most costly disease for the Australian health system, with the direct health system costs estimated at \$7.6 billion in 2004 (eleven per cent of total health spending) (AE & NHF 2005).

In South Australia, diseases of the circulatory system (which include cardiovascular diseases) account for the largest number of deaths of people of all ages: 18,536 deaths for the period 1999 to 2002. In 2001, there were an estimated 193,052 people with circulatory system diseases in the Adelaide metropolitan regions, an age-standardised rate of 184.1 per 1000 population (see Chapter 6, page 226).

Socioeconomic inequalities are still apparent for cardiovascular diseases in Australia (Glover et al. 2004). Research undertaken with self-reported data from the 2001 NHS showed that circulatory system diseases (in particular, hypertensive disease) exhibit a strong differential in the 25 to 64 year age group (statistically significant differentials of 28%) (Glover et al. 2004).

Diabetes mellitus

Diabetes mellitus is a major cause of death, illness and disability in Australia (AIHW 2002). It is also a leading cause of blindness, blood vessel disease and lower limb amputation, and can lead to pregnancy-related complications for both the mother and foetus or newborn child. Diabetes is an important risk factor for several other chronic diseases including heart disease, stroke and renal disease (AIHW 2002). Obesity is a prominent risk factor for diabetes type 2, and thus, the risk of developing diabetes rises continuously with increasing obesity (DHAC & AIHW 1999).

The incidence of diabetes is increasing both across Australia, and internationally. An estimated 554,200 persons (2.9% of the population) reported having been diagnosed with diabetes in the 2001 ABS National Health Survey (ABS 2002). In South Australia, an estimated 26,848 people reported having been told by a doctor or nurse that they had diabetes type 2 in the metropolitan regions (see Chapter 6, page 228). This figure is, however, likely to be a significant underestimate, as a large

proportion of diabetes in the community remains undiagnosed (DHAC & AIHW 1999). Diabetes is also disproportionately prevalent in particular population groups, such as older Australians, Aboriginal and Torres Strait Islander people, European-born men and women, and Asian-born women (DHAC & AIHW 1999).

The prevalence of diabetes type 2 in Indigenous Australians is among the highest in the world (AIHW 2002). In 1995, the self-reported prevalence of diabetes for Indigenous Australians aged 25 to 54 years was seven to eight times that for non-Indigenous people. Among those aged 55 years and over, it was more than twice as high (AIHW 2001).

Trends over the last fifty years indicate that diabetes death rates in males are now higher than in 1950, but lower than their peak in 1968 (AIHW 2002). In females, diabetes death rates are now about half the level they were in 1950, and well below those for males. Indigenous Australians have much higher death rates for diabetes than non-Indigenous Australians. In 1995 to 1997, the death rate for diabetes among Indigenous males was nine times that of all Australian males, and for Indigenous females it was 16 times that of all Australian females (Cunningham & Paradies 2000).

Socioeconomic differentials are also apparent for diabetes. Data from the 2001 National Health Survey indicated that diabetes is just over two-and-a-quarter times as prevalent among the lowest socioeconomic category as compared with the highest category for those aged 25 to 64 years (Glover et al. 2004).

Injury prevention and control

Injuries result in an estimated 8,000 or six per cent of deaths each year in Australia, and are responsible for an estimated 400,000 hospital admissions annually (DoHA 2003). Injuries are the principal cause of death in almost half of the people under 45 years of age, and account for a range of physical, cognitive and psychological disabilities that seriously affect the quality of life of injured people and their families.

Significant health costs are also attributable to injury, accounting for approximately eight per cent of the total direct costs of all diseases annually. Health costs associated with injury in Australia have been estimated to be \$2.6 billion annually, compared to the total direct cost for cancer of \$1.4 billion for the same period (DoHA 2003).

Injuries are the leading causes of death among children, and one of the main causes of ill health. The most common reasons for hospitalisations following injury are falls, pedal cyclist injuries, and accidental poisoning. Young people – in

particular, young males - are also disproportionately affected by injury. Accidents are the leading cause of death in those aged 12 to 24 years (60 deaths per 100,000 population). Prevalence of injuries in young people is higher than in any other age group, and (apart from the 75 years and older group) death and hospitalisation rates are also higher than for any age group. Injury deaths have decreased by around 60% in two decades largely as a result of falling motor vehicle accident deaths (AIHW 2002). However, deaths from motor vehicle and other transport accidents still remain overwhelmingly the commonest cause of accidental injury and death. Death from injury is around four times more common in young males than in young females.

Young people between the ages of 15 to 24 years account for a significant proportion of all hospitalisations (16%) and deaths (14%) from injury in Australia (Pointer et al. 2003). The age range covers the transition to adulthood, an important developmental stage marked by changes in social independence, family life and work status. Young adults are over-represented in a number of injury areas including transport, violence, pharmaceutical poisoning, and self-harm. Different patterns of injury can be seen according to age and gender. Key issues that need to be addressed include suicide and self-harm, risk-taking behaviour, alcohol use and workplace injury.

Injury is also an important contributor to death and disability for older people. Those over the age of 75 years account for the largest proportion of all hospitalisations (16%) and deaths (21%) from injury in Australia (Pointer et al. 2003). Falls are the commonest cause of serious injury among elderly Australians, but other areas such as complications of surgical and medical care, pharmaceutical poisoning and transport injury also result in a large number of hospital admissions and deaths (Pointer et al. 2003).

There are also significant differences in the impact of injury across the population. Rates of injury mortality and hospital admission due to injury are substantially higher for Aboriginal people and Torres Strait Islanders than for the Australian population as a whole (Pointer et al. 2003). Injury is the second leading cause of death in Aboriginal and Torres Strait Islander people, and the rate of hospitalisation is higher in every injury category, except drowning, when compared to the non-Indigenous population (Pointer et al. 2003).

Rates of death and hospitalisation as a result of injury are also relatively high in the rural and remote population of Australia, with rates increasing with remoteness from metropolitan centres. Rates of suicide and self-harm and road traffic accidents are high among rural youth,

particularly males (Pointer et al. 2003). Significant socioeconomic differentials also exist for deaths from injuries across the population (Draper et al. 2004).

Mental health

Mental health relates to an individual's ability to negotiate the daily challenges and social interactions of life without experiencing undue emotional or behavioural incapacity (DHAC & AIHW 1999). In Australia, one in five people is likely to develop a mental health problem at some stage in their lives (NMHS 1992), and this number will increase over the next twenty years (Mathers et al. 1999).

There are significant mental health inequalities across the population, as the risk of mental ill-health is higher among those who are poor, homeless, unemployed, persons with low education, victims of violence, migrants and refugees, Indigenous populations, children and adolescents, abused women and the neglected elderly (WHO 2003).

Mental health is crucial to the overall wellbeing of individuals and communities. However, mental health and mental disorders have not been accorded anywhere near the same importance as physical health and illness (WHO 2003). This is reflected in the stigma, disability and discrimination still experienced by those who suffer mental ill health, the lack of acknowledgement of the true extent of the problem, and the longstanding neglect of mental health care systems globally (WHO 2003).

In Australia, a substantial number of people of all ages experience significant mental illness annually and many others are affected, particularly their families and carers. In 2001, an estimated 111,814 people in the Adelaide metropolitan regions reported mental and behavioural disorders, a rate of 106.7 per 1,000 people (see Chapter 6, page 230).

The stigmatisation of people with mental illnesses and its negative consequences also impinges on family members (Phelan et al. 1998). The care burden on children of parents with a mental illness (especially in sole-parent situations), for example, may greatly affect their participation in education and social life (CA 2001; COPMI 2004). There may also be an increased risk of mental health problems, although not all children of parents with a mental illness will experience difficulties as a result of their parent's health status (Anthony & Cohler 1987).

Mental health problems take many different forms, from anxiety and obsessive and compulsive disorders, post-traumatic stress, to schizophrenia and depression. Many mental health disorders can

also co-exist with chronic, physical ill health conditions. The National Survey of Mental Health and Wellbeing Report indicated that just under half of those with any mental health disorder also had a physical health problem (DHAC & AIHW 1999). These included asthma, chronic bronchitis, anaemia, high blood pressure, heart disease and kidney disease. Mental health problems may also be associated with a wide range of other health and social problems such as substance misuse, homelessness, unemployment, and gambling.

In Australia, depression is the fourth leading cause of disease burden, with high associated costs including reduced work productivity, days of lost work, educational failure, poor family functioning, poor social functioning, a diminished sense of wellbeing and increased use of health services (AIHW 2002). It is also a major risk factor for suicide and self-inflicted injury (DHAC & AIHW 1999).

Socioeconomic inequalities are also apparent in the prevalence of mental health problems in Australia (Glover et al. 2004). Research undertaken with self-reported data from the 2001 NHS showed that there was a statistically significant differential of 67% at ages 25 to 64 years, with a strong, continuous gradient, in the prevalence of self-reported mental and behavioural problems across the socioeconomic gradient; differentials (also statistically significant) in the 0 to 14 year and 65 years and over age groups were 52% and 56%, respectively (Glover et al. 2004).

Arthritis and musculoskeletal conditions

'Arthritis' is a term used to describe a disorder of one or more joints within the body. Arthritis disorders are part of a broader group of disorders of the muscles and bones called musculoskeletal disorders. Osteoarthritis, rheumatoid arthritis and osteoporosis are the most prevalent forms of musculoskeletal disease within Australia and have been found to place the highest burden on the community. The primary health burden of musculoskeletal disorders is through loss of quality of life associated with pain and disability (AIHW 2002).

According to results from the 2001 National Health Survey, arthritis is a major cause of disability and chronic pain in Australia. Using results from the Survey, the ABS estimated that about 2.58 million Australians suffer from arthritis, representing about 13.6% of the population (ABS 2002). While it is more common in the elderly, and especially in women, arthritis can affect people of any age, including children. Estimates from the Australian Institute of Health and Welfare indicate that nearly 75,000 years of healthy life are lost to

arthritis every year, making it a significant cause of disease burden (Mathers et al. 1999). Most are years lost due to disability, although 3,000 years of life are lost each year due to premature death (Mathers et al. 1999).

Health inequalities early in life

Early life is a time when we are particularly vulnerable to risk and protective influences on our health and wellbeing (Keating & Hertzman 1999). There is strong evidence of the effect of early life factors and experiences on cognitive function, growth, the ability to learn, physical and mental health, and resilience in later life (Keating & Hertzman 1999). Thus, experiences at the beginning of life may be reflected in health outcomes during the adult years up to the end of life. A life course view highlights the sequencing of events across an entire lifetime, and their cumulative impact. There is also evidence for intergenerational effects; for example, the socioeconomic status of a child's grandfather may predict the child's cognitive and emotional development at 14 years of age (Najman et al. 2004).

To become productive and contributing adults, children and young people need to live in environments that provide some order and meet their basic physical, emotional and material needs, as well as their developmental and learning requirements (Bronfenbrenner 1979). They prosper best within families and communities that provide security, nurturing, respect and love. To be the good parents that most want and hope to be, adults need employment and educational opportunities. To ensure wellbeing for family members, there must be adequate health care, housing, safety, effective schools and quality child care. For optimal child development, families need support from neighbours, schools, community agencies and governments, and opportunities to develop relationships and pursue their interests (Weissbourd 2000).

A lack of resources in any of the essential dimensions decreases a family's ability to fulfil its mission. The effect of poverty supersedes all others (Acheson et al. 1998). Without adequate income, the likelihood of having good health, housing, education or any other opportunities diminishes substantially (Keating & Hertzman 1999). The resulting tension increases the likelihood of instability and stress in relationships among family members, further decreasing a family's ability to maintain a supportive environment for the development of children and young people.

The extent of socioeconomic disadvantage experienced by Aboriginal communities and by

individual families impacts significantly on their youngest and most vulnerable members. Disadvantage at a population level is associated with factors such as infant and maternal mortality and morbidity, low birthweight and poor physical growth, developmental delay, disability, learning and behavioural problems, and mental health issues. These factors may then be compounded by discrimination and racism, social exclusion, poverty, cultural and spiritual alienation, and a relative paucity of employment and educational opportunities.

A complex relationship exists between the factors that contribute to poorer outcomes, such as low socioeconomic status, low income or occupational class, and the resulting implications for children and young people and their families. While this inter-relationship is not yet fully understood, there is much that can be done, for improved quality of early life carries benefits into adult life (for example, in terms of improved health risk particularly in relation to chronic diseases (Fonagy 2001)).

Infant mortality and morbidity

The majority of pregnancies and confinements in South Australia do not result in mortality or severe illness. However, pregnancy, childbirth and infancy remain a period of significant vulnerability. Problems in the first few days of life, and those associated with the health of the mother, can adversely affect an infant's immediate and future wellbeing and development (AIHW 2002).

During pregnancy, the health of infants can be affected by a number of factors, such as maternal behaviours (for example, smoking, medication and other substance use, and excessive alcohol intake), injury and violence, and some health conditions affecting the mother, such as specific infections and diabetes. Maternal nutrition is increasingly recognised as another important consideration. Health conditions that may be associated with poor nourishment of the foetus include coronary heart disease, hypertension and non-insulin dependent diabetes in later life (Barker 1995). There is also good evidence that an adequate intake of folate, a B-group vitamin, by the mother before and during early pregnancy, can prevent up to 70 per cent of neural tube birth defects (spina bifida and related conditions) and possibly, other non-neural tube defects (Lumley et al. 2001).

Infant deaths and risk factors relating to the perinatal period are presented in Chapter 6. In South Australia, there was a dramatic decline in the infant mortality rate over the decade 1989 to 1999. This is consistent with an overall decrease in the death rate for all children and young people over the same period, but reflects a more significant reduction. Much of the decline can be

attributed to the substantial fall in deaths due to Sudden Infant Death Syndrome (SIDS) following the introduction of the educational campaign in 1990 aimed at reducing the prevalence of risk factors for SIDS, including prone sleeping (DHS 2001). In 2000, there were only five post-neonatal deaths from SIDS compared with an annual average of 38 in the period 1986 to 1990 (DHS 2001).

Unfortunately, in spite of recent improvements, there remains a very significant disparity between the infant mortality rates for babies of Indigenous mothers (11.2 per 1,000 live births) and those of non-Indigenous mothers (4.2 per 1,000 live births) (DHS 2001). Recent trends in Indigenous infant mortality in South Australia imply a worsening of the rates for female infants over the years 2000 to 2003 (ABS 2003). There is also regional variation evident across the metropolitan and non-metropolitan areas of the State. This reflects identified factors such as parental smoking, alcohol and substance use, co-sleeping when intoxicated, physical abuse and domestic violence, and poor socioeconomic circumstances (DHS 2001).

The risk factors surrounding birth and the subsequent four weeks that are most predictive of an adverse perinatal outcome are outlined in Chapter 6. A number of these factors occur more frequently or are associated with women who are socioeconomically disadvantaged. For the purposes of the first atlas, a summary perinatal score was developed for each postcode (see further on page 194). Over time, there has been a reduction in the number of high-risk postcodes, which indicates a significant improvement in outcomes for mothers and babies in these areas. However, the presence of some postcode areas in all three of the time periods analysed indicates that the overall progress made in outcomes in the State as a whole has not been reflected, nor are these areas experiencing any significant improvements in maternal or perinatal outcomes.

Most live births of infants occur between 37 and 41 weeks of gestation. These births are described as full-term. Infants who are born before 37 weeks are referred to as pre-term. Of all births in Australia in 2002, 20,071 (7.9%) were pre-term. Babies born to Aboriginal women in 2001 were more than twice as likely to be of low birthweight (12.9%) than those born to non-Indigenous women (6.0%). The low-birthweight proportions nationally for babies born to Aboriginal and Torres Strait Islander women were highest (16.5%) for South Australia (Laws & Sullivan 2004).

The number of low birthweight babies born to female residents of Metropolitan Adelaide declined, from 3,773 in 1989 to 1992 to 2,626 in 2000 to

2002, a decrease of 7.2%. However, the proportion of babies born with a low birthweight increased marginally, from 6.7% in 1989 to 1992 to 6.9% in 2000 to 2002 (see Chapter 6, Table 6.1). The number of low birthweight babies born in country South Australia also declined, from 1,434 in 1989 to 1992, to 998 in 2000 to 2002, a reduction of 7.2%. There was a larger decline in the total number of births in this period, resulting in an increase in the proportion of babies who have a low birthweight from 6.3% in 1989 to 1992 to 6.8% in 2000 to 2002.

Weight at birth is determined primarily by genetic inheritance, but factors such as poor maternal nutrition, maternal stress or smoking can constrain that growth. Growth constraints force the foetus to adapt, and these adaptations may become permanent features that modify tissue functions and possibly disease risk in later life (Barker 1995). Pre-term birth and being small-for-gestational age (two aspects of low birthweight) are both associated with increased morbidity in the infant, and also with parental factors such as maternal smoking and low socioeconomic status (Sommerfelt et al. 2000).

Optimal growth and development in the prenatal period and early childhood are critical to good health over an individual's lifetime. The period of life from birth to four years is one of rapid growth and development, but infants and young children remain developmentally vulnerable. They have no control over their physical and social environments. Their wellbeing and developmental health are largely determined by the living conditions, knowledge and attitudes and lifestyles of the adults who care for them.

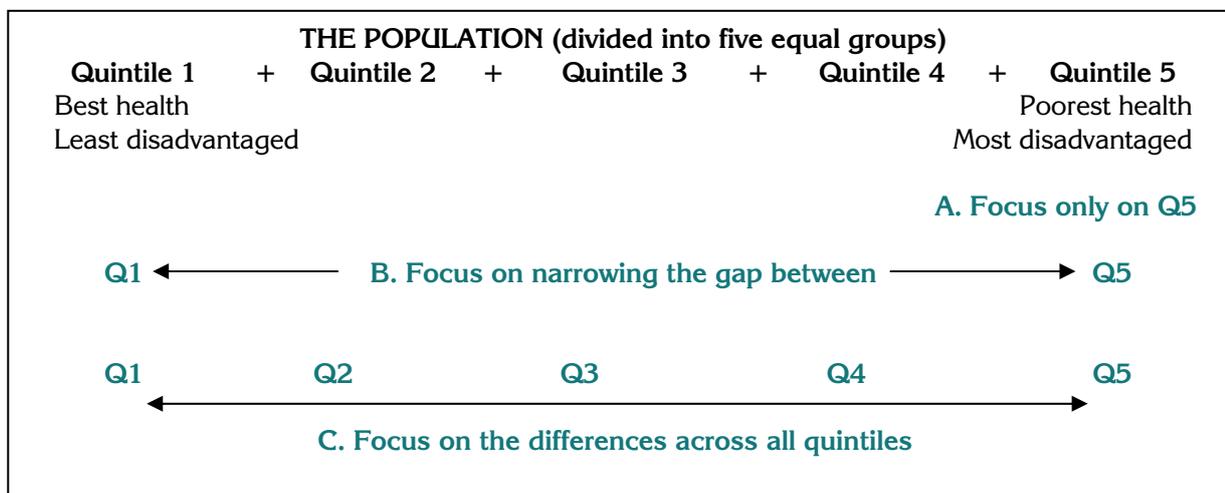
This vulnerability is exemplified by the rate of substantiated cases of child abuse and neglect. In Australia in 1999 to 2000, rates were highest for young infants under one year of age, with male infants having the highest rates of all children aged 0 to 14 years (7.1 per 1,000 male infants and 6.6 per 1,000 female infants) (AIHW 2002). Infants aged less than one year are consistently the age group at highest risk for homicide in Australia (Strang 1993). This is due to both their physical fragility and their absolute dependence. In South Australia for the period 1997 to 2000, the mortality rate for infants under one year from interpersonal violence was 22.0 per 100,000 population, compared with a rate of 7.5 per 100,000 for the population overall (AIHW 2002).

Addressing health inequality

Throughout the atlas, there is substantial evidence of the powerful influence of social and economic factors on the health of South Australians, depicted by the geographic patterns of health inequalities and the socioeconomic gradients in health. The recent trends in social and health inequalities in South Australia are specifically identified in Chapter 9.

The challenging policy objective is how best to address health inequalities. However, firstly, there are a number of different approaches to thinking about health inequalities and what each means in terms of possible policy solutions (Figure 1.2).

Figure 1.2: Conceptualising health inequality and possible policy approaches
(Adapted from Graham 2004)



Addressing health inequalities can be described in the following ways (Graham 2004):

- Some view the impact of social disadvantage on the health of the poorest groups in the population, such as Aboriginal people and Torres Strait Islanders, as the priority policy goal (Focus A).
- Others identify the gap between the health of those at the outer ends of the socioeconomic hierarchy (those with the poorest health and those with best health), and see the narrowing of the gap as the goal (Wagstaff et al. 1991; Manor et al. 1997) (Focus B).
- The socioeconomic gradient in health that runs across the whole population can also be the focus, rather than looking solely at social disadvantage, or the health gap (Focus C).

The last approach (Focus C) widens the frame of health inequality policy in three ways (Graham 2004). Firstly, it looks for the causes of health inequality in the systemic differences in life chances and opportunities, living standards and lifestyles that are associated with people's unequal positions across the socioeconomic hierarchy, and for the pathways through which they influence health (Davey Smith et al. 2001). Secondly, as a result, 'addressing health inequalities' becomes a population-wide goal that includes every citizen. Thirdly, 'reducing health gradients' provides a comprehensive policy goal: one that encompasses remedying disadvantages and narrowing health gaps within the broader goal of equalising health chances across all the socioeconomic groups (Graham 2004).

We must be careful that the impact of any policy intervention to improve the community's wellbeing does not inadvertently increase health inequalities. Some programs, by their very success, can widen the gap between groups in the population; for example, they may be more attractive to those who are already healthier, or not as effective for certain groups with poorer health, less education or who are disadvantaged or overburdened in other ways (Jarvis & Wardle 1999). Thus, different approaches and mixes of policies and programs must be mounted to address health inequalities. These may include more precise targeting, but also greater attention to the community-based dimensions of 'interdependence' between individual behaviours, key determinants, and community and institutional resources.

Improving the health of poor groups and improving their position relative to other groups are necessary elements in a strategy to reduce the socioeconomic gradient. However, neither is sufficient on its own: to reduce the socioeconomic gradient, health in other socioeconomic groups

also needs to improve at a faster rate than in the highest socioeconomic group. Thus, policies to remedy health disadvantages, to close health gaps and to reduce health gradients need to be pursued together, and not at the expense of each other (Graham 2004).

Moving towards health equity

Increasingly, health equity is also being recognised as an important issue by researchers, policy makers and health service providers in South Australia and elsewhere. However, the local meaning of health equity is still far from clear, and there is little agreement about how best the moral considerations of fairness and injustice can be incorporated into its measurement.

A recently published framework suggests three steps for measuring health inequity (Asada 2005):

Step 1: defining when a health distribution becomes inequitable (e.g., health equity as equality in health, or health inequality as an indicator of general injustice in society?);

Step 2: deciding on measurement strategies (e.g., what aspect(s) of health, what unit(s) of time, and what unit(s) of analysis?);

Step 3: quantifying health inequity information (e.g., which comparisons; relative or absolute differences; which aggregations of differences at a population level; sensitivity to the population mean or to the population or sub-population size?).

Further discussion and debate around these issues is required, and some agreement reached, so that we can proceed to work to fulfil one of the pillars of the South Australian government's health reform, that of 'health inequalities and health as a human right'. Without clearly defining health inequity and applying the chosen concept to measurement, no one can move onto effective policy making for health equity (Asada 2005).

Conclusion

Protecting and improving overall levels of health in the South Australian population is no longer a sufficient justification for investment in health; this investment must also yield a more equal distribution of health for socioeconomic groups (DHS 2003). The inequalities in health that are reflected in the atlas are, for the most part, avoidable and therefore, inequitable. In any given society, those in the best health set a standard which all should be able to enjoy. If this is so, it is those in the poorest groups who face the most profound denial of their health as a fundamental human right (Graham 2004).

Therefore, the challenge for policy-makers, planners, researchers and communities is to find those effective interventions that will address these

inequalities and improve the health of all those who are disadvantaged in South Australia.

As outlined earlier, there is now substantial evidence that wellbeing is the result of complex interactions of the social, biological and ecological environments in which people live (Keating & Hertzman 1999). If these environments are supportive, they provide a foundation for the development of competence and skills that underpin learning, behaviour and health throughout life. However, a lack of enabling social and environmental conditions results in poorer life outcomes for people (Stanley et al. 2002).

This situation, however, is not inevitable. There is a growing body of knowledge that can provide direction for developing policies to help to reduce inequalities in modern societies. The socioeconomic environment is a powerful and potentially modifiable factor, and public policy is a key instrument to improve this environment, particularly in areas such as housing, taxation and social security, work environments, urban design, pollution control, educational achievement, and early childhood development (Halfon & Hochstein 2002).

A focus on the environmental context of life in no way implies that other factors such as genetics, personal lifestyles or use of services do not figure in determining health and wellbeing; rather, it highlights a greater understanding in recent years of the hidden social factors that underpin differences in the likelihood of having a healthy and fulfilling life. Health inequalities, an ageing population and changing patterns of disease present challenges that will require new responses from the South Australian health care system, its workforce and its ways of delivering services. However, to achieve good health for every segment of the population, we should also address the behavioural, social and environmental factors that determine health, and make a real shift from a narrow focus on illness, to a broader focus on health and wellbeing.

What else should we be doing differently? There is an urgent need to make 'health equity' a research priority for each stage of the life course – not just to monitor the size and extent of the inequalities, but also to undertake research that will find preventive approaches and policy interventions that are effective in reducing them, and that are likely to be implemented by governments and communities.

This should occur within an environment where 'health inequality' and 'health equity', and the different mix of policy approaches have been discussed, defined and agreed for South Australia.

Community views should also be canvassed to determine which health inequalities are considered to be inequitable and unfair and therefore, should be addressed as a priority. Then we must evaluate the success or lack of benefit of those policy options that are put in place, to learn more about how to improve the population's health in South Australia now, and into the future.

2 Methods

Socioeconomic status

In the absence of a measure of socioeconomic status in the health datasets, comparisons can be made of the socioeconomic characteristics of populations at the small area¹ level. In this case, the socioeconomic characteristics of the area are being used as a proxy for the socioeconomic characteristics of the population (in the area) – this is quite acceptable, and is particularly appropriate if the statistics for the area describe the *population* in the area, not the area itself. In this atlas, data on the health, wellbeing and use of services of the population are compared at the small area level with indicators of socioeconomic status, either through a comparison of the patterns of distribution in maps, or by reference to the correlation analysis.

There are a number of deficiencies associated with this area-based approach. These include that:

- i the data for an area represent the average of the characteristics or events (deaths, hospital admissions) for the population of the area; as the population of many of the areas for which data are available is quite large, this can conceal the existence of areas with higher or lower rates;
- ii there is considerable movement of the population between areas over time, weakening the value of the data for small area analysis;
- iii the use of the socioeconomic status of an area (as measured by the characteristics of the population of the area) can hide the existence of any 'area' or 'locality' effect in the data: that is, where aspects of the location itself are impacting on health, whether through structural factors (such as lack of transport) or environmental factors (such as poor air quality), such that the area itself can be considered a risk factor.

The comment under point i, above, is relevant in both the metropolitan regions and country South Australia. While the map of South Australia is dominated by three large and sparsely-settled SLAs in the remote north of the State, many other SLAs are also large and sparsely-settled. In the metropolitan regions, many of the SLAs are of reasonable uniformity as to area and population density: the major problems are the larger SLAs in the outer north, as well as through the Mt Lofty Ranges, from Tea Tree Gully to Sellicks Beach.

¹ The term 'small area' is widely used, despite (often large) variations in the size and population of areas covered.

Glover et al. (2004) addressed the first two of these concerns in an analysis of admissions to hospitals in Western Australia of residents of Perth² over a five-year period. They found that people who move do so between, or within, geographic areas of similar socioeconomic status; and that the (often relatively large) areas used in these analyses provide a reliable indication of the socioeconomic status and health service utilisation of the individuals in the area about whom the event is recorded. That is, the association between rates of total admissions and socioeconomic disadvantage of area evident at the smallest area level (Census Collection District) is also evident, albeit less strongly, in the higher level area aggregates of postcode or SLA. The finding was similar for individuals admitted. They concluded that, given the widespread use in Australia of area-based analyses at the postcode and SLA level, it is important to know that such analyses can provide a reliable indication of the direction and underlying strength of the association of socioeconomic disadvantage at the local area level.

The characteristics of areas can also influence socioeconomic status and health. In addressing the question 'Do individual or area characteristics matter?', Joshi et al. (2000) respond 'Both do'. They conclude their further discussion on this question as follows: 'Our finding that there are spatial dimensions to these disadvantages further suggests that area-based initiatives need not be futile. But they will not be a panacea, if individual inequality is neglected.' This is a neglected area of analysis in Australia: however, the atlases have shown that disadvantaged groups, whether they live in industrial, suburban, country town or rural areas, have poorer health outcomes than those better off.

Selection of indicators

The variables used as indicators within the topic headings have been chosen because they provide data with which to illustrate patterns of socioeconomic status, health status and utilisation of health services at a small area level.

The indicators of socioeconomic status represent a broad cross-section of data variables that are generally used to illustrate socioeconomic disadvantage. Indicators of health and wellbeing that can be reproduced at a small area level are, to some extent, limited by the lack of available data. However, in this third edition, the range is greater than has been previously available: details of newly

² The Western Australian hospital admissions database is the only one in Australia to include details for individuals (as well as events) for all hospitals in the State.

available indicators are provided in the introduction to Chapters 6 and 7.

Data presentation

In maps and tables

Statistical Local Areas (SLAs) are based on Local Government Areas, with additional codes allocated to local government areas which have been split for statistical purposes, and to areas outside Local Government Areas (e.g., unincorporated areas). Additional details on the mapping of SLAs are provided on page 24, under the heading of *Area mapped/ Boundary issues*.

Two maps are shown for the majority of variables in this atlas. The first comprises a map at the SLA level for the metropolitan regions, represented by the Adelaide Statistical Division, excluding Gawler (treated as part of Wakefield region under the Health Service Regions of the Department of Health); a small number of variables in Chapter 6 are mapped for larger areas, referred to as burden of disease areas.

The second map is of the whole of the State, by SLA; again, a small number of variables in Chapter 6 are mapped by burden of disease areas. In this map, the metropolitan health regions are mapped as one area. This enables comparisons to be made of the distribution of the characteristic/ event mapped in the metropolitan regions with its distribution in country South Australia.

Populations in urban centres can have different characteristics to those living in less settled areas, and frequently have different health status and exhibit different patterns of use of services. Where it has been possible to separately identify urban centres with populations of 1,500 or more, they are shown on the whole of the State map as circles. Unfortunately the town is not a distinct and identifiable unit within the structure of ASGC. Thus, only urban centres that are incorporated local government areas (and are therefore represented in the Australian Bureau of Statistics classification as SLAs) can be identified in the datasets and separate details published for them. More details of the urban centres mapped and the process of their identification are on page 24, under the heading of *Area mapped/ Boundary issues*.

The majority of maps in this atlas reflect the distribution of the population for whom the particular event is recorded (eg. hospital episode, death) by location of their 'usual residence', as coded from their address, in the various statistical data collections. In addition to the comments at the beginning of this chapter, the validity of this approach is discussed in more detail under the heading *Important points to note* (page 25).

The maps in Chapter 4 reflect the distribution of the population by a mixture of address locations. The variables for single parent families, low income families, housing authority rented dwellings and dwellings without a motor vehicle reflect the population counted in the SLA on Census night and include visitors, people in hospitals and gaols, and so forth; and exclude usual residents who were absent from the dwelling on that night. This is because the data for these variables are only available for people recorded in the Census at their place of enumeration. The remaining variables mapped reflect the address of usual residence of the population who were in Australia on Census night – that is, people in Australia, but not 'at home', have been coded to the address of their usual residence.

By remoteness

In 1999, the (then) Commonwealth Department of Health and Aged Care sponsored a project to develop a standard classification and index of remoteness which would allow the comparison of information about populations based on their access, by road, to service centres (towns) of various sizes. By specifying towns of various sizes, the index implicitly takes account of the education, health, welfare and other services likely to be located in towns of those sizes; but there is no explicit use in the development of the index of which services should exist - that is, distance is the sole measure of access. The outcome of that project was the Accessibility/ Remoteness Index of Australia (ARIA) (DHAC 1999 & 2001), based on a methodology developed by the National Centre for Social Applications in GIS (GISCA).

More recently, the Australian Bureau of Statistics (ABS) addressed the concept of remoteness, with a view to including a measure in its classification of areas. The ABS work, also undertaken with GISCA, used ARIA as the underlying methodology for the determination of remoteness.

The new classification, described by the ABS as a 'Remoteness Structure', and referred to in this atlas as the ASGC Remoteness classification (ABS 2001), is an update and refinement of the original ARIA.

ASGC Remoteness measures access in terms of remoteness along a road network from 11,914 populated localities to five categories of service centres (service centres with more than 250,000 persons; with 48,000 to 249,999 persons; with 18,000 to 47,999 persons; with 5,000 to 17,999 persons; and with 1,000 to 4,999 persons). An adjustment is made for localities situated on islands.

For each locality, the distance to each of the five categories of service centre is converted to a ratio

to the mean. To remove the effect of extreme values, a threshold of three is applied to each component and then the five component index values are summed. This produces a continuous variable with values between 0 (high accessibility) and 15 (high remoteness). Index values for an expanded locality and point database of 42,648 localities are then interpolated to produce an index value for 1km grids and averages calculated for larger areas such as postcodes or SLAs.

A continuous index is ideally suited to some forms of research; however, many other uses require discrete categories. To meet these other uses, the index values have been grouped into five categories: Major Cities, Inner Regional, Outer Regional, Remote, and Very Remote (a sixth category, Migratory, is used at the five-yearly population Census to account for people on trains, planes etc). The categories were chosen on the basis of natural breaks in the data, balance across categories and broad comparability with earlier classifications.

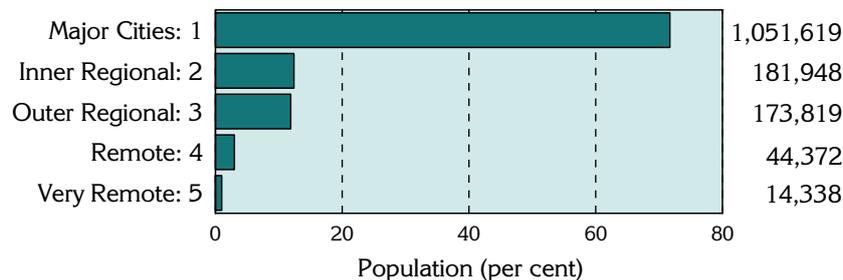
Map 2.1 shows the ASGC Remoteness classification for each SLA or part SLA in South Australia, other than for the Major Cities class. A list of the areas by class is shown in Appendix 1.2.

For each variable in the atlas, details were calculated of the average percentage, ratio and so on, for each of the five ASGC Remoteness classes described above. For example, for children living in single parent families, the average percentage of all such families in SLAs in category 1 (Major Cities) was calculated and shown in a graph beneath the whole of State map, together with the average percentage in each of the other four categories. The ASGC Remoteness classification thereby provides a summary measure of the characteristics of the population, for each of the variables mapped, categorised by accessibility to the largest populated centres.

Figure 2.1 shows the distribution of the population across South Australia by the AGSC Remoteness classification. The population used here is the Usual Resident Population by Statistical Local Area (SLA) at the 2001 Census.

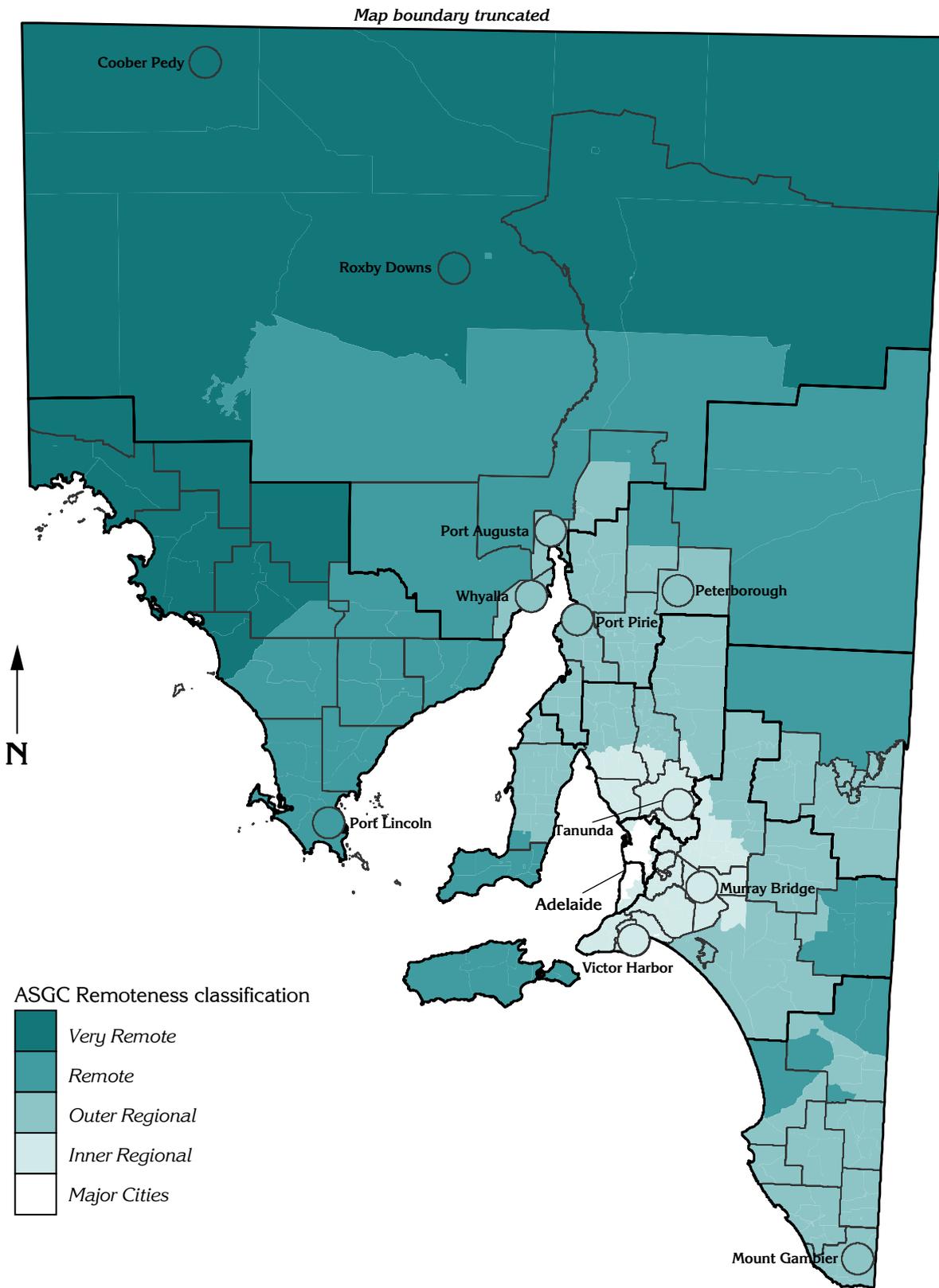
Almost three quarters (71.7%) of South Australia's population live in areas classed as Major Cities, 12.4% live in areas in the Inner Regional class, 11.9% in Outer Regional, 3.0% in Remote and 1.0% in Very Remote.

Figure 2.1: Population by ASGC Remoteness classification, South Australia, 2001



Source: Calculated on Usual Resident Population, Census 2001, using a concordance supplied by the ABS

Map 2.1 ASGC Remoteness classification, South Australia, 2001



Source: Calculated on data from GISCA

*Details of map boundaries are in Appendix 1.2
A Social Health Atlas of South Australia, 2006*

By socioeconomic status

As well as presenting the data in maps and by the AGSC Remoteness classification, the data have also been grouped into five groups (quintiles) of approximately equal population. The groupings are based on the Index of Relative Socio-Economic Disadvantage (IRSD) score for the SLA as calculated from the data collected by the ABS at the 2001 Population Census³. Quintile 1 comprises the SLAs with the highest IRSD scores (highest socioeconomic status, or most advantaged areas) and Quintile 5 comprises the SLAs with the lowest IRSD scores (lowest socioeconomic status, or most disadvantaged areas). Each quintile comprises approximately 20% of the total population in the areas under analysis (eg. Metropolitan Adelaide or country South Australia).

Once grouped in this way, the analysis has been repeated to calculate the various rates, ratios and percentages, to show variations between the populations in each of the quintiles. Data presented in this way are described as being by 'socioeconomic disadvantage of area' and are shown in Chapter 9.

The data

Data periods

The majority of the data are for periods around 2001, to tie in with the 2001 Census, which provides the majority of data in Chapter 4. It might be thought that such 'old' data are out of date, and not relevant. For the purposes of an analysis such as is presented in this atlas, the data are of acceptable timeliness, as the geographic patterns in the data change relatively slowly. Further, many of the datasets only become available after some time, and processing them from the form they are in to be presented in maps is also time-consuming.

Data describing the characteristics of the population mapped in Chapter 4, *Demography and socioeconomic status* are largely from the 2001 Census of Population and Housing.

The data mapped in other chapters are recorded for a range of periods: in each case, these are shown together with the indicator.

Postcode data

Another important issue is that the only spatial detail available for a number of datasets is the postcode of the address. There are two main

issues: one is the extent to which the postcode of the address (for example, the postcode held for a child's immunisation) is the same as the address used to calculate population estimates (based on Census data); the other is problems encountered in converting postcode area data to SLA.

Mismatch of addresses

Problems arise when a post office box is given as an address for a Medicare account (eg. for a visit to a general medical practitioner). These cannot be accurately converted to an SLA. This is of particular importance in country areas, or on the fringe of the metropolitan regions, where a person uses a post office box in an SLA that is different to that to which the Census shows them as living (population estimates for SLAs are based on Census data).

This is possibly the cause of an unusual pattern in the rates of admission to public acute hospitals in Grant and Mt Gambier. Grant surrounds Mt Gambier, and some residents no doubt use Post Offices in Mt Gambier (see page 401).

Converting postcode area data to SLA

SLAs are generally larger than postcode areas, and the conversion frequently allocates a whole postcode (or more than one postcode) area to an SLA, together with a part of another postcode (or parts of more than one postcode). The conversion is undertaken using approximate allocations of postcode populations (based on the best fit of Census Collection Districts (CDs) to postcode areas) to SLAs, derived from data at the previous Census. In many instances, this conversion represents a relatively crude allocation of the population of any SLA. For example, in many cases the boundaries of CDs do not match the boundaries of postcodes, and whole CDs are allocated to the postcode into which the population largely falls. Postcodes are similarly allocated to an SLA on a 'whole postcode' basis, leading to further approximations. However, in the absence of accurate population counts from the Census for postcode areas, this method has been used in this atlas. As the allocation is done on the basis of total populations, it does not take account of differences in the location within a postcode (or CD) of different age groups in the population and may mask the differential use of services, death rates and population characteristics between age groups.

The main impact of this conversion process is seen in the data in Chapter 5 (pension data) and Chapter 6 (immunisation data), where the estimated number of events can be greater than the population.

An example of the inaccuracies resulting from this conversion process is provided in *A Social Health Atlas of Australia, Second Edition, Volume 5*,

³ The IRSD is one of four Socio-Economic Indexes for Areas (SEIFA) produced by the Australian Bureau of Statistics from data collected in the 2001 Census. Further details of the construction of this index are in Appendix 1.3.

South Australia (Glover et al. 1999): Table 2.1 (page 12) and associated text (page 11); this is also available at www.publichealth.gov.au.

Analysis and presentation

Measures mapped

Most measures are percentages (particularly those in Chapters 4 and 5) or age-standardised rates (particularly those in Chapters 6 and 7). Age standardisation has been undertaken where it was considered that variations in the age distribution of the population for any variable could affect the analysis. Indirect age standardisation, which largely removes variations in rates between areas where such variations arise solely as a result of the age structure, was applied to the majority of the variables describing the health status and use of services (see Appendix 1.3 for more details).

By mapping the data as percentages, rates or ratios the distribution of the population or event, and variations in that distribution, can be easily seen across the areas mapped. These variations are important in highlighting areas of, for example, high service use or high death rates. However, in using the data, it is important to recognise that while the same percentage or standardised ratio value may apply in two areas, the areas may differ greatly in population size, which may have implications for service delivery or program planning. For example, an area with a highly elevated rate of hospitalisations and a relatively small population may be of lesser concern than an area with a moderately high rate of hospitalisations and a very large population, because of the larger number of people affected. As it has not been possible at the scale of these atlases to show on the map both relative values (percentages, rates and ratios) and absolute values (number of people, events etc.), users should bear this caution in mind and refer to the absolute values listed in the associated text, or on the PHIDU web site. This aspect is discussed in more detail under the heading *Reading the maps*, below.

Standardised ratios

Where the comparisons between areas for an indicator are likely to be affected by variations in the age profile of the area, the data have been age-standardised. This effectively means any differences in age-standardised rates between areas are reflecting the influence of factors other than age. In this atlas, the age-standardised data are presented as an index, with the South Australian or metropolitan region⁴ total as 100; an index of 110

in an area means the standardised ratio is ten per cent higher (for an area of its population size and structure) in the area than expected from the State rates. An index of 85 means the standardised ratio is 15% lower (for an area of its population size and structure) in the area than expected from the State rates. The extent to which variation in the index is statistically significant is indicated by asterisks (see *Statistical significance*, below).

Rate ratios

The graphs of the socioeconomic groupings of areas in Chapter 9 include a 'rate ratio', which shows the difference between the average percentage or standardised ratio for that indicator (eg. low income families) in the most disadvantaged areas (Quintile 5) and the most advantaged areas (Quintile 1). The statistical significance of rate ratios is shown with an asterisk(s) (see *Statistical significance*, below).

Statistical significance

Where a ratio varies significantly from the expected level, the degree of statistical significance is indicated by asterisks. A single asterisk indicates that the ratio is statistically significant at the 95% confidence level; that is, that the likelihood of the observed ratio being due to chance or random error is five per cent. A double asterisk indicates that the observed ratio is statistically significant at the 99% confidence level. A separate test has been applied to the rate ratios, with the results reported as described above.

Tables

The data on which the maps are based, copies of the atlas as PDFs, and an interactive map viewer are available on the PHIDU website at www.publichealth.gov.au. The data available are the absolute numbers (number of deaths, population with a particular characteristic, etc.), the denominator on which the rate or percentage has been calculated and the percentages, ratios, etc which have been mapped.

Area mapped/ boundary issues

Statistical local areas

As noted above, the spatial unit used in the atlas is generally the Statistical Local Area (SLA). The SLA is a spatial unit within the Australian Standard Geographical Classification (ABS 2001), the geographical classification defined by the ABS for coding data to areas within Australia. It was chosen as the area to be mapped in this atlas because it is the smallest area to which the majority of statistics of relevance to this report are coded.

⁴ Data were standardised to the metropolitan regions where data were not available for the State as a whole

(eg. domiciliary care, community health services and the estimates of chronic diseases).

The SLAs mapped are shown on the key map at the end of the atlas.

Urban centres identifiable in the data

Just as the demographic characteristics and health profiles of South Australians vary between residents of metropolitan and country areas, they also vary within country areas, between residents of urban centres and those living in more rural and remote locations. SLAs have deficiencies as a spatial unit to describe urban centres outside of the capital cities and other major urban centres. For example, the majority of the urban centres in South Australia with a population of 1,500 or more cannot be identified in the SLA classification: that is, they are not SLAs in their own right.

To increase the number and range of urban centres for which data could be published, a set of rules was established. The rules allow for an urban centre with a population of 1,500 or more to be mapped where it comprised 75.0% or more of the SLA in which it was located. This resulted in eleven of the 38 urban centres in South Australia (outside of the Adelaide Statistical Division) being mapped. Additional details of this approach are in Appendix 1.2 (Table A2.1).

These urban centres (referred to as towns in the discussion of the maps and data in the atlas) are shown as circles on the maps. In cases where the area of the SLA is larger than the area of the circle, the underlying SLA can be seen on the map, and both are mapped in the same shade. An example is the town of Whyalla.

Burden of disease areas

A number of estimates of burden of disease provided by the Department of Health and mapped in Chapter 6 have been mapped to larger areas because of the small number of cases. These areas were also used for mapping infant deaths and are shown on the key map at the end of the atlas.

Other supporting information

Wherever possible, the introductory notes to each topic provide background information to the topic (e.g. hospital admissions) as well as the individual variables mapped (e.g. admissions to a public acute hospital). This background information may include definitions, details of collection methods, references to other analyses relevant to the variable being mapped, and details of the age distribution of the population represented in the data.

Major limitations

Data availability

Despite the generally high quality of health data in Australia, identifiable gaps and deficiencies, as documented by AIHW in 1998, remain. These

include: *The quality of Indigenous health statistics; Data requirement for national health priority areas; Health Surveys; Public health information; and Health service outcomes and quality of health care.* Data for small area analysis in these areas are particularly deficient.

Details of data limitations, with an emphasis on small area data, are included in the introductions to Chapters 6 and 7. In addition to the collection-specific limitations noted, two important overall limitations of the data for undertaking small area analysis are discussed below. These are the geographic areas to which small area data are classified and the lack of linked data.

Areas

SLAs vary widely in size (both of area and of population). For example, the 2001 Estimated Resident Populations of SLAs in the metropolitan regions range from 2,888 in Playford - Hills to 35,006 in Onkaparinga - Woodcroft; and, in country areas of South Australia, from 17 in Unincorporated Lincoln to 23,600 in Mount Gambier. Similarly, the area covered by SLAs varies widely, from 3.5 square kilometres to 169.4 square kilometres in the metropolitan regions; and from 18.4 square kilometres in Unincorporated Yorke to 671,466 square kilometres in Unincorporated Far North in country South Australia.

These differences lead to major difficulties using data of the type in this atlas, whether directly from the maps, or through the correlation analysis, without reference to the population covered by the variable. The relevant SLA population size is included in the discussion to minimise this issue.

Data linkage

There are many datasets in Australia that include information which, when linked, can potentially increase their value for research and policy analysis. This is equally so for small area analyses. Results from data linkage can lead to changes in the way services are delivered. Data linkage is attracting increasing attention in Australia and in South Australia. It is to be hoped that ways can be found to enable data linkage to proceed in this State in a much broader and speedier way than at present.

Important points to note

The following points should be noted when reading the maps and text.

Usual residence

The maps in this atlas generally reflect the distribution of the population (with various characteristics) by location of their 'usual residence'. For some people their current usual residence will have been the same for many years,

while for others, it will be only a recent address. It is not possible to distinguish in the statistics between long and short term residents. *The analysis assumes, therefore, that the populations mapped in each area usually reside in those areas, or in other areas sharing similar characteristics.* This is a common assumption in analyses of this nature, and a reasonable assumption for the majority of the data analysed (see comments on page 19 regarding results of the analysis of Western Australian data).

In those instances where this assumption is not warranted, or can be less certainly applied, the analysis has been constructed to take this into account, or attention is drawn to this deficiency. For example, this may occur in relation to deaths data, where a substantial proportion of deaths of people aged 65 years and over occurs in residents of nursing homes. The location of the nursing home is quite likely to be different from that of the residents in their pre-nursing home lives, so the analysis is of deaths at ages under 65 years (and also because deaths at under 65 year of age can be considered to be 'premature').

The treatment of deaths data is discussed in more detail in Chapter 6 (pages 279 to 282).

Reading the maps

The choropleth mapping technique adopted for the atlas inevitably involves a degree of generalisation because it conceals variations within the areal units used. The larger the areal unit, the greater the degree of generalisation, and for this reason, the values (percentages, ratios, rates) shown on the maps for large SLAs, in particular those which are sparsely and irregularly populated, or have very small populations, must be treated with caution.

This problem can be minimised by presenting the data by very small areas, such as the Census Collection District (CD) used in the social atlas series produced by the ABS for capital cities. However, only Census data are generally available at the CD level, whereas the SLA (or postcode) is the smallest area for which most health status and service use information is available across Australia.

3 Regional profile

This chapter is an abbreviated version of a longer paper prepared for the atlas by Professor Graeme Hugo, from The University of Adelaide, and titled, *A Regional Profile of South Australia's Population*. The full version of this paper is available from the PHIDU website at www.publichealth.gov.au.

Introduction

South Australia has had a distinctive demography in the Australian context (Hugo 1983; 1996; 1999; 2002a and b). Population growth has been the lowest of the mainland states over much of the last decade. The most recent ABS population estimates show that the State's population grew at 0.6% from 2004 to 2005, compared with 1.2% for the nation as a whole (ABS 2005) to reach 1,542,000 in June 2005. This represented the fastest annual rate of growth of the State's population since 1998-1999. Nevertheless, partly as a result of the generally slow growth, the State had the largest percentage of its population aged 65 years and over (15.0% in 2005 compared with 13.0% in Australia as a whole) of any of the States and Territories. The State government and others in the community have expressed concern about these and other aspects of South Australia's population.

This chapter seeks to outline the major features of the demography of South Australia's population. In particular, it examines aspects of the population living in the various areas of the State, especially as reflected in the results of the 2001 Census of Population and Housing. Some 73.1% of the State's population currently reside in the Adelaide Statistical Division – the largest proportion of any of the States. The numerical dominance of the State's metropolitan population has meant that the population in regional parts of the state is often not given sufficient attention in analyses of the state population.

This chapter examines the nature of each of the health regions delineated by government following the Generational Health Review (GHR), and discusses their population dynamics and some of the specific health challenges which they currently face. At the outset, however, it is necessary to briefly overview the development of South Australia's total population.

Overview of the population

The Indigenous population

Background

The Aboriginal and Torres Strait Islander population of South Australia has a unique

demography. No other sub-group in the State's population differs from the total population as much in its social, economic and demographic characteristics. Over thirty years ago, the National Population Inquiry (NPI 1975) summarised the situation as follows:

In every conceivable comparison, the Aborigines and Islanders ... stand in stark contrast to the general Australian society ... They probably have the highest death rate, the worst health and housing, and the lowest educational, occupational, economic, social and legal status of any identifiable section of the Australian population.

At that time, their demographic characteristics were more those of a Less Developed Country population than of a Developed Country. Although there have been significant changes since then, there is still much validity in this assessment.

The Aboriginal occupation of South Australia goes back at least 25,000 years and possibly up to 40,000 years. As Griffin and McCaskill (1986) have written, "The Aboriginal occupation of South Australia exceeds 1,200 human generations compared with a maximum of eight generations of European occupation." There are substantial difficulties in the counting of the Aboriginal population partly associated with the marginal circumstances in which many live, leading to them being missed in censuses. This problem has been overcome to a degree in recent censuses through the ABS employing special procedures, which undoubtedly have led to successively greater proportions of the Aboriginal population being counted.

Population numbers

A greater problem relates to variations between censuses in the extent to which people do or do not identify themselves as Aboriginal and or Torres Strait Islander in the census. Increased readiness to identify oneself as Indigenous undoubtedly is a major factor in the rapid increase in numbers between 1981 and 1986. Regardless of these data collection problems, however, it is salutary to note that the approximate Aboriginal population in South Australia at the time of first white settlement in Australia (1788) is estimated to have been at a minimum, 15,000 (Smith 1980). The subsequent decimation of the State's Indigenous population was such that it has taken some 200 years to get back to that level.

Table 3.1 shows the changes in the South Australian and Australian Indigenous populations over the period since initial European settlement. Although the data are poor, the pattern they reveal

is definitely indicative of the trajectory of decline and growth in the Aboriginal population over the last two centuries. At the time of initial European settlement, 4.7% of the continent's Aboriginal population lived in South Australia. At the 1986

census, this had increased to around 6.3%, compared with 8.6% of the national population being enumerated in South Australia. In 2001, the proportion of both had declined to 5.6% and 7.6% respectively.

Table 3.1: Estimates of total Indigenous population, South Australia and Australia, 1788 to 2001

Year	Australia	South Australia	% in South Australia
1788	314,500	15,000	4.8
1861	179,482	9,000	5.0
1871	155,285	7,500	4.8
1881	131,366	6,346	4.8
1891	111,150	5,600	5.0
1901	94,598	4,888	5.2
1911	80,613	4,692	5.8
1921	69,851	4,598	6.6
1933	67,314	4,699	7.0
1947	70,465	5,600	7.9
1954	75,567	6,300	8.3
1961	85,685	7,200	8.4
1966	101,978	8,100	7.9
1971	115,953	9,450	8.1
1976	160,915	10,714	6.7
1981	159,897	9,825	6.1
1986	226,837	14,291	6.3
1991	282,979	17,239	6.1
1996	386,049	22,051	5.7
2001	460,140	25,620	5.6

Note: Figures up to 1971 are estimates of Smith (1980) and involve adjusting census figures upward. In subsequent years the unadjusted census totals are given.

Source: NPI 1975; Smith 1980; ABS 1976, 1981, 1986, 1991, 1996 and 2001 Censuses

This is not the place to analyse in detail the tragic decline of the Aboriginal population under the catastrophic impact of European settlement, which saw their numbers decline to less than a third of their pre-contact population by the 1921 census (in the nation as a whole the decline was to less than a quarter). Suffice it to say that the major elements were:

- increased mortality due to introduction of new diseases, disruption of living patterns, usurpation of traditional lands, displacement from livelihood and outright slaughter;
- greatly decreased fertility due to introduced disease rendering many women infertile; and
- the devastating effects of European penetration on the Aboriginal culture, social patterns and economy.

The 2001 census count was the most reliable census of the Aboriginal population yet. It is clear that, despite considerable problems with the data and especially comparability between censuses, there has been significant growth of the State's Aboriginal population. Over the last intercensal period, the Aboriginal population increased by 16.1% while the total population of the State increased by only 2.2% (for further discussion, see Chapter 4).

Inequality: deaths

There is no greater inequality between people than inequality in the face of death. This is the ultimate, unarguable evidence of the disadvantaged situation of the State's Aboriginal population. Currently the death rate among the Indigenous population in Australia is more than twice that of the total Australian population. Moreover, the ABS points out that the poor quality of identification of the Indigenous population in deaths' registrations means that this differential is likely to be significantly greater (ABS 2002). The ABS estimate across Australia that the coverage of Indigenous deaths is about 58%, and, in South Australia, it is 66% (ABS 2003). It is important to bear in mind that the differentials outlined here comparing Indigenous and total deaths tend to understate the actual level of difference.

The ABS has developed an experimental life table of Indigenous people (Table 3.2), which shows that, at birth, Indigenous boys have an expected life span of 18.1 years less than all boys and for girls the difference is 14.8 years. Even in older years, the difference remains substantial. It must be reiterated that this represents an inequality of major and concerning dimensions.

Table 3.2: Comparisons of life expectancy at selected ages, Indigenous¹ and total populations², South Australia

Age	Males			Females		
	Indigenous	Total Population	Difference	Indigenous	Total Population	Difference
0	58.5	76.6	18.1	67.2	82.0	14.8
20 years	40.7	57.4	16.7	48.8	62.7	13.9
40 years	25.2	38.7	13.5	30.9	43.3	12.4
60 years	13.4	20.8	7.4	16.2	24.7	8.5

Source: ¹ ABS Abridged Experimental Indigenous Life Tables, SA & WA 1996-2001 (ABS 2003);

² ABS unpublished data, for the period 1998-2000

The level of mortality among infants is one of the most sensitive indicators of differences in social wellbeing between groups. In the late 1960s, the Infant Mortality Rate (the number of children born alive and dying at under one year of age per 1,000 live births) for Aboriginal people was estimated at 144 for males and 143 for females (NPI 1975), while the comparable levels for the total Australian population were 18.8 for males and 15.0 for females. From 2001 to 2003, the State figures fell to 5.3 for males and 12.9 for females (ABS 2003).

The dramatic decline in infant mortality rates has been a result of decreased fertility (reducing the number of high risk births), greater prenatal and post-natal care, greater education especially among Indigenous women but also the enormous changes in the availability of health services following documentation of exceptionally high infant mortality levels in the 1980s (Thomson 1983). Nevertheless, in 2002, the Aboriginal infant mortality rate was twice as high as that for the total population. This compares to four times as high in 1975 and 1980 (Hugo 1990). The South Australian rates for the Indigenous population are considerably lower than the estimated national figure (12.7).

The causes of comparatively high levels of infant mortality are the ongoing consequences of poverty and inequality, and the excessive Aboriginal deaths at the youngest ages are gastro-intestinal and respiratory infections, and accidents. In principle, almost all such deaths are preventable, and there is still a considerable challenge to provide accessible and appropriate health services.

In each of the leading causes of death, the median age at death for the Indigenous population is lower than for the total population. The standard causes of death do not show the deeper underlying causes of death but rather the disease that caused death. The deeper underlying causes are associated with poverty, deprivation, dispossession, powerlessness, and the loss of culture and hope. Thomson (1984), in demonstrating the failure of more than a decade of special Aboriginal health programmes to attain the goal of equal health status, accurately identifies these inequalities as stemming from “the

extreme social inequality experienced by Aborigines. The social inequality is characterised by poverty and powerlessness, and is directly related to the dispossession and discrimination to which Aborigines have been, and are still being, subjected”. One needs look no further to explain the huge contemporary differences between Aboriginal mortality in South Australia and that of the population as a whole.

Population distribution

Over recent decades, South Australia’s Indigenous population living in metropolitan Adelaide increased from less than a quarter in 1971 to a third in 1986 and to 44.8% in 2001. The proportion in ‘other urban areas’ increased from a fifth in 1971 to almost a third in 1986 and has remained steady. On the other hand, the proportion in rural areas has fallen, from more than half to less than a quarter. This reflects the continuing urbanisation of the Indigenous population in the state. While this distribution is converging toward the overall pattern of distribution of the state’s population, the Indigenous population is still much more dispersed than the total population, and is much less concentrated in Adelaide.

By far the largest group of the non-metropolitan Indigenous population is in Port Augusta and this has been the case over a long period. There are also substantial communities in the west coast cities of Whyalla, Port Lincoln and Ceduna and in Coober Pedy in the north. However, the most rapidly growing ‘other urban’ communities are in Murray Bridge and Mount Gambier.

Despite a decline in its relative significance in the State’s Aboriginal population distribution, the far north remains the area with the highest proportion of its total population made up of Aboriginal people. More than one in five persons ‘outside the cities’ are Aboriginal. The area is a huge one – covering more than two thirds of the State – so it is important to consider the distribution of the Aboriginal population within it.

Adelaide now has the largest single community of Aboriginal people within the State and is the focal point of many Aboriginal organisations. Gale (1980) found that, in the Adelaide Aboriginal

population, there were several competing forces operating to shape their spatial distribution within the metropolitan area. Firstly, there are forces making for spatial agglomeration. These include the kin networks, which are such an important influence shaping Aboriginal settlement. Moreover, the fact that most Aboriginal people have low incomes greatly restricts the areas in which they can afford housing.

Secondly, there is a set of influences that are encouraging a more dispersed pattern of settlement. One element here is the fact that a

high proportion of the Indigenous population occupy rented State housing authority dwellings, and these SA Housing Trust (SAHT) houses are almost entirely restricted to low socioeconomic status areas. In 2001, the largest concentration of Indigenous people was in the local government area of Salisbury, followed by Port Adelaide and Enfield, Playford, Elizabeth and Woodville. The north-west orientation of the Indigenous population is clear, and reflects their disadvantaged position within the total community, being concentrated in lower socioeconomic status areas.

Table 3.3: Estimated resident population, Indigenous status by section of state and South Australia, 30 June 2001

Section	Persons					
	Indigenous		Non-Indigenous		Total	
	No.	%	No.	%	No.	%
Major urban	11,451	44.8	1,023,266	68.9	1,034,717	68.4
Other urban	8,206	32.1	260,926	17.6	269,132	17.8
Bounded locality	2,229	8.7	44,472	3.0	46,701	3.1
Rural balance	3,658	14.3	157,520	10.6	161,178	10.7
South Australia	25,544	100.0	1,486,184	100.0	1,511,728	100.0

Source: ABS, South Australian Office

There is a concentration of South Australia's Indigenous population in the north-western corner of the State, the region to which the Pitjantjatjara people gained full title in 1981. Other concentrations are found in the small urban centres of the far north – Oodnadatta, Coober Pedy and Marree. The Aboriginal population in the opal-mining centre of Coober Pedy has increased, but the numbers in Marree and Oodnadatta have declined. The other major concentrations are in Yalata on the far west coast of the State, and Nepabunna.

Another major pattern is the concentration of Aboriginal people in small towns and rural areas near former missions or reserves. Hence, the concentrations in the Riverland around the Gerard mission, in the Central Yorke Peninsula area near the Point Pearce mission and in the Murray Mouth area near the Point McLeay (Raukkan) mission. The recent patterns of growth in non-metropolitan South Australia, apart from the provincial cities, are clearly on the west coast, Yorke Peninsula, the Upper Murray and the Coorong area, and in the north. These are all areas where missions were previously located.

Age structure

The Indigenous age structure is substantially younger than the total population of South Australia, reflecting the different fertility and mortality patterns outlined earlier (see Figure 4.2, Chapter 4, page 56). This means that the structure of service need and demand differs substantially

between the two groups. There is clearly a strong 'over-representation' of dependent children and young adults (especially in the school-leaving age groups) and low representation of older age groups. At the 2001 census, while only a third (32.2%) of non-Aboriginal South Australians were aged less than 25 years, the proportion of Aboriginal people in the age category was close to two thirds (64.9%) (64.4% in 1981). On the other hand, only 2.8% of Aboriginal people were aged 65 years and over (4.0% in 1981) compared with 14.9% of the non-Indigenous population. Thus, the Indigenous population profile has not aged markedly between 1981 and 2001.

There are, however, regional variations in the age structure of Aboriginal groups. Children are predominant in the age structure in provincial urban centres, as are young adults in Metropolitan Adelaide. The rural population has an older age structure, although it is still significantly younger than the total rural population. The oldest age structure among the total population is in the metropolitan sector and the youngest in rural areas. Again, this has significant implications for planning service provision for the Aboriginal populations.

The Aboriginal age structure also reflects the relatively high levels of fertility and mortality in the population described earlier. It is important to point out that the age structure carries the potential for high rates of growth in the future. This is because it is clear that over the next fifteen years, the number of women in the childbearing years is going to increase significantly. Whereas the

number of Aboriginal women aged 15 to 44 years in 2001 was 6,105, those aged 0 to 29 (who will be aged 15 to 44 in 2016) was 8,260.

Hence, even if significant declines in fertility (births per woman) occur over that period, the fact that there will be substantially more potential mothers than in the past will see a continuation of large numbers of births and a high growth rate. The other issue relating to the age structure is the implication for social welfare and for particular types of services. The need for education of Aboriginal children will continue to expand while that of the total population stabilises. The number of Aboriginal youth coming into the labour force ages will greatly expand over the next 15 years.

In a contemporary situation of a tight labour market, this raises the question of how this group, who are currently excluded from many parts of the labour market, can be absorbed.

Inequality: socioeconomic factors

Assessment of the levels of wellbeing among the Aboriginal population has been a difficult task, partly due to lack of suitable data, but also as Young (1985) points out:

“Census definitions and criteria are derived from internationally recognized standards which enable them to be used in a comparative sense. But they may not be appropriate to the real life situation of many Aboriginal groups”.

Table 3.4: Labour participation and unemployment of Indigenous and non-Indigenous persons aged 15 years and over, South Australia, 2001

Variable	Indigenous %	Non-Indigenous %
Labour Force Participation Rate	49.5	60.8
Males	56.2	68.6
Females	43.2	53.3
Unemployment Rate	20.3	7.4
Males	22.8	8.2
Females	17.4	6.5

Source: ABS 2001 Census

One of the major pressing problems within the Aboriginal community is the high rate of unemployment. In 1986, 34.5% of Aboriginal workers in the State were unemployed compared with 9.6% for the total population. Although the comparative figures in 2001 were 20.3% and 7.4%, it remains a huge problem.

Unemployment is especially high in provincial urban centres and lower in rural areas than in

Hence, in interpretation of data to the wellbeing of Aboriginal people, it is essential to be sensitive to the meaning of the indicators used to the Aboriginal population. Nevertheless, regardless of the data problems, it is clear that the incidence of poverty and deprivation is far greater among the Aboriginal population than any other large sub-groups in the total population.

It is apparent from Table 3.4 that the Indigenous population has significantly lower rates of employment than for the total population. This applies in all age groups for both males and females. Overall, in 2001, 49.5% of the Aboriginal population aged 15 years and over was in the workforce, compared with 60.8% of the total population. Participation rates are slightly higher in Adelaide than elsewhere in the State. Young (1985) has discussed the reasons for low Aboriginal labour force participation rates and these include:

- Cultural factors which involve such considerations as ‘whether the job is interesting and relevant to community interests, or whether the duties of the job will be comparable with other demands on the person’s time’.
- Personal relationships and individual contacts greatly influence whether or not an Aboriginal person is able to get a job.
- Attachment to the local region may prevent them seeking work elsewhere.

Adelaide. Unemployment rates are highest among young Indigenous groups.

Nowhere are the contrasts between the Aboriginal community and the non-Indigenous population of South Australia more apparent than in a consideration of incomes (see Table 3.5).

Table 3.5: Indigenous and non-Indigenous persons, equalised gross household income, South Australia, 2001

Variable		Indigenous	Non-Indigenous
Mean	\$	351	531
Income quintile			
Lowest	%	45.9	22.4
Second	%	28.8	21.9
Third	%	13.1	21.1
Fourth	%	7.6	19.8
Highest	%	4.6	15.4
Total	%	100.0	100.0
Total		20,985	1,139,253

Source: ABS 2001 Census

Although there is a much greater proportion of the total population who are aged persons receiving pensions, the mean household weekly income of Aboriginal people is far lower (\$351) than that for the total population (\$531). Moreover, because 15.1% of Aboriginal people did not state their income at the census compared with 9.1% of the

non-Indigenous population, the data probably understate the differences in their income distribution. The concentration in the two largest income quintiles of Indigenous people (74.7%) compared with the non-Indigenous population (44.3%) is also apparent in Table 3.5.

Table 3.6: Indigenous and non-Indigenous persons aged 15 years and over, highest level of schooling, South Australia, 2001

Variable		Indigenous	Non-Indigenous
Still at school	%	5.7	3.4
Did not go to school	%	3.6	0.8
Year 8 or below	%	17.6	10.5
Year 9 or equivalent	%	12.0	7.1
Year 10 or equivalent	%	21.5	19.3
Year 11 or equivalent	%	16.8	19.5
Year 12 or equivalent	%	14.9	34.9
Not stated	%	8.0	4.3
Total	no.	14,388	1,131,878

Source: ABS 2001 Census

One area in which the disadvantageous situation of the Aboriginal population is evident is education. This is illustrated in Table 3.6, which shows that, while 34.9% of the non-Indigenous population completed year 12, only 14.9% of the Indigenous population did so. Only 14.4% of the State's Aboriginal population aged 15 years or more had a degree compared with 32.6% of the non-Indigenous population.

The profile of educational qualifications is lower in rural than urban areas. Educational attainment is important because it has significant effects on labour force experience, earning capacity and access to goods and services (ABS 1988).

Moreover, at the 2001 Census, only 17.1% of the Indigenous population recorded using computers at home compared with 42.1% for the rest of the population. The equivalent percentages for Internet usage are 17.1% and 26.5% respectively.

In summary, the disadvantaged situation of South Australia's Indigenous population is reflected across a wide range of socioeconomic indicators in Table 3.7. Despite two decades of rapid social and economic change, as a group, they are still the most disadvantaged in the State. The removal of this huge inequity must remain an important priority for all South Australians.

Table 3.7: Comparison of various demographic and social characteristics of the Indigenous and total population, South Australia, 2001

Characteristics	Indigenous Population	Total Population
Expectation of life at birth (years) - male	55.1	76.7 ¹
Expectation of life at birth (years) - female	61.0	82.4 ¹
Infant mortality rate (deaths per 1,000 live births)	10.6	5.3
Total fertility rate (births per 1,000 women)	2.0	1.7
Percentage in major urban centres	45.2	68.3
Percentage aged less than 15 years	38.5	19.7
Unemployment rate	20.3	7.6
Percentage employed as managers, administrators, professionals	29.2	38.6
Percentage labourers and related workers	24.3	10.8
Percentage with diploma, degree or higher	6.1	17.9
Individual income \$199 or less per week (per cent)	47.8	30.1
Individual income \$600 and over per week (per cent)	12.5	26.5
Percentage of households living in public rental accommodation	49.3	7.7
Percentage of persons in prisons, corrective and detention institutions, 18 years and over	1.0	0.1

¹Figure for total population is for Australia.

Source: ABS 2001 Census.

The total population

Australia's population is ageing, with the proportion of the population aged over 65 years increasing from 8.3% in 1971 to 12.7% in 2001. Over the same period, the proportion of South Australia's population aged over 65 went from being only slightly above the national average (8.5% compared with 8.3%) to well above it (14.7% compared with 12.7%). Hence, while South Australia's total population grew at well below the national average over the last 15 years, its aged population grew at an annual rate of 3.4%, six times as fast as the total population. This is a faster rate of growth than the national aged population, so that South Australia's population is ageing faster than the nation as a whole. This is due to two factors:

- The fact that there was a net influx of people from interstate and overseas in the 1947 to 1954 period. At that time, most were young adults and they have aged in place.
- The continuous net loss of young adults through interstate migration.

Hence, South Australia has a smaller proportion of its population aged under 34 and a higher proportion aged 45 years and over, than the national population.

One dimension of the ageing of South Australia's population, which is often neglected in policy discussions, relates to its changing spatial distribution. Between 1981 and 2001, the population aged 65 years and over has been

growing at 2.09% in Adelaide, compared with 0.64% per annum for the total population.

However, the proportion of the State's older population living in Adelaide declined from 72.7% in 1981 to 71.4% in 2001.

On the other hand, the elderly have become disproportionately represented in 'other urban areas' during the last twenty years, where they were previously under-represented (Hugo 1986). In 2001, some 19.3% of the elderly lived in other urban areas compared with 17.8% of the total population. The older population of centres with between 1,000 and less than 100,000 inhabitants grew by 3.14% per annum between 1981 and 2001 – faster than the aged population of Metropolitan Adelaide and almost three times as fast as the total population of these centres. The proportion of the elderly living in rural urban areas has declined between 1981 and 2001, and only 10.7% of the State's population aged 65 years and older live in such areas. However, the rural elderly grew faster (2.15% per annum) than the total population in rural areas (0.24%) between 1991 and 2001.

Virtually all of Adelaide's inner and central suburbs experienced a decline in the numbers of persons aged 65 years and over during the 1996 to 2001 intercensal period, despite the fact that most of Adelaide's aged care homes and hostels are located in these areas of declining older population.

On the other hand, the most rapid growth of this age group was in the outer suburbs, which are poorly serviced by aged services.

Turning to non-metropolitan South Australia, the spatial patterns are also striking. Elsewhere (Hugo 1986), the types of areas in Australia that tend to have above average concentrations of elderly persons have been identified. The 'types' outside the major urban centres are as follows:

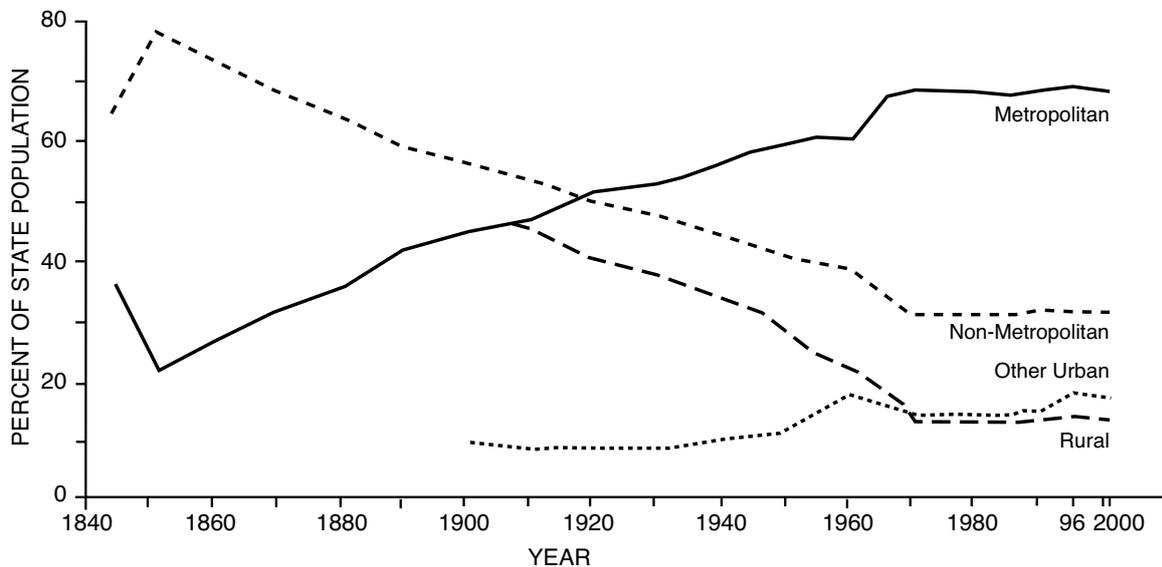
- Firstly, there are certain concentrations in non-metropolitan coastal resort areas, with the growth fuelled particularly by retirement migration toward attractive environments and equable climates.
- A similar resort development is apparent along the River Murray and in favourable ecological niches outside but near Adelaide.
- Many country towns have an above average concentration of older people. This often reflects a pattern of older people retiring from farm properties into nearby towns, which allows them to maintain (and perhaps even enhance) existing local social networks and remain close to their children who have taken over the farm.
- The remainder of non-metropolitan LGAs with above average concentrations of older people are found in the more closely settled agricultural areas. These also tend to be the longest settled agricultural parts of the country. Although located beyond the commuting zones of the largest cities, they tend to be the most accessible of the purely agricultural areas to the capital cities. Here, the above average levels of

ageing are less a function of in-movement of older persons than of the heavy out-movement of younger adults. One of the stereotypical characteristics of rural depopulation is an 'old' population structure. In particular, in certain localities (especially in seaside, riverside and other scenically attractive medium-sized country towns), this effect may be supplemented by in-migration of retirees, especially those moving from farms.

There have been substantial changes in the population balance between rural and urban areas in the State and in the proportion of the State's population living in Metropolitan Adelaide (Figure 3.1). After more than a century of increasing concentration of the State's population in Metropolitan Adelaide, the proportion of South Australia's population living in Metropolitan Adelaide has stabilised over the last quarter century. For example, the proportion of the State's population living in the Adelaide Statistical Division was 73.1% in 1991 and 73.4% in 2001.

This illusion of stability, however, masks considerable mobility. For much of the post-war period, Metropolitan Adelaide has accommodated increased population by lateral extension of the built up area, thus reducing population density.

Figure 3.1: Changing distribution of the population between metropolitan, other urban and rural areas, South Australia, 1844 to 2001



Source: Hugo 1971; ABS censuses 1971 to 2001

The pattern of population change in Adelaide was the classical 'doughnut' pattern, with population decline in inner and middle suburbs grading to moderate population growth in the middle suburbs, and rapid growth on the urban fringe. However, it is evident that this pattern no longer holds and there are significant areas of the inner and middle

suburbs that are experiencing population growth. This is due to the following elements:

- Gentrification, which has seen the movement of well-to-do, often two income couples into attractive older housing areas and inner and middle suburbs associated with changed lifestyle preferences for living near the city centre.

- Urban consolidation activities of state, local and city governments which have seen development of land in established suburbs, formerly occupied by factories, schools and other extensive uses developed for medium density housing.
- The ageing of the massive cohort, which moved into new housing in the 1950s and 1960s, has seen many die off or move into specialised elderly accommodation. This has meant unprecedented numbers of houses in the middle suburbs come onto the Adelaide housing market. This has offered possibilities for younger people to move in, as individual house blocks or groups of them are redeveloped for housing.
- It may be that the large baby boom cohort is showing a difference to earlier generations of 'empty nesters' in their late 40s and early 50s. Whereas most of earlier generations have stayed in the family suburban home after 'launching' their children, there are signs that many baby boomers may be trading down to smaller, more centrally located houses.

The major net gains by intrastate migration have been within the inner, and some middle and coastal suburbs. Certainly some areas on the periphery have experienced net gains, but it is far from the "doughnut" patterns in net migration observed in the pre-1990s period.

There were distinct patterns of population change in the non-metropolitan part of the State. Growth was strongly concentrated in the area around Metropolitan Adelaide as well as in and around prominent centres. The Outer Adelaide Statistical Division was the fastest growing statistical division in the State in 1991 to 1996 with its population expanding at 2.3% per annum. It remained the fastest growing statistical division over 1996 to 2001. However, although it grew at a rate three times as fast as the Metropolitan Adelaide rate, it was at a slower rate than in 1991 to 1996.

The fastest rates of growth were in Victor Harbor (3.6%) and in the Goolwa-Port Elliot area (3.0%). Clearly, the South Coast area's function as a resort-settlement focus is increasing. In addition, however, it has become an increasingly important dormitory area for Metropolitan Adelaide. The numbers commuting each day from SLAs in the Outer Adelaide Statistical Division (OASD) to the Adelaide Statistical Division (ASD) to work increased from 11,115 in 1991 to 14,735 in 2001. The proportion of workers in the OASD who work in the ASD has increased from 29.3% to 31.0%. Other parts of the Outer Adelaide Statistical Division all grew at more than 1.0% per annum except for Kangaroo Island, which grew at only 0.1%.

In the Yorke Peninsula and Lower North Statistical Division, the annual rate of increase of population doubled from 0.1% in 1991 to 1996 to 0.2% in 1996 to 2001. The population of Yorke Peninsula declined slightly but there was significant growth (1.3%) in the Copper Coast settlements to the north of the peninsula. The Clare and Gilbert Valleys grew slightly.

The Murray Lands Statistical Division grew by 0.1% per annum in both 1991 to 1996 and 1996 to 2001. However, growth was confined to the urban centres of Murray Bridge, Berri, Renmark, Loxton and Waikerie.

In the South East, there were more or less static overall population numbers in 1991, 1996 and 2001. However, Mount Gambier's population grew by 0.5% per annum in 1996 to 2001 and Robe grew by 0.4%.

On Eyre Peninsula, a small decline in 1991 to 1996 (0.1% per annum) was transferred to a (0.5% per annum) gain in 1996 to 2001. However growth was largely confined to Port Lincoln (1.6% per annum), Cowell (1.3%) and Ceduna (0.6%).

In the Northern Statistical Division, a growth rate of 0.4% per annum in 1991 to 1996 increased slightly to 0.5% in 1996 to 2001. However, the bulk of growth was in Roxby Downs (5.6% per annum) and there were declines in most other areas.

Most SLAs experienced net losses in intrastate migration. Virtually all of the non-metropolitan areas experiencing net gains were in the Outer Adelaide Statistical Division, especially the Barossa Valley and South Coast regions, which are the main poles of growth (with Mount Barker) in the Outer Adelaide Statistical Division. There were small outliers of growth in the Northern York Peninsula town of Wallaroo/Kadina and Moonta and in the remote mining community of Roxby Downs. Elsewhere, there was either net migration loss or stability. The heaviest net migration loss was in the Whyalla - Port Augusta area.

Background to the formation of the new Health Regions

It is now recognised that a broad range of factors determine our health, both at an individual level and at a population level. In order to optimise the health of all South Australians, we need a balance between supporting those social, economic and environmental conditions that will encourage good health and prevent illness, and offering the care necessary to treat sickness and disease, and provide rehabilitation and palliative care.

Historically, in South Australia, the majority of resources in the health system have been placed in the acute hospital care sector to treat injury and

illness in individuals once these have occurred (DHS 2003a). Far fewer resources have been invested in preventing illness and injury, and promoting the health and wellbeing of the whole community. This has led to an over-reliance on the 'ill-health' part of the system, without supporting those elements of the system that are aimed at healthy development, disease prevention and earlier intervention; and has meant reduced opportunities to achieve a healthier population overall in this State.

The requirement to redress the balance in South Australia's health care system to reflect a greater focus on prevention and early intervention was identified over thirty years ago (Bright 1973). At that time, the need for a shift in the proportion of resources spent on acute hospital-based services to community-based preventive health care and wider health promoting programs was highlighted. This also meant a greater role for general practitioners and other health practitioners in improved primary health care, and a larger proportion of health funding for community health centres and programs (Bright 1973).

However, progress in achieving change in South Australia over the following decades was slow. In May 2002, the South Australian Government initiated a Generational Health Review (GHR) of the health care system. The aim of the Review was to deliver a plan that would provide effective strategies for reform of the health system, to ensure that "all South Australians could enjoy the best possible health and have access to high standards of care".

The final report was released in April 2003. There were many challenges identified for the State:

- population changes - people were living longer and were ageing at a faster rate than other states;
- changing disease burden - more people were suffering from diseases such as cancer and heart disease, and there was a growth in the number of people who had multiple, chronic and complex health conditions;
- distribution of services - ensuring that the right services were available at the right place at the right time to meet the health needs of all citizens;
- fragmentation and duplication of planning, patient assessment processes and the delivery of services;
- health inequalities - some population groups had very poor health or limited access to health services. These groups included Aboriginal people, children and young people, the frail aged and those with a mental illness (DHS 2003a).

The Review outlined a number of key themes

critical to delivering the required health reform agenda. These themes were:

- promoting a population health approach;
- promoting primary health care;
- accountability and transparency;
- workforce development; and
- health inequalities, and health as a human right.

The objectives for the health care system, in partnership with governments and communities, were 'to strive to maintain and improve the health of the population with an emphasis on addressing health inequalities, and to ensure safe, accessible, efficient and effective health care' (DHS 2003a).

The State Government began a process of reform in response to the GHR (DHS 2003b). Key requirements were to reorient the system towards primary health care whilst balancing the critical role of hospitals; to focus on population health needs and system coordination; and to achieve sustainability in the longer term. This also meant defining the role of a new Department of Health (DH).

In July 2004, the metropolitan area of Adelaide was divided into two geographic regions and a population-based region, with each region overseen by a new Board responsible for coordinating all the health services within the region.

These were:

- the Central Northern Adelaide Health Service;
- the Southern Adelaide Health Service; and
- the Children, Youth and Women's Health Service.

The three Boards replaced twelve hospital and health service boards, which agreed to dissolve. The Repatriation Hospital remained as an independent entity, but working in concert with the new Southern Adelaide Health Service. The Institute for Medical and Veterinary Science (IMVS) and Metropolitan Domiciliary Care were also left as separate entities.

In the country areas, the existing seven regions remained. However, they were diverse geographically and also had significant population differences across the regions, with three country regions having only 30,000 to 34,000 people. Access to specialised health care services and recruitment and retention of skilled staff continue to be major issues facing non-metropolitan health services. Reforms to the non-metropolitan health services are planned in line with the Government's reform agenda, and the Department will consider the non-metropolitan area as one region for the purposes of resource allocation.

Metropolitan health regions

The Central Northern Adelaide region

The Central Northern Adelaide region covers the central, western, eastern and northern suburbs of the Metropolitan Adelaide (excluding Gawler) incorporating the Local Government Areas (LGAs) of Adelaide, Prospect, Walkerville, Burnside, Campbelltown, Charles Sturt, Norwood Payneham St Peters, Playford, Port Adelaide-Enfield, Salisbury, Tea Tree Gully, Unley, West Torrens and part of Adelaide Hills. The region contained 763,508 people at the 2001 Census (774,714 in mid 2004) – some 50.5% of the State's total population. Its population grew at a slower rate than the State as a whole between 1996 and 2001 (0.48% compared with 0.50%) and between 2001 and 2004, its annual growth rate (0.49%) remained below the level of the total State (0.51%).

Since the region has just over half of the State's population, its age structure is strongly similar to that of the State as a whole. However, Figure 4.1 (Chapter 4, page 55) shows there is an over-representation in the young adult ages – a cohort in which South Australia as a whole is deficient compared with Australia as a whole. Both the 0 to 4 and 5 to 14 year old age groups were under-represented in the area, compared with South Australia as a whole; but the decline in the 0 to 4 year age group was lower, and the increase in the 5 to 14 year age group was greater in the region than in the State as a whole.

The 15 to 24 year old youth age category is one of the most crucial from the perspective of the State's economic and social development. Between 1991 and 2001, the number of persons in South Australia aged between 15 and 24 years declined by 18,930 or nine per cent. However, fully 74% of this decline was accounted for by the Central Northern region, which saw a loss of 14,007 in this age category between 1991 and 2001. Nevertheless, the group were still slightly over-represented at the 2001 population census. The loss in these ages is partly a function of lower fertility cohorts moving into this age group, but especially of the sustained net migration loss of this age group, which South Australia experienced in the 1990s.

The experience for the 65 years and older age group is in stark contrast to the younger ages with a massive growth of 16.8% between 1991 and 2001 in the region, but this was not as substantial as the growth in the State as a whole (19.9%). Nevertheless, the proportion aged over 65 years (14.7%) is the same as for the State as a whole.

It is important to underline that the Central Northern region is very large and heterogeneous, and the whole of region trends discussed here are

the average between sub regions with much higher or lower values. For example, the region contains some of the State's largest growing populations (e.g. Salisbury LGA was the largest growth area in Adelaide in 2003 to 2004, increasing by 2,100 persons) as well as areas experiencing population declines (e.g. Tea Tree Gully LGA's population decreased by 170 persons).

In no area is this intra regional diversity more evident than in socioeconomic status. The Index of Relative Socioeconomic Disadvantage (IRSD) scores for the region is only slightly lower than for the State as a whole and the metropolitan regions, but the region contains the areas of both highest and lowest scores in the metropolitan area. A similar proportion of families are in the low income category (23.1%) to the State as a whole (23.8%), and the proportion has increased substantially since 1991 when 17.7% of families in the region had low incomes (compared with 19% in the State as a whole). It is important to note that low income families in this region not only include families in poverty, but also many older persons and older couples who are asset rich, but income poor.

It is interesting that while the State's population grew by only 7.5% between 1991 and 2001, the number of households grew by 14.6%. However, the bulk of extra growth was in single person households and the number of families increased by only 6.1%. In the Central Northern region, the increase of five per cent in the number of families was even smaller. There was a slightly higher proportion of families made up of single parent families in the Central Northern region (11.5%) than is the case in the State as a whole (11.0%). This reflects the inclusion of some of the metropolitan regions' poorest areas (such as the Parks and some northern suburbs) in the region. This is exemplified by the fact that 20.4% of families with one or more children in the region had no parent employed, compared with 18.7% in the State as a whole.

The proportion of the workforce that comprises unskilled and semi-skilled workers was 17.4% compared with 18.9% in the State as a whole. However, there are wide differences between the different parts of the area in the occupational structure with the proportion of unskilled and semi-skilled workers being much lower in the eastern and central suburbs than in the northern and western suburbs. In the region, the proportion of the workforce that was unemployed fell from 12.4% in 1991, to 6.9% in 2001, reflecting the improvement in the labour market situation over the decade. This compares to a decline from 11.6% to 6.8% in the State as a whole.

Female labour force participation in the region decreased from 69.4% in 1991 to 65.8% in 2001. In the State as a whole, the rate fell from 69.5% to

66.3%. Educational participation levels have, on the other hand, increased from 75.7% to 80.1%, compared with 76.6% to 80.1% in the State as a whole.

One of the distinguishing features of the Central Northern region is that it is more diverse than the State and the metropolitan regions as a whole. Some 1.1% of the population is Indigenous (up from 0.8% in 1991). While this is lower than the State as a whole (1.6% compared with 1.2% in 2001), it is higher than the proportion across the entire metropolitan regions (1.0%). Persons from a Non-English Speaking Background (NESB) decreased from 123,065 to 102,767 between 1991 and 2001, reflecting the downturn in immigration to the State over the last decade. The number of NESB people in the region in 2001 who had arrived in Australia over the previous five years declined by more than a third from 16,042 to 10,535. Nevertheless, 71.7% of newly arrived NESB people in the State lived in this region in 2001. This is reflected in the fact that 3.0% of the region's adults speak a language other than English at home, compared with 1.8% in the State as a whole, and 2.3% in the metropolitan regions.

A characteristic of the region is that a higher proportion of the housing stock is public, being rented from the South Australian Housing Trust (SAHT) housing (8.7% compared with 7.7% in the State as a whole and 8.0% in metropolitan regions). However, this masks the fact that the region contains some of the major concentrations of SAHT housing in the metropolitan regions. The reduced availability of state housing is reflected in the fact that the number of SAHT dwellings in the region declined from 31,745 in 1991 to 25,848 in 2001. The large number of poor households and households comprised of elderly persons accounts for the region having 11.6% of all households without a motor vehicle, compared with 9.9% in the State as a whole. The proportion using the Internet at home in the last week (18.6%) was slightly above the State average (18.3%).

While the region is diverse, the various parts of it will face different challenges over the next decade or so, which will impinge on the need for health services in the region. These include the following:

- The trajectory that the region's population takes, over the next two decades, will be strongly influenced by the extent to which South Australia is successful in its population policy efforts to increase population growth (Government of South Australia 2004). If the State's population were to continue to increase at current rates or at somewhat higher rates, the increase would be disproportionately absorbed in the Central Northern region, particularly in the northern SLAs of Playford

and Salisbury. These SLAs will continue to be the fastest growing in the metropolitan regions since they still have substantial parcels of land, which have yet to be put under housing.

- The inner and middle-eastern, western and northern suburbs and central Adelaide are part of the region, and these areas will experience greater population growth than in the recent past due to increased infill, urban consolidation and gentrification.
- There will be an increasing contrast between the eastern and inner areas, which will continue to be higher income, older areas with their young adult populations having small numbers of children. The outer areas will continue to have lower incomes, larger families and a greater incidence of poverty.
- The Parks region, despite considerable efforts to change it, remains a substantial concentration of socioeconomic disadvantage and presents a significant challenge to planners.
- The region's share of South Australia's older population will increase, and the numbers in the more dependent elderly ages over 75 will increase even faster than that of the total population, so this will create considerable pressure on health services.
- The region will continue to be the most multiculturally diverse within South Australia. This diversity will increase with the growing numbers of refugee-humanitarian settlers from the Horn of Africa (Sudan, Ethiopia, and Eritrea) who are now dominating Australia's refugee intake and are settling in disproportionately large numbers in metropolitan regions – most in the Central Northern region. The region's share of the State's Indigenous population is also likely to increase.
- While there is variation within the region, it is certain that there will be a disproportionate concentration in some parts of the region of groups experiencing multiple disadvantages – socioeconomic, physical or mental disability, low levels of skill and training, and exclusion from the workforce and other areas of society.

The trends anticipated above have a number of implications for health services in the region, which will need to be addressed:

- The region contains some of the best-served (central city, eastern suburbs) as well as least well-served parts of the metropolitan regions, with respect to availability of general practitioners. The latter applies to much of the north-western and northern suburbs.

- This difference is also evident across the entire array of specialised medical services and in allied health practitioners.
- There is, on the other hand, a greater concentration of many of the risk factors for poor physical and mental health such as concentrations of people with low socioeconomic status, significant groups of excluded persons, concentrations of unemployed persons, single parent families, disabled persons, people with low levels of education and persons with poor proficiency in English.
- There are, in the north and parts of the northwest, concentrations of culturally distinct groups such as Indigenous people, Vietnamese and recently arrived African refugees, who have distinct health needs.
- One characteristic of the area is that there are areas of low rates of private health insurance taken up, which also places heavy pressure on the region's public health facilities.

The Southern Adelaide region

The Southern Adelaide health region contains the remainder of the population of the metropolitan regions and includes the SLAs of Holdfast Bay, Marion, Mitcham and Onkaparinga. It included 326,133 people in 2001, or 21.6% of the total State's population, or 30.0% of the population in metropolitan regions.

Adelaide's metropolitan lateral expansion is constrained by the Gulf of St Vincent in the west and the Adelaide Hills in the east, so most of the extension of the built up area has been to the north and south. That development to the south has not been as pronounced as in the north, in line with the Metropolitan Planning strategy (Planning SA 2003). Nevertheless, its rate of growth over the 1996 to 2001 period was somewhat faster than that of the north.

Like the north, it is a very heterogeneous area although it does not include any of the inner suburban SLAs, which are all part of the northern region. However, much of the Holdfast Bay SLA is a coastal community, which shares many of the characteristics of the inner and central suburbs – an early settled area with significant amounts of housing built more than a century ago, high and increasing density of housing, a significant “yuppie” (double income, no children) population, a high level of renting, and increasing high rise housing. It does include substantial tracts of middle suburban areas in Mitcham and Marion and extensive recently-settled low density housing, and remaining undeveloped areas suitable for housing. There is also significant socioeconomic variation within the

region, although the numbers of low income, poor groups are much less than in the northern region.

The age and sex profile of the region is shown in Figure 4.1 (Chapter 4, page 55). The region has an over-representation, compared with the State, in the baby boomer 40 to 54 year age group, the 15 to 24 year age category and women aged 75 years and over. There were declines in the numbers in the dependent age population, reflecting the slow growth of the State's population as a whole over the last decade. However, the region did not lose its population of 15 to 24 year olds over the period to the same extent as the State's population as a whole. This suggests that the population of the South expanded rapidly in the 1980s with the in-movement of young families whose children grew up in the 1990s. However, like the metropolitan regions as a whole, there was a rapid growth of the older population – the bulk of it in the middle suburbs.

As in South Australia generally, there has been an increase in the number of households growing faster than the population. The number of families in the Southern region increased by 8.1% compared with 6.1% in the State as a whole. It has a slightly higher proportion of its families made up of single parent families (11.4%) than the State as a whole (11.0%). This partly reflects the substantial part of the area being made up of outer suburban low-density suburbs.

It is interesting that the region has a lower proportion of low income families (21.0%) than South Australia (23.8%). However, there was a faster increase in the number of such families over the last decade (38.6%) than in the State as a whole (25.1%). A smaller proportion of families with children had no parent employed (16.6%) than in South Australia, reflecting the fact that the region includes some of the better off areas of the metropolitan regions.

It also has a smaller proportion of the total workforce unemployed (5.9%) than the State as a whole (6.8%) and of unskilled and semi-skilled workers (15.8% compared with 18.9%). Female labour force participation rates (68.6%) are higher than in South Australia overall (66.3%), reflecting a substantial number of two income families in the region. Educational participation rates (82.4%) are higher than the State average (80.1%) as well as higher levels of educational performance than the State average.

The region is somewhat less multicultural than the Central Northern region with 0.7% of residents being Indigenous (compared with 1.6% in all of South Australia) and 8.0% being of NESB origin (compared with 12.2% in metropolitan regions). However, while the Indigenous population in the

area increased from 5,656 to 8,439 persons between 1991 and 2001, the numbers of those of NESB origins fell from 29,208 to 25,172. In particular, there was a fall in the number of recent arrivals (those resident in Australia for less than five years) from 4,082 to 2,731. The low degree of multiculturalism in the region is evident in the fact that only 0.8% of residents have a poor proficiency in English.

The above average mean levels of socioeconomic status in the Southern region is reflected in only 6.4% of households being in SAHT housing; and the number declined from 9,019 to 7,995 in 2001. In addition, despite its older population, there is a slightly lower proportion of the population living in a household without access to a motor vehicle (9.3%) compared with both metropolitan regions combined (10.9%).

This Southern region faces a number of challenges over the next two decades. Much will depend on State planning policy with respect to development of the southern parts of the metropolitan area. Hitherto, there has been a stronger focus on development in the north. The south lacks a north-south public transport line, while the north has a railway, and this will continue to exert some influence. Nevertheless, the south will be one of the main areas, which will be expected to absorb any population increases experienced by South Australia. As indicated earlier, the future population growth in this region will be dependent on the extent to which the State's population policy is able to reach its goals of population growth. Like the north, this region would be expected to absorb a disproportionately large amount of this increase.

Some of the major challenges being faced by the region are as follows:

- At present, the region has a lower level of unemployment than the State as a whole. There are some questions regarding the future of the largest employer in the region, Mitsubishi, but, at the time of writing, the economic prospects of the region are buoyant.
- Like the north, the region will be influenced by processes of urban consolidation as government planning policy stresses increasing housing density in middle suburbs and urban infill. However, there will continue to be growth in peripheral areas on the edge of the expanding metropolitan fabric.
- While the region has above average socioeconomic levels, overall there are concentrations of poverty within the region with significant numbers of people who are multiply disadvantaged.

- More than most parts of South Australia, the south will experience a very rapid growth of its older population over the next two decades.

These shifts in the area have some important implications for provision of health services:

- The rapid growth of the older population over the last ten years is only a prelude to an even more rapid growth over the next two decades. The region is currently heavily under-serviced with specialised services for the elderly and this will present challenges. Incidence of chronic disease, disability and the need for a greater range of independent, semi-dependent and supervised housing options is pressing.
- Like the north, there is a low provision of general practitioners, specialised medical practitioners and allied health practitioners and this needs to be addressed.

Non-metropolitan health regions

There are seven country health regions in South Australia, which were established by the South Australian Health Commission (SAHC) in 1996. They are very diverse in their geography, history and demography, and have varied profiles of disadvantage, which pose significant challenges for regional health planning and service delivery.

The Hills Mallee Southern region

The first of the country health regions, Hills Mallee Southern includes the southern part of the Outer Adelaide Statistical Division (part of Adelaide Hills, Mount Barker, Alexandrina, Kangaroo Island, Victor Harbor and Yankalilla SLAs), the regional centre of Murray Bridge, the Coorong Area and the Murray Mallee region (Karoonda-East Murray, Mid Murray and Southern Mallee SLAs).

This region represents the largest population of the country health regions and incorporates the most rapidly growing non-metropolitan area in the State, that of Alexandrina-Victor Harbor on the south coast. This region, like many such "sea change" areas in coastal Australia, has recorded population growth associated with retirement migration, resort development and as a dormitory region for Metropolitan Adelaide. This rapid growth is reflected in the region having the fastest population growth of any of the South Australian Health Regions in both the 1996 to 2001 (1.38% per annum) and 2001 to 2004 periods (1.57% per annum). However, it must be stressed that the region contains both rapidly growing areas and areas like the Mallee where the population has fallen.

The age composition of the area is depicted in Figure 4.3 (Chapter 4, page 57). Like all non-metropolitan parts of the State, there is a deficit in the 15 to 34 year age categories reflecting the out

migration of young people in the school leaving and labour force entry age categories. There is an over-representation of the dependent child age categories reflecting higher fertility in the area than in the metropolitan area. However, an interesting feature is the marked over-representation in the 40 to 74 year age categories. This reflects the fact that much of the immigration into Alexandrina-Victor Harbor is comprised of pre-retirement and early retirement age categories.

There was a small decline in the numbers of children aged 0 to 4 years between 1991 and 2001, but this group makes up 6.4% of the regional population which is higher than the State average (6.1%). There were increases in all other age groups. There was substantial growth (13.9%) in the numbers of children aged 5 to 14 years compared with a very small growth (0.7%) of this age group in the State as a whole, reflecting the significant in-movement of established families into the south coast region, as well as to the Adelaide Hills communities like Mount Barker. In addition, there was even a small growth in the 15 to 24 year age group, which was an age group that declined in size in South Australia over the 1991 to 2001 period. This reflects the significance of young families in the Adelaide Hills region, in Murray Bridge and the South Coast region. However, this age group remained a smaller proportion of the total regional population (10.7%) than the State as a whole (13.1%) reflecting the situation across all non-metropolitan areas and the strong out-migration of the group from the South Coast and the Mallee-Coorong areas.

The most striking pattern is in the older age groups with the 65 years and over age group increasing by 37.4%, nearly twice as fast as the group's growth in South Australia as a whole. They increased their share of the region's population from 13.2% to 15.3%. Moreover, it is apparent from Figure 4.3 in Chapter 4 that there are large cohorts aged 40 to 59 years in 2001, and thus poised to enter the retirement age groups in the next two decades. Hence, the current rapid growth of the older population will only get more pronounced during this period. Again, it needs to be stressed that this growth of the older population is spatially concentrated in particular areas.

The growth in the numbers of families in the region over the 1991 to 2001 period was 19.8%, the highest of any region and substantially faster than the population increased (8.2%) over this period. The older age structure of the region means that two-person older households are over-represented in the area. Single parent families make up 9.7% of all families compared with 11.0% in the State as a whole. However, there is an over-representation of low income families (28.0%) compared with South

Australia as a whole (23.8%). While there are pockets of rural poverty in the region, this is predominantly a function of the older age structure, which means that there are substantial numbers of 'income poor but asset rich' retirees in the region.

The proportion of families with children aged less than 15 years where the parent(s) are unemployed was lower in the Hills Mallee Southern region (16.4%) than in South Australia (18.7%). The overall unemployment level (5.2%) was lower in this region than the State as a whole (6.8%) and the proportion of workers who are unskilled and semi-skilled was greater (21.6% compared with 18.9%) than the State as a whole, but lower than the average for the non-metropolitan regions (24.3%). Hence, in some ways, this region is transitional between metropolitan and non-metropolitan areas, since many of its residents, while living outside Metropolitan Adelaide, commute to work in the city. Female labour force participation levels are similar to the State as a whole and the level of educational participation is only marginally lower (79.3% compared with 80.1%) but on educational performance, scores slightly higher.

As is common in non-metropolitan areas, especially the coastal sea change areas, there is a low level of multiculturalism. The proportion of the population of NESB origin (3.6%) is substantially smaller than for the State as a whole (9.8%) and declined slightly in the 1991 to 2001 period in sharp contrast to the trend in the total population. This reflects the fact that the "sea change" movement is very much an Anglo-Saxon, established Australian resident phenomenon. Only 0.2% of the population of the region have a poor proficiency in English, compared with 1.8% in the State as a whole. There is, however, a significant Indigenous population in the region, which increased from 1,027 in 1991 to 1,589 in 2001, although they only make up 1.5% of the regional population (similar to the 1.6% in South Australia). The Indigenous population is strongly spatially concentrated in the Murray Bridge-Coorong area.

There was a low proportion of all housing that was public rental housing (3.9%) compared with the State as a whole (7.7%), and their numbers declined substantially from 2,005 dwellings in 1991 to 1,638 in 2001. There were also only 6.6% of households which did not have a motor vehicle compared with 9.9% in South Australia. This raises the issue in the sea change areas of whether older people will be able to stay in such areas if their capacity to drive is impaired. The proportion of households using the Internet at home was lower (16.8%) than the State as a whole (18.3%).

The Hills Mallee Southern region is very diverse including sea change coastal areas, commuting rural-peri-urban areas, dormitory areas to

metropolitan regions, a regional city (Murray Bridge), intensively cultivated areas along the River Murray and dry farming areas in the Mallee. Hence, it is not possible to generalise about the issues and problems in the region, as they vary considerably.

However some of the major challenges include the following:

- In the coastal areas experiencing “sea change” type growth, there are a number of pressing issues associated with the rapid growth and the difficulty in keeping up an appropriate level of service provision.
- The region also contains rural areas experiencing considerable difficulty because of structural change in the economy and increasing restrictions on water use from the River Murray. Much of the Murray Mallee area is marginal cropping country with a relatively high frequency of drought. These areas face significant challenges over the next decade.
- As with the other regions considered so far, much depends on the trajectory of population growth over the next two decades and the effects of State population policy. This region contains communities which will become significant dormitories for city workers.
- The City of Murray Bridge is experiencing solid growth and is increasingly adopting a dual role of regional centre and the location of intensive activity serving the metropolitan regions – having chicken batteries, piggeries, recreation facilities, and so on.
- Kangaroo Island faces a range of particular challenges associated with its isolation from the mainland. However, the buoyancy of its tourist industry promises to be an increasing part of its economy in the future.

There are a number of health provision issues which follow from these challenges:

- In the Victor Harbor - Alexandrina - Yankalilla area, there are a number of health issues, which surround the influx of retirees and pre-retirees into the region. It is well known that need for health services increases exponentially once people enter their 70s. Clearly, the rapid influx of people in their 50s and 60s into this area presages a substantial increase in the demand for health services in the next two decades should these immigrants decide to remain in the South Coast area throughout the rest of their lives. The reality is, however, that there has been a longstanding pattern of circularity in this movement, so that many of these in-migrants tended to return to their home area, especially if there is a change in their circumstances with the death of a spouse

or the onset of disability. However, there is no research to indicate whether this is a function of “pull” or “push” factors: is it people being pushed out of the retirement-resort areas by the lack of medical and other services, the lack of public transport, and poor accessibility to services, or is it that the pull of children and grandchildren in origin areas is sufficient to bring people back, especially if they are going to be more reliant on getting help from their families? Or is it a mix of both elements? There is also anecdotal evidence of a significant return flow occurring within a short period after arrival because the sea changers are disillusioned by the lack of networks at the destination area. The critical question here from a health service provision perspective is the extent to which it can be anticipated that the in-migrants will remain in the South Coast as they enter the dependency stages of old age. This is a critical determinant of the level to which the demand for a range of health services will increase in the area over the next two decades.

- A less discussed health issue in this region as well as elsewhere in the State is mental health. There are a number of emerging issues in mental health in the area. Related to the first issue, loneliness among older people is one of the most significant barriers to their wellbeing in Australia. This may be exacerbated when they are in-migrants to a coastal community and lose a partner. In the rural sections of the region, there are issues with families facing economic difficulty due to market realignments, restructuring of the economy and drought. The mental strain this places on the people involved is frequently overlooked, and it will be an issue of increasing significance in the region over the next decade.
- A challenge in health service provision in this area is the considerable diversity in the pattern of health needs. The region varies from resort-retirement commuter, dormitory areas for metropolitan regions, sparsely settled rural areas and intensive agricultural areas.
- Rapid population growth in the region will place pressure on local health resources. Hills Mallee Southern has been the fastest growing health region in the State over the last decade and is likely to remain so in the near future.

The South East Region

The South East is one of South Australia’s most distinctive non-metropolitan health regions, occupying the south eastern corner of the State and including the SLAs of Grant, Mount Gambier, Lacedpede, Naracoorte and Lucindale, Robe, Tatiara

and Wattle Range. The South East has been one of the State's most prosperous agricultural areas and did not experience the population decline during the post-war period which has characterised many of the State's rural communities.

Over the 1996 to 2001 period, the region's population declined by 0.04% per annum compared with an increase of 0.50% per annum for the State as a whole. From 2001 to 2004, the population grew by 0.66% compared with an increase of 0.51% in the State as a whole.

The South East has a varied economy based on a number of primary industries – forestry, fishing, grazing and intensive agriculture, although tourism is of increasing significance. Its urban system is dominated by the regional centre of Mount Gambier (with a 2001 population of 23,503 – the largest regional urban centre in South Australia). Provision of health services in the region is complicated by the fact that there is considerable overlapping of community of interest areas across the boundary with Victoria.

The age and sex profile of the region is depicted in Figure 4.3 (Chapter 4, page 57) at the 2001 Population Census. The South East is significantly younger than the State's population as a whole. All of the age groups under 54 years for males are over-represented except for ages 20 to 29 years. The under-representation in the 20s is a function of the pattern in all rural areas of an out-migration of youth, although it is less marked in the South East than in many other areas. It is interesting that there is no over-representation in the 30 to 49 year age groups among women as there is for men, although there is a strong over-representation of dependent children. There is an under-representation of older people in the South East compared with the State as a whole.

The over-representation of the 0 to 14 year age group is in evidence, but the decline in these ages over the 1991 to 2001 period is greater than in the State as a whole. The 15 to 24 year age category is under-represented compared with the State, and declined slightly faster than the State as a whole over the last decade. The 65 years and over age group is also under-represented and, while it grew by 17.1% over the 1991 to 2001 period, the rate was below the State average. Hence, ageing is less pronounced in the South East than elsewhere.

The number of households in the South East region increased by 10.0% between 1991 and 2001, compared with the population declining by 0.4%. Families increased by only 2.2%. Single parent families were under-represented (8.9% of families) compared with the State as a whole (11.0%), as were low income families (21.9%, compared with 23.8%). The fact that this region is

generally better off than other rural areas is reflected in the fact that 13.8% of families with children aged less than 15 years had jobless parent(s) compared with 18.7% for the State as a whole. As in other rural areas, the proportion of the workforce who were unskilled and semi-skilled (28.5%) was higher than the State average. However, the tight labour market situation in the South East is reflected in the fact that in 2001, only 4.4% of workers were unemployed, compared with 6.8% for the State as a whole – the lowest level of unemployment for any health region. This may be a factor in the high level of female labour force participation (68.9%, compared with 66.3% in South Australia generally). Like other rural areas, there was a lower than average level of educational participation (78.8%, compared with 80.1%). However, there was a slightly above average level of educational performance.

As is the case with most other non-metropolitan areas, there was a lower level of multiculturalism in the South East than in South Australia as a whole. Only 1.1% of the population was Indigenous compared with 1.6% in the State and 3.1% in the non-metropolitan sector. Only 3.3% of the resident population were from a non-English speaking background – one third of the State average. There was a decline in the NESB population in the South East from 2,502 in 1991, to 2,014 in 2001. Only 0.3% of the South East population had a poor proficiency in English.

There was a stronger representation of SAHT housing in the South East (7.2%) than most non-metropolitan areas. It is a region that is experiencing a significant housing shortage, and this may be a factor in the labour shortage in the region. As in other rural areas, the proportion of households without access to a motor vehicle (6.6%) was lower than the State average (9.9%). Some 15.5% of households used the Internet at home.

The South East's population is substantially influenced by migration. In the 1996 to 2001 period, there was a concentration of net losses in the school leaving and early workforce ages. They were more substantial for interstate migration than for migration within South Australia.

The South East faces a number of challenges over the next two decades:

- The economy of the region has been relatively buoyant over a long period, although the heavy dependence on primary industry exposes the economy to vicissitudes of the market for those goods. However, the fishery, forestry, grazing, viticulture-intensive agriculture and tourism activity have created sufficient job opportunities to create a quite tight job market in the region.

Indeed, a shortage of workers may be a problem in the region in the future.

- Mount Gambier is the largest regional centre in the State but it is not growing very rapidly and the direction which it takes in the future will depend on its ability to expand the diversity of its economic base beyond its current role as a service centre.
- Development in the South East is not as constrained by availability of water as is the case in much of the rest of South Australia. Availability of a plentiful supply of water could be of major advantage to the region in its development over the next two decades.

With respect to health challenges which the region faces over the next two decades, the significant growth in the aged population will continue and the need to provide aged care services to a dispersed low density rural population, while not as extreme in the South East as elsewhere in the State, presents challenges. This especially applies to the health services' sector. While the South East does not have as substantial an ageing effect as other parts of the State, it will be an issue of significance in the region that needs to be planned for. The area is not as disadvantaged as some other parts of non-metropolitan South Australia, but there are pockets of rural poverty that should be identified and the health needs assessed. Like all areas outside the metropolitan area, there are considerable difficulties in attracting appropriate health staff to the region, but the particular attractive qualities of the South East may make it less difficult to attract health professionals than some other parts of the non-metropolitan area.

The Wakefield Region

In 2004, the Wakefield region had an estimated population of 100,983 and covered around 24,000

km². The region overlaps the Adelaide metropolitan area since it includes the Adelaide Statistical Division SLA of Gawler, which is an integral part of the Adelaide metropolitan complex. It is a quite varied area as it also includes the tourism – wine growing – dormitory area of the Barossa Valley and the Outer Adelaide Statistical Division SLAs of Light and Mallala, which are part of the peri-urban, commuting belt associated with the Adelaide Metropolitan area.

Further north are the dry farming and viticulture areas of the Clare and Gilbert Valleys SLA and the dry farming areas of Goyder and Wakefield. It also includes Yorke Peninsula with its important retirement – resort area of the Copper Coast. Hence, it is a quite diverse area containing areas with varying demographic characteristics. Over the 1996 to 2001 period, the Wakefield region's population grew by 0.82% per annum compared with 0.50% in the State as a whole. The areas in the Outer Adelaide Statistical Division and Gawler represent the most rapidly growing part of the region, with other parts of the region experiencing slow growth or stability.

The linkages between this area and the metropolitan regions need to be stressed. Table 3.8 shows the significant commuter flow from the Barossa Valley into Metropolitan Adelaide (including Gawler) area each day. In fact, there has been a substantial migration from Adelaide to the Barossa Valley of persons seeking to live in the heritage, ecologically attractive area but maintain their job in Metropolitan Adelaide. Indeed, the increase in housing prices in that region may mean that, if there is an expansion of job opportunities in the wine industry and tourism over the next two decades, many of the new workers required will need to live in the northern part of Adelaide and commute daily to the Barossa Valley.

Table 3.8: Outer Adelaide Statistical Division: Extent of commuting to Adelaide Statistical Division, 2001

SLA	Number of Employed	Commuters to ASD	
		Number	%
Adelaide Hills (DC) - North	3,118	1,747	56.0
Adelaide Hills (DC) Bal	4,051	1,713	42.3
Alexandrina (DC) - Coastal	3,191	544	17.0
Alexandrina (DC) - Strathalbyn	3,651	798	21.9
Barossa (DC) - Angaston	3,553	238	6.7
Barossa (DC) - Barossa	3,243	1,212	37.4
Barossa (DC) - Tanunda	2,113	176	8.3
Kangaroo Island (DC)	1,826	13	0.7
Light (DC)	4,548	1,487	32.7
Mallala (DC)	3,039	1,872	61.6
Mount Barker (DC) - Central	6,592	2,689	40.8
Mount Barker (DC) Bal	3,778	1,633	43.2
Victor Harbor (DC)	3,376	339	10.0
Yankalilla (DC)	1,442	274	19.0

Source: ABS 2001 Census

The age structure of the Wakefield region is depicted in Figure 4.3 (Chapter 4, page 57). The region has a significantly younger age structure than the State as a whole. The 5 to 14 year age group is not only over-represented in the area but also is growing significantly faster than the growth in this age group in all of South Australia. It is apparent too that people in their 40s are also over-represented. Those are the groups who have moved into Gawler, the Barossa Valley and the near north SLAs of Light and Mallala. It will be noted that people in their 20s and early 30s are under-represented in the area, suggesting people in the early working ages have left those areas and moved to the city. Older age groups are over-represented in the area and are growing at a more rapid rate than for the State as a whole. This growth of the aged population is especially concentrated on Yorke Peninsula and in the northern parts of this region. There is retirement migration into parts of this area, similar to, but on a smaller scale than that experienced by the South Coast area and considered earlier. For the period 1996 to 2001, the fastest growth was in all of the older age groups and in the 15 to 19 year age group.

The number of households in the region increased by 17.8% between 1991 and 2001 compared with the population increasing by 9.7%. The number of families in Wakefield increased by 12.4% between 1991 and 2001 – double the increase for the State as a whole (6.1%). This reflects the movement of established families into Gawler, the Barossa Valley and the Outer Adelaide Statistical Division SLAs of Light and Mallala. The number of single parent households increased by 59.5% over the 1991 to 2001 period, dramatically faster than for the State as a whole (30.8%) reflecting the increasing numbers of single parent families in Gawler and the lower north of the State. This partly reflects the availability of cheaper housing in some of these areas. The proportion of families that were single parents (8.7%), however, was still lower than for the State as a whole (11%). The proportion of families with young children where the parents are unemployed was 16.4%, below the State average of 18.7%. The proportion of families that were in the low income category (27.3%) was higher than for the State as a whole (23.8%), partly reflecting the older population in the Copper Coast and Yorke Peninsula SLAs.

As is the case with other non-metropolitan regions, the proportion of the workforce who are unskilled or semi-skilled (22.2%) is above the State average of 18.9%. However, its unemployment rate of 5.6% in 2001 is below the State average of 6.8%. This may reflect the buoyant employment conditions in areas like the Barossa Valley. Female labour force participation (65.5%) is close to the average for South Australia as a whole (66.3%).

The inclusion of part of the metropolitan area (Gawler) and the commuter populations of the Barossa, Light and Mallala in the region leads to the average level of educational participation being above the State average (81.1% compared with 80.1%).

Like other non-metropolitan parts of South Australia, the area has a low level of multicultural diversity. The Indigenous population comprises only 1.1% of the region's residents compared with 1.6% of all South Australians. Only 3.1% of residents are NESB origin migrants who have been in Australia more than five years compared with 8.5% of South Australians. Similarly, 1.1% are NESB residents who arrived in Australia in the last four years compared with 1.6% of the total State population. The number of NESB origin residents in the Wakefield region declined from 3,296 to 2,921 between 1996 and 2001. The proportion of residents in the region who had a poor proficiency in English was only 0.2% compared with 1.8% in South Australia as a whole.

The proportion of dwellings in Wakefield owned by the SAHT was less than half the State average and the proportion of dwellings without access to a motor vehicle (6.1%) was below that for South Australia – 9.9%.

Like that of the Hills Mallee Southern region, the population of the Wakefield Health Region is growing at a rate faster than that of the State as a whole. Moreover, this pattern will certainly continue. This is due to several factors:

- the impact of metropolitan regions on its peri-urban area, and the dormitory area of Gawler;
- the buoyant economy based on the wine industry, tourism and heritage dormitory development in the Barossa;
- the retirement – resort led growth in Yorke Peninsula – Copper Coast.

Wakefield is also a region of considerable diversity so that the health issues faced by residents will vary considerably within the region. Some of the main challenges faced by the region are as follows:

- The continued population growth will undoubtedly create pressures in the Barossa Valley; for example, there is little land left for housing development without compromising the heritage and environmental amenity, which is the basis of its tourism and wine industries. Moreover, the influx of high income commuters will price out lower income workers, which the growing industry of the region will require. Hence, it is likely that, while the Barossa will grow in significance as a dormitory for metropolitan workers, workers employed in the Barossa will necessarily have to live in northern

Adelaide or in the country towns in Light and other nearby SLAs.

- The growth of the older population, especially in the Yorke Peninsula and Copper Coast areas, will raise the issues already discussed for several rural communities in non-metropolitan South Australia.
- There will be pressures on Gawler to increase the amount of housing development.
- The region contains some of the State's richest and most productive dry farming areas. Nevertheless, such areas face pressure from changing markets for products, increased costs and pressure to intensify production.
- In the dry farming areas, many of the country towns have experienced a loss of services due to improved accessibility which allows local residents to shop in Gawler or Adelaide rather than locally (Hugo & Smailes 2001). Accordingly, several have reduced populations, particularly of young people. In such places, the communities have often lost groups such as school teachers, police, stock and station agents, bank officers, and so on, who not only provided services but also contributed to the social and economic life of the community. On the other hand, the availability of cheap housing has seen an influx of groups such as single parent families, and those unemployed who are often not able to play the same roles in the community.

There are a number of health service challenges faced by the Wakefield region over the next decade:

- Within Wakefield, there are seven incorporated health services managing a total of four community health services and twelve hospitals. There will be further pressures on these services, especially in the northern part of the region where population has been stable or marginally declining. Cost demands on services, and pressure to reduce the number of services to achieve economies of scale, will continue. However, the services are crucial not only for the provision of health services to residents, but also as an essential element in community wellbeing.
- The changing population of the region is presenting challenges to the health service system. The influx of urban people, the increasing population reliant on transfers such as single parent families and unemployed persons will be influential. Similarly, the growth of the older population, especially on Yorke Peninsula, will be significant.
- The differing nature of the area means that the types of health services required will vary

considerably from metropolitan areas to purely rural communities, regional centres and resort – retirement communities.

- Closeness to Adelaide will be a significant element as transport continues to improve and the ability of people in the area to access resources within the metropolitan area increases.

The Mid North region

The Mid North region lies immediately north of the Wakefield region and comprised a population of 30,695 in 2004, living in an area of 54,000 km². Geographically, it lies within the Lower Flinders Ranges and encompasses the SLAs of Barunga West, Mount Remarkable, Northern Areas, Orroroo-Carrieton, Peterborough and Port Pirie. This is one of the diminishing areas in the State with the population declining by 0.68% per annum between the 1996 and 2001 censuses and by 0.71% between 2001 and 2004. The region includes the smelting, regional and port centre of Port Pirie, the mixed farming region of the Mid and Upper North and some sparsely settled pastoral areas to the east. It has a network of country towns, which are stable in population size or declining, as the impact of increased capital-labour substitution in farming, increasing travel to shop in large centres and the withdrawal of government funded services is felt.

The age and sex structure of the Mid North is depicted in Figure 4.3 (Chapter 4, page 57) and it differs dramatically from the State as a whole. There are two age groups over-represented in the area – the under 15 and over 50 year age groups. This reflects the substantial out-migration of young people from the area leaving behind older people. The relatively high fertility of the area is reflected in the strong representation of children – 6.8% of the population are aged 0 to 4 compared with 6.1% in the State as a whole, and 14.9% aged 5 to 14 compared with 13.5% in all South Australia. Nevertheless, the numbers in these age groups declined from 7,553 in 1991 to 6,623 in 2001.

The out-migration of school leavers is reflected in the fact that only 10.3% of the region's population are aged 15 to 24 compared with 13.1% in South Australia in total. Moreover, their numbers declined substantially from 4,152 in 1991 to 3,159 in 2001. The impact of this decline on the community life in the region is considerable since this age group is crucial, especially for sports teams – the demise of which has become commonplace in the Mid North. On the other hand, the 65 years and older population is over-represented, making up 16.9% of the Mid North population compared with 14.7% of that of South Australia. This ageing population, however, is very much a function of the out-movement of young people rather than an in-

movement of older people. Their numbers increased from 4,466 in 1991 to 5,176 in 2001.

Despite the population decline in parts of the region, the number of households increased by 2.8% between 1991 and 2001. The number of family households declined from 8,751 to 8,354. However, the number of single parent families increased from 709 to 842 and their share of all families grew from 8.1 to 10.1%. Moreover, one third of all families in the region were in the low income category, compared with 23.8% of the State as a whole. Hence, the Mid North has a larger proportion of poor families than any other health region in the State. A quarter of families with dependent age children have parent(s) who are unemployed – also the highest proportion of the health regions. The region also has an unemployment rate (10.2%) above the State average of 6.8%. However, the proportion of its workers who are unskilled and semi-skilled is only a little above the State average (21.6%) due to the significance of Port Pirie. Female workforce participation rates in the region (58.4%) are the lowest of all health regions, reflecting the paucity of job opportunities for women in the Mid North. The presence of Port Pirie also explains the educational participation rate being around the State average.

There is more ethnic diversity in the Mid North than in some South Australian non-metropolitan areas. Some 1.8% of the residents are Indigenous compared with 1.6% for the State as a whole. However, the proportion that is of NESB origin and has been in Australia for more than 5 years was only 2.8% and more recent arrivals, only 0.1%. The number of NESB residents in the area declined from 1,208 in 1991 to 907 in 2001. The proportion of persons with a poor proficiency in English was only 0.3%.

The large number of SAHT properties in Port Pirie led to them making up 8.3% of all households in the region compared with 7.7% in the State as a whole. The proportion of households that do not have access to a car (9.6%) is close to the State average but high for a non-metropolitan area. Only 14.7% of households used the Internet at home compared with 18.3% in the State as a whole.

The Mid North faces a number of significant challenges over the next decade or so. The future of the key city of Port Pirie (a population of 14,090 in 2001) is uncertain. It is an important regional centre and port for the produce of its hinterland and those functions are assured. Its smelting operations have been a vital part of the city's economic base but the employment they provide has reduced over the years. Like all Australian centres dependent upon manufacturing, Port Pirie has suffered due to restructuring of the Australian economy, which has reduced the significance of

manufacturing. Whether Port Pirie will grow significantly over the next two decades or remain around the present size will be dependent on its ability to attract new employment generating activity. Furthermore, historic lead contamination of soil surrounding the smelting site and current airborne emissions have given rise to significant community concerns, centred on the blood lead levels of children in nearby residential areas (Manins et al. 2001).

Almost all the rural communities of the region have experienced losses of services and falling or static populations for the reasons outlined earlier. This presents difficulties because it not only erodes the basis for supporting a range of services, but it leads to a diminution of community activity. Whether there can be an arresting of this trend or even a reversal will depend on the ability of these communities to diversify their economies. If this does not occur, the outlook is for further population decline.

This region contains a higher proportion of poor families than any of the health regions. The incidence of poverty in this area is considerable and is an important issue. To some extent, the low incomes reflect the older population and an over-representation of retirees, but are also indicative of significant poverty in the Mid North.

There are considerable health provision challenges that face the Mid North region over the next two decades. These include the substantial difficulty of maintaining provision of services to a relatively dispersed population in a situation where the population is static or declining. The point should be made, however, that although the numbers may be static, the substantial ageing of the population and the high incidence of poverty in the region means that the level of need for health services may be increasing, even though the population is not growing.

The substantial outflow of young people is having a substantial effect on social capital in the area and on the ability of small communities to maintain provision of voluntary and semi-voluntary support services in a context where the demand for them may be growing. This problem can also have a negative impact on the wellbeing of individuals in the community and has implications for demand for health services. There is also a significant Indigenous population in the region with specific health needs. The regional centre of Port Pirie also has a range of specific health issues that need to be considered in planning the provision of services in the region.

The Riverland region

The Riverland region has a total area of 24,000 km² and lies within the Central Eastern section of South Australia adjacent to the border with Victoria. It includes the SLAs of Berri and Barmera, Loxton, Waikerie and Renmark-Paringa. The majority of the population lives in the intensively irrigated areas along the River Murray, although some areas of the Mallee to the south of the river are included. In 2004, its population was 33,263. It had grown at a miniscule 0.04% per annum between 1996 and 2001 compared with 0.5% for the State as a whole. Between 2001 and 2004, it declined by 0.28% compared with a State population gain of 0.51% per annum.

The age and sex structure of the Riverland is depicted in Figure 4.3 (Chapter 4, page 57). As is typical of non-metropolitan age structures, it is over-represented in the dependent child and 40 to 74 year age categories. It is noticeable that it is not over-represented in the 75 years and over age groups, reflecting the strong movement of the very old to Adelaide seeking specialised aged services. However, the region has above average fertility compared with the State, so that the 0 to 4 year age group makes up 6.7% of the population (compared with 6.1% in South Australia as a whole) and the 5 to 14 year age group, 15% (13.5% in South Australia). However, like other non-metropolitan areas, the Riverland experienced an outflow of its youth and this has contributed to an ageing of its population. The 15 to 24 year age population declined from 4,407 in 1991 to 3,828 in 2001. On the other hand, the over 65 year old age group increased from 3,848 to 4,711. Thus, population growth has been concentrated in the older ages and the momentum of ageing is apparent through the large numbers poised to enter the older age groups.

Despite the limited population growth, the number of households increased by 11.4% between 1991 and 2001. For many settlers, it is important to consider households rather than population. The number of families in the region increased by 3.7% between 1991 and 2001. The number of single parent families in the Riverland increased even faster, at 12%. This is reflected in a higher proportion of families being classified as low income (26.1%) compared with the State as a whole (23.8%). Some 17.8% of families with dependent children had at least one parent who was unemployed but the overall level of unemployment (5.9%) is below the State average. This reflects the buoyancy of many of the in-migration area industries in the late 1990s.

However, the Riverland has the lowest skilled workforce of any of the health regions with 30.5% of workers being unskilled and semi-skilled,

compared with 18.9% in the State as a whole. Female labour force participation rates are the highest of any region (69.1%) reflecting the availability of a wider range of jobs for women in the area than is the case in dry farming regions. Education participation levels are slightly below average.

The Riverland is more multicultural than most rural areas in South Australia. Some 2.3% of the population is of Indigenous origin compared with 1.6% in the State as a whole. Some 5.9% of its population were of NESB origin and had lived in Australia for more than 5 years. While this is lower than the State average (8.8%), it is higher than the non-metropolitan average (3.5%). This reflects the substantial settlement of Southern Europeans in the region in the post-war years (Hugo & Menzies 1980). This is one of the few areas in which the number of NESB people resident in Australia less than five years actually increased slightly between 1991 and 2001 (from 230 to 238). The region continues to be a destination for some NESB groups because of the work available in irrigated agriculture. In recent years, refugees and asylum seekers have been important in the harvesting workforce in the region. There is a considerable demand for workers in the region during the harvest times (Hugo 2001). Some 1.6% of the population of the region have a poor proficiency in English.

The proportion of SAHT dwellings (6.6%) is a little below the State average (7.7%), as is the proportion of households not having access to a motor vehicle (7.1% compared with 9.9%). Some 15.5% of households have access to the Internet at home.

The Riverland is one of the most distinctive in the State, with its strong focus on irrigated agriculture and associated processing industries and its higher degree of multiculturalism than other non-metropolitan areas. Its economic fortunes are highly dependent on the demand for the fruit, grapes, and vegetables that it produces. However, there is a diverse range of crops grown in the region and on individual properties, so that the risk is spread. It has benefited from the boom in the wine industry over the last decade or so and this has increased the prosperity of the region. The region has a number of urban centres along the River Murray, none of which is dominant, and this perhaps has led to some higher order services not being provided in the Riverland than would have been the case if there were a single large regional centre. Nevertheless, there is a greater degree of concentration of population along the River Murray than is the case in other rural areas and this facilitates accessibility to services. The challenges to health service provision in the region are hence

not as severe as in other areas of much sparser population distribution and declining populations.

The Eyre region

The Eyre region has a degree of regional distinctiveness comprising the Eyre Peninsula, which has long had a strong identity and separateness emanating from its isolation from Adelaide and the rest of the State. Indeed, earlier generations of people in Eyre Peninsula often referred to Adelaide as the "mainland". The region has a population of 31,799 spread over 72,354 km². It is the second most sparsely settled health region with a population density of 0.4 persons per km². The region comprises the SLAs of Cleve, Elliston, Franklin Harbor, Kimba, Le Hunte, Lower Eyre Peninsular, Murat Bay, Port Lincoln, Streaky Bay and Tumby Bay. Its urban hierarchy is dominated by the major regional centre of Port Lincoln (population of 13,899 in 2001) and smaller centres of Ceduna, Tumby Bay and Streaky Bay.

There are five Aboriginal communities in the Eyre region – Ceduna, Kooniba, Oak Valley-Maralinga, Port Lincoln and Yalata. The region has experienced difficulties in recent times with a succession of drought years in the early 1990s, and the devastating 2005 bushfires. Nevertheless, its population has grown at about the rate of the State as a whole in recent years by 0.6% per annum between 1996 and 2001, and 0.53% per annum between 2001 and 2004.

The age and sex structure of the Eyre population is depicted in Figure 4.3 (Chapter 4, page 57) and shows less difference to the State age structure than is the case for other non-metropolitan areas. The dominance of the dependent child age group typical of non-metropolitan areas however is evident. The 0 to 4 year age group accounts for 7.3% of Eyre's population compared with 6.1% for the State, while for the 5 to 14 year age group, the proportions are 16.0 and 13.5%. Nevertheless, there was a decline in the number of dependent children in the Region from 8,035 in 1991 to 7,674 in 2001. Like other non-metropolitan areas, Eyre experiences a net out-migration of school leavers, and 15 to 24 year olds make up only 11.4% of the population compared with 13.1% of the State population. Also the numbers of these young people declined from 4,118 in 1991 to 3,770 in 2001.

As elsewhere, there has been an ageing of Eyre's population with the numbers aged 65 years and over increasing from 3,595 in 1991 to 4,480 in 2001 and their proportion of the total population increasing from 11.3 to 13.6% of the population. Nevertheless, the ageing is still below the State average. The momentum of ageing in Eyre, however, is apparent with the numbers aged below

40 years declining and those above it increasing between 1996 and 2001.

The number of households in Eyre increased at a faster rate than the population between 1991 and 2001, 11.7% compared with 2.6%. Similarly, there was an increase in the number of family households from 8,310 to 8,660. The numbers of single parent families increased from 8.1 to 9.3%. The proportion of families which are in the low income category was 27.8% in 2001 - above the State average of 23.8% but the proportion of families with dependent age children in which the parent(s) are unemployed was below the State average - 14.7% compared with 18.7%.

The Eyre region had one of the highest unemployment levels of any health region - 10.8% in 2001, compared with 6.8% in the State as a whole. As with other non-metropolitan areas, the proportion of the workforce that was unskilled and semi-skilled was higher than for South Australia as a whole - 20.4% compared with 18.9%. However, female labour force participation rates were higher (67.5%) than in the State as a whole, perhaps reflecting the number of job opportunities for women in the fishing, tourist and regional centre of Port Lincoln. Educational participation (78.8%) is below the State average, however, partly reflecting the selective out-migration of many of those wishing to proceed to higher levels of education.

The Eyre region is more diverse ethnically than many non-metropolitan areas in South Australia. It has the second largest representation of Indigenous people who make up 5.6% of the population of the region, compared with 1.6% of the population of South Australia. The number of Indigenous people increased from 1,493 in 1991 to 1,851 in 2001. NESB groups have been significant in the development of the Eyre region. In particular, the fishing industries in Port Lincoln and all along the West Coast have had a significant involvement of European migrant groups. However, in 2001 only 2.8% of the population were of this background and their numbers declined from 1,111 in 1991 to 883 in 2001. Only 0.2% of the region's population had a poor proficiency in English. The SAHT accounts for 6.7% of the housing in the region, and 7.1% of the households have no access to a motor vehicle. Some 18.8% of households have access to the Internet.

As indicated earlier, much of Eyre Peninsula suffered significant drought in the 1980s and 1990s. On the other hand, there has been a great deal of prosperity associated with the expansion of fisheries and in recent years, fish farms. The expanding Asian market for high quality food has seen the tuna and other fisheries undergo substantial expansion. Much of the interior of the Eyre Peninsula is dependent on wheat farming and

wheat-sheep farming. The northern margins of the region have been particularly prone to drought. The bushfires of 2005 have also had a devastating impact. Tourism is a significant industry but the region's relative isolation has limited its development.

The region faces a number of significant challenges in providing health services:

- The substantial Indigenous population have particular health issues and are very socioeconomically disadvantaged.
- Issues of providing health services to an isolated and sparsely settled area are a particular challenge. This is exacerbated by the increasing concentration in the growing regional centre of Port Lincoln, and the declining population in much of the interior of the peninsula.
- Ageing is also a factor, with the added problem of isolation and lack of accessibility of those in rural areas to services.

The Northern and Far Western Region

The Northern and Far Western health region is by far the largest in area, covering 756,742 km² and containing around 50,000 residents. It is highly distinctive with much of the population living in the two Spencer Gulf cities of Whyalla and Port Augusta, but others concentrated in mining centres, Indigenous communities and tourist developments. It contains the sparsely settled outback parts of the State and has the most substantial concentration of Indigenous people in the State. It has experienced an overall population decline of 0.78% per annum between 1996 and 2001 and of 1.23% per annum between 2001 and 2004. Its population fell from 53,410 in 1996 to 49,544 in 2004.

The majority of the area included in the region is unincorporated, but it also contains the SLAs of Coober Pedy, Flinders Ranges, Port Augusta, Roxby Downs and Whyalla. Whyalla grew rapidly in the early post-war decades and became South Australia's second largest city. However, there has been a continued decline over recent decades as its iron and steel industry shed workers. It has now lost its position as the State's second largest city to Mount Gambier. Its peak population was 33,409 in 1976 but by 2004, it had declined to 21,547. The mining centre of Roxby Downs grew rapidly in the 1990s but its population has stabilised. Port Augusta's role as a railway centre has declined but its tourist industry has expanded.

The age and sex profile of the region is shown in Figure 4.3 (Chapter 4, page 57). The proportion of males is more marked than any other region reflecting the "frontier" nature of part of the region.

It is apparent too, that the region's age structure is substantially younger than that of the State's population as a whole. In fact, it has larger proportions of its population aged 0 to 4 years (7.5%) and 5 to 14 years (16%) than any of the other health regions. This is partly a function of relatively high fertility in the region, but also due to the fact that many older people leave the area to be closer to aged care services.

The Northern and Far Western region has a higher proportion of its population in the 15 to 24 year age group than any other non-metropolitan region, due partly to the nature of job opportunities in the region and also to the substantial Indigenous population. Nevertheless, the number of residents in the area aged less than 25 years declined from 22,829 in 1991 to 18,192 in 2001. The numbers aged 65 years and over increased from 3,941 to 5,037, but still only accounted for 10.1% of the total population in 2001.

There has been a decline in the number of households between 1991 and 2001 of 2.8%. The number of family households declined from 14,144 to 12,448 over the same period. On the other hand, the number of single parent families increased from 1,498 to 1,758. In fact, the region had the largest proportion of its families made up of single parent families of any of the health regions (14.1%). The number of such families is especially pronounced in the Indigenous population. The proportion of families that are in the low income category was above the State's average (28% compared with 23.8%). Moreover, in 24% of all families with children less than 15 years of age, the parent(s) were unemployed.

The relatively low representation of aged persons in the area means that the majority of low income families are young. Hence, the area is one with significant rural poverty and it is known that this is especially concentrated among the Indigenous population. The proportion of workers that were unskilled and semi-skilled was 25.7% - well above the State average of 18.9%. However, unemployment levels were by far the highest of any region - 17.3%, almost three times the State average. Again, this is largely a reflection of the substantial Indigenous population in the region. Female labour force participation is one of the lowest levels in the State - 58.9% compared with a State average of 66.3%. Educational participation is the lowest of any health region - 67.3% compared with 80.1% in the State as a whole.

The Northern and Far Western region is the most multiculturally diverse of South Australia's non-metropolitan health regions with 12.0% of the region's population being of Indigenous origin. The number of Indigenous residents increased from 4,971 in 1991 to 5,988 in 2001. Almost a

quarter of the State's Indigenous population live in this region. However, there has been a dramatic decline in the number of NESB origin residents from 4,469 in 1991 to 2,559 in 2001. Their share of the region's population fell from 7.7% to 5.1%. There have been significant concentrations of immigrants in Whyalla, and to a lesser extent, in Port Augusta, but they also have been important in mining communities like Coober Pedy. However, in 2001, only 0.6% of the population in the region had a poor proficiency in English.

The large SAHT presence in Whyalla is reflected in some 17.8% of all dwellings in the region being public rental housing. The region had the largest percentage of households, which did not have access to a motor vehicle - 13.1%. It also had the lowest percentage of households accessing the Internet at home (14.5%).

This region faces a range of challenges over the next decade. Its economy has been based in the past on a number of sectors, which have experienced difficulty in recent decades. The manufacturing industry, especially that located in regional centres, has undergone massive change due to movement of activity offshore and increased substitution of capital for labour. The outlook for Whyalla remains clouded while it is highly dependent on manufacturing. Yet it has the advantage of substantial infrastructure, coastal location, and so on. Its future expansion would seem to depend, however, on diversification of its economy. Port Augusta suffered from withdrawal of some of its functions as a key railway centre but its role as a gateway to outback tourism has potential. Again diversification of the economic base will be crucial.

In Australia's (and South Australia's) arid zone, there has been a history of mining centres growing rapidly, and then declining as ore bodies are worked out or world markets shift. This zone has gained and lost population quickly as a result of this factor and will continue to do so.

Tourism has only influenced the region to a limited degree compared with comparable ecological zones in the United States. The trajectory of the next decade in the region will be influenced by tourism development.

The Indigenous community in the region is significant both numerically and proportionally. They will remain a group of major significance in planning in the region.

In many ways, the health challenges posed by this region are the most distinctive of any in South Australia. The first must relate to the Indigenous population. It has been shown earlier that they remain the most disadvantaged group in the community and have substantial and distinctive health service needs. In this region, issues of remoteness and separate Indigenous communities exacerbate these needs. Remoteness presents challenges in providing services in such a way that can be accessed by low density distribution populations in the shortest time. The age structure of the population, its high mobility and distinctive disease risk factors are all of importance.

Whyalla presents a separate range of issues. Ageing is of significance in the city as are continuing high levels of unemployment. The region will in the future be more and more influenced by temporary populations, those working in the mining and tourism industry, and larger numbers of tourists including recent retirees travelling around Australia.

Regional health inequalities

The health regions face a range of challenges in providing individually focused health services, and population-based health initiatives for their communities. This is not only as a result of their differing demography and geography, but also in response to the existing health of their communities, and their associated health risk and protective factors, including levels of socioeconomic disadvantage, and the available health service resources.

A selection of indicators of regional health status and health service delivery is presented in Table 3.9.

Table 3.9: Selected health status and service delivery indicators, SA Health Regions

Indicator	% / SR / Rate ¹	Health region ²								
		CNAHS	SAHS	HMS	W	SE	NFW	E	MN	R
Health status:										
<i>Perinatal and pregnancy:</i>										
- Fully immunised at 12 months	%	94.6	95.0	94.1	95.6	94.7	93.4	94.5	96.3	92.8
- Low birthweight babies	%	7.0	6.4	6.3	7.0	6.4	7.8	6.8	7.0	7.3
- Overweight 4 year old boys	%	11.4	11.1	11.2	14.1	14.6	13.0	15.7	14.2	14.1
- Obese 4 year old boys	%	4.7	4.1	3.4	4.1	4.5	5.1	6.4	5.0	5.2
- Smoking during pregnancy	SR	98**	83**	105	109**	115**	124**	125**	108	135**
<i>Premature and avoidable mortality:</i>										
- Infant mortality rate	Rate	4.5	4.5	4.2	4.8	7.1	6.4	3.8	3.3	5.2
- Males 15-64 yrs: all causes	SR	98*	88**	96	106	97	145**	113	115	113
- Females 15-64 yrs: all causes	SR	99	89**	99	104	98	131**	121	112	135**
- Avoidable mortality	SR	99	86**	100	102	108	142**	108	124**	122
<i>Cancer incidence:</i>										
- All cancers	SR	100	103*	98	98	97	94*	99	100	102
- Prostate cancer	SR	100	103	105	109	101	66*	100	69	99
- Breast cancer (females)	SR	99	109	101	96	84*	81*	90	98	116
- Lung cancer	SR	100	100	86	101	94	139**	84	99	114
Services:										
- Community mental health	SR	98	94**	87**	128**	30**	137**	149**	141**	97
- Child & Adolescent Mental Health	SR	78	93**	137**	101	133**	175**	105	165**	219**
- Dept for Families and Communities	SR	94**	73**	89**	99	133**	175**	105	165**	219**
- Breast screening participation	SR	96	104**	104**	105**	82**	207**	169**	155**	153**
- Cervical screening participation	SR	99	103**	101	100	103**	83**	107**	92**	107**
- GP services to males	SR	109	97**	93**	91**	71**	89**	84**	87*	77**
- GP services to females	SR	106	99**	98**	92**	73**	94**	88**	85**	75**
- Hospital admissions: total	SR	97	100	95**	103**	103**	121**	102*	121**	108**
- Hospital admissions: public acute	SR	89	86**	108**	121**	131**	170**	141**	164**	142**
- Hospital booking lists (6 mths & over)	SR	115	127**	55	74	24	55	44	42	26
- Population per GP	Rate	1,039	1,234	1,149	1,162	1,524	1,303	1,144	1,207	1,290

¹ SR: Standardised ratio; Rate: Infant mortality rate is infant deaths per 1,000 live births (see page 284) and Population per GP is the number of people per full-time weighted equivalent GP (see page 358)

² CNAHS: Central Northern Adelaide Health Service; SAHS: Southern Adelaide Health Service; HMS: Hills Mallee Southern; W: Wakefield; SE: South East; NFW: Northern and Far Western; E: Eyre; MN: Mid North; R: Riverland