A SOCIAL HEALTH ATLAS OF AUSTRALIA

Second Edition

Volume 6: Western Australia

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Φ PHIDU Public Health Information Development Unit

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A Social Health Atlas of Australia, 1992, Vols 1 & 2

HealthWIZ: details available at www.prometheus.com.au

Social health atlas World Wide Web site: www.publichealth.gov.au

Foreword

The publication of this second edition of ***A Social Health Atlas of Australia*** brings together a wide range of information about the health status of Australians by region, and the health service use by the Australian population.

By presenting the data as maps, the atlas provides a graphical image of the distribution of health status, and differences in the patterns and levels of access to and use of health services at the local level throughout the cities, towns, and rural and remote areas of Australia. The format of the atlas makes the information easy to understand and readily accessible to a broad group of users, including public health planners, providers, researchers, students and the general public.

The graphs of the newly developed Accessibility/Remoteness Index for Australia (ARIA) provide useful information for communities, as well as practitioners and managers in the health sector, to better understand the differences in the statistics that describe health status and health service use.

This data is essential for policy development and local area planning, and for monitoring and evaluating health services. It is also of major importance for resource allocation at the broadest level, and between areas, services and population groups. The maps and tabulations presented in this atlas represent a major compilation of information for these purposes.

I congratulate all those who have contributed to this important project.

Dr Michael Wooldridge
The Minister for Health and Aged Care

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Executive summary

Introduction

The information in this atlas adds to a convincing body of evidence built up over a number of years in Australia as to the striking disparities in health that exist between groups in the population. People of low socioeconomic status (those who are relatively socially or economically deprived) experience worse health than those of higher socioeconomic status for almost every major cause of mortality and morbidity. The challenge for policy makers, health practitioners and governments is to find ways to address these health inequities.

Background

The primary aims of the first edition of *A Social Health Atlas of Australia* were to illustrate the spatial distribution of the socioeconomically disadvantaged population, and to compare this with patterns of distribution of major causes of illness and death and use of health services. The maps and correlation analysis highlighted associations between social and economic factors in relation to health and illness.

A number of new variables have been included in this second edition, together with many of the variables from the first edition. One of the additions is the presentation of data by the new Accessibility/Remoteness Index of Australia (ARIA). Also included is a cluster analysis, providing profiles at the Statistical Local Area (SLA) level of the socioeconomic status, health status and health service utilisation of the population.

The extent of change (between the editions) in the patterns of distribution in death rates by socioeconomic status is also highlighted.

Findings

Correlation analysis

There were correlations of significance at the SLA level between the measures of socioeconomic disadvantage and a number of the health status variables in **Perth**. The strongest of these were with the variables for people reporting their health as fair or poor (as opposed to those reporting their health as being excellent, very good, or good); the PCS (the Physical Component Summary, a measure of physical health); and premature death from, in particular, lung cancer and circulatory system diseases (**Table 8.1**). Similarly, strong associations were also evident in the correlation analysis with the health service use variables of GP services to males and females; and of admissions for circulatory and respiratory system diseases, admissions to a public hospital admissions for Caesarean section and admissions for hysterectomy.

There were fewer correlations of significance at the SLA level in the non-metropolitan areas of Western Australia than was the case in **Perth**. This is, in part, a result of the number of SLAs with relatively small numbers of cases (population, deaths, hospital admissions, etc.) which reduces the strength of the analysis.

However, a number of variables are highly correlated with each other: these are the variables for low income families, single parent families, unemployed people, the Indigenous population and dwellings without a vehicle.

Various sub-sets of these are correlated with measures of health status and use of health services. The strongest correlations with the measures of socioeconomic disadvantage were with the variables for people reporting their health as fair or poor, and the PCS.

Although generally weaker, there was a consistent pattern between socioeconomic disadvantage and the variables for deaths of males and females; hospital admissions of males and females; and hospital admissions from accidents, poisonings and violence.

For the Indigenous population, there were correlations of meaningful significance at the SLA level with the variables for years of potential life lost (the summary measure of premature death), people reporting fair or poor health, people with a handicap, deaths of 15 to 64 year old males and females, admissions to a public hospital and admissions from the combined causes of accidents, poisonings and violence; and admissions for neuroses.

Changes in socioeconomic status

Marked variations were recorded between 1986 and 1996 for a majority of the socioeconomic status variables mapped for Western Australia (**Table 9.1**). For **Perth**, the largest increases were for the population of Aboriginal and Torres Strait Islander people (an increase of 70.5 per cent over this ten year period); the occupational grouping of managers and administrators, and professionals (55.5 per cent); low income families (41.6 per cent); people born overseas in predominantly non-English speaking countries: an increase of 39.6 per cent for those resident for five years or more, of 24.9 per cent for those resident for less than five years, and of 23.9 per cent for those with poor proficiency in English; people aged 65 years and over (35.5 per cent); single parent families (35.4 per cent); and housing authority rented dwellings (21.7 per cent). The largest decrease recorded over this ten year period was for the variable for unemployment among 15 to 19 year olds (down by 17.9 per cent).

Variations of this order were also recorded in the non-metropolitan areas of Western Australia. The major differences from the changes noted for **Perth** were the larger increases in the population of people aged 65 years and over and the number of dwellings without a motor vehicle; smaller increases for the Indigenous population, occupations of managers and administrators and professionals, low income families and single parent families; and decreases for each of the three variables for people born overseas in predominantly non-English speaking countries.

Substantial variations were recorded in income support payments to residents of **Perth** for all of the payment types analysed, other than the Age Pension, for which there was a small increase (an increase of 3.2 per cent). The number of recipients for each of the other payment types increased substantially, with the number

of unemployment beneficiaries more than doubling (an increase of 140.2 per cent) (**Table 9.1**). Similar, although smaller increases were recorded in the non-metropolitan areas of Western Australia for all of these income support payments, other than the Female Sole Parent Pension, for which there was a larger increase (52.2 per cent).

Changes in death rates

Death rates in South Australia have declined over the years 1985 to 1989 and 1992 to 1995 for the majority of causes studied.

In **Perth**, the largest decreases were recorded for the infant death rate (down by 36.9 per cent); and for deaths of people aged from 15 to 64 years from respiratory system diseases (-45.0 per cent), circulatory system diseases (-41.2 per cent) and cancer (-23.9 per cent). All causes mortality was 26.6 per cent lower over this period, marginally more so for males than for females.

There were also reductions in rates of premature death in the non-metropolitan areas of Western Australia for all the major causes of death. However the reductions were all lower than those recorded for **Perth**, at around two thirds (60.9 per cent) for all cause mortality.

Summary of findings by socioeconomic status of area of residence

Comparisons are made of changes in the health status of the population by socioeconomic status. In the absence of any direct measure of socioeconomic status in the health status data, the socioeconomic status of the SLA of usual residence in the health status records is used. In this analysis socioeconomic status is measured by the Index of Relative Socio-Economic Status (IRSD, see page 17). The SLAs in **Perth** have been grouped into five groups (quintiles) based on the IRSD score, with Quintile 1 comprising the twenty per cent of SLAs with the highest IRSD scores, and Quintile 5 comprising the twenty per cent of SLAs with the lowest IRSD scores. This exercise was repeated for the non-metropolitan SLAs in Western Australia.

Health status

Although there is some variability across the quintiles, the pattern is generally for the highest socioeconomic status SLAs (those in Quintile 1) to have the most advantageous (ie. in the majority of cases the lowest) rates and, generally, for the most disadvantaged SLAs (those in Quintile 5) to have the highest rates. The exception is the Physical Component Summary (PCS) score, for which low scores indicate poorer health. Despite the narrow range of these mean values, there is a clear gradient evident across the quintiles of socioeconomic disadvantage of area (**Figure 9.2**).

Years of potential life lost (YPLL) from deaths between the ages of 15 to 64 years varied from 87 in the most advantaged areas (13 per cent fewer YPLL than were expected from the Australian rates) to 114 in the most disadvantaged areas (indicating that there were 14 per cent more YPLL than were expected from the Australian rates). In fact, the differential is even greater (1.54 times) between Quintile 2 and Quintile 5. Large differentials were also evident for deaths of 15 to 64 year old males (from an SDR of 81 in Quintile 1 (and even lower, at 72, in Quintile 2) to 121 in Quintile 5) and deaths of 15 to 64 years olds from lung cancer (54 to 123), circulatory system diseases (66 to 119) and respiratory system diseases (56 to 107).

The main differences from the gradients evident for **Perth** are for people with a handicap, infant deaths, premature deaths of females, premature deaths from circulatory system diseases, and the Total Fertility Rate (**Figure 9.4**).

Health service utilisation

Although there is some variability across the quintiles for the health service utilisation variables for SLAs in **Perth**, the pattern is generally for the most advantaged SLAs (those in Quintile 1) to have the lowest rates of admission, and for the most disadvantaged SLAs (those in Quintile 5) to have the highest rates. The exceptions include the graphs for admissions to a private hospital, for breast cancer of females aged 40 years and over, for psychosis and for neurotic, personality and other mental disorders. Others, including the graphs for admissions for myringotomy, hip replacement, lens insertion and endoscopy, reveal a less consistent pattern (**Figure 9.3**).

The associations evident between the gradients in the health service utilisation data and socioeconomic status in **Perth** are much less evident in the non-metropolitan areas (**Figure 9.5**).

Change in health status by socioeconomic status of area of residence

As noted above, there has been an overall decrease in death rates in Western Australia; there are also differentials in death rates by socioeconomic status of area. It is possible to examine the extent of the change in death rates by socioeconomic status of area. As data was not available for non-metropolitan SLAs in the first edition of the atlas, the following comparisons have been limited to **Perth**.

Death rates in **Perth** declined between 1985-89 and 1992-95 for all of the causes of death studied, both overall and in the majority of quintiles of socioeconomic status of area.

It is clear for many of the variables, however, that despite the overall decline in death rates, the strong gradient between the quintiles remains. For example, while the differential in death rates for males has decreased, from 1.48 times higher in Quintile 1 (the most advantaged areas) to 1.39 times higher in Quintile 5 (the most disadvantaged areas), the remaining differential of 39 per cent represents a substantially higher death rate in the most disadvantaged areas. The percentage decline in death rates between the two periods is similar across all quintiles.

For females, the differential in death rates between Quintile 1 (the most advantaged areas) and Quintile 5 (the most disadvantaged areas) while higher than that for males, also decreased, from 1.27 times higher in the most disadvantaged areas in 1985-89 to 1.11 times higher in 1992-95.

Infant death rates in **Perth** declined by over one third (36.9 per cent, **Table 9.2**) between 1985-89 and 1992-95, and the differential in rates between Quintile 1 and Quintile 5 also declined, from 1.66 times higher in the most disadvantaged areas in 1985-89 to 1.33 times higher in 1992-95. This is a notable reduction, although the remaining differential of 33 per cent is still substantial.

Despite a decline in death rates for the 15 to 64 year old population for all cancers and lung cancer (with a larger decline), the differential in rates between Quintile 1 and Quintile 5 remained consistent at 1.1 for all cancers, although it increased from 1.98 times higher in the most disadvantaged areas in 1985-89 to 2.08 times higher in 1992-95 for lung cancer.

The overall decline in death rates for deaths of 15 to 64 year olds from circulatory system diseases was the second highest of the causes of death studied in **Perth** (41.2 per cent). The differential in rates between Quintile 1 and Quintile 5 increased, from 1.63 times higher in the most disadvantaged areas in 1985-89 to 1.71 times higher in 1992-95.

Although death rates from respiratory system diseases are lower than those recorded for circulatory system diseases (and declined by the largest proportion, 45.0 per cent), the gradients across the quintiles of socioeconomic status of area of address of usual residence in **Perth** over both periods are similar. In 1985-89, the differential between Quintiles 1 and 5 was 1.71; by 1992-95 this had increased (by 5.6 per cent) to 1.80.

Death rates of 15 to 64 year old people from the external causes of accidents, poisonings and violence are also highest in the most disadvantaged areas of **Perth**. Unlike the other causes of death, the differential in 1992-95 is smaller than in 1985-89 (down from 1.43 to 1.09).

Death rates of 15 to 24 year olds from the external causes of accidents, poisonings and violence show a different pattern to that evident for deaths at ages from 15 to 64 years. Rates are highest in Quintiles 3 and 5 in 1985-89, although in 1992-95, the rates in Quintile 1 and 4 are highest. However, as is the case for deaths from these causes in the 15 to 64 year age group, the differential in 1992-95 is smaller than in 1985-89 (down by 15.7 per cent, from 1.05 to 0.88).

Conclusion

There is clear evidence in the data of an association at the SLA level between high premature death rates (for both deaths from all causes and from most specific causes) and socioeconomic disadvantage, as measured by the IRSD. These associations are generally evident not only between the most advantaged (Quintile 1) and disadvantaged areas (Quintile 5), but also at each of the intervening levels of socioeconomic status (Quintiles 2 to 4) (**Figures 9.2 and 9.4**).

Similarly, there are associations between socioeconomic disadvantage and high rates of use of general medical practitioner services and for most of the variables for hospital admission in **Perth** (**Figure 9.3**).

It is also clear that, despite the overall improvement in deaths rates from all causes and for a majority of the specific causes studied (**Table 9.2**, **Figure 9.6**), these improvements have not removed the disparities evident in death rates between residents of the most well off areas and those in the poorest areas (**Figure 9.6**).

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Using the *Social Health Atlas*

The social health atlas package

This second edition of *A Social Health Atlas of Australia* comprises:

- this volume for Western Australia and a companion volume (Volume 2.1) containing the data mapped (the numbers and rate/ratio/percentages on which the maps are based); and
- similar volumes for each of the other States and Territories and a separate atlas for Australia as a whole (each of these atlases also has a companion volume containing the data mapped).

Some of the data from the atlas are also available on the **HealthWIZ** statistics database product, which comprises comprehensive health statistics from Australia's hospital systems, cause of death registries, population censuses, cancer registries, Medicare and income support system, as well as details of aged care and child care.

This volume contains general background information to the atlas, as well as maps of selected variables showing patterns of socioeconomic status, health status and health and welfare service use at a small area level. Each of these maps is accompanied by a commentary.

The text and maps can also be downloaded for reading and printing from the Public Health Information Development Unit World Wide Web site at www.publichealth.gov.au. The text (including the maps and graphs) and datasets on which the maps are based are available on CD-ROM (for Windows). Further details are in Appendix 1.1, *Project Resources and Output*.

Content

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

1 Introduction

2 Methods

3 Demography and socioeconomic status

4 Income support payments

5 Health status

6 Utilisation of health services

7 Availability of selected health services

8 Statistical analysis

9 Summary

Chapters 1 and 2 provide an overview of the purpose of the atlas and the approach taken in analysing and mapping data. These sections 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 7 each provide an introduction to the topic(s) being mapped, as well as the maps and associated commentary.

Chapter 8 shows the results of the correlation and cluster analyses. Chapter 9 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 5 and 6.

Using the atlas

Some people will use the atlas as a reference source, either going to particular maps(eg. of hospital surgical procedures), or using the index to find a particular topic (eg. deaths from circulatory system diseases) 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 re-group the 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 in this atlas. 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.

Map of Perth

Area mapped

The area mapped is the Statistical Division of **Perth** (generally known as the capital city area). The spatial unit mapped is the Statistical Local Area (SLA).

Additional details, including key maps to assist in the location and identification of particular SLAs, are in *Appendix 1.2*: a set of clear film overlays to assist in this process is located 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 (or age-sex) standardised ratio (the process of standardisation is described in Appendix 1.3, *Analysis and presentation of data*). The exceptions are the maps, in Chapter 7, of the location of selected health services; the Index of Relative Socio-Economic Disadvantage mapped in Chapter 3; the infant death rate; and the Total Fertility Rate.

The legend shows the data ranges used to indicate the spatial distribution of the characteristic being mapped.

Footnotes on the map page draw attention to particular aspects of the mapped data and the source of 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 SLA level.

The commentary in the top section provides information about the topic being mapped, as well as a comparison between the capital cities and, where the data are available, refers to the situation reported in the first edition of the atlas. For variables where the data are age (or age-sex) standardised, these comparisons are made across Australia (with Australia as the standard for comparison).

In the lower two thirds of the page, attention is drawn to other sources of information about the variable, or characteristics of the population under discussion. The pattern of distribution shown in the map is then described, and associations evident in the correlation analysis with other variables are noted. Users should note that in these descriptions, where data has been standardised, it has been re-calculated to a new standard – in this atlas, to the Western Australian State rates (rather than the Australian rates). This allows comparisons to be made between the rates for the SLAs within **Perth**, and the Western Australian rates – ie. in effect the State average. This differs from the commentary on the top of the page, for which comparisons are made with the Australian rates.

Where the numbers of cases are relatively small (and, in particular, where these small numbers are associated with elevated rates), the absolute numbers are included in the commentary. The numbers (as well as the percentages, rates and ratios) are available in printed and electronic forms and should be used in conjunction with the information in this atlas.

Map of Western Australia: referred to as the 'non-metropolitan areas' of Western Australia

Area mapped

The spatial units mapped are again SLAs: however **Perth**, is mapped as one area (ie. not by SLA) to enhance comparisons between **Perth** and the non-metropolitan areas.

Towns with a population of 7,500 or more (but less than the urban centre cut-off of 100,000) are represented on the maps as circles. Unfortunately, data for many towns is not available for the datasets in the atlas (other than the Census data).

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

Data measures mapped

See comments above concerning **Perth**.

Description

Again, commentary in the top section provides information about the topic being mapped, as well as national comparisons, this time comparing the 'other' major urban centres (those population centres of 100,000 or larger which are not capital cities) and the areas of Australia outside of the capital cities and other major urban centres. These regional/rural/remote areas are referred to in the text as 'non-metropolitan areas'. Where the data are age (or age-sex) standardised, the standard is, again, Australia.

The lower two thirds of the page again draws attention to other sources of information about the variable, or characteristics of the population under discussion. The pattern of distribution shown in the map is then described, and associations evident in the correlation analysis with other variables are noted. Users should note that in these descriptions, where data has been standardised, it has been re-calculated to a new standard – in this atlas, to the Western Australian State rates (rather than the Australian rates). This allows comparisons to be made between the rates for the SLAs within the non-metropolitan areas of Western Australia and the State rates – ie. in effect the State average.

The cautions in the main introduction and in the introductory notes to each chapter are particularly relevant to the non-metropolitan areas, with their geographically large SLAs and relatively small, scattered populations.

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 five levels of accessibility/remoteness, as determined by the Accessibility/Remoteness Index for Australia (ARIA). This Index is described in more detail in Chapter 2, under the heading *Accessibility and Remoteness*. In brief, each SLA in Western 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.

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The atlas series was produced with the assistance of a number of people and organisations. This atlas for Western Australia was produced by John Glover, Kevin Harris and Sarah Tennant, with the assistance of Vija Watts. Sarah was also responsible for day to day management of the data (for checking and storing it), for producing many of the tables and graphs, and for generally keeping in touch with the whole project. Some of the early drafting of Chapter 3 in this atlas was undertaken by David Forster and Cameron Joyce, and Caroline Bruce was responsible for the majority of the work in checking and validating the Census data that was supplied for all of the atlases. These three people moved on to other jobs in the early stages of this project. Lucy Glover checked the data in the drafts against the source material and edited it as necessary. Nicholas Glover inserted many of the map files (as did Kieran Moors) and set up the graphs in Chapter 9.

Outside the Public Health Information Development Unit (PHIDU), Prometheus Information Pty Ltd was the major contributor to the project. Prometheus is contracted by the Commonwealth Department of Health and Aged Care to develop HealthWIZ, the software which was used to produce the maps in this atlas and the data tables (on which the maps are based) in Volume 5.1. Some of the information was already held by Prometheus, and other information needed to be obtained from various Commonwealth, State and Territory agencies and added to the HealthWIZ database in a way that ensured comparability. This was no small task. Although the HealthWIZ software included a mapping facility, the particular approach to publishing the atlas required that special arrangements be made to output the maps in a suitable format. For example, the maps were exported from HealthWIZ and pasted into frames in a MS Word document. Each of these documents was then inserted into the appropriate page in the atlas. Much of the work was highly complex and technical, and required attention to detail and knowledge of the datasets (in particular in identifying potential problems in the data and following these up to confirm or correct them) and statistical geography over a number of years. The quality of the final result, evident in the published product, is testimony to their efforts. George Preston, a Director of the company, was always willing to assist. His knowledge of health statistics and his statistical expertise were frequently of value in making decisions about alternative approaches to the analysis and interpretation of data. Daryel Akerlind and Alain Remont designed the software enhancements to provide the pullouts and town overlays for the maps. Other major contributors at Prometheus were Jane Gorrie and Jennifer Chorley, Zlatan Dzumhur, Jane Lindsay, Jennie Widdowson, Ayse Idehen and (in the earlier stages of the project) Swandi Candra.

In addition to funding the project, the Commonwealth Department of Health and Aged Care took a keen interest in the ongoing work. A number of people had a key role in this, including Ruth Parslow, Karl Higgins and Frances Byers (in aspects of project establishment and contract management) and Jan Bennett and Brendan Gibson (overall direction of the project). In more recent months, Joy Eshpeter and Renata Rustowski have had a major role in seeing the project signed off and in negotiating release arrangements. The support and encouragement of this group of people (and others in the Department) has been greatly appreciated, as were their comments on the final drafts.

The South Australian Department of Human Services had contract responsibility for the atlas for much of the time over which it was produced. They provided a supportive environment in which the atlas could be produced, and made possible the transition of responsibility for the project to PHIDU in April 1999. The support of many people in the Department, including the Chief Executive, Christine Charles, is gratefully acknowledged.

The Australian Institute of Health and Welfare (AIHW) provided the majority of the hospital inpatient data in Chapter 6. They also provided other material for this chapter, in addition to the data mapped. The main individuals who assisted were Jenny Hargreaves, Janis Shaw and Paul Halliday. The State and Territory health agencies all provided additional details of hospital admissions not available from the AIHW (of admissions of residents of one State or Territory occurring in another).

Colin Mathers of the AIHW and Theo Voss of the Victorian Department of Human Services readily agreed to the use in the atlas of the results of their recent (unpublished) studies into links between socioeconomic status and health status.

All of the data in Chapter 3, as well as a range of other data used throughout the atlas, were purchased from the Australian Bureau of Statistics (ABS). The staff of the Adelaide office of the ABS handled these requests and were thorough and helpful in assisting us to define the data so that it was comparable with that published in the first edition of the atlas. The staff of the ABS office in Perth were also helpful in providing details of population counts for areas affected by boundary changes that had implications for the datasets being used.

The cluster analysis was a major exercise and was undertaken in a highly professional manner by Graeme Tucker. The ARIA graphs and the graphs in Chapter 9 were exported from a module produced by Andrew McAlindon. This module streamlined the calculation of the many rates, percentages etc. used in these sections of the atlas, as well as the production of the final graphs.

Diana Hetzel and Jeanette Pope provided invaluable support in strengthening the discussion of the socioeconomic determinants of health in Chapter 1. Diana contributed in a number of other ways, in particular by providing much of the referenced background material in the topic introductions throughout the atlas; she also read the final drafts. Tony Woollacott and Fearnley Szuster read a number of earlier drafts and Fearnley also provided many useful comments on later drafts. Thanks are also due to Julie Johinke who produced the cover design, and to Paul Doherty for the photographic image used on the cover.

The final responsibility for the content and comment remains with me.

John Glover, Project Manager
December 1999

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Glossary and Explanatory notes

Cause of death

Causes of death are classified by the Australian Bureau of Statistics to the Ninth (1975) Revision of the World Health Organisation'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 Organisation has defined as the disease or injury which initiated the train of morbid 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 5 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 6 are shown in *Appendix 1.4*.

Admissions

The technical term describing a completed hospital episode (ie. the discharge, death or transfer of a patient) is a 'separation'.

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.

Standardised ratios

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

Statistical Local Area

The Statistical Local Area (SLA) is a standard geographic area established by the Australian Bureau of Statistics (ABS) to cover the whole of Australia, for the purposes of geographically coding data. It is, in a majority of cases, equivalent to a legal local government area (LGA). SLAs comprise whole LGAs; part LGAs (where the LGA has been split for planning, administrative or statistical purposes); or are unincorporated areas. In Western Australia there were 142 LGAs and 151 SLAs at 1 July 1996 (ABS 1996).

Symbols used

n.a.	not available
..	not applicable
-	nil, or less than half the final digit shown
C	City
S	Shire
T	Town

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