

# A Social Health Atlas of Young South Australians

Second Edition

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January 2003

Public Health Information Development Unit

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# Foreword

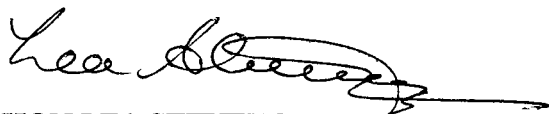
Our children and young people are the future of South Australia. Their wellbeing and healthy development are essential foundations for the responsibilities of active citizenship in later life. How are our children and young people doing now? The answer to this will be an important indication of what is ahead - for them individually, and for the future quality of life in our community as a whole.

*A Social Health Atlas of Young South Australians*, now in its second edition, provides communities, practitioners and policy makers with some of the answer. As a reference, it contains a rich source of descriptive, population-based data about the current health and wellbeing of South Australian children and young people, from birth to the age of 24 years. By focusing on many of the social determinants of children's and young people's health, the Atlas also examines the impact of differences in socioeconomic status, the relationship between education and health, and the community resources and family characteristics that can promote healthy development.

In recent years, the wellbeing of children and young people in South Australia has improved in many areas, as exemplified by increases in life expectancy and reductions in perinatal and infant mortality rates. However, other data suggest that some outcomes have remained static or have even declined, and that not everyone has experienced health improvement. Substantial inequalities in the health of certain groups remain, particularly Indigenous children and young people and those whose families are socioeconomically disadvantaged.

The material in this Atlas raises pertinent questions for our community. Given what we now know about the factors influencing early development of the brain, the different pathways that affect wellbeing, and the possible long-term effects of a disadvantaged childhood, how do we minimise poor outcomes for children and young people in South Australia? This Atlas provides evidence of the significance of supportive social, economic and ecological environments.

*A Social Health Atlas of Young South Australians* is an important addition to the resources available to policy makers, planners, service providers and community members working towards the future health and wellbeing of young South Australians. Our hope is that the Atlas will be used to identify inequalities in health and wellbeing at both the regional and State level and to determine areas where new efforts are necessary. For South Australia to be a socially just community, we need to address these inequalities and ensure the best possible environments in which our children and young people can grow and develop.



**HON LEA STEVENS MP**  
Minister for Health  
Minister Assisting the Premier in Social Inclusion



**HON STEPHANIE KEY MP**  
Minister for Social Justice  
Minister for Housing  
Minister for Youth  
Minister for the Status of Women

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# Executive summary

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## Introduction

There is now substantial evidence that the wellbeing and healthy development of children and young people are the result of complex interactions of the social, biological and ecological environments in which they live (Stanley et al. 2002). If these are supportive, they provide a foundation for the development of competence and coping skills that underpin learning, behaviour and health throughout life. However, a lack of enabling social and environmental conditions is reflected in poorer developmental and health outcomes.

The purpose of this atlas, now in its second edition, is to provide policy makers, practitioners and communities with information about the current health and wellbeing of South Australian children and young people, from birth to the age of 24 years, and to illustrate the range of factors that are associated with their wellbeing and developmental health outcomes.

## Background

The primary aims of the first edition of *A Social Health Atlas of Young South Australians* were to illustrate the spatial distribution of socioeconomically disadvantaged children and young people, and to compare this with the patterns of distribution of major causes of illness and death and use of health services.

This second edition updates much of the information in the first edition and adds a number of new variables. The new variables describe clients of Child and Adolescent Mental Health Services, terminations of pregnancy, the Body Mass Index for four year old children and children and young people admitted to hospital for selected surgical procedures, or on a hospital inpatient booking list.

The patterns of distribution of the population are shown by demographic, social and economic factors (Chapter 3), health status (Chapter 4) and health service use (Chapter 5). The cluster analysis, in Chapter 6, provides summary measures of socioeconomic status and health service for Adelaide and non-metropolitan South Australia.

The correlation analysis (Chapter 6) highlights associations between social and economic factors in relation to health and illness.

It is now possible to show the extent of change over time in levels of socioeconomic status, health status and health service use (Chapter 7). Changes are also shown in the patterns of distribution in death rates by socioeconomic status and in the use of selected health and welfare services by socioeconomic status (Chapter 7).

## Findings

This edition of the atlas reveals the existence of considerable disparities across many aspects of the lives of South Australian children and young people. Increasing numbers of children and young people face socioeconomic and other forms of disadvantage, resulting in significant adverse effects on their wellbeing that are likely to continue into adult life. This is particularly relevant in the case of many Indigenous children.

Many of the indicators in this atlas demonstrate that the health and wellbeing of South Australian children and young people has improved. This is most evident in the decline in death rates of infants, children and young people. However, in other areas, outcomes have remained static or worsened in an environment that has been marked by rapid social change. Examples are the marked increase in the proportion of low birthweight babies and of overweight and obese children aged 4 years, as well as increases in both notified and substantiated cases of child abuse and neglect.

Along with the overall improvement in deaths rates, the relative difference in infant death rates and deaths at ages 15 to 24 years between the poorest and most well off areas has decreased substantially. The remaining differentials in death rates of 30% and above are, however, substantial.

Substantial differences (between the poorest and most well off areas) also exist for perinatal outcomes (as indicated by the proportion of low birthweight babies), overweight and obese females aged 4 years and substantiated cases of child abuse and neglect. For each of these indicators, the gap has widened over the years for which data were analysed. However, the gap has narrowed for overweight and obese four year old males in Adelaide; and for South Australia as a whole it is static.

Access to services is also more difficult for children and young people in Adelaide's poorest areas. For example, children and young people in the most disadvantaged areas are over-represented on public hospital booking lists, even when their higher rate of use of those hospitals is taken into account.

While the differential in overall admission rates has been reduced for 0 to 14 year old children (in Adelaide and the non-metropolitan areas), it has increased for those aged 15 to 24 years (in Adelaide). Similarly, the disparity in rates of FAYS clients and of terminations of pregnancy, between the poorest areas and most well off areas in Adelaide, has increased.

The challenge for policy makers, researchers, health practitioners and governments is to find ways to address these health inequalities and the socioeconomic factors which underpin them.

# Using A Social Health Atlas of Young South Australians

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## A Social Health Atlas of Young South Australians

This second edition of *A Social Health Atlas of Young South Australians* provides general background information about the issues covered in the atlas, as well as specific maps of selected variables indicating demographic characteristics, health status and health service use at a local area level.

### Content

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

1. Introduction
2. Methods
3. Demography and socioeconomic status
4. Health status
5. Utilisation of health and welfare services
6. Correlation analysis
7. Summary

Chapters 1 and 2 provide an overview of the atlas and the approach taken in the analysing and mapping data. These chapters contain 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.

Chapters 3 to 5 provide an introduction to the topic(s) being mapped, as well as the maps and associated commentary.

Chapter 6 shows the results of the correlation analysis. Chapter 7 presents details of the major changes in the data between this second and the first edition, as well as some summary measures of the health differentials calculated from the health status and health service utilisation data mapped in Chapters 4 and 5.

### Using the atlas

Some people will use the atlas as a reference source, either going to particular maps (eg. a map of hospital surgical procedures), or using the index to find a particular topic (eg. deaths from injury and violence) or variable (eg. tonsillectomy).

Others may choose to examine the correlation matrices and to then view the maps for variables for which the data are highly correlated. Or they may access the data in a spreadsheet and regroup the postcodes or SLAs 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 the mapping approach used.

### Map of Adelaide

#### Area mapped

The area mapped is the Statistical Division of Adelaide (generally known as the capital city area). The spatial unit mapped is either the postcode or Statistical Local Area (SLA). Postcode areas are shown in italics, to differentiate them from SLAs with the same name.

Additional details, including key maps to assist in the location and identification of particular areas, are in Appendix 1.2; a set of clear film overlays to assist in this process are included in a pocket inside the back cover of this atlas.

#### Data measures mapped

The map sub-title indicates the format in which the data are presented. In a majority of cases, data are mapped as either a percentage or age-sex standardised ratio (the process of standardisation is described in Appendix 1.3, Analysis and presentation of data).

The legend 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 and the source of the data.

## Description

The text associated with the maps provides background information on the variable being mapped and describes the pattern of distribution of the variable at the postcode or SLA level.

The text concludes with evidence of associations in the data as determined a correlation analysis (described on page 311). Correlation is the degree to which one variable is statistically associated with another. The correlation coefficient is a measure of the strength of this association.

For example, in relation to the data mapped for early school leavers (**Map A**), the text on page 98 states “There was a correlation of substantial significance with the variable for children aged 0 to 14 years living in low income families (a positive correlation of 0.74).” This means that there was a strong association between the distribution of early school leavers and children aged 0 to 14 years living in low income families. The text concludes that “These results, together with the inverse correlations of substantial significance with the IRSD (-0.78), indicate an association at the postcode level between high proportions of people who left school at age 15 years or earlier and socioeconomic disadvantage.” That is, in a statistical sense, there is a strong correlation between this variable and the summary measure of socioeconomic disadvantage.

The map opposite (**Map A**) is an example of the map shown most commonly throughout the atlas for Adelaide. It shows data mapped to postcode areas and includes a description of what the shades represent (see boxes on the map).

Where the number of cases (deaths, admissions to hospital, etc.) is relatively small, the absolute numbers are included in the commentary along with the percentages, rates and ratios. The numbers (as well as the percentages, rates and ratios) are available electronic form and should be used in conjunction with the information in this atlas (see Appendix 1.1).

## Map of South Australia

### Area mapped

The area outside of Adelaide is referred to as the non-metropolitan area of South Australia. The spatial units mapped are SLAs or Health Service Regions: however Adelaide is mapped as one area (ie. not by SLA) to enhance comparisons between the Adelaide and the non-metropolitan areas.

Towns with a population of 1,500 people or more are represented on the maps as circles.

As noted above in relation to the map of Adelaide, additional details are in Appendix 1.2; a set of clear film overlays to assist in the location and identification of particular areas is included in a pocket inside the back cover of this atlas.

## Data measures mapped

See comments above concerning Adelaide.

## Description

Again, the text associated with the map provides background information on the variable being mapped and describes the pattern of distribution of the variable at the SLA or Health Service Region level. The map overleaf (**Map B**) is an example of the map shown most commonly for South Australia. It shows data mapped to SLAs and includes a description of what the shades represent (see boxes on the map).

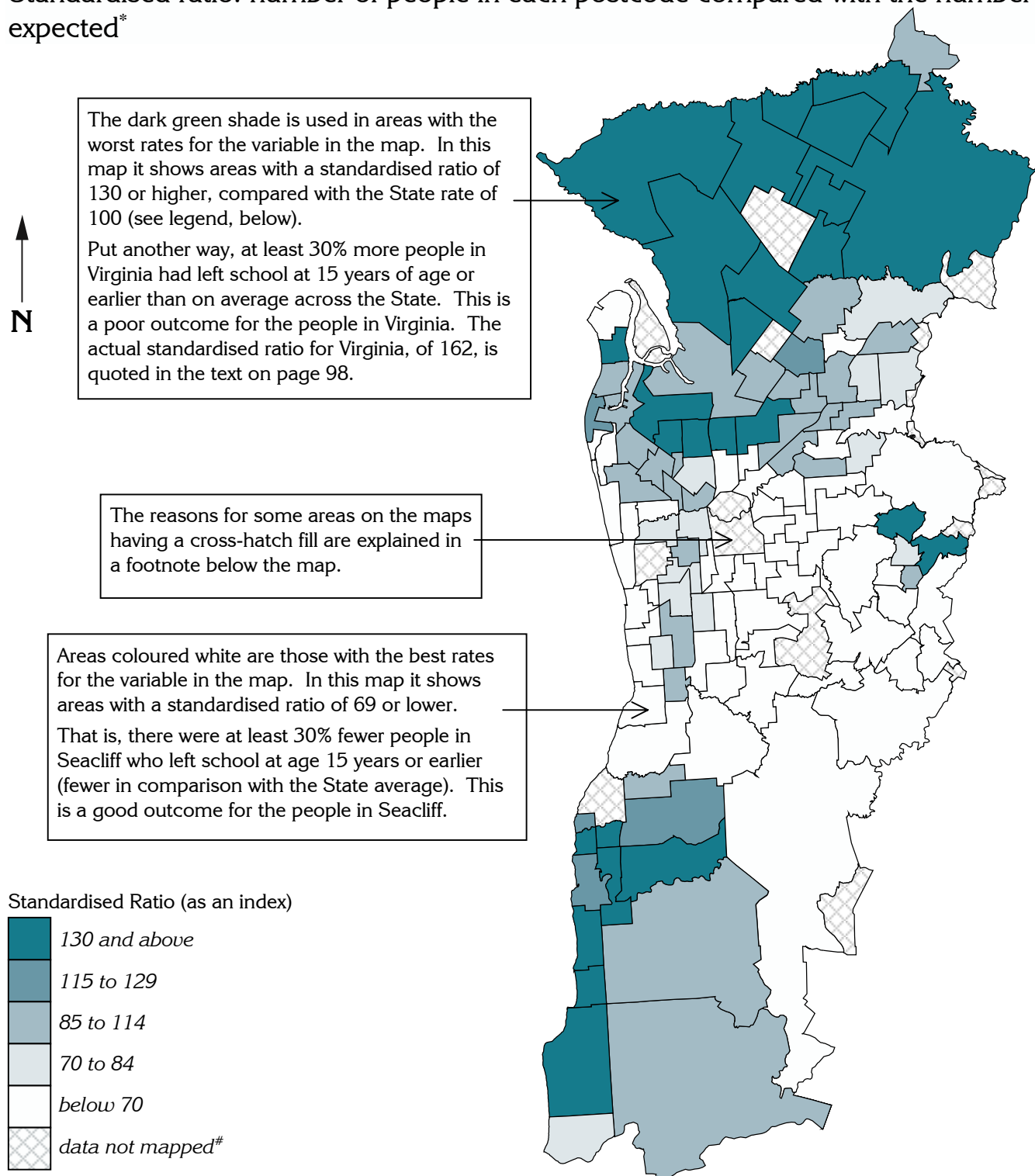
## Additional information: ARIA+ Index

In addition to the map, the map page includes a graph showing the average measure for the variable in each of the five levels of accessibility/remoteness, as determined by the Accessibility/Remoteness Index for Australia (ARIA+) (see **Map B**). This Index 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 categories, which range from Highly Accessible, through Accessible, Moderately Accessible and Remote, to Very Remote. The average percentage, rate or ratio for each of the five categories is then calculated for each variable and presented as a graph. The graph is accompanied by a brief comment on the distribution across the categories.

# Map A

## People aged 15 to 24 years who left school aged 15 or less, Adelaide, 1996

Standardised ratio: number of people in each postcode compared with the number expected\*



\* Expected numbers were derived by indirect age-sex standardisation

# Data were not mapped because either too many non-resident people were included in the Census population, the postcode population is less than 100 or only a small part of the postcode is located in Adelaide.

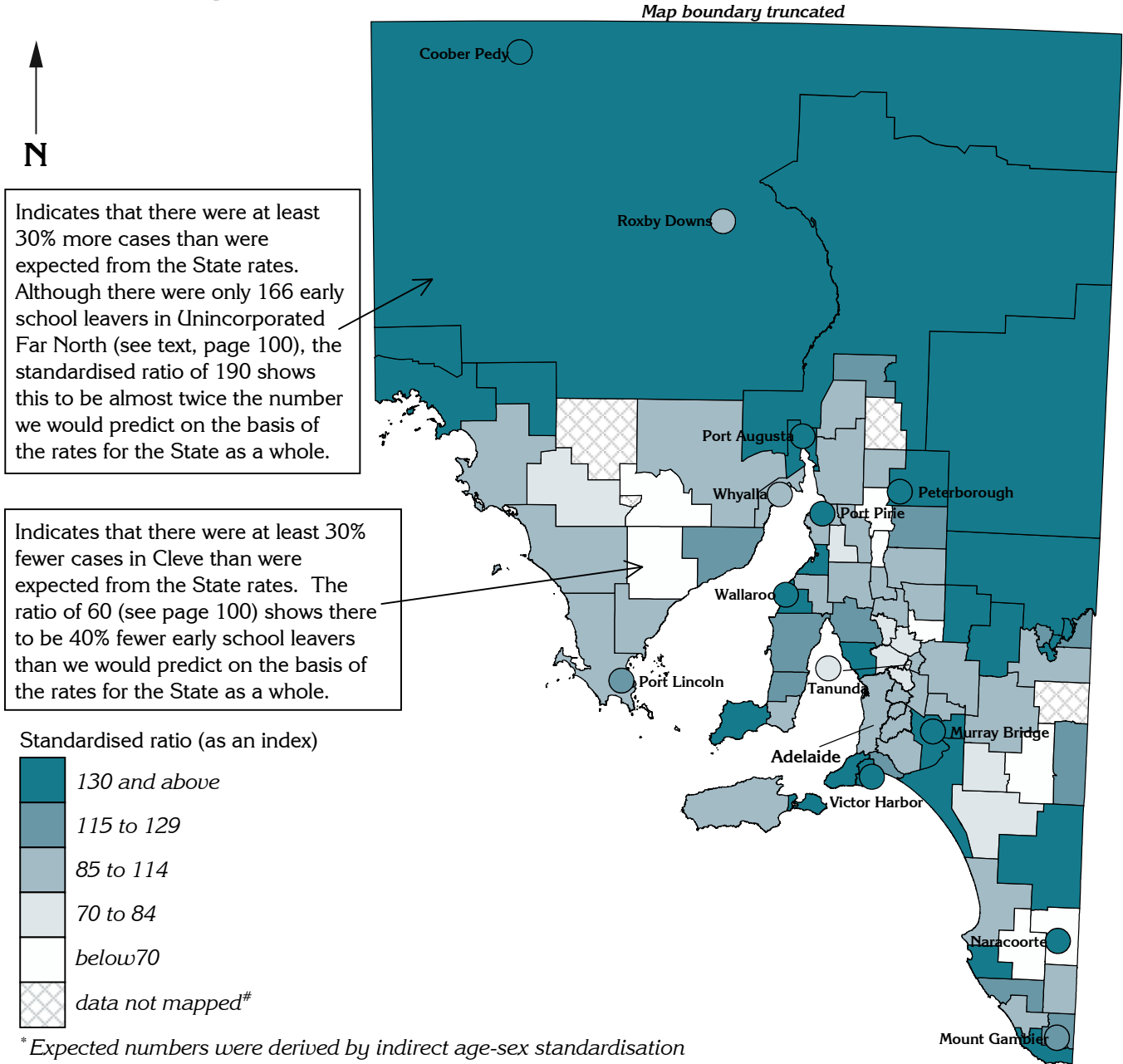
Source: Calculated on data from ABS 1996 Census

Details of map boundaries are in Appendix 1.2

## Map B

### People aged 15 to 24 years who left school aged 15 or less, South Australia, 1996

Standardised ratio: number of people in each Statistical Local Area compared with the number expected\*



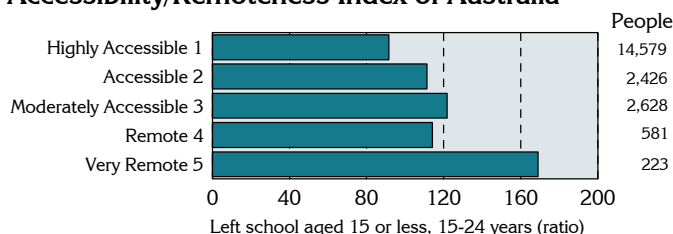
\* Expected numbers were derived by indirect age-sex standardisation

<sup>#</sup>Data were not mapped because the SLA population is less than 100 or there were fewer than five expected cases.

Source: Calculated on data from ABS 1996 Census

Details of map boundaries are in Appendix 1.2

#### Accessibility/Remoteness Index of Australia



Young people living in the Highly Accessible areas have the highest rate of educational participation. As accessibility decreases, people are increasingly likely to have left school early (with an SR of 169 in the Very Remote areas): the relatively high proportion of Indigenous people in these areas is likely to be an important influence on the rates (see text opposite).

Source: Calculated on ARIA+ classification

# Acknowledgements

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- Information Management Services Division: Paul Basso and Jenny Cirillo
- Family and Youth Services: Werner Buchheister.

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Data for the South Australian Certificate of Education published in Chapter 3, Demography and socioeconomic status, were provided by Michael Evans of the Senior Secondary Advisory Board of South Australia.

The data for the Population Census and Estimated Resident Population variables in Chapter 3 were collated by Rachel Aylward, National Centre for Social Applications of GIS (GISCA), The University of Adelaide, with funding from DHS. Chris Wright of GISCA mapped the ARIA+ data by CD (Chapter 2).

Data for the Body Mass Index in Chapter 4, Health Status were provided by Bob Volkmer, Manager, Service Improvement, Child and Youth Health. Immunisation data mapped in this chapter were provided by Brynley Hull of the National Centre for Immunisation Research and Surveillance, Westmead Hospital.

The majority of the data for Chapter 4, Health Status and Chapter 5, Utilisation of Health and Welfare Services were added to the HealthWIZ software program (see Appendix 1.1) for the production of the rates for analysis and mapping.

We also wish to acknowledge the ongoing support of the members of the DHS Child Health Advisory Committee (under the Chairmanship of Professor Don Robertson) whose advocacy and commitment has been instrumental in ensuring the production of this edition of the atlas.

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.

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# Glossary and explanatory notes

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## Admissions

The technical term describing a completed hospital episode is a 'separation'. This includes when the patient is discharged from hospital, transfers to another institution, dies or has a change in type of episode of care.

At the time of admission, the age, sex, address of usual residence and other personal details of the patient are recorded. At the end of the episode, at the time of separation from hospital, details of the episode itself are recorded, including the principal diagnosis (and other diagnoses), principal procedure (and other procedures), and the date, time and method (discharge, transfer or death) of separation. Consequently, hospital inpatient data collections are based on separations. In this atlas the more commonly used term of 'admission' has been used. In an analysis such as this, which excludes long stay patients (other than the few long stay acute patients), there is little difference between the number of admissions and the number of separations in a year. Also, 'admission' is a much more familiar term to many people who will use this atlas.

## Cause of death

Causes of death are classified by the Australian Bureau of Statistics to the Ninth (1975) Revision of the World Health Organization's International Classification of Diseases (ICD-9) which was adopted for world-wide use from 1979.

The cause of death particulars in this publication relate to the underlying cause of death, which the World Health Organization has defined as the disease or injury which initiated the train of events leading directly to death. Accidental and violent deaths are classified to the circumstances of the accident or violence which produced the fatal injury. Deaths of infants aged less than one month are classified according to the main condition in the infant which contributed to the death.

Details of the ICD-9 codes applicable to the variables mapped in Chapter 4 are shown in Appendix 1.4.

## Coding of hospital admissions

Diagnoses and procedures are classified according to the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM October 1988 Revision). External causes are classified according to ICD-9-CM Supplementary

Classification of External Causes of Injury and Poisoning ('E' codes) classification codes.

Details of the codes applicable to the variables mapped in Chapter 5 are shown in Appendix 1.4.

## Standardised ratios

Data on which many of the variables have been mapped have been standardised to remove differences in the data between areas mapped where those differences result from variations in the age and/or sex profiles of the population being examined. This standardisation process is described in Appendix 1.3, Analysis and presentation of data.

## Socioeconomic disadvantage of area

Socioeconomic disadvantage of area is represented by the Index of Relative Socio-Economic Disadvantage (IRSD). The IRSD is one of five Socio-Economic Indexes for Areas produced by the Australian Bureau of Statistics at recent population censuses. Produced using Principal Components Analysis, it summarises information available from variables related to education, occupation, income, family structure, race (the proportion of Indigenous people), ethnicity (poor proficiency in use of the English language) and housing. The variables are expressed as percentages of the relevant population. The IRSD was calculated at the Census Collection District level and was then calculated for Statistical Local Areas by weighting the scores for the smaller CDs by their population. The IRSD is calculated to show the relativity of areas to the South Australian average for the particular set of variables which comprise it. This average score is set at 1000. Scores below 1000 indicate areas with relatively disadvantaged populations under this measure, and scores above 1000 indicate areas with relatively advantaged populations.

## Quintiles

In the Summary, Chapter 7, the data have been grouped into areas of similar socioeconomic status by allocating each postcode (or SLA) in Adelaide to one of five categories (quintiles) based on its Index of Relative Socio-Economic Disadvantage (IRSD) score (see above). Quintile 1 comprises the postcodes (or SLAs) with the highest IRSD scores (most advantaged areas), and Quintile 5 comprises

the SLAs with the lowest IRSD score (most disadvantaged areas). The average rate (or standardised ratio or percentage) for each quintile was then calculated. SLAs in the non-metropolitan areas and the whole of the State (Adelaide plus the non-metropolitan areas) were similarly treated.

The quintiles each comprise approximately 20% of the population of children and young people (aged from 0 to 24 years). This process does not provide an exact allocation of population, so the resultant populations are only 'approximately' equal (see **Table 7.4** in Chapter 7).

## Rate ratio

Rate ratios are calculated for the data analysed by quintile of socioeconomic disadvantage of area and by remoteness, using the Accessibility Index of Australia (ARIA+). For analysis by quintile of socioeconomic disadvantage, the rate ratio shows the extent of variation in percentages or age standardised rates between the quintile under analysis and Quintile 1, the areas with the highest socioeconomic status. For analysis by ARIA+, they show the extent of variation in percentages or age standardised rates between the remoteness class under analysis and the Highly Accessible class.

Areas with the same death rate as in Quintile 1 or the Highly Accessible class will have a rate ratio of one (1.0); areas with a higher death rate will have a rate ratio of more than 1; and areas with a lower death rate will have a rate ratio of less than one. Rate ratios are expressed as a ratio (eg. 1.25), or as a percentage (a rate ratio of 1.25 shows the death rate in the quintile or class to be 25% higher than that in Quintile 1 or the Highly Accessible class, respectively).

## Statistical Local Area

The Statistical Local Area (SLA) is a spatial unit within the Australian Standard Geographical Classification (ASGC 1996, 1998), the geographical classification developed by the Australian Bureau of Statistics (ABS) for coding data to areas within Australia. It is a standard geographic area used for many statistical purposes.

## Symbols used

C	City
DC	District Council
M	Municipality
RC	Rural City

## Abbreviations used

ABS	Australian Bureau of Statistics
ARIA+	Accessibility/ Remoteness Index of Australia
CAMHS	Child and Adolescent Mental Health Services
DFaCS	Department of Family and Community Services
DHS	Department of Human Services
DoHA	Department of Health and Ageing
FAYS	Family and Youth Services
HIC	Health Insurance Commission
IRSD	Index of Relative Socio-Economic Disadvantage
SEIFA	Socio-Economic Indexes for Areas