5 Health status

Introduction

Differences in social and economic circumstances have been illustrated in the previous chapters for areas of New South Wales. The maps and analyses in this chapter illustrate differences in the health status of residents of these areas.

The mapping technique is particularly useful in highlighting differences in the health status of the population (as measured by the indicators available) in areas across New South Wales, and in demonstrating associations with the socioeconomic status and health service utilisation patterns. The results of the correlation analysis (which shows the extent of interdependence between the measures when mapped) are included in the text to support these associations.

Background

Health has been defined by the World Health Organisation as á state of complete physical, mental and social well being and not merely the absence of disease or infirmity ?. Health status "refers to the level of health experienced by an individual or a community by placing them along a continuum, from health through distress, disease and disability, to death" (SAHC 1988).

Data collected since early this century have shown a steady improvement in the health status of Australians, as measured by a range of indicators including life expectancy, infant mortality and overall death rates. However, as noted in the *Introduction* (page 1), there are overwhelming inequalities in health status for disadvantaged groups. For example, all cause mortality rates are, on average, around 50 per cent higher for people aged under 65 years and living in the lowest socioeconomic areas when compared to the population groups of the same age and sex living in the areas of highest socioeconomic status (**Table 5.1**).

These differentials exist for both males and females in all the age groups studied, for all cause mortality and for a number of selected causes.

Table 5.1: Health status indicators by socioeconomic disadvantage of area and sex, Australia, late 1980s
Note: First quintile is high socioeconomic status and fifth quintile is low socioeconomic status

Age group (years)		Rate ratio for quintile of socioeconomic disadvantage of area			
		Males		Females	
		1st quintile	5th quintile	1st quintile	5th quintile
Children (0 to 14 years):	Mortality	1.00	1.46***	1.00	1.63***
	Serious chronic illness	1.00	1.25	1.00	1.18
	Reduced activity	1.00	1.36***	1.00	1.03
	Not breastfed: 0 to 4 yrs	1.00	1.46*	1.00	1.09
Youth (15 to 24 years):	Mortality	1.00	1.46***	1.00	1.49***
	Serious chronic illness	1.00	1.03	1.00	1.03
	Reduced activity	1.00	0.74***	1.00	0.95
	Fair/poor health	1.00	1.33	1.00	1.40
	Inactivity	1.00	1.07	1.00	1.34**
	Smoking: 18 yrs & over	1.00	1.24*	1.00	1.22
Adults (25 to 64 years):	Mortality	1.00	1.67***	1.00	1.49***
	Serious chronic illness	1.00	1.12	1.00	1.22**
	Reduced activity	1.00	1.56***	1.00	0.98
	Fair/poor health	1.00	1.61***	1.00	1.67***
	Overweight/obesity	1.00	0.99	1.00	1.23***
	Inactivity	1.00	1.26***	1.00	1.17**
	Smoking	1.00	1.43***	1.00	1.53***
	Alcohol risk	1.00	1.44***	1.00	0.95
Older people (65 & over):	Mortality	1.00	1.13***	1.00	1.10***
	Serious chronic illness	1.00	1.06	1.00	1.06
	Reduced activity	1.00	1.08**	1.00	1.22***
	Fair/poor health	1.00	1.34**	1.00	1.30**
	Overweight/obesity	1.00	1.05	1.00	1.17
	Inactivity	1.00	1.25	1.00	1.27**
	Smoking	1.00	1.47*	1.00	1.32
	Alcohol risk	1.00	1.12	1.00	1.05
All ages :	Mortality	1.00	1.23***	1.00	1.23***
	Serious chronic illness	1.00	1.11*	1.00	1.13**
	Fair/poor health	1.00	1.50***	1.00	1.51***
	Overweight/obesity	1.00	1.01	1.00	1.20***
	Inactivity	1.00	1.23***	1.00	1.21***
	Smoking: 18 yrs & over	1.00	1.34***	1.00	1.44***
	Alcohol risk: 18 yrs & over	1.00	1.34***	1.00	0.98

Statistical significance: the greater the number of * the higher the level of significance : * p < 0.05: ** p < 0.01: *** p < 0.001
Source: Mathers, C. Health Monitoring Series Nos. 1 to 4, Australian Institute of Health & Welfare, Canberra, 1994

Young people and adults from the lowest socioeconomic areas are also more likely to report their health as being 'fair' or 'poor' (in comparison with 'excellent' or 'good') than those living in the areas of highest socioeconomic status. The largest differential is that for 25 to 64 year old females: a differential of 67 per cent. Most risk factors, for example smoking, are also highly elevated for both men and women in the 'young' (by 24 per cent for males and 22 per cent for females) and 'adult' (by 43 per cent for males and 53 per cent for females) age groups living in the most disadvantaged areas. Male adult residents of these areas are also at high risk of poor health from high levels of alcohol consumption.

Despite overall decline in mortality rates between 1985-87 and 1995-97 for the majority of conditions, the differentials observed in the earlier period were still evident a decade later (Mathers in press). For example, during 1995-97 infants and children living in the most disadvantaged areas experienced the highest mortality rates for perinatal conditions and sudden infant death syndrome, and for injury and poisoning (**Table 5.2**)[1]. Similarly, males and females aged from 25 to 64 years residing in the most disadvantaged areas, experienced the highest death rates for all cause mortality; for specific causes such as circulatory, respiratory and digestive system diseases; and for selected causes, such as coronary heart disease and stroke, motor vehicle traffic accidents and pneumonia/bronchitis. Although data for the individual quintiles are not presented in the table, almost without exception, death rates for these quintiles exhibited a clear gradient from high to low socioeconomic status. These widening differentials give cause for concern.

For some conditions, the authors found an actual increase in the mortality rates over the decade. Among those aged 15 to 24, there was an increase in the rate of male suicide in the middle (third) and low (fifth) socioeconomic status quintiles, and a corresponding increase for females in the high (first) and middle socioeconomic status quintiles (and also in the rate ratio). Among males aged 25 to 64, mortality rates increased (or remained largely unchanged) for diabetes mellitus, suicide, and asthma/emphysema, and for females of the same age increases in death rates were evident for diabetes mellitus, lung cancer and asthma/emphysema.

Although not statistically significant, the large reductions in rate ratios for deaths of 15 to 24 year old males and females from causes of drug dependence may reflect an increase in deaths of residents of higher socioeconomic status areas from these causes.

[1]Age standardised mortality rates were calculated for males and females in the first (least disadvantaged), third, and fifth (most disadvantaged) quintiles of the ABS SEIFA Index of Relative Socio-Economic Disadvantage. Only the rate ratio of the fifth quintile to the first quintile is shown in the table.

Table 5.2: Rate ratio of mortality inequality by socioeconomic disadvantage of area, 1985-87 and 1995-97

Age group/Mortality type	Rate ratio[1]			
	Males		Females	
	1985-87	1995-97	1985-87	1995-97
0 to 14 years				
All Cause	1.50	1.62***	1.67	1.45***
Perinatal conditions	1.54	1.39***	1.90	1.41***
Sudden infant death syndrome	1.20	2.73***	1.69	3.24***
Injury and Poisoning	2.02	2.21**	1.84	1.75
MV Traffic Accident	1.53	2.49***	1.95	1.40***
15 to 24 years				
All Cause	1.49	1.78***	1.54	1.40***
Drug dependence	1.91	0.98	1.52	0.94
Injury and Poisoning	1.47	1.98***	1.66	1.49**
MV Traffic Accident	1.40	2.26***	1.56	1.83***
Suicide	1.35	1.75***	1.30	0.95***
25 to 64 years				
All Cause	1.68	1.64***	1.50	1.45***
Circulatory System	1.65	1.87***	1.97	2.01
Coronary HD	1.55	1.88***	2.22	2.34***
Stroke	2.10	2.07	1.71	1.70
Diabetes mellitus	1.73	2.07***	3.04	3.49***
Cancer	1.28	1.39***	1.10	1.14***
Lung cancer	1.60	1.98***	1.58	1.73***
Injury and Poisoning	1.96	1.76***	1.69	1.47***
Suicide	1.73	1.52***	1.42	1.15***
MV Traffic Accident	1.73	2.33***	1.66	2.21***
Respiratory System	2.31	2.49***	2.06	2.64***
Pneumonia, bronchitis	3.72	1.76***	4.24	2.80***
Asthma, emphysema	1.90	3.02***	1.43	2.94***
Digestive System	3.06	2.20***	2.26	2.21

[1]Ratio of Standardised Mortality Ratio for fifth quintile (low socioeconomic status) to first quintile (high socioeconomic status)
Note: Rate ratios of mortality inequality differ significantly from no inequality at significance level p<0.001
Asterisks indicate level of significance of the difference from the corresponding 1985-87 value: * p <0.05, ** p <0.01, *** p <0.001
Source: Mathers C. Australian Institute of Health and Welfare (in press)

Measurement of health status

Current situation

In the absence of accepted measures of good health as a positive entity, health status is largely indicated by measures of morbidity (sickness), mortality (death, in particular infant and other premature deaths, and life expectancy), disability, risk factors and, in some instances, utilisation of health services. Broader aspects of health, such as social and economic wellbeing, or of life satisfaction, are rarely measured in the administrative collections from which most health data are drawn. To be useful in describing health status at a local area level, datasets need to include descriptive information associated both with the particular event being recorded (eg. cause of death) and the person about whom it was recorded (eg. age, sex and place of usual residence).

The deaths 'data collections undertaken by the Australian Bureau of Statistics (ABS) have provided one of the few datasets to include such detail at a local area level. Therefore, mortality data have been the major indicator of health status used over the years in small area analyses. Data on the extent of morbidity (illness or disease), disability and risk factors in the community have generally not been available at the local area level, apart from proxy measures such as hospital admissions and for some States and Territories, cancer incidence data.

Use of Synthetic Predictions

Information on the levels of morbidity in the community has been collected by the ABS since 1977 in the five-yearly National Health Survey (NHS) (prior to 1989 called the Australian Health Survey, AHS). In these surveys, a sample of the Australian population is asked to report on medical conditions, diseases, etc. experienced in the two weeks prior to being interviewed. Information is also collected on personal attributes (eg. age, sex, height, weight, income and occupation), and on a number of lifestyle and behavioural factors including smoking and alcohol consumption.

In the 1989 AHS and 1995 NHS, a sample of the Australian population was asked to indicate its perception of its own health status, on a scale of 'excellent', 'very good' (only asked in the 1995 NHS), 'good', 'fair' and 'poor'. The purpose of this question was to obtain information about health status in a more subjective way, in order to provide an alternate measure to that derived solely from statistics of illness, death, or service use.

As a further development, the 1995 NHS also included the SF-36 (Ware et al. 1993), a survey questionnaire designed to provide general self-reported health status profiles of the population. The SF-36 provides an indicator across eight dimensions of health and well being: physical functioning; role limitations due to physical health problems; bodily pain; general health; vitality (energy/fatigue); role limitations due to emotional problems; and mental health (psychological stress and psychological well being). Two summary measures, a Physical Component Summary and a Mental Component Summary[2], can be calculated from the eight dimensions.

Data from the NHS are generally available only at the State and Territory level, or for large regional areas such as State health regions. In recognition of the importance of local area level data, the ABS was contracted (as part of this national atlas project) to produce estimates for two variables (the self-assessed health status of the population and the Physical Component Summary of the SF-36) for SLAs across Australia, using the synthetic prediction technique. The variables and the synthetic prediction technique, are described on page 109.

This section also includes estimates of the number of people with a handicap, which were also produced using the synthetic prediction technique.

Data mapped

In this chapter, data have been mapped for a number of measures of health status. These include the measures, discussed above, from the NHS; the population with a handicap; premature deaths of males and females, selected causes of death and years of potential life lost; and the Total Fertility Rate. These variables are discussed in more detail in the introduction to the maps on each topic.

A comparison of the mapped distribution of these measures of health status with the distributions in other chapters indicates the possible extent of association at the local area level between health status, and socioeconomic status and health service use. The extent of association is supported by the results of the correlation analysis in Chapter 8.

Gaps and deficiencies in the data

Health status of Aboriginal and Torres Strait Islander people

Indigenous people have the poorest health of any group in Australia: they are also the group least well identified in statistical collections. **Table 3.2** in Chapter 3 documents problems in the counts of Indigenous Australians from the population Census. Data for the birth and death records for Indigenous people used in this chapter are similarly inaccurate.

Despite the inclusion of a question to identify Indigenous people on the death information statements and medical certificates of cause of death, they are under-reported in death records[3]. Over the past few years only the Northern Territory, Western Australia, South Australia and the Australian Capital Territory were considered to have had reasonably complete coverage. The coverage in other States has not improved since the early 1990s, with the exception of Queensland, which has been estimated to have moved close to complete coverage since 1996. However, between 1991 and 1996 there has been a largely unexplained increase in the population of Indigenous people: see pages 16 and 17 for further details. Thus, estimates of the completeness of Indigenous birth and death notifications for some States and Territories (which are, in part, based on Census counts) will need to be reviewed.

[2] Preliminary investigations by the ABS found that it was not possible to obtain a model capable of reliably predicting the Mental Component Summary.

[3] The death information statement is authorised by a relative or other person who has knowledge of the deceased and is usually filled out by a funeral director; the medical certificate of cause of death is completed by a medical practitioner or coroner.

Cancer incidence and notifications of communicable diseases are other important collections of relevance to the measurement of health status which also inadequately identify Indigenous Australians.

The Australian Bureau of Statistics and the Australian Institute of Health and Welfare (ABS/AIHW 1999) have identified that "among the most important issues relating to data quality is: the estimation of the size and composition of the Indigenous population; the identification of Indigenous people in administrative data collections; and issues related to the collection of survey data about Indigenous people. The availability of data are also affected by the number of Indigenous people included in surveys and the regularity with which the surveys are conducted". The ABS, AIHW, State and Territory health authorities and the heads of Aboriginal and Torres Strait Islander health organisations are currently working together to reduce the long term issues related to the accurate and appropriate collection of an Indigenous people identifier for demographic and health collections.

Influence of deaths of Indigenous people on ARIA results

There has been considerable discussion on the extent to which high death rates in the non-metropolitan areas of Australia result from the much higher mortality experience of Indigenous populations. A Queensland study, using the Rural, Remote and Metropolitan Areas classification (RRMA) has shown that across most major classes of diseases remote areas had higher rates than urban areas. Once the Indigenous component was taken out of the analysis, the differences between the RRMA groups were greatly reduced for most diseases. Significant differences remained for diseases of the circulatory and genitourinary systems and all causes (Miller, Ring & Kennedy 1998 unpublished).

An initial examination of data for deaths in 1997 of Indigenous people aged from 15 to 64 years was undertaken by the new Accessibility/Remoteness of Australia (ARIA) as part of the atlas project. Data were examined for Western Australia, South Australia and the Northern Territory, which are considered to have the best identification of Indigenous people in their deaths statistics. Preliminary findings suggest that, for the Northern Territory, death rates for all of the ARIA categories are likely to be affected by deaths identified as Indigenous. In South Australia, the affect on death rates is substantial in the Very Remote category and is also likely (although to a much lesser extent) to impact on results for the Remote category. In Western Australia, the affect on death rates in the Very Remote category is again substantial, and is also likely to be significant in the Moderately Accessible category (driven by the impact of male deaths) and the Remote category (driven by the impact of female deaths).

As this analysis was undertaken as the first volume of the atlas went to print, the data on which these initial findings were based were not able to be incorporated in the printed version. The data are, however, available on the atlas World Wide Web site, at www.publichealth.gov.au. It is planned to extend the analysis to include more years of data, and to use age standardised rates, rather than the age-specific rates as used in this initial analysis.

Health status and socioeconomic status

As noted in Chapter 2 (*Measurement of socioeconomic status*), most collections of health statistics do not include data items which directly allow for analysis of socioeconomic status at the local area level. This is a major deficiency in Australian health information.

Even the death notification form, which requires the inclusion of the deceased person's occupation (a potential indicator of socioeconomic status), is of limited value. The data available are of questionable quality and is not published by the ABS.

The area of usual residence of the person is therefore used here as a proxy measure of socioeconomic status in the absence of any direct measures. The validity of using the area of usual residence in this way is discussed in Chapter 2, *Methods* under the heading *Usual residence*.

Health status and the physical environment

There is limited information on the impact on the health of Australians of environmental factors, such as air quality and soil and water contamination (Peach 1997). Overseas studies have found a relationship between the levels of several pollutants in the air, and death rates or signs of sickness (such as hospital admissions or use of medications for respiratory system disease). Some relate an increase in signs of poor health with increased levels of sulphur dioxide and total suspended particulate matter in the air (Dept. of the Environment, Sport and Territories 1996).

However recent developments in Australia provide the potential to improve the range and quality of data available. In February 1998 the National Environment Protection Council agreed to establish the National Pollutant Inventory. The National Pollutant Inventory (NPI) is the first of a series of National Environment Protection Measures to be developed in Australia. When fully developed, the NPI will provide a national database of pollutant emissions and will be available on the Internet.

Since 1 July 1998, larger Australian industrial facilities which use more than a specified amount of the chemicals listed on the NPI have been required to estimate and report annually their emissions for the NPI. Estimates of emissions from facilities using less than the specified amount of the chemicals listed on the NPI and emissions from the community (such as nutrient emissions to waterways and air emissions from motor vehicles, lawn mowers etc.) will also be made available. Information regarding the composition of substances listed on the NPI, their uses, and the associated risks to human health and the environment, will be included on the database. The data from the first year of reporting are now expected to be available in 2003. In the first two reporting years for the NPI, facilities will be required to report their emissions to air, land and water (from 36 of the 90 chemicals listed on the NPI). In late 1999, a review of the NPI will consider whether reporting requirements should extend to the full list of chemicals.

The establishment of this inventory and its promulgation using the Internet, will bring to a wide audience important data on pollutant emissions by type of emission and the location of the facility responsible for the emission. This spatial element will enable comparisons with data from other sources and will better

inform the work in Australia on the impact of air quality and soil and water contamination on the health of Australians.

Other National Environment Protection Measures being developed include ambient air quality, movement of controlled waste across State and Territory borders and assessment of contaminated sites.

Homeless people

Chamberlain (1999) has estimated that there were 105,000 homeless people in Australia on Census night in 1996. Where there are a disproportionately large number of homeless people in a city, a town or a regional area, they may also be represented disproportionately in the maps in this atlas. For example, if they are not captured in the population data for the same area of address that is given in administrative records following a hospital admission or a visit to a general medical practitioner, or on a death certificate, the rates for these events will be overstated for that area.

Rates of death and hospital admission in inner and near city SLAs in the capital cities are particularly likely to be affected, as many of those who live ón the street 'frequent these areas, and these SLAs are also the location of much of the sheltered accommodation and many of the low-cost boarding houses used by the homeless in general.

Other gaps and deficiencies

There are a number of important areas for which health status data are not available at the small area level. These include oral health, nutrition (including information on height and weight) and mental health and wellbeing, all of which are key areas affecting health status. Details of the incidence of cancer are also not available for all of Australia in a standard form suitable for mapping. For example, data are available for some States at the SLA level and for others at the postcode level. The National Cancer Statistics Clearing House has this small area data, although it has not been edited or used to date. Similarly, details are available from the State and Territory operations of the National Cervical Screening Program and Breast Screen Australia. As yet small area data are not held nationally, although the National Screening Information Project will eventually hold such information.

Although small area data could have been obtained from the individual States and Territories, this was not done because, for a number of jurisdictions, the data would have to be converted from postcode to SLA for mapping. This is an inexact process (see page 11) and could well produce rates that overstate the true incidence of cancer in an SLA (and possibly overstate the rate many times). Given the concerns that high rates estimated from these datasets at the small area level would evoke in the community (when the rate may well be inaccurate), a decision was taken not to map this data.

Area mapped/Boundary issues

As noted in Chapter 2, under the heading of *Area mapped/Boundary issues*, adjustments have been made to the deaths 'data in a number of cases to maintain comparability at the small area level. Data for deaths used in this chapter were those registered over the four years from 1992 to 1995.

Each death was allocated the code of the Statistical Local Area (SLA) of usual residence of the deceased. However, in 1992 the new Shire of Warringah and the Municipality of Pittwater were formed out of the old Shire of Warringah. As a result, it has been necessary to merge these SLAs when presenting data for deaths that were registered over the period from 1992 to 1995.

In describing these data in the text in this chapter, the generic name Warringah/Pittwater has been used.

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Synthetic predictions of selected health status measures

Introduction

As noted above, some important data in Australia are only collected in household surveys such as the 1995 National Health Survey and the 1993 Survey of Disability and Ageing. Data from the these surveys are generally available only at the State and Territory level; in some instances (eg. for the largest States) they may also be available for large regional areas, such as State health regions. In recognition of the importance, for strategic planning and policy development, of local area level data for the measures included in these surveys, estimates were made for SLAs across Australia for selected variables from the NHS, using the synthetic prediction technique.

The variables are the self-assessed health status of the population and the Physical Component Summary of the SF-36. The ABS has previously produced estimates (using the synthetic prediction technique) at the SLA level of the number of people in the population with a disability and, of those, the number handicapped by that disability. The estimates of the population with a handicap are included in this section.

Description of the technique[4]

Synthetic predictions represent, in effect, a prorating of the Australian estimate (for the particular variable) across SLAs. The predictions are based on a model fitted to survey information, in which associations in the survey data for Australia are identified. For the purpose of the analysis, the survey data used in the model are limited to variables for which data are also available at the SLA level (these are the predictors). The model is then applied to the SLA counts of the predictors. The prediction is, effectively, the likely value for a typical area with those characteristics.

For example, in predicting the population with a disability (using data in the Survey of Disability and Ageing), the data variables were limited to those that were also available at the SLA level. These included variables from the 1991 Census, various socioeconomic (eg. unemployed, Indigenous) and demographic characteristics (age, sex, predominantly non-English speaking birthplace) and other sources (Disability Support Pensions). Relationships identified in the survey data (between levels of disability and age, sex, receipt of a Disability Support Pension) are then modelled in the SLA level data, and predictions produced of the number of a people with a disability.

The estimates were then age-sex standardised to remove variations (between SLAs) solely related to variations in age and sex.

Cautions

The synthetic predictions are intended as an indicator of regional distribution of the population with a handicap, where no other Australia-wide indicator exists (ABS 1996). Therefore, the extent to which the estimates reflect the number of people with a disability in any region will be, in part, dependent on the predictive value of the characteristics used in the model.

In making decisions based on the synthetic predictions, it is important to take into account any specific knowledge about a particular area (ie. the characteristics of its population) that is not incorporated into the model.

The synthetic predictions are also subject to sampling error because they are based on a model fitted to survey data. They are, however, fairly stable, most having sampling error comparable to the Australian estimates for the same variable from the survey (ie. lower than sampling error normally associated with survey estimates for small areas).

Users should note that the estimates will not necessarily agree with other (published) State estimates produced from the relevant surveys, as the predictions are based on Australian totals. Each of the surveys include people in institutions such as hospitals, specialised long-term accommodation for people with a disability, gaols, etc.

Variables mapped

Physical Component Summary of the SF-36

As noted on page 105, the SF-36 (the Rand Short Form, 36 questions) is one of a number of multi-dimensional or general health status profiles under development in the world (Ware et al. 1993). Although it is becoming widely used, questions remain as to its validity as a measure of health and wellbeing. There are also concerns as to its applicability to particular population groups (such as Indigenous populations, children, or the elderly) and, in particular, to older people born overseas in countries where English is not the predominant language.

It has, however, been included in a number of major studies in the health field in Australia. In 1995 it was incorporated in the NHS. In the light of this general acceptance, one of the summary measures from the SF-36, the Physical Component Summary (PCS) score, has been estimated at the SLA level (using the synthetic prediction technique) and included in this atlas. The PCS score is derived from a subset of items that ask respondents to the NHS aged 18 years and over, about their general physical health and wellbeing. A higher score indicates a better state of physical health and wellbeing.

Self-assessed health status

Self-assessed health status refers to a person's perception of their general health status. In the 1995 NHS, the population aged 18 years and over was asked to indicate its perception of its own health status, on a scale of 'excellent', 'very good', 'good', 'fair' and 'poor'. In the following analysis, details are shown of that proportion of the population who reported their health as being fair or poor. The ABS report that how people rated their health was strongly related to their illness experience (ABS 1997). This is consistent with the finding by McCallum et al. (1994) that people rate their health as poor on the objective basis of illness and disability. For Indigenous people, the factors associated with reporting fair or poor health have been examined using data from

[4] A more detailed description of the production of the synthetic estimates is in Appendix 1.5.

the 1994 National Aboriginal and Torres Strait Islander Survey (ABS/AIHW 1999).

Among the factors most strongly associated with self-assessed health status were reported health conditions and recent health actions, age, main language spoken and labour force status (Cunningham, Sibthorpe & Anderson 1997).

Survey of Disability and Ageing

The 1993 Survey of Disability, Ageing and Carers (ABS 1993) provides estimates of the numbers of persons with disabilities and those who were handicapped by the disability and who were living in private dwellings. The following definitions apply:

- a person was recorded as having a disability if he/she had one or more of a group of selected limitations, restrictions or impairments which lasted, or was likely to last, for six months or more.
- a handicap results from a disability which limits a person's ability to perform certain tasks associated with daily living. The limitations must be in relation to one or more tasks of self-care, mobility, verbal communication, schooling or employment.

These definitions of disability and handicap are based on the *International Classification of Impairments, Disabilities and Handicaps* published by the World Health Organisation (1980).

It was estimated from the 1993 Survey of Disability, Ageing and Carers that 1,015,600 people in New South Wales (16.9 per cent of the population) had a disability. Of these, 957,800 (16.0 per cent of the population) were living in 'households'; the remainder living in establishments such as nursing homes and hostels.

The majority (803,200, or 13.4 per cent of the population) of those with a disability had a handicap of varying levels of severity, ranging from profound (18.3 per cent of all people with a handicap), through severe (12.3 per cent) and moderate (17.3 per cent), to mild (38.1 per cent). The rate of disability per thousand population increased with age.

Following the release of the 1993 Survey results, the Australian Bureau of Statistics (ABS) produced a set of 'synthetic predictions' for the Heads of Disability Services of the Commonwealth and the States and Territories, for use as a component of assessing the demand for disability services at a regional level.

Estimates for the population with a disability and the number handicapped by that disability are included in the tables in Volume 2.1, however only the dataset for the population with a handicap has been mapped in this atlas.

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People reporting their health as fair or poor, 1995

Capital city comparison (Australia as the Standard)

The majority of Australians aged 18 years and over consider themselves to be in good health, with 83 per cent reporting their health status as good, very good or excellent (ABS 1997); similar proportions were reported by males and females. Self-assessed health status was, however, strongly related to age, with the proportion reporting their health as excellent or very good declining with age, and the proportion reporting fair or poor health increasing with age.

In 1995, the standardised ratios (SRs) recorded for people reporting their health as fair or poor, ranged from 109** in **Hobart** to 90** in **Perth**. The other capital cities with ratios below the level expected from the Australian rates were **Melbourne** (with an SR of 96**) and **Canberra** (98**). For the five cities with data recorded in both periods in **Table 5.3**, none of the changes in the ratios were very large. The largest changes were recorded in **Perth** (with a higher proportion reporting their health as fair or poor, relative to the Australian rate) and **Adelaide** (fewer people reporting their health as fair or poor, relative to the Australian rate).

Table 5.3: People reporting their health as fair or poor, capital cities
Standardised ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1995	102**	96**	100	102**	90**	109**	105**	98**	99**
1989-90	104**	99**	97**	106**	85**	..	..	..	100

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Sydney (New South Wales as the standard)

The number of people reporting their health as fair or poor (as distinct from those who reported their health as being good, very good or excellent) in **Sydney** in 1995 was marginally lower than expected from the State rates (an SR of 99** and an estimated 458,766 people).

The SLAs with ratios in the highest range mapped reflect the patterns of socioeconomic disadvantage mapped in Chapter 3. In excess of one quarter of the population (28.6 per cent) in the SLA of Sydney reported their health as fair or poor. This was the highest proportion in **Sydney**, representing almost twice the number of people reporting their health as fair or poor than expected from the State rates (an SR of 191**). Also mapped in the two highest range were the inner city areas of South Sydney (124**), Marrickville (118**), Botany (109**) and Ashfield (106**); the inner western SLAs of Fairfield (123**), Auburn (120**), Blacktown (114**) and Holroyd (108**); and the south-western SLAs of Liverpool (118**), Campbelltown (114**), Canterbury (113**) and Bankstown (107**).

As can be seen from **Map 5.1**, the large outer SLAs of Wyong (with an SR of 102*), Gosford (98*), Wollondilly (94**), Hawkesbury (92**) and Blue Mountains (91**) recorded ratios of just above or below the level expected from the State rates.

The lowest ratios were recorded in a number of SLAs to the north of **Sydney**, including Ku-ring-gai (13.6 per cent of the population reporting their health as fair or poor; an SR of 70**), Mosman (76**), Lane Cove and Baulkham Hills (both with 78**), Hornsby (79**), Pittwater and Hunter's Hill (both with 80**), Warringah and North Sydney (both with 82**) and Willoughby, (83**). Ratios of below 85 were also recorded in Woollahra (81**) and Sutherland (83**).

In 1995, the largest numbers of people reporting fair or poor health were in Blacktown (estimated at 27,605 people), Fairfield (25,343), Bankstown (22,581), Sutherland (20,507), Gosford (19,438), Canterbury (19.257), Parramatta (18,029), Penrith (17,188) and Wyong (16,363).

The results of the correlation analysis revealed a positive association between people reporting their health as fair or poor and many of the indicators of socioeconomic disadvantage. The strongest of these were with the variables for low income families (0.70), single parent families (0.66) and dwellings with no motor vehicle (0.66). The inverse correlation with the IRSD (-0.69) also indicates a positive association at the SLA level between high proportions of people reporting their health as fair or poor and socioeconomic disadvantage. Correlations of substantial significance were also recorded with the health status variables of premature deaths of females (0.81) and males (0.73) and from circulatory system diseases (0.71), and people with a handicap (0.83); and the health service variables for admissions to hospital – all admissions (0.71) and admissions to public acute hospitals (0.81). Many of the other variables in the atlas were similarly highly correlated.

Newcastle

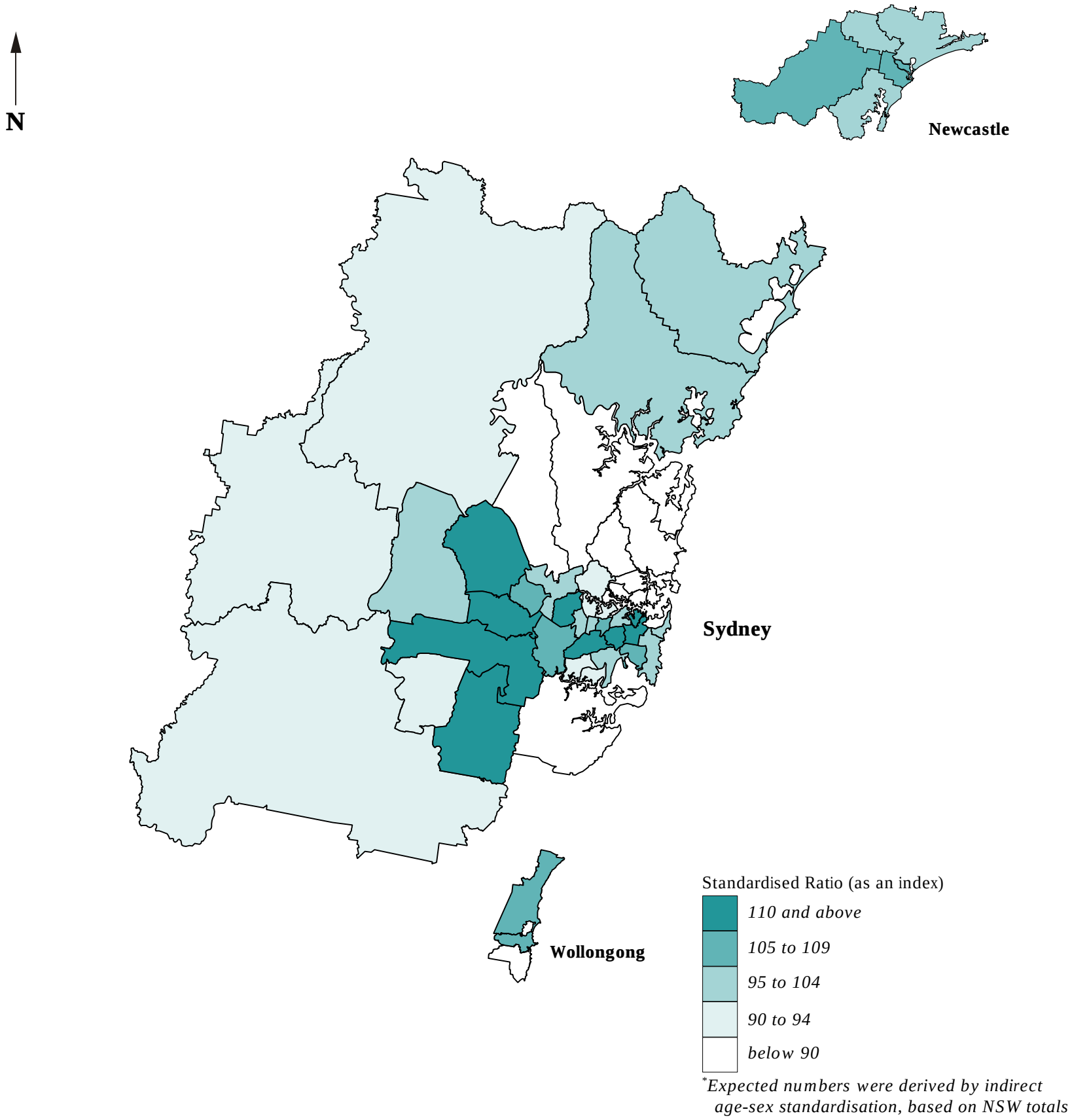
There were 5 per cent more people reporting fair or poor health in **Newcastle** in 1995 than were expected from the State rates, an SR of 105**. All SLAs within **Newcastle** recorded ratios above the level expected, ranging from 103** in Lake Macquarie to 109** in Cessnock. Both Port Stephens and Maitland recorded an SR of 104**, while there were 5 per cent more people reporting fair or poor health than expected in the City of Newcastle (an SR of 105**).

Wollongong

Wollongong had 32,871 people reporting fair or poor health in 1995, 5 per cent more than expected from the State rates (an SR of 105**). The highest ratios were recorded in the SLAs of Shellharbour and Wollongong, with SRs of 109** and 106** respectively. There were 14 per cent fewer people reporting fair or poor health than expected in Kiama (an SR of 86**).

Map 5.1
People reporting their health as fair or poor, Sydney, Newcastle and Wollongong, 1995

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



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

People reporting their health as fair or poor, 1995

State/Territory comparison

There was little difference in the levels of fair or poor health reported by residents of the capital cities and the *Rest of State/Territory* areas for Australia as a whole (**Table 5.4**). The most highly elevated standardised ratios (SRs) for people reporting their health as fair or poor in the non-metropolitan areas of Australia were in Tasmania (with an SR of 115**) and the Northern Territory (111**). Only in Western Australia (91**) and Victoria (95**) were the ratios below the level expected from the Australian rates. Responses given by Indigenous people are particularly relevant in non-metropolitan areas. After adjusting for age, Indigenous people in these areas were about twice as likely as their non-Indigenous counterparts to report their health as fair or poor (ABS 1999).

For the five States with data recorded in both periods, none of the changes in the ratios were very large. As for the capital cities, the largest changes were recorded in Western Australia (with a higher proportion reporting their health as fair or poor, relative to the Australian rate) and South Australia (fewer people reporting their health as fair or poor, relative to the Australian rate). For both these States the differential in the ratios from the Australian rate was twice that in their capital cities.

Table 5.4: People reporting their health as fair or poor, State/Territory
Standardised ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1995									
Capital city	102**	96**	100	102**	90**	109**	105**	98**[1]	99**
Other major urban centres[2]	108**	103**	103**	..	..	..	..	..	105**
Rest of State/Territory	103**	95**	103**	101	91**	115**	111**	–[3]	101**
Whole of State/Territory	103**	96**	102**	102**	90**	112**	108**	97**	100
1989-90									
Rest of State/Territory	104**	97**	103**	110**	82**	..	..	..	101**

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Rest of State (New South Wales as the standard)

There were estimated to be 198,998 people reporting their health as fair or poor (as distinct from those who reported their health as being good, very good or excellent) in the non-metropolitan areas of New South Wales in 1995**,** marginally more than expected from the State rates (an SR of 101*).

As can be seen from **Map 5.2**, a number of the SLAs in the north-west and north-east of the State have been mapped in the highest range, while those with the lowest ratios were generally situated in the southern and central western regions.

The highest ratio was recorded in Jervis Bay Territory, with 38 per cent more people reporting their health as fair or poor than expected from the State rates (an SR of 138*). However, there were estimated to be just 64 people in this category. Ratios elevated by at least 15 per cent were recorded in the north-western SLAs of Brewarrina (with an SR of 133**), Walgett (124**), Unincorporated Far West (118), Central Darling (116**) and Broken Hill (115**). Other SLAs with elevated ratios of statistical significance were Bourke (with an SR of 113**), Byron and Richmond River (both 113**), Ulmarra (112**), Kempsey (111**), Kyogle and Tweed Part B (both 109**), Coffs Harbour, Nambucca and Wellington (both with 108**) and Greater Lithgow, Greater Taree and Tweed Heads (both 106**).

The majority of SLAs were mapped in the middle range mapped, with ratios ranging from 95 in Quirindi, Narrandera, Dungog, Carrathool, Blayney Parts A and B and Bathurst (a statistically significant ratio of 95**); to 104 in Barraba, Casino, Cobar, Grafton, Inverell Part B, Mudgee and Great Lakes and Lismore (both with a statistically significant ratio of 104**).

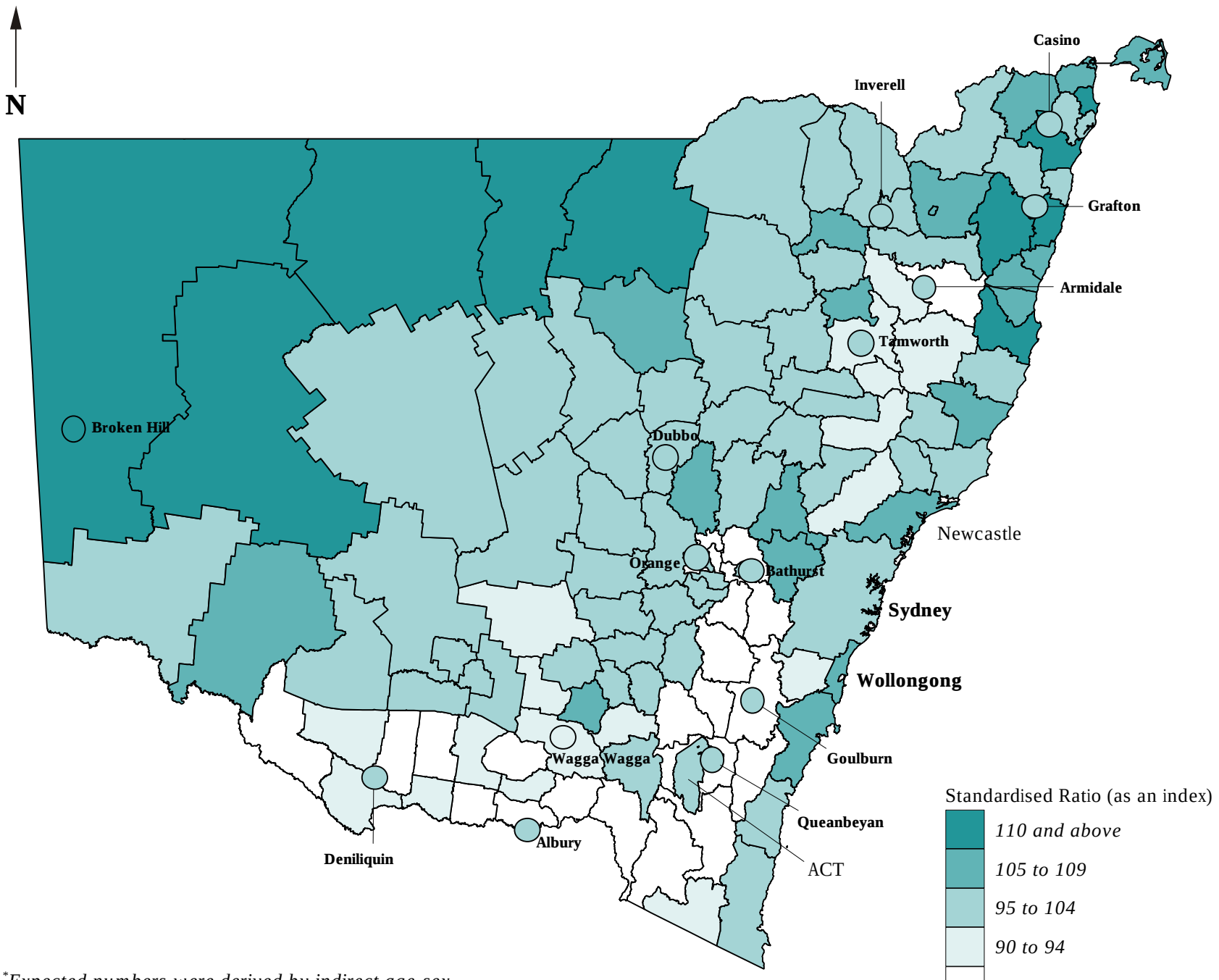
There were 25 per cent fewer people than expected reporting their health as fair or poor in the northern SLA of Dumaresq, an SR of 75**. Also mapped in this lowest range were the southern areas of Gunning (with an SR of 77**), Yarrowlumla (78**), Cooma-Monaro (82**) and Jerilderie (84*); the central western SLAs of Cabonne Part A (79**), Evans Part A (80*) and Oberon (83**); and the SLA of Lord Howe Island (84). Relatively low ratios were also recorded in the southern areas of Lockhart and Holbrook (both with an SR of 85**), Yass, Hume and Crookwell (each with 86**), Snowy River (87**), Conargo (87), Mulwarree (88**), Wakool (89**) and Tumbarumba (89*).

In the non-metropolitan areas of New South Wales, the largest numbers of people reporting their health as fair or poor were in Shoalhaven (estimated at 11,264 people), Hastings (8,442), Coffs Harbour (7,663), Tweed Heads (6,422) and Taree (6,091).

The correlation analysis revealed a positive association with many of the indicators of socioeconomic disadvantage, the highest being with the variables for dwellings with no motor vehicle (0.70) and unemployed people (0.67). The inverse correlation of substantial significance recorded with the IRSD (-0.84) also indicates a positive association at the SLA level between high proportions of the population reporting their health as fair or poor and socioeconomic disadvantage. The correlations with other health status and health service use variables were weaker than in **Sydney**; the strongest were with the variables for people with a handicap (0.85), years of potential life lost (an overall measure of premature death, 0.50) and hospital admissions (0.49).

Map 5.2
People reporting their health as fair or poor, New South Wales, 1995

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

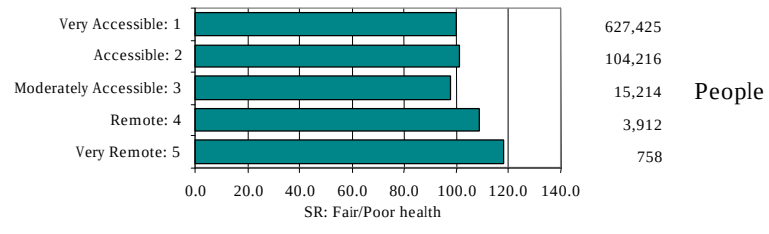


*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



The first three accessibility categories had similar ratios for people reporting their health as fair or poor, with higher ratios in the two 'remote' categories. The most highly elevated ratios were in ARIA category 5 (with 18 per cent more people than expected from the State rates reporting their health as fair or poor, an SR of 118) and ARIA 4 (109).

Source: Calculated on ARIA classification, DHAC

Physical Component Summary, SF-36, 1995

Capital city comparison (Australia as the Standard)

The Physical Component Summary (PCS) score is expressed as a mean score, with higher scores indicating better physical health. The PCS score for the Australian population aged 18 years and over was 49.7, ranging from a high of 53.1 for 18 to 24 year olds and 53.0 for 25 to 34 year olds, to 50.0 in the 45 to 54 year age group, before declining at each subsequent ten year age group to a mean score of 38.5 for people aged 75 years and over (ABS 1997). Males had a marginally higher score than females (49.8 compared with 49.6). Scores for males and females were the same at ages 55 to 64 years (a PCS score of 46.6), and higher for males at ages under 55 years, and lower at older ages (in the 65 to 74 years and 75 years and over age groups). The PCS score also varies by employment status, with employed males recording the highest mean score (52.2), with lower scores for the unemployed (51.0) and those not in the labour force (47.4). The major difference for males and females was recorded for females not in the labour force, with a score of 49.8, higher than that for males, with a score of 45.1. There are also notable variations for people reporting selected illness conditions such as cancer (those with cancer had a PCS score of 44.6, compared with those with no cancer, 49.3), heart disease (40.3, compared with 48.3), diabetes (44.0, compared with 49.9), asthma (47.3, compared with 50.0) and injury (45.9, compared with 50.2). There was a striking gradient in the PCS score for people reporting no serious physical conditions (a mean score of 53.1), when compared with those with one serious physical condition (49.8) and two or more such conditions (44.8).

The capital city PCS scores vary over a narrow range (**Table 5.5**), from 49.4 in **Adelaide** to 50.2 in **Melbourne**.

Table 5.5: Physical Component Summary, capital cities, 1995
Standardised score

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
49.8	50.2	49.8	49.4	49.7	49.9	49.5	50.1	49.9

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3

Sydney (New South Wales as the standard)

The PCS score recorded in **Sydney** in 1995 was 49.7, which was as expected from the State rates for a population of this size and age/sex composition.

The distribution of mean scores across **Sydney** was similar to that recorded for many of the indicators of socioeconomic disadvantage, with the highest scores (indicating better physical health) located north of the Parramatta River and the lowest in the western and inner city regions (**Map 5.3**).

The highest PCS score was recorded for residents of Ku-ring-gai, with a mean score of 51.3. Relatively high scores were also recorded in the northern SLAs of Mosman (a PCS score of 51.0), Lane Cove (50.9), North Sydney and Hunter's Hill (both with 50.8), Hornsby (50.7), Willoughby, Baulkham Hills, Manly and Pittwater (each with 50.6) and Warringah (50.5); and in the eastern SLA of Woollahra (50.9).

The SLAs of Randwick and Leichardt (both with a PCS score of 49.8) and Gosford and Burwood (both with 49.6) recorded mean scores of close to the **Sydney** average.

The inner SLA of Sydney recorded the lowest score for this variable (a PCS score of 46.8). Mean scores of 49.0 or below were also recorded in Fairfield (a mean score of 48.5) and Liverpool (48.9), situated in the west; and Auburn (48.6) and Canterbury, South Sydney and Marrickville (each with 49.0), located in the inner city region.

The results of the correlation analysis revealed a positive association between a high PCS score (indicating better physical health) and many of the indicators of high socioeconomic status. The strongest of these were with the variables for female labour force participation (0.88) and high income families (0.76).

The correlation of substantial significance with the IRSD (0.84) also indicates a positive association at the SLA level between high PCS scores and high socioeconomic status. Inverse correlations of substantial significance were recorded with the health status variables of people reporting fair or poor health (-0.97); premature deaths from circulatory system diseases (-0.75), and of females (-0.74); and people with a handicap (-0.73); and the health service variables for admissions to hospital – from respiratory system diseases (-0.73), circulatory system diseases (-0.71) and bronchitis, emphysema and asthma (-0.71).

Newcastle

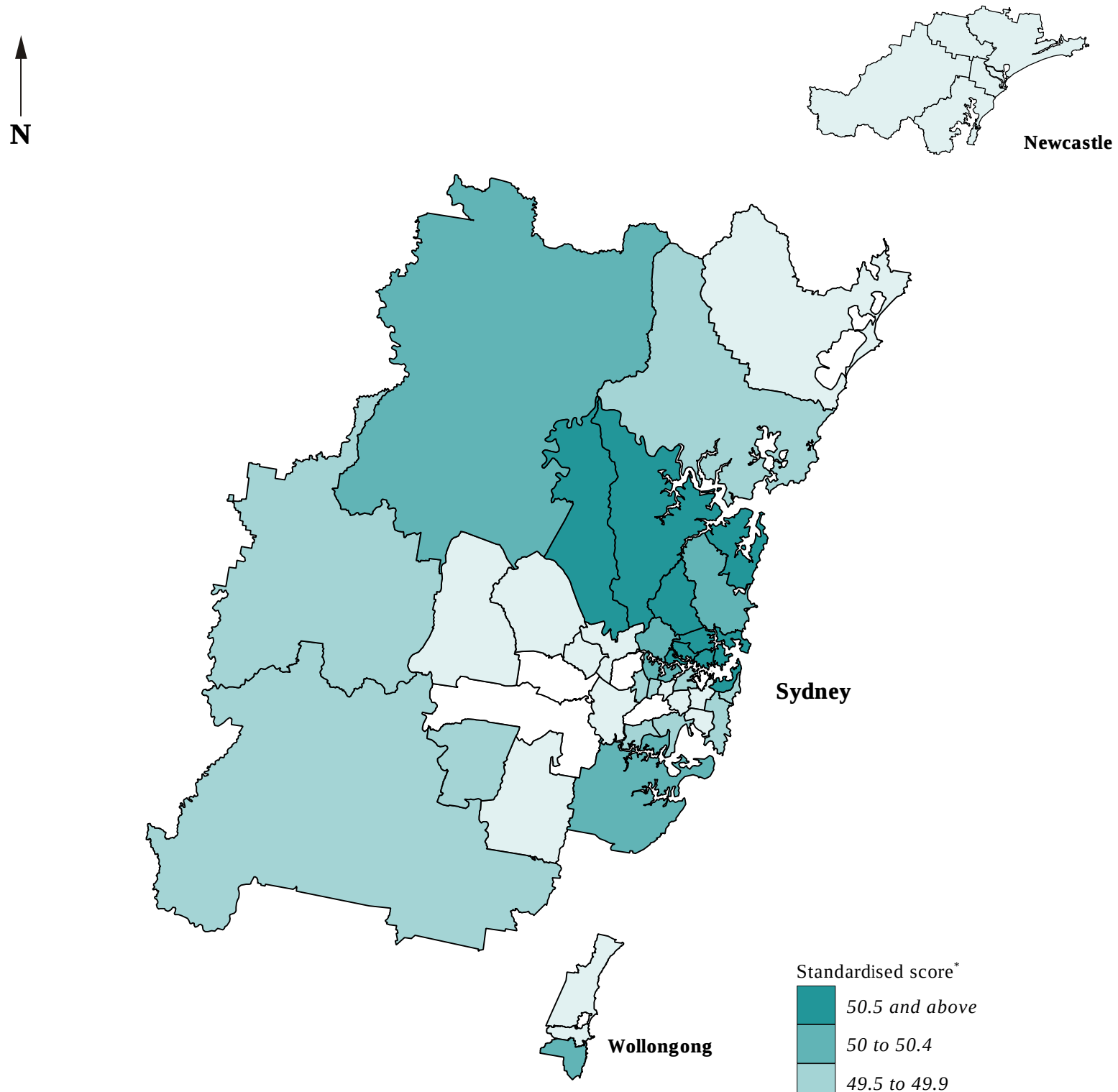
Residents of **Newcastle** had a PCS score of 49.4 in 1995, as expected from the State rates. There was little variation in the mean scores, ranging from 49.3 in Cessnock to 49.5 in Port Stephens, Lake Macquarie and the City of Newcastle. Residents of Maitland recorded a PCS score of 49.4.

Wollongong

A mean score of 49.4 was recorded for residents of **Wollongong**, again this was as expected from the State rates. The highest score was recorded in Kiama, with a PCS score of 50.3. The City of Wollongong and Shellharbour had scores of 49.4 and 49.2 respectively.

Map 5.3
Physical Component Summary*, SF-36, Sydney, Newcastle and Wollongong, 1995

mean Physical Component Summary (PCS) score* in each Statistical Local Area



*The PCS score has been age-sex standardised, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Physical Component Summary, SF-36, 1995

State/Territory comparison

The Physical Component Summary (PCS) score is expressed as a mean score, with higher scores indicating better physical health. Details of variations in the PCS score by selected population characteristics are given on the previous page.

The scores in the non-metropolitan areas are all either the same as, or lower than, those in the capital cities (**Table 5.6**). The lowest PCS score was in the Northern Territory (a score of 49.3) and the highest in Victoria (50.2).

Table 5.6: Physical Component Summary, State/Territory, 1995
Standardised score

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	49.8	50.2	49.8	49.4	49.7	49.9	49.5	50.1[1]	49.9
Other major urban centres[2]	49.5	49.9	49.7	..	..	..	..	..	49.6
Rest of State/Territory	49.6	50.2	49.7	49.4	49.7	49.6	49.3	–[3]	49.7
Whole of State/Territory	49.7	50.2	49.7	49.4	49.7	49.8	49.4	50.1	49.8

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3

Rest of State (New South Wales as the standard)

The PCS score estimated for residents of the non-metropolitan areas of New South Wales was 49.5, which was as expected from the State rates. This was marginally lower than the score recorded for residents of **Sydney** (a PCS score of 49.7).

As can be seen from **Map 5.4**, SLAs with the highest scores (indicating better physical health) were generally situated in the southern and central western regions of the State. The exceptions were in the northern SLAs of Dumaresq (with a PCS score of 50.7) and Scone and Singleton (both with 50.1). Means scores of 50.0 or above were recorded in the south-eastern SLAs of Gunning (50.7), Yarrowlumla (50.6) Cooma-Monaro (50.5), Yass and Holbrook (both with 50.2) and Crookwell, Mulwarree, Tallaganda and Snowy River (each with 50.1); in the central western areas of Cabonne [Part A] (50.6), Oberon and Evans [Part A] (both with 50.4), Evans [Part B] (50.1) and Cabonne [Part B]; and in the southern SLAs of Jerilderie and Lockhart (both with 50.3), Corowa, Hume and Wagga Wagga (each with 50.2) and Wingecarribee, Conargo and Wakool (each with 50.1).

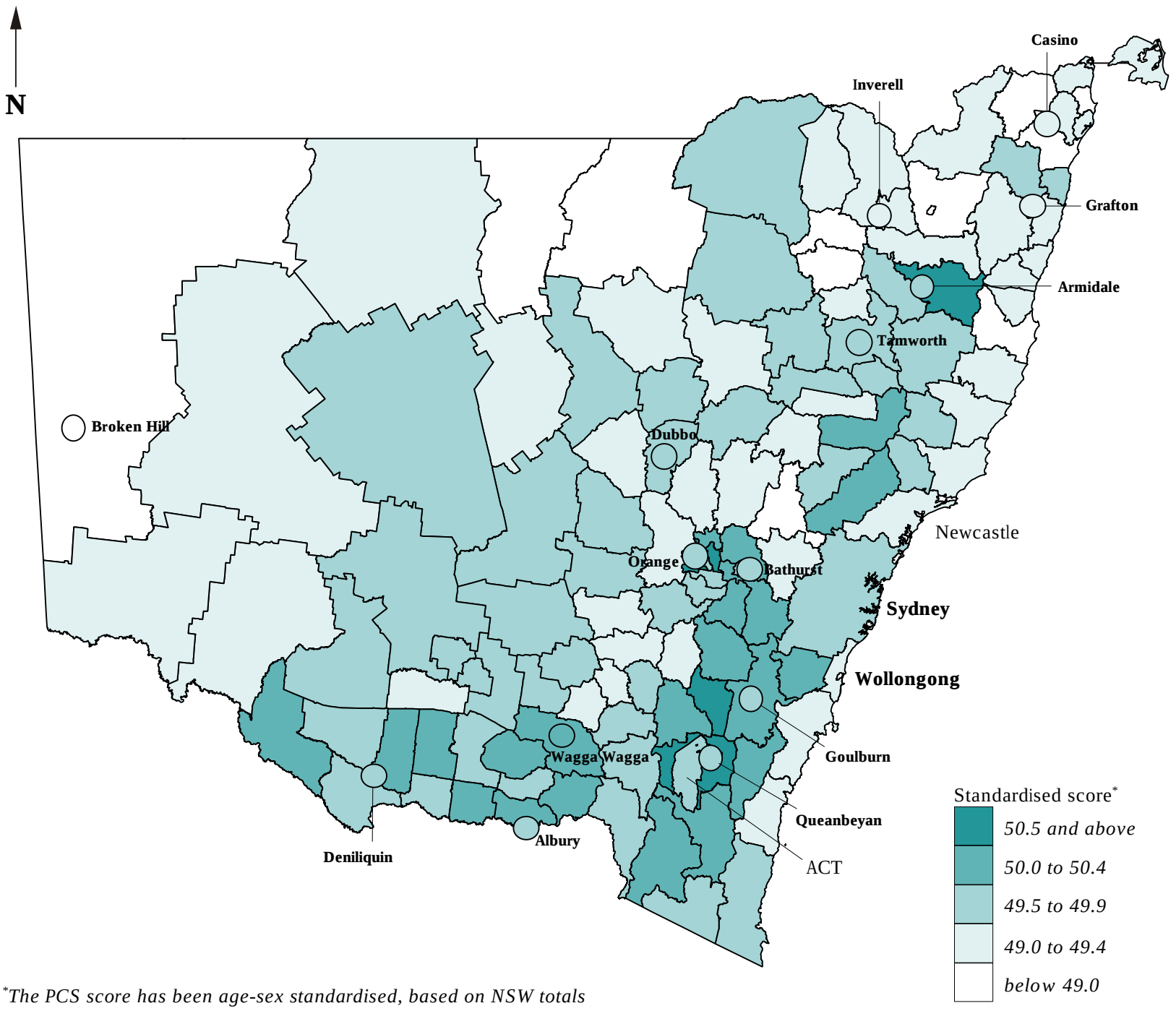
The lowest scores were in the far north-western SLAs of Brewarrina (a PCS score of 48.1), Walgett (48.5), Unincorporated Far West (48.8) and Broken Hill (48.9). The north-eastern SLAs of Richmond River and Bingara (both with 48.8), Byron, Glen Innes and Kempsey (each with 48.9), Severn, Barraba and Kyogle (each with 49.0) also had relatively low ratios.

There were correlation with many of the indicators of high socioeconomic status, the highest being with the variables for female labour force participation (0.68) and high income families (0.58). The correlation of substantial significance recorded with the IRSD (0.84) also indicates a positive association at the SLA level between high PCS scores (indicating better physical health) and high socioeconomic status.

The correlations with the health status and health service use variables were generally weaker than in **Sydney**; the strongest were with the variable for people reporting fair or poor health (-0.96), people with a handicap (-0.85) and GP services to males and females (-0.58 and -0.54 respectively).

Map 5.4
Physical Component Summary*, SF-36, New South Wales, 1995

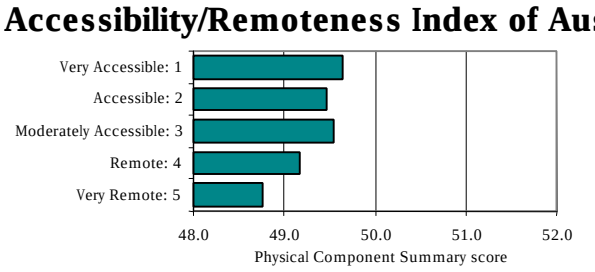
mean Physical Component Summary (PCS) score* in each Statistical Local Area



*The PCS score has been age-sex standardised, based on NSW totals

Source: See Data sources, Appendix 1.3 ***Details of map boundaries are in Appendix 1.2***

Accessibility/Remoteness Index of Australia



There is little differentiation in Physical Component Summary scores across the ARIA categories. However, the three 'accessible' categories have closely similar scores of around 49.5 (with the lowest in category 2), and the two 'remote' categories have the lowest scores (indicating poorer physical health) of 48.8 in the Very Remote category and 49.2 in the Remote areas.

Source: Calculated on ARIA classification, DHAC

Estimated number of people with a handicap, 1993

Capital city comparison (Australia as the Standard)

The estimates presented below do not include people living in institutional accommodation but do include those living more independently in, for example, community or group housing.

Age-sex standardised ratios (SRs) calculated from the 1993 Survey of Disability and Ageing of the estimated number of people with a handicap ranged from 14 per cent lower than expected (in relation to the Australian rates) in **Sydney** (86**) 13 8 per cent lower in **Darwin** (87**), to 11 per cent higher in **Perth** (111**). The ratios cover a wider range than those calculated from the 1988 Survey (**Table 5.7**). Most other capital cities had SRs in 1993 which were close to the level expected from the Australian rates.

Table 5.7: Estimated number of people with a handicap, capital cities
Standardised ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1993	86**	100	102**	110**	111**	102**	87**	97**	98**
1988	97**	100	93**	101**	104**	..	..	..	98**

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

The regional distribution of people with a disability (and who are handicapped by that disability) is likely to be affected by a number of factors associated with their disability, in addition to any association between a higher prevalence of disability and poorer socioeconomic status. Such factors include the location of dedicated therapeutic, educational and employment facilities, as well as the location of accommodation, both group or community housing and institutional accommodation. For example, people who have moved out of institutional accommodation into group or private housing often remain close to the institution in which they previously lived. This may reflect a choice to remain near to available services eg. day centre, education or employment services (which may be located with or near to the institution), or because group housing has been provided in the local area.

Another important influence is likely to be that people may have chosen to live in an area in which such therapeutic and educational services are available. While this may have been a more important influence in the past, when transport to these services was less readily available than it is now, such historical influences can remain for many years.

Sydney (New South Wales as the standard)

There were 4 per cent fewer people with a handicap in **Sydney** than were expected from the State rates (a ratio of 96**), an estimated 411,833 people.

Ratios elevated by at least 20 per cent were located in and around the city centre, with the highest ratios in Sydney (an SR of 143**) and South Sydney (126**). The northern SLAs of Wyong (110**) and Gosford (103**); the inner SLAs of Marrickville (105**) and Leichhardt (104**); and the western SLAs of Liverpool (100), Auburn (100) and Blacktown (100) also had ratios at or above the level expected from the State rates (**Map 5.5**).

The lowest ratio was in the SLA of Baulkham Hills, with 15 per cent fewer people with a handicap than were expected from the State rates (a ratio of 85**). Low ratios were also estimated for residents of Ku-ring-gai (86**), Hornsby (88**), Warringah-Pittwater and Sutherland (both 88**) and Lane Cove (90**).

The largest estimated numbers of people with a handicap were in the SLAs of Blacktown (20,929), Sutherland (19,992), Bankstown (19,871) and Warringah-Pittwater (19,675).

Correlations of significance were clearly evident at the SLA level with many indicators of socioeconomic status, including with the variables for dwellings with no motor vehicle (0.73), single parent families (0.59), low income families (0.53) and dwellings rented from the State housing authority (0.51). The weak inverse correlation with the IRSD (-0.41) also indicates a positive association at the SLA level between high proportions of the population with a handicap and socioeconomic disadvantage. There was also an inverse correlation with female labour force participation (-0.62). Correlations of substantial significance were also recorded with the variables for premature deaths (at ages from 15 to 64 years) of males (0.91), of females (0.87), from the combined causes of accidents, poisonings and violence (0.85), from respiratory system diseases (0.82) and from cancer (0.78).

Newcastle

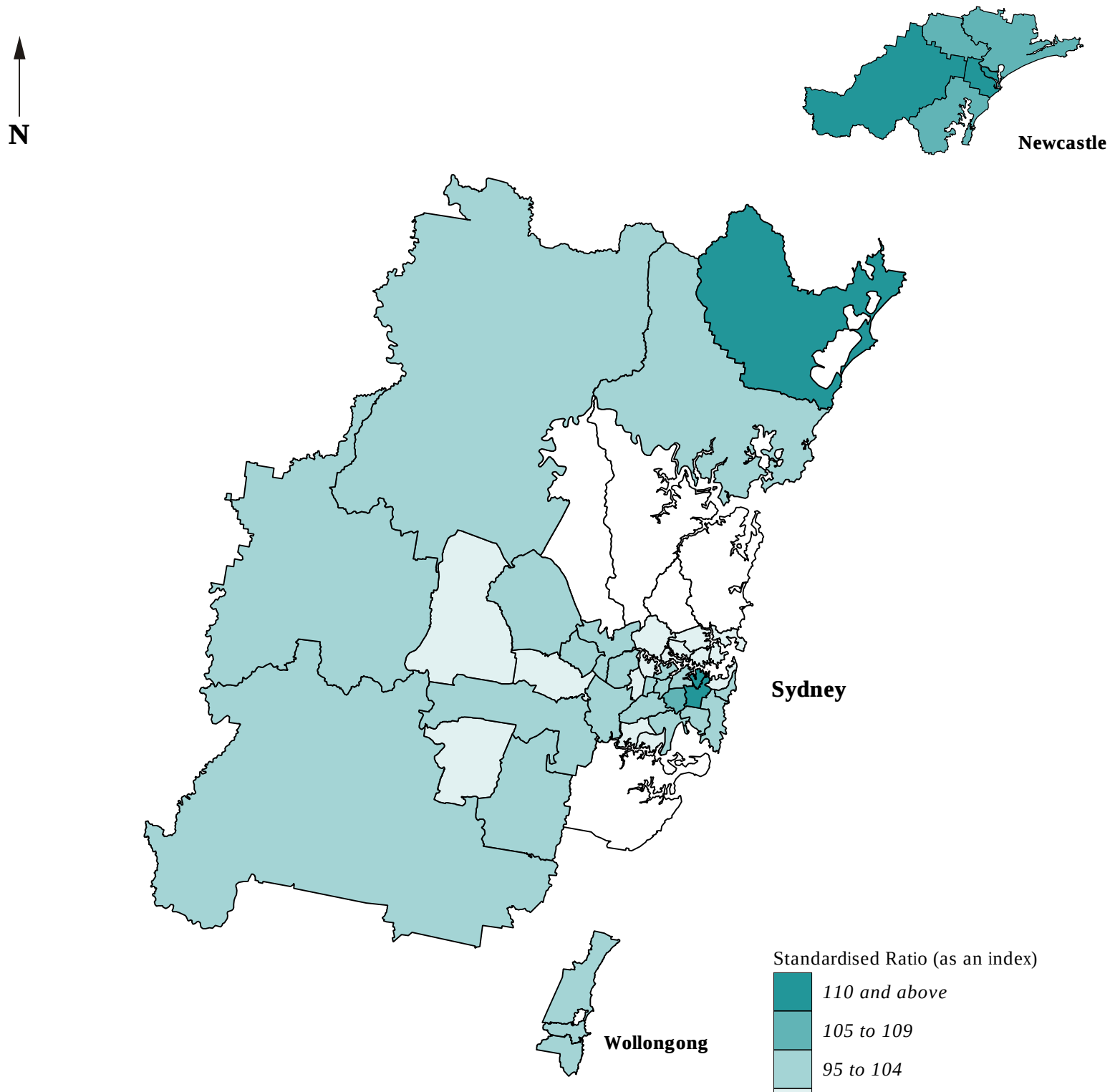
Newcastle had the highest ratio among the major urban centres outside of the capital cities, with 8 per cent more people with a handicap than expected (a ratio of 108** and 59,035 people). Ratios elevated by 10 per cent or more were found in the SLAs of Cessnock (113**) and Newcastle (110**), while Port Stephens and Lake Macquarie recorded the lowest ratio of 106**.

Wollongong

The SR recorded for residents of **Wollongong** was at the level expected (a ratio of 100), representing an estimated 29,065 people. The lowest ratio was recorded for residents of Kiama (an SR of 97), with a ratio of 100 in both the City of Wollongong and Shellharbour.

Map 5.5
Estimated number of people with a handicap, Sydney, Newcastle and Wollongong, 1993

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



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Estimated number of people with a handicap, 1993

State/Territory comparison

The estimates presented below do not include people living in institutional accommodation but do include those living more independently in, for example, community or group housing.

At the *Whole of State/Territory* level, standardised ratios (SRs) calculated from the 1993 Survey of Disability and Ageing of the estimated number of people with a handicap ranged from a high of 112** in Western Australia and 110** in South Australia to a low of 91** in New South Wales (**Table 5.8**). There was a similar range across the non-metropolitan areas of the remaining States and the Northern Territory.

The SRs in the *Rest of State/Territory* areas were less variable in the later period shown (when compared with those calculated from the 1988 survey), with the highest ratios occurring in Western Australia and South Australia and the lowest in the Northern Territory.

Table 5.8: Estimated number of people with a handicap, State/Territory
Standardised ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1993									
Capital city	86**	100	102**	110**	111**	102**	87**	97**[1]	98**
Other major urban centres[2]	95**	131**	102**	..	..	..	..	..	101**
Rest of State/Territory	98**	106**	106**	112**	115**	105**	97*	–[3]	104**
Whole of State/Territory	91**	103**	104**	110**	112**	104**	92**	98**	100
1988									
Rest of State/Territory	98**	119**	96**	90**	99**	..	..	..	102**

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Rest of State (New South Wales as the standard)

There were 205,113 people with a handicap in the non-metropolitan areas of New South Wales, 8 per cent more than were expected from the State rates (an SR of 108**).

Forty six SLAs were mapped in the highest range, with standardised ratios of 110 or above. It can be seen that SLAs mapped in this category were distributed throughout much of the State, in particular in the northern region (**Map 5.6**). The most highly elevated standardised ratios were recorded in Brewarrina (131**), Central Darling (127**), Walgett (126**), Unincorporated Far West (126**), Broken Hill (122**), Bingara (117**), Wellington (116**) and Ulmarra (115**). With the exception of Broken Hill (with 3,818 people) these SLAs had fewer than 1,500 people with a handicap.

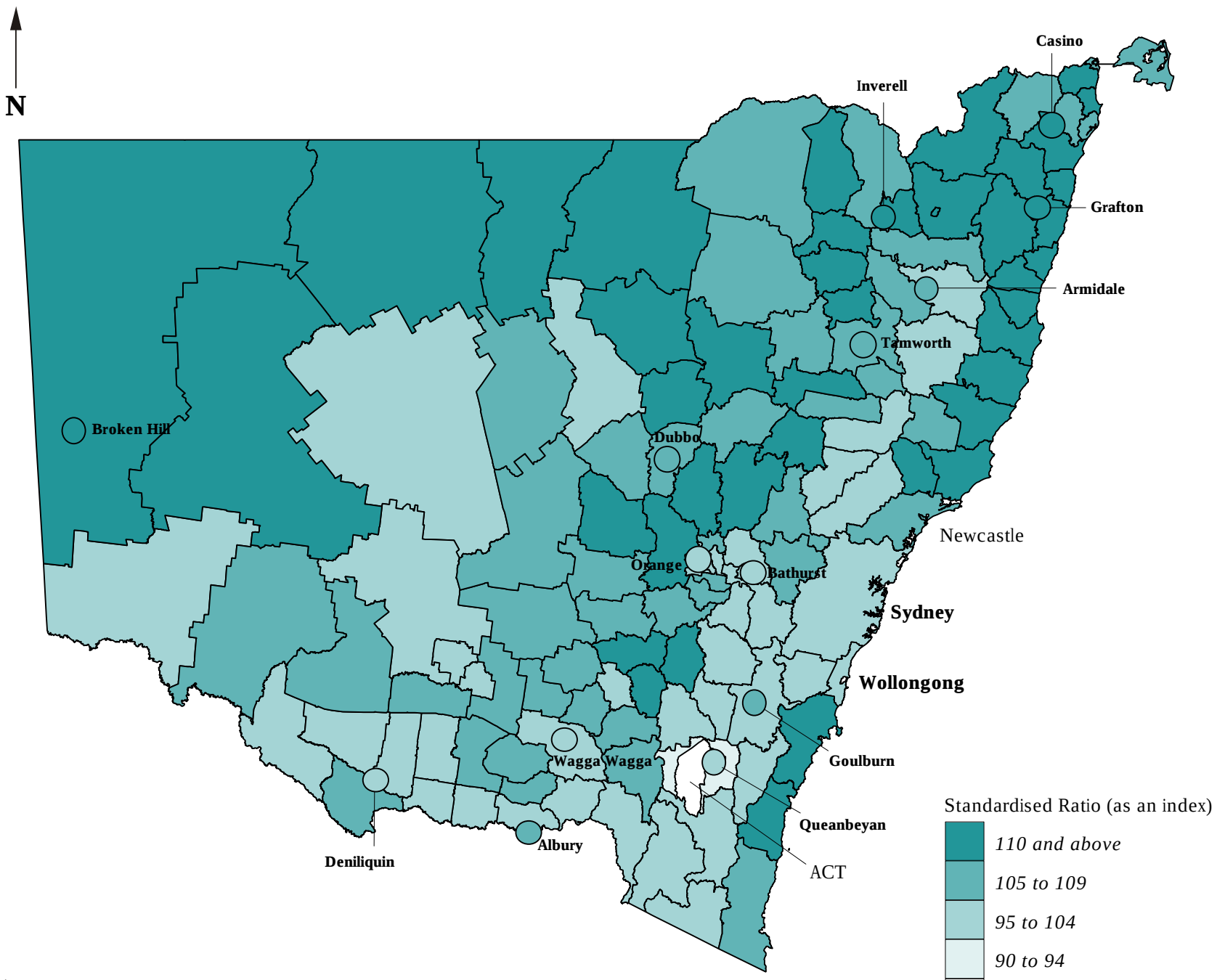
Thirteen of the SLAs in the non-metropolitan areas of New South Wales had SRs below the level expected. However, only the SLAs of Yarrowlumla (90**) and Queanbeyan (96*) had ratios of statistical significance. Other ratios that were lower than expected were estimated for Cooma-Monaro (with an SR of 96), Jerilderie, Snowy River, Yass, Gunning, Cabonne [Part A], Dumaresq and Single ton (each with an SR of 97), Evans [Part A] and Muswellbrook (both with an SR of 98) and Hume (99).

In 1993, 10,688 residents of Shoalhaven were estimated to have a handicap. High numbers were also estimated for Hastings (8,243 people), Coffs Harbour (7,030 people) and Greater Taree (6,276 people).

There were correlations of meaningful significance at the SLA level with the variables for low income families (0.69), unemployed people (0.59), early school leavers (0.57), dwellings without a motor vehicle (0.57) and the Indigenous population (0.51). These results, together with the inverse correlation with the IRSD (-0.78), suggest the existence at the SLA level of an association between high proportions of the population with a handicap and socioeconomic disadvantage.

Map 5.6
Estimated number of people with a handicap, New South Wales, 1993

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

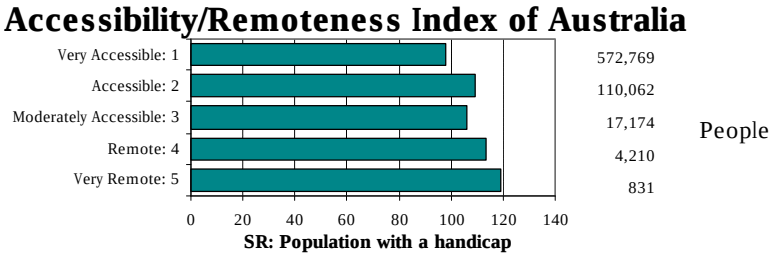


*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



The Very Remote areas recorded the largest Standardised Ratio, with an estimated 19.0 per cent more people with a handicap than expected from the New South Wales State rates. The Accessible (with an SR of 109), Moderately Accessible (106) and Remote (113) categories also had elevated ratios, with the lowest SR of 98 in the Very Accessible category.

Source: Calculated on ARIA classification, DHAC

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Deaths

Introduction

Variations in death rates attributable to measures of equity (such as social class) are perhaps the most telling of all the indicators relevant to a social health analysis. The maps in this section include infant deaths and premature deaths of males and females, and by major cause of death. Details of years of potential life lost from premature death are also shown.

Variations in death rates by social class

Variations in death rates related to social class have been shown in a wide range of studies in overseas countries, and in some studies in Australia. The most detailed Australian work in this area is an analysis of deaths occurring in 1985, 1986 and 1987, undertaken for the National Health Strategy (1992) and published in more detail by the Australian Institute of Health and Welfare as part of their Health Monitoring Series (Mathers 1994) (**Table 5.1**). As noted above, Mathers has recently updated this work by adding the period 1995-97 (**Table 5.2**). Mathers' study is discussed in detail in Chapter 1 but shows that the differentials in mortality rates that were evident in 1985-87 have persisted over the decade. This analysis provides details of the extent of disparities in mortality rates according to the relative social disadvantage of the population, as measured by the ABS SEIFA Index of Relative Socio-Economic Disadvantage.

Both the NSW and Victorian governments have also recently released health reports that examine socioeconomic variations in death rates in some detail (NSW Health Department 1997; Department of Human Services Victoria, in press). In NSW over the period 1990 to 1994, premature deaths from all causes were inversely related (-0.59) to high socioeconomic status. Moreover, four out of the five areas with the highest mortality rates and the lowest socioeconomic status also had the highest percentage of Indigenous people. In Victoria in 1996, socioeconomic status was also found to be correlated with premature death, with socioeconomic disadvantage explaining 36 per cent of the variance in life expectancy of males and 30 per cent of the variance in females.

Changes in numbers and rates, 1986 to 1995

Australia

As Australia's population continues to grow and age, the number of deaths each year is expected to increase over the next several decades (AIHW 1998). Over the nine year period from 1986 to 1995 the number of deaths in Australia increased by 8.8 per cent, rising from 114,981 deaths in 1986 to 125,133 deaths in 1995. However, this trend was a reflection of the increased number of deaths experienced among people aged 65 years and over, which rose by 17.6 per cent over this period. In line with increasing life expectancy in Australia, the number of deaths declined in all other age groups. The most substantial decline was for infants (those aged under 12 months), for whom the number of deaths decreased by 32.7 per cent, from 2,154 deaths in 1986 to 1,449 deaths in 1995. This is largely due to a decline in deaths attributed to sudden infant death syndrome, which declined from 2.2 deaths per 1,000 live births in 1987 to 0.8 per 1,000 live births in 1996 (AHIW 1998). Deaths recorded for 15 to 64 year olds in Australia also declined, from 29,892 to 26,532 over this nine year period, a decrease of 11.2 per cent.

Death rates have declined over this nine year period for all ages and in the age groups under 12 months (deaths per 1,000 live births), 15 to 64 years and 65 years and over.

New South Wales

The number of deaths in New South Wales over the nine year period from 1986 to 1995 increased by 6.2 per cent, rising from 42,167 in 1986 to 44,773 in 1995. Male deaths increased by 4.6 per cent, while a more substantial increase of 8.0 per cent was recorded for female deaths. Although there has been an overall increase in the number of deaths, this increase was evident only for people aged 65 years and over (an increase of 15.3 per cent). In 1995, there were 498 infant deaths (272 males and 226 females) recorded in New South Wales, a decrease of 34.4 per cent since 1986. There was also a decrease in the number of deaths of people aged from 15 to 64 years, down by 14.9 per cent, from 10,976 deaths in 1986 to 9,340 deaths in 1995.

Death rates have declined for all ages and in the age groups under 12 months, 15 to 64 years and 65 years and over.

Changes in death rates by cause, 1986 to 1995

Australia

Over the period from 1986 to 1995, death rates of people aged from 15 to 64 years have declined for all major causes of death, with the largest decline occurring for deaths from circulatory system diseases, a decrease of 43.1 per cent (**Figure 5.1**). Other large decreases were recorded for deaths from respiratory system diseases (28.3 per cent); accidents, poisonings and violence (16.7 per cent); and cancer (13.1 per cent).

New South Wales

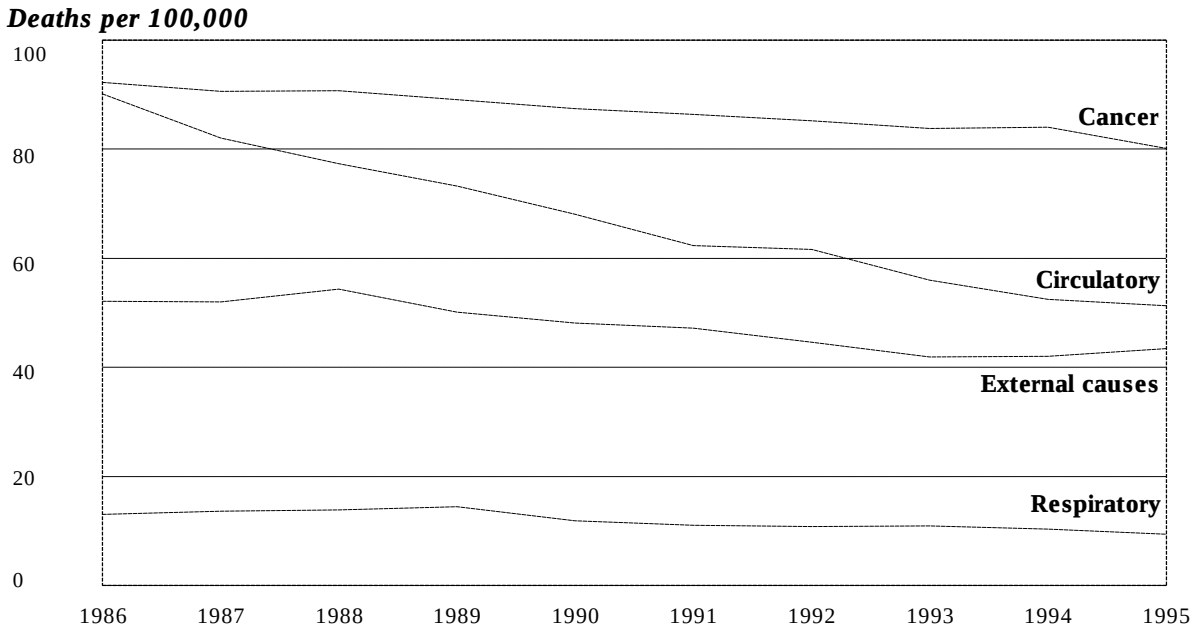
In New South Wales, death rates of people aged from 15 to 64 years have declined for all major causes of deaths, with the largest decline recorded for deaths from circulatory system diseases, a decrease of 43.7 per cent (**Figure 5.2**). Other large decreases were recorded for deaths from respiratory system diseases (33.2 per cent); accidents, poisonings and violence (20.4 per cent); and cancer (14.5 per cent).

Changes in death rates by age group and sex, 1986 to 1995

Australia

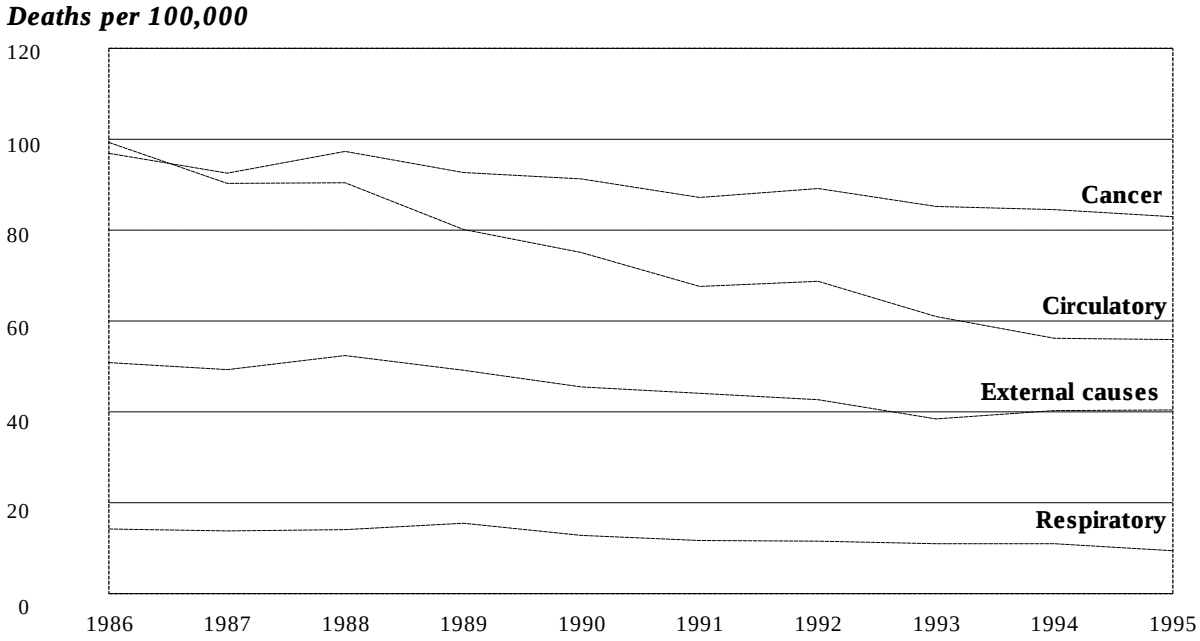
Overall, premature death rates (ie. deaths of people aged from 15 to 64 years) declined at a greater rate for males (22.0 per cent fewer male deaths) than females (20.2 per cent fewer) over the years from 1986 to 1995. Male death rates from malignant neoplasms declined by 14.1 per cent over this nine year period, whereas female deaths from the same cause decreased by 11.7 per cent.

Figure 5.1: Death rates of people aged from 15 to 64 years, by cause, Australia



Source: ABS Causes of Death bulletins, ABS Catalogue No. 3303.0, 1986 to 1995

Figure 5.2: Death rates of people aged from 15 to 64 years, by cause, New South Wales



Source: ABS Causes of Death bulletins, ABS Catalogue No. 3303.0, 1986 to 1995

Death rates of males and females from accidents, poisonings and violence were similar, with male deaths down by 16.4 per cent and females by 16.6 per cent over the years studied. Female death rates for circulatory system diseases declined at a greater than for males, with decreases of 46.1 per cent and 41.7 per cent, respectively.

The biggest differential in the rates of change recorded for males and females occurred for deaths due to diseases of the respiratory system. Between 1986 and 1995, death rates among 15 to 64 year olds from these diseases declined by 34.9 per cent for males. In contrast, female death rates over this same time period declined less substantially, from 9.5 deaths per 100,000 population in 1986 to 8.0 in 1995, a decrease of 16.4 per cent.

New South Wales

In New South Wales, premature death rates of males (down by 22.8 per cent) and females (23.5 per cent) declined at similar rates. A similar pattern was evident for all of the major causes of death analysed. Male death rates from the combined causes of accidents, poisonings and violence declined by 20.5 per cent, while female death rates from these causes declined by 19.4 per cent, and male death rates from malignant neoplasms declined by 16.4 per cent compared with 12.0 per cent for females. Death rates recorded for diseases of the circulatory system over this nine year period showed the reverse of this pattern. Between 1986 and 1995, female death rates from diseases of the circulatory system decreased at a rate of 48.0 per cent, while male death rates decreased by 41.8 per cent.

Data mapped

Age range

There are two main reasons for basing the analysis on the death rates of the 15 to 64 year age group: these are outlined below.

The population aged from 15 to 64 years can be considered to be of 'working' age, and examined as a group. Although in recent years the lower age of the 'working' age population has been set at 20 years in some analyses, fifteen years of age has been retained here mainly for consistency with the first edition. Note however, that participation of 15 to 19 year olds in the labour force has declined over the ten years from 1986 to 1996, from 52.9 per cent to 47.0 per cent for males, and from 55.5 per cent to 47.7 per cent for females.

The exclusion of deaths of persons aged 65 years or more (which account for three quarters of all deaths) is important not only because of the focus on prematurity. A significant proportion of people aged 65 years and over die while residents of nursing homes and other aged care facilities. Aged care facilities are unlikely to be located in the same area as the person's previous (domestic) home and are over-represented in capital cities compared with the non-metropolitan areas. Their inclusion would increase the rates for those SLAs in which nursing homes are largely concentrated and reduce the rates in other areas, thereby distorting the analysis. The concern is that deaths of people resident in aged care facilities may influence the rate for that SLA, when it is not necessarily the area, in terms of its socioeconomic profile, in which they would have lived throughout much of their life.

Residents of some nursing homes and other types of supported accommodation (such as hostels, boarding houses and shelters used by people with psychiatric conditions and community houses for those with an intellectual disability) are more likely than the population in general to die at ages below 65 years.

Since the mid-1980s (the period on which the analysis in the first edition of the atlas was based) the number of deaths occurring at ages from 15 to 64 years has declined, and the age of people dying in nursing homes has increased. It would have been possible, therefore, to increase the age range in this analysis to include deaths between the ages of 65 and 74 years (thereby increasing the number of cases and strengthening the analysis at the SLA level). To do so would, however, have reduced the possibility of comparison with the analysis in the first edition. On balance, it was considered to be more important to retain comparability than to boost the numbers.

Measure mapped

Age-sex standardised ratios (Standardised Death Ratios, SDRs) have been calculated and mapped for a range of causes of death, by place of usual residence, to illustrate the extent of variation in death rates between the populations in the areas mapped. A brief description of the technique of standardisation, its purposes, and method of calculation is in Appendix 1.3. For infant deaths, the more traditional infant death rate (infant deaths per 1,000 live births) has been mapped.

Readers should be aware that two standards have been used in this atlas. Standardised ratios calculated for the States, Territories, capital cities and other major urban centres have the Australian rates as the standard. Those ratios calculated for Statistical Local Areas are based on the rates applicable to the relevant State or Territory.

Thus, the text describing the variables refers to two standards: the discussion in the 'Capital city comparison' and 'State/Territory comparison' sections has Australia as the standard (as do the tables in this section), whereas the discussion describing 'Sydney' or 'Rest of State' has New South Wales as the standard. In this way the capital cities, States, etc., can be compared to each other against the Australian rates, and the smaller area data within each State and Territory can be compared to each other against the State/Territory rates.

Variables mapped

Only a selection of the total number of causes of death of the population aged from 15 to 64 years has been mapped. These include deaths from all causes (separately for females and males) and from four major cause groups – deaths from diseases of the circulatory system, diseases of the respiratory system, from all cancers (and separately for deaths from lung cancer) and from the external causes of accidents, poisonings and violence. **Table 5.9** shows the number of deaths for the age groups and causes for which data were analysed and mapped.

Infant deaths are analysed separately as they are recognised internationally as a group with historically high mortality rates, and rates with marked socioeconomic differentials. The four cause of death groups mapped were chosen because they represent a large proportion of the deaths in the 15 to 64 year age group (85.7 per cent, compared to 87.4 per cent in the mid-1980s). They are also predominant among the causes for which persons of lower socioeconomic status have been shown to have higher death rates than those of higher socioeconomic status.

Table 5.9: Deaths by cause and age, New South Wales, 1992 to 1995

Age at death	Cancers	Circulatory system diseases	Respiratory system diseases	Accidents, poisonings & violence	All other causes	Total deaths
Infants (under 1 year)	**13**	**17**	**39**	**51**	**2,162**	**2,282**
15 to 64 years	**13,756**	**9,595**	**1,733**	**6,407**	**6,343**	**37,834**
males	7,658	6,907	1,002	4,995	4,515	25,077
females	6,098	2,688	731	1,412	1,828	12,757
Other ages	**33,178**	**69,782**	**11,828**	**2,949**	**19,075**	**136,812**
All ages	**46,947**	**79,394**	**13,600**	**9,407**	**27,580**	**176,928**

Source: ABS Causes of Death bulletins, 1992 to 1995

Importantly, they provide a sufficient number of deaths (by aggregating four years of data, from 1992 to 1995) to be analysed at the SLA level for presentation in the State and Territory atlases. Some other important causes of death which are of public concern (eg. deaths from suicide) and/or are important causes of death among the most disadvantaged in the population (eg. deaths from mental disorders) have insufficient numbers for the production of meaningful statistics for most areas at the local level. As the combined causes of accidents, poisonings and violence (which include suicides) are the major cause of death for young people, deaths from these causes have been mapped separately for the 15 to 24 year age group. A separate discussion on deaths from suicides is on page 130.

Table 5.10 shows the number of deaths for the causes mapped for **Sydney** (the Sydney Statistical Division) and the *Rest of the State* (the remainder of New South Wales).

Table 5.10: Deaths by selected cause and area, New South Wales, 1992 to 1995

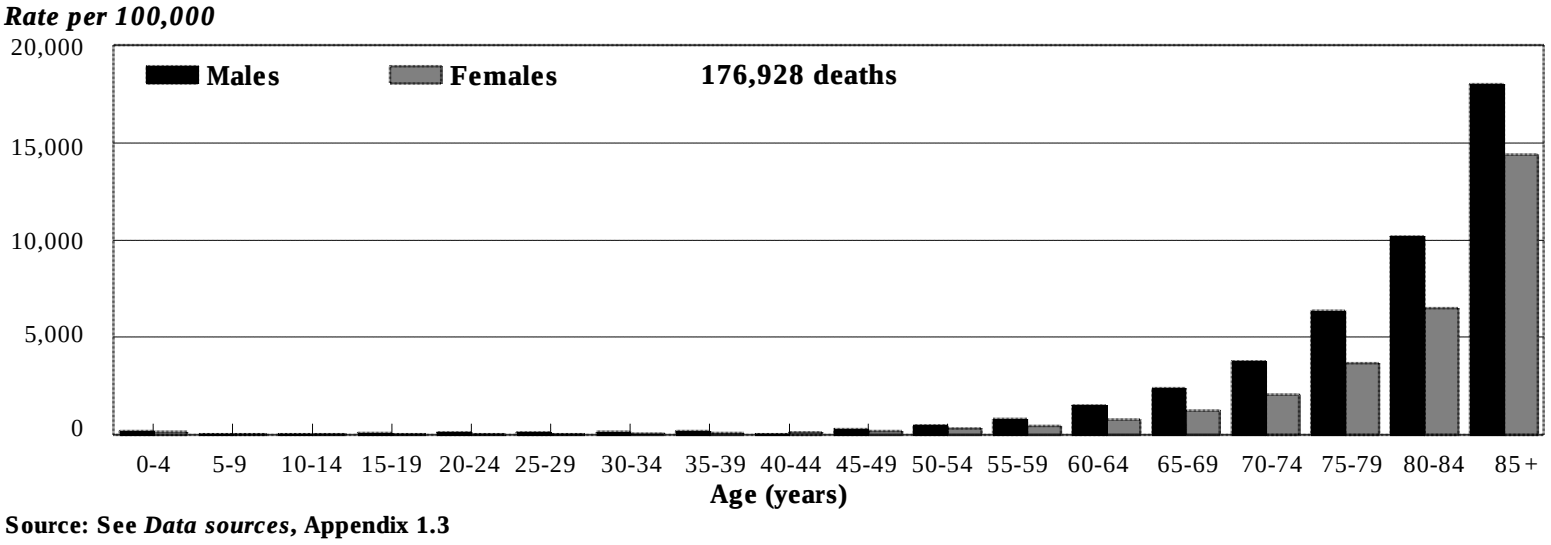
Cause of death	Sydney and the other major urban centres	Rest of State	Total
Infant: all causes	**1,603**	**679**	**2,282**
15 to 64 years	**26,750**	**11,084**	**37,834**
Cancers	9,858	3,898	13,756
Circulatory system diseases	6,535	3,060	9,595
Respiratory system diseases	1,180	553	1,733
Accidents, poisonings & violence	4,381	2,026	6,407
15 to 24 years	**1,619**	**691**	**2,310**
Accidents, poisonings & violence	1,058	520	1,578
All ages	**125,779**	**51,149**	**176,928**

Source: See *Data sources*, Appendix 1.3

Figures 5.3 to **5.7** give a graphical presentation of death rates in New South Wales by age and sex for each of the major causes analysed (apart from infant deaths). Please note that the scales for the rates per 100,000 are different for each figure.

Figure 5.3 highlights both the steeply rising death rates from age 50 years for males and from age 60 years for females, as well as the higher rates of deaths for males across all the age groups.

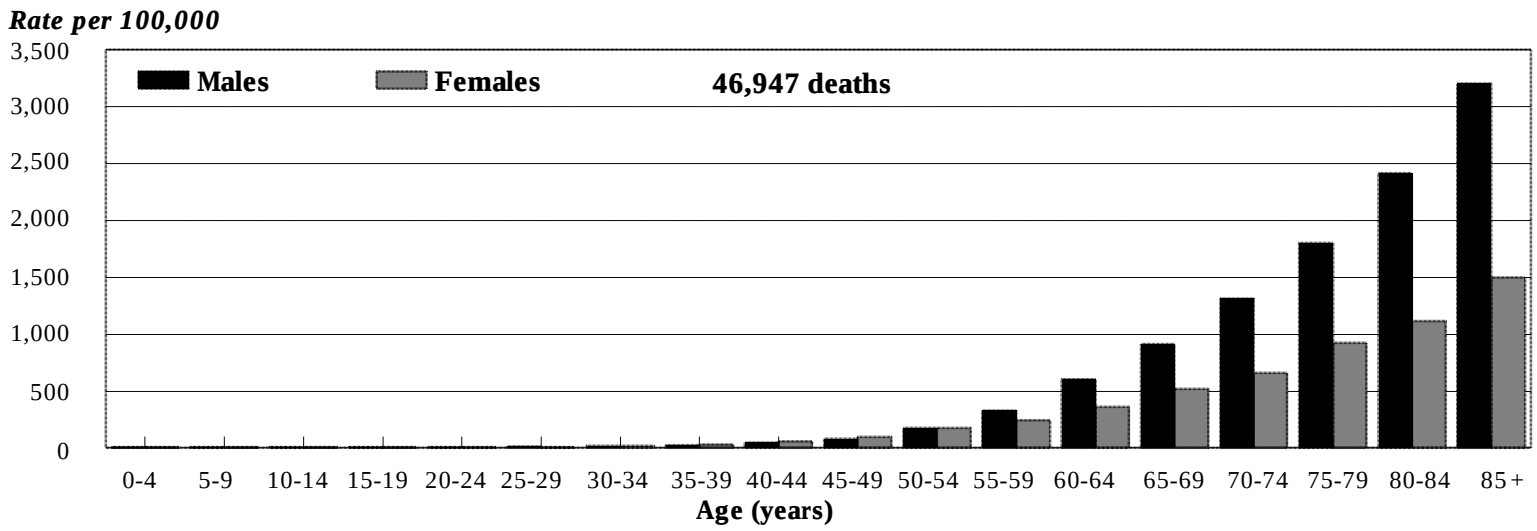
Figure 5.3: Deaths from all causes, by age and sex, New South Wales, 1992 to 1995



Source: See *Data sources*, Appendix 1.3

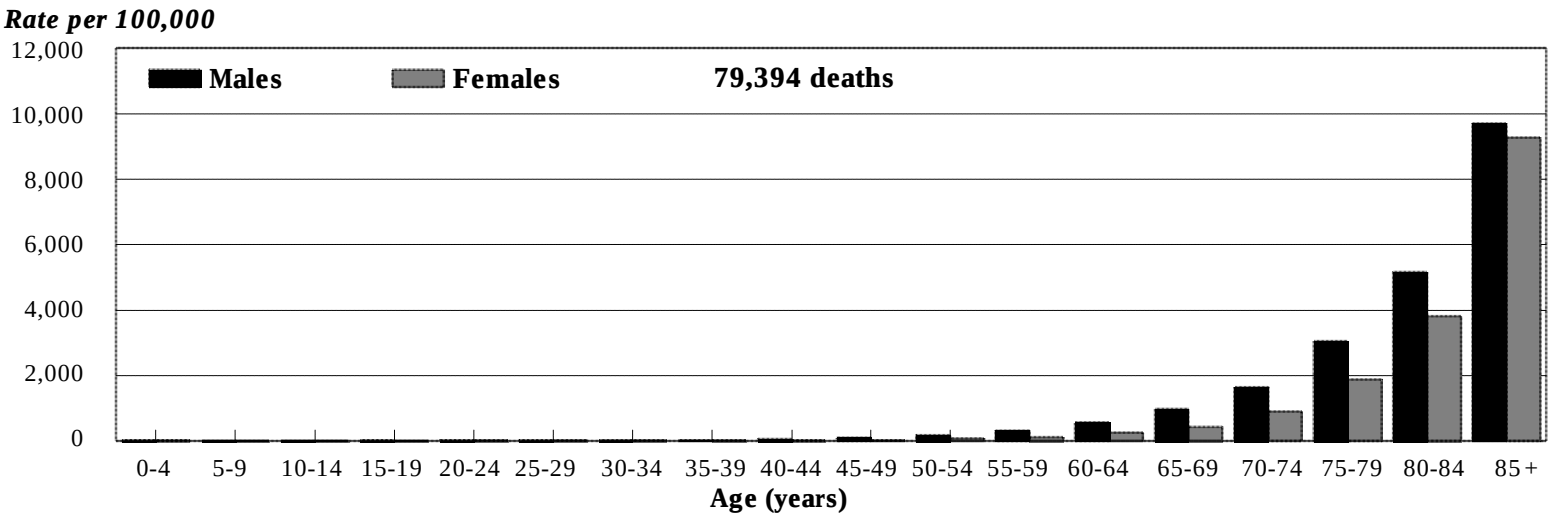
Figure 5.4 shows the predominance of males in deaths from cancer, whereas in **Figure 5.5** the similar pattern for deaths from circulatory system diseases is broken in the 85 years and over age group, where female death rates closely approximate those of males. Death rates from respiratory system diseases (**Figure 5.6**) reflect the 'all causes' pattern.

Figure 5.4: Deaths from cancer, by age and sex, New South Wales, 1992 to 1995



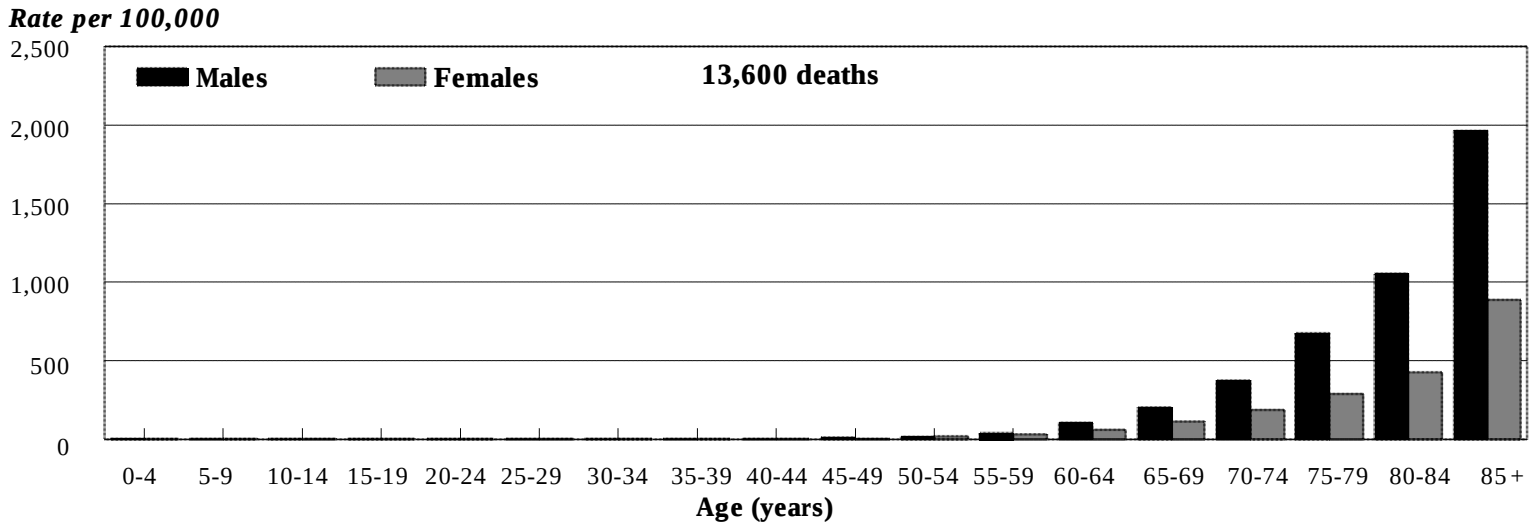
Source: See *Data sources*, Appendix 1.3

Figure 5.5: Deaths from circulatory system diseases, by age and sex, New South Wales, 1992 to 1995



Source: See *Data sources*, Appendix 1.3

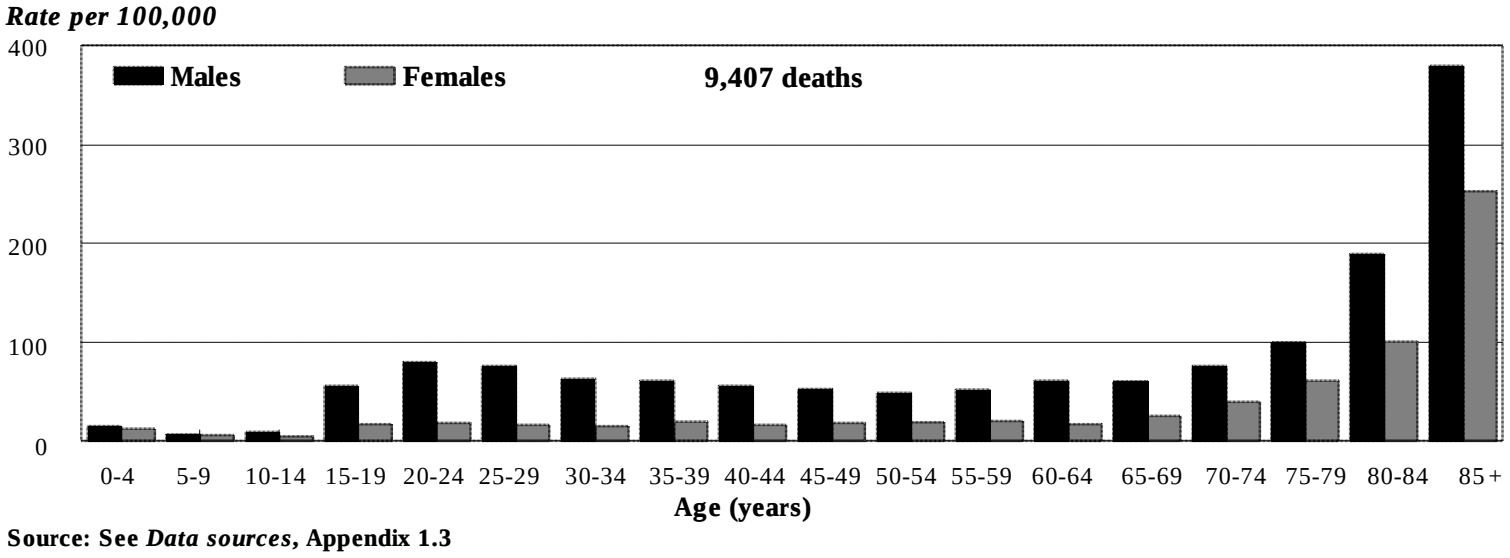
Figure 5.6: Deaths from respiratory system diseases, by age and sex, New South Wales, 1992 to 1995



Source: See *Data sources*, Appendix 1.3

Deaths from the external causes of accidents, poisonings and violence (**Figure 5.7**) occur at earlier ages than is the case for other causes, and occur across all age groups. Again, males predominate across the age groups, with peaks at younger ages (from 15 to 29 years, where motor vehicle accidents and suicides are major causes), and at the older ages, increasing markedly from 75 years of age.

Figure 5.7: Deaths from accidents, poisonings and violence, by age and sex, New South Wales, 1992 to 1995



Source: See *Data sources*, Appendix 1.3

Deaths from suicide

Taylor et al. (1998) found that risks for suicide increased significantly with decreasing socioeconomic status in males, but not in females. An even stronger relationship existed when suicide rates were controlled for country of birth. When adjusted for age and country of birth, suicide rates were 66 per cent higher in the lowest socioeconomic status quintile compared to the highest quintile and 39 per cent higher in the 15 to 24 year age group (youth suicide). These findings suggest that socioeconomic status plays an important role in male suicide rates among Australians and residents from non-English speaking countries, and among young people.

Despite suicide being an important cause of death, in particular amongst young people[5], it has not been mapped in this chapter. As the number of recorded suicides is quite low at the SLA level there is a possibility that mapping them will lead to misinterpretation of results. The following is an overview of the deaths recorded for suicides over the period from 1986 to 1995 for New South Wales as a whole, as well as separately for **Sydney** and the *Rest of the State*.

In Australia, deaths are classified as self-inflicted by the coroner or a Government Medical Officer upon consideration of the evidence, but it is likely that the number of suicides is under-reported. A death intended as suicide may appear as the result of an unrelated cause, ie. a motor vehicle accident, and thus is not recorded as such by the coroner. For example, young male residents of country areas are over represented in single vehicle accidents.

There were 7,403 deaths of all ages from suicide in New South Wales over the nine year period from 1986 to 1995. Of these, 79.6 per cent (5,896) were aged from 15 to 64 years and 16.9 per cent (1,251) were aged from 15 to 24 years at death. Over this time period there has been a 23.8 per cent increase in the number of deaths recorded for suicides at all ages, rising from 618 in 1986 to 765 in 1995. A similar increase was recorded among 15 to 64 year olds, where the number of suicides rose from 519 in 1986 to 650 in 1995, an increase of 25.2 per cent.

While there has been a significant recent increase in suicide in the young, Goldney and Harrison (1998) have highlighted continuing reductions in suicide rates in middle aged and older Australians over the last hundred years.

Males predominated in these deaths, accounting for 79.1 per cent of suicides of all ages, 80.3 per cent of 15 to 64 year olds and 85.4 per cent of 15 to 24 year olds. However, research has suggested that females attempt suicide more often, but that males use more violent, and therefore more successful means, such as firearms (see box).

Attempted Suicide

A study by the Health Department of Western Australia (1996) found that over the period from 1981 to 1993 attempted suicide rates were considerably higher among females than males, an age standardised rate of 162 compared to 105 per 100,000 person-years respectively. Female rates were highest in the 15 to 19 year age group (455 attempted suicides per 100,000 person-years), followed by those aged from 20 to 24 years (346 per 100,000). For males, rates were highest in the 20 to 24 year age group (273 per 100,000), with slightly lower rates among those aged 25 to 29 (228 per 100,000). Despite the overall higher rates recorded for females, over the years from 1981 to 1993 female rates declined by 2.4 per cent per year while male rates declined by only 0.2 per cent.

Numbers of suicides not only vary by age and sex, but also by place of residency. While there were more deaths from suicide of residents of **Sydney** (4,334 deaths compared to 2,709 in the non-metropolitan areas of New South Wales over the nine years from 1986 to 1995), because it contains a higher proportion of the State's population, it is more informative to consider death rates.

[5]Suicide is also an important cause of death at older ages.

In 1995, death rates from suicide among 15 to 64 year olds were 2.5 per cent higher in the non-metropolitan areas of New South Wales than in **Sydney**, a rate of 16.3 per 100,000 population compared to 15.9 per 100,000, respectively. The difference in 1995 was more substantial in the 15 to 24 year age group, with a death rate of 14.6 per 100,000 non-metropolitan residents, compared to 13.3 per 100,000 for residents of **Sydney,** a difference of 9.2 per cent.

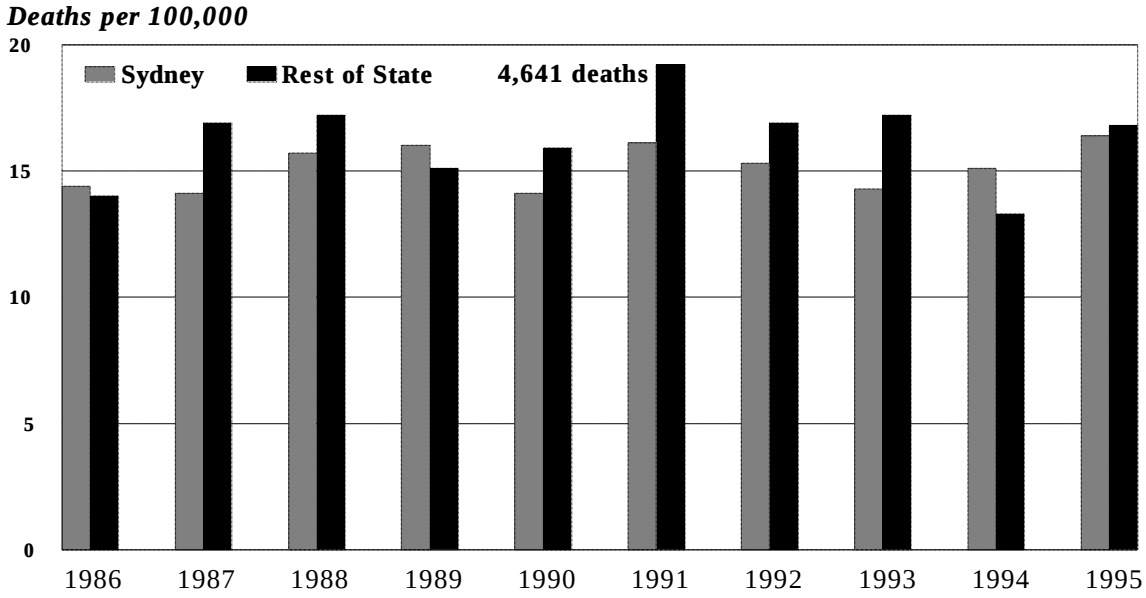
In the following charts, suicide rates are shown separately for the 15 to 24 and 25 to 64 year age groups. Among the older age group (**Figure 5.8**) rates were higher for residents of the non-metropolitan areas than for **Sydney** in all but 1986, 1989 and 1994.

Although the overall suicide rates were only slightly higher for 15 to 24 year olds, the differentials in rates between the capital city and non-metropolitan rates were more marked in several of the years than for the older age group (**Figure 5.9**).

It is likely that the higher rates in country areas relate to factors such as a relative lack of job and training opportunities, the decline of many rural communities and the relatively larger numbers of Indigenous people in the population, a group which has higher suicide rates.

Figure 5.8: Suicide rates of people aged from 25 to 64 years:, Sydney and Rest of State

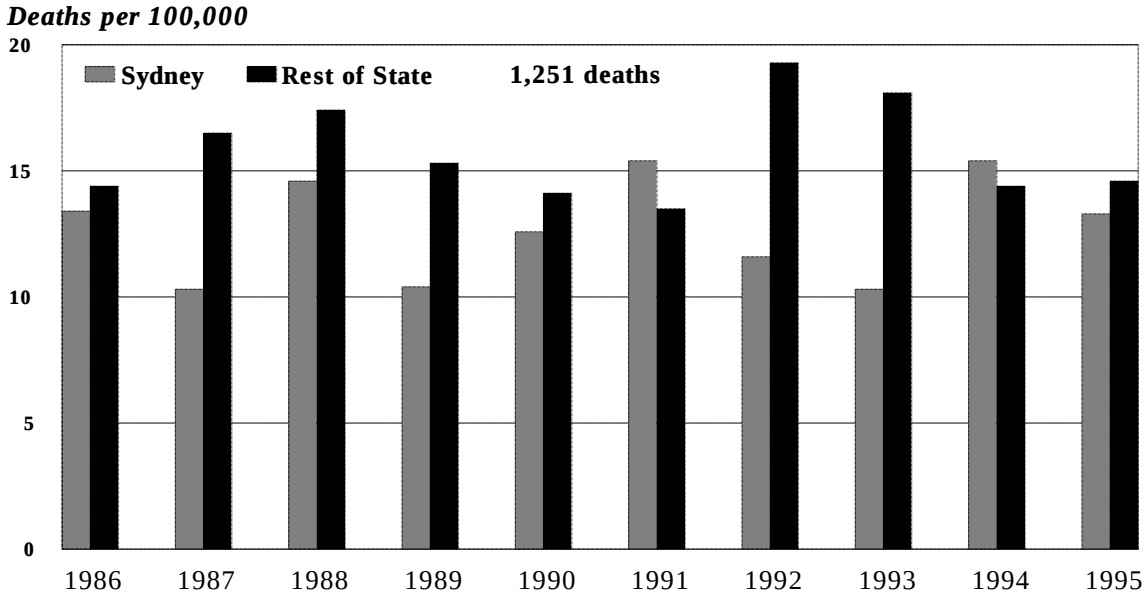
Deaths per 100,000



Source: Various issues, ABS Causes of Death bulletins

Figure 5.9: Suicide rates of people aged from 15 to 24 years, Sydney and Rest of State

Deaths per 100,000



Source: Various issues, ABS Causes of Death bulletins

Infant deaths, 1992 to 1995

Capital city comparison

The infant death rate is calculated as the number of infant deaths (deaths under one year of age) per 1,000 live births. Over the years 1992 to 1995, the rate varied between the capital cities, from a high of 10.3 in **Darwin** to around half that level in a number of cities. **Hobart** had the second highest rate.

The *All capitals* infant death rate has declined by one third between the two periods for which data have been analysed (**Table 5.11**). As noted earlier (page 125), this is largely the result of the decline in deaths from sudden infant death syndrome. There were similar reductions in all of the capital cities other than **Darwin**, where the infant death rate rose, from 9.4 for the period 1985 to 1989, to 10.3 for the years 1992 to 1995. **Darwin** now has the highest infant death rate (10.3 infant deaths per 1,000 live births), followed by **Hobart** (7.5), a reversal of the ranking over the period from 1985 to 1989. All capital cities except these show significant improvements in the rate.

Table 5.11: Infant deaths, capital cities
Infant death rates per 1,000 live births

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	**6.1**	**5.2**	**6.7**	**5.2**	**5.3**	**7.5**	**10.3**	**5.9**	**5.8**
1985-89[2]	**9.3**	**8.2**	**8.9**	**7.5**	**8.4**	**9.5**	**9.4**	**8.3**	**8.7**

[1]Includes Queanbeyan (C)
[2]For 1985-89 the rate was calculated per 1,000 children aged under 12 months plus infant deaths: this approximates live births
Source: See *Data sources*, Appendix 1.3

Over the years from 1992 to 1995, there were 2,282 infant deaths of children resident in New South Wales. This represented a decline from an average of 774 to 571 infant deaths per year between the two periods analysed, and a decline in the infant death rate from 9.1 to 6.4.

Neonatal deaths (deaths of infants aged under 28 days) accounted for 67.1 per cent of all infant deaths. Neonatal deaths result mostly from the circumstances of the birth, or from pre-natal conditions resulting in disabilities at birth. The remaining (post-neonatal) deaths are related to infections, respiratory disorders, accidents and deaths attributed to Sudden Infant Death Syndrome and other causes.

Sydney

There were 1,345 deaths of infants resident in **Sydney** over the four year period from 1992 to 1995, a rate of 6.1 infant deaths per 1,000 live births.

By far the highest infant death rates were recorded in the inner SLAs of South Sydney, Auburn and Bankstown, with 13.3, 10.3 and 8.4 infant deaths per 1,000 live births respectively (**Map 5.7**). Also mapped in the highest range was Hawkesbury, with a rate of 8.1. Relatively high rates (of more than 7 deaths per 1,000 live births) also occurred to the west of the city in Burwood, Rockdale and Blacktown, and in the northern SLAs of North Sydney, Gosford and Willoughby.

The largest proportion of SLAs (52.5 per cent) was mapped in the middle range, with rates ranging from 4.0 to 5.9. No SLAs were mapped in the lowest range, with the lowest rates in the inner SLAs of Kogarah (with 2.4 infant deaths per 1,000 live births), Waverley (2.6) and Ashfield (3.4).

The SLAs of Blacktown, Bankstown and Campbelltown had the largest numbers of infant deaths over the four year period from 1992 to 1995, with 135, 82 and 79 deaths respectively.

There were weak correlations at the SLA level with the indicators of socioeconomic disadvantage, and weak inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.26), suggest the existence at the SLA level of an association between high infant death rates and socioeconomic disadvantage.

Newcastle

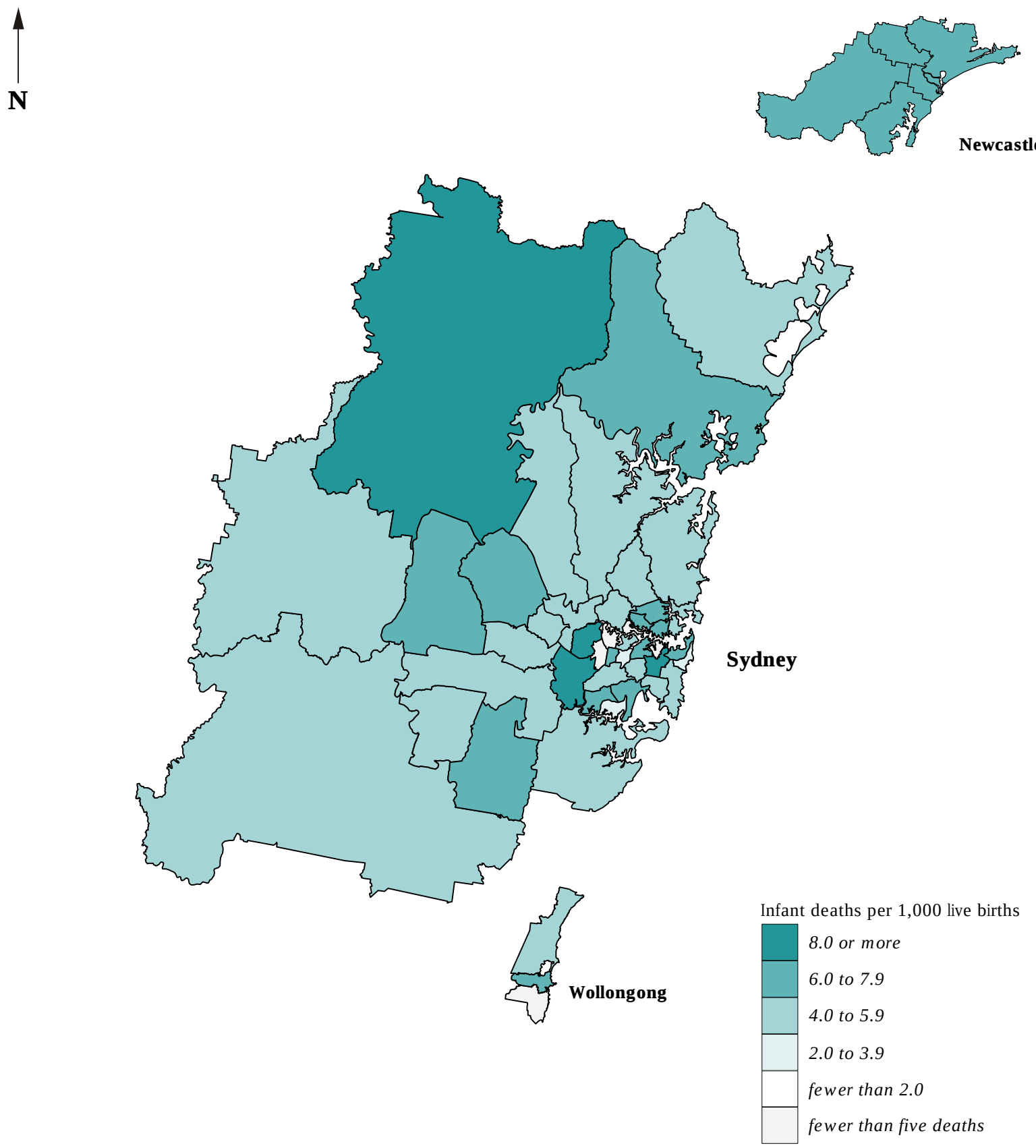
In **Newcastle** there were 174 infant deaths over the four year period from 1992 to 1995, 6.8 infant deaths per 1,000 live births. All SLAs had infant death rates within the range of 6.0 to 7.9, with the highest occurring in Port Stephens (7.9 infant deaths per 1,000 live births) and the lowest in Cessnock (6.1 infant deaths per 1,000 live births).

Wollongong

Wollongong recorded the lowest infant death rate among the major urban centres, with 5.6 infant deaths per 1,000 live births (a total of 84 deaths). Shellharbour and the City of Wollongong had infant deaths rates of 7.7 and 5.1 respectively. However the SLA of Kiama was not mapped for this variable as only four infant deaths were recorded over the four years.

Map 5.7
Infant deaths, Sydney, Newcastle and Wollongong, 1992 to 1995

infant deaths per 1,000 live births in each Statistical Local Area



Source: **See *Data sources*, Appendix 1.3**

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Infant deaths, 1992 to 1995

State/Territory comparison

The infant death rate is calculated as the number of infant deaths (deaths under one year of age) per 1,000 live births. The rate varied between the States and Territories, from a high of 13.9 in the Northern Territory to less than half that level in a number of States and the Australian Capital Territory. Rates in the *Rest of State/Territory* areas were similarly highest in the Northern Territory and were higher than the capital city rates for all but Queensland (where they were the same) and Tasmania (where they were lower).

Infant death rates in the *Rest of State/Territory* areas were 26.7 per cent lower over the years from 1992 to 1995 than over the years from 1985 to 1989 (**Table 5.12**). The largest reductions occurred in the non-metropolitan areas of Tasmania (down by 46.7 per cent) and the smallest in the Northern Territory (down by 10.4 per cent). Western Australia (22.8 per cent) and Queensland (24.4 per cent) experienced the next smallest reductions, with declines of around one third occurring in the remaining States.

Table 5.12: Infant deaths, State/Territory
Infant deaths per 1,000 live births

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	6.1	5.2	6.7	5.2	5.3	7.5	10.3	5.9[1]	5.8
Other major urban centres[2]	6.4	4.6	7.1	..	..	..	..	..	6.2
Rest of State/Territory	7.1	5.4	6.7	5.9	7.1	5.7	16.3	–[3]	6.8
Whole of State/Territory	6.4	5.3	6.8	5.4	5.9	6.4	13.9	5.1	6.2
1985 to 1989[4]									
Rest of State/Territory	9.3	8.3	9.0	9.0	9.2	10.7	18.2	–[3]	9.3

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
[4]For 1985-89 the rate was calculated per 1,000 children aged under 12 months plus infant deaths: this approximates live births
Source: See *Data sources*, Appendix 1.3

Although Aboriginal infant mortality has generally improved, rates remain high. The Australian Institute of Health and Welfare (1998) has published estimates of infant death rates in the Indigenous populations of SA, WA and NT, the only States and Territory with reliable data. In 1991-96 infant death rates were 19.2 per 1,000 live births in the Indigenous population compared to 6.1 per 1,000 in the non Indigenous population. The high rates for Aboriginal and Torres Strait Islander people are likely to influence the regional rates in areas with very high proportions of Aboriginal people in the population, in particular the remote areas of Australia.

Rest of State

Over the four year period from 1992 to 1995, there were 679 deaths of infants resident in the non-metropolitan areas of New South Wales, an infant death rate of 7.1 infant deaths per 1,000 live births.

Data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates. SLAs that did have sufficient numbers of cases were generally situated along the coastal regions, with the majority mapped in the highest range.

The most highly elevated infant death rates were in Ulmarra (an infant death rate of 21.5) on the mid north coast, Broken Hill (13.7) in the far north-west, and Queanbeyan (13.7) in the south-east (**Map 5.8**). High rates along the coastal region were also recorded in Nambucca (12.7), Great Lakes (9.8), Tweed Part B (8.5) and Kempsey (8.1).

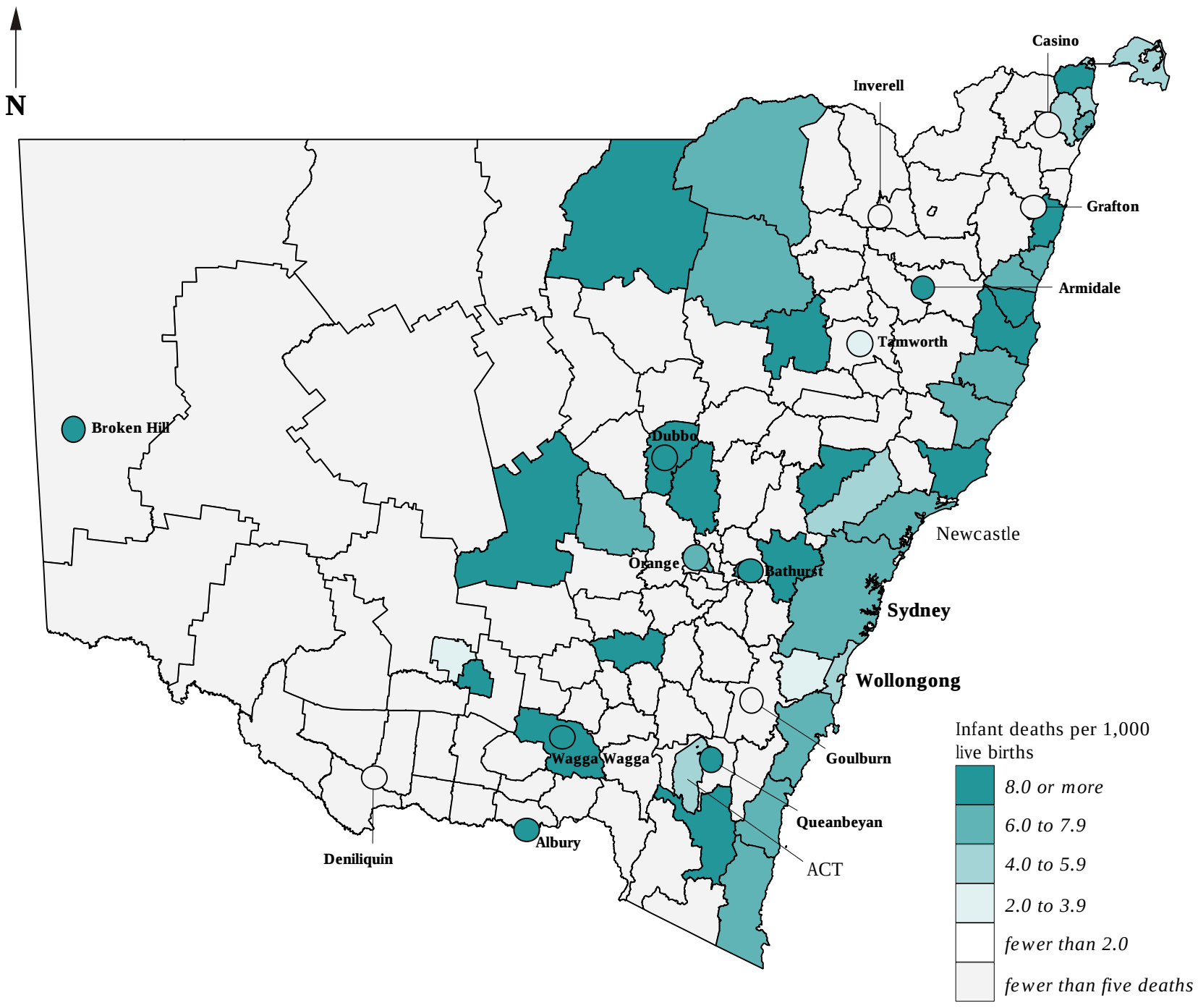
SLAs mapped in the middle range, with infant death rates ranging from 4.0 to 5.9, were Lismore, Tweed Part A and Byron, located in the north-east, and Singleton, to the north of **Sydney**. Tamworth had the lowest rate for this variable, with 2.6 infant deaths per 1,000 live births (and 6 infant deaths): other low infant death rates were recorded in the SLAs of Wingecarribee and Griffith, with rates of 2.8 (6 infant deaths) and 3.3 (5 infant deaths) respectively.

Residents of Wagga Wagga had the largest number of infant deaths in the non-metropolitan areas of New South Wales (34 deaths). More than 20 infant deaths were also recorded in Albury (with 31 deaths), Shoalhaven (31 deaths), Queanbeyan (28 deaths), Dubbo (28 deaths) and Coffs Harbour (23 deaths).

The correlation analysis was not undertaken as there were too many SLAs with small numbers of cases.

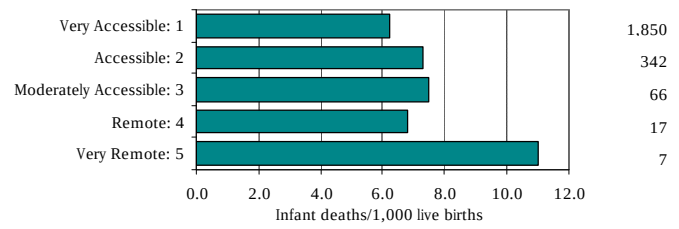
Map 5.8
Infant deaths, New South Wales, 1992 to 1995

infant deaths per 1,000 live births in each Statistical Local Area



Source: **See *Data sources*, Appendix 1.3** ***Details of map boundaries are in Appendix 1.2***

Accessibility/Remoteness Index of Australia



Infant death rates were highest in the Very Remote ARIA category (11.0 infant deaths per 1,000 live births), although there were just seven deaths over this period. The next highest rates were in the Moderately Accessible (7.5) and Accessible (7.3) categories and the lowest in the Very Accessible categories (6.2). The high rate in the most remote areas is likely to reflect high infant death rates among Indigenous Australians.

Source: Calculated on ARIA classification, DHAC

Deaths of males aged 15 to 64 years from all causes, 1992 to 1995

Capital city comparison (Australia as the Standard)

Over the four years from 1992 to 1995, Standardised Death Ratios (SDRs) for males aged from 15 to 64 years ranged from 81** in **Canberra** to 143** in **Darwin**. The other capital cities (except **Hobart** with an SDR of 103) had fewer deaths than expected.

There was a higher differential (from the Australian rates) in the SDR recorded for **Darwin** in the later period shown in **Table 5.13**. The higher SDR in this later period suggests a worsening (relative to the Australian rates) in the male death ratios from all causes between the periods analysed. The differential in the ratios for **Adelaide** between these periods also suggest a deterioration, while those in **Brisbane** and **Canberra** indicate a relative improvement.

Table 5.13: Deaths of males aged 15 to 64 years from all causes, capital cities
Standardised death ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	99	92**	94**	93**	87**	103	143**	81**	94**
1985-89	100	92**	97*	89**	87**	101	124**	82**	94**

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Malignant neoplasms (cancer), diseases of the circulatory system and the combined external causes of accidents, poisonings and violence were the main causes of premature death (deaths between the ages of 15 to 64 years) for males over this period. There were 65,493 deaths of males in **Sydney** and the other major urban centres over the period from 1992 to 1995, of which 17,671 (27.0 per cent) were of males aged from 15 to 64 years. Males most likely to die prematurely include Indigenous people; those who are homeless, or who live in sheltered accommodation or low-cost boarding houses; those earning low incomes; and those who are unemployed.

Sydney (New South Wales as the Standard)

There were 14,685 deaths of 15 to 64 year old males in **Sydney**, 4 per cent fewer deaths than expected from the New South Wales rates (an SDR of 96**). This represented a decline in the number of deaths per year, down from 4,394 per year (over the years from 1985 to 1989) to 3,671 per year (from 1992 to 1995).

The vast majority of SLAs were mapped in the middle range within 15 per cent of the level expected from the State rates. Only four SLAs were mapped in the highest range and five in the lowest (**Map 5.9**). SLAs with the highest SDRs were located in the city and nearby inner suburbs, including South Sydney, Sydney, Leichhardt and Marrickville. Male residents of South Sydney had the highest SDR, of 297** (almost 3 times more deaths of 15 to 64 year old males than expected from the State rates). Sydney (254**), Leichhardt (160**) and Marrickville (152**) also recorded highly significant SDRs.

In total, 24 SLAs were mapped in the middle range. To the west, Liverpool, Auburn, Blacktown and the Blue Mountains had elevated ratios ranging from 109 to 114. Ratios significantly lower than expected were recorded in Canterbury (with a ratio of 85**), Hawkesbury (86*) and Bankstown (86**). All five SLAs in the lowest range mapped had ratios that were highly significant, and lower than expected. These SLAs included Ku-ring-gai (with an SDR of 58**), Willoughby (60**) and Warringah-Pittwater (66**), located to the north of the city; Baulkham Hills (59**), in the north-east; and Sutherland (67**), situated in the south.

The SLA of South Sydney had the largest number of deaths from all causes of males aged from 15 to 64 years (983 deaths) as well as having the highest SDR (297**). A large number of deaths was also recorded in Blacktown (953), Fairfield (702) and Parramatta (592). Hunter's Hill recorded 45 male deaths in the 4 year period between 1992 and 1995, and Mosman and Camden also recorded a low number of deaths, being 76 and 80 respectively.

The was a correlation of substantial significance with the variable for dwellings with no motor vehicle (0.81) and correlations of meaningful significance with the variables for single parent families (0.57) and dwellings rented from the State housing authority (0.53). There were also weaker correlations with a majority of the indicators of socioeconomic disadvantage, and weak inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.33), suggest the existence at the SLA level of an association between high rates of premature deaths of males and socioeconomic disadvantage.

Newcastle

There were 3 per cent more deaths of 15 to 64 year old males in **Newcastle** than expected from the New South Wales rates, a total of 1,956 male deaths of all causes in this age group and an SDR of 103**. SDRs at the SLA level were in the range of 17 per cent above to 5 per cent below the level expected, with the western SLA of Cessnock recording the highest SDR, of 117*. The remaining SLAs were mapped in the range from 85 to 115.

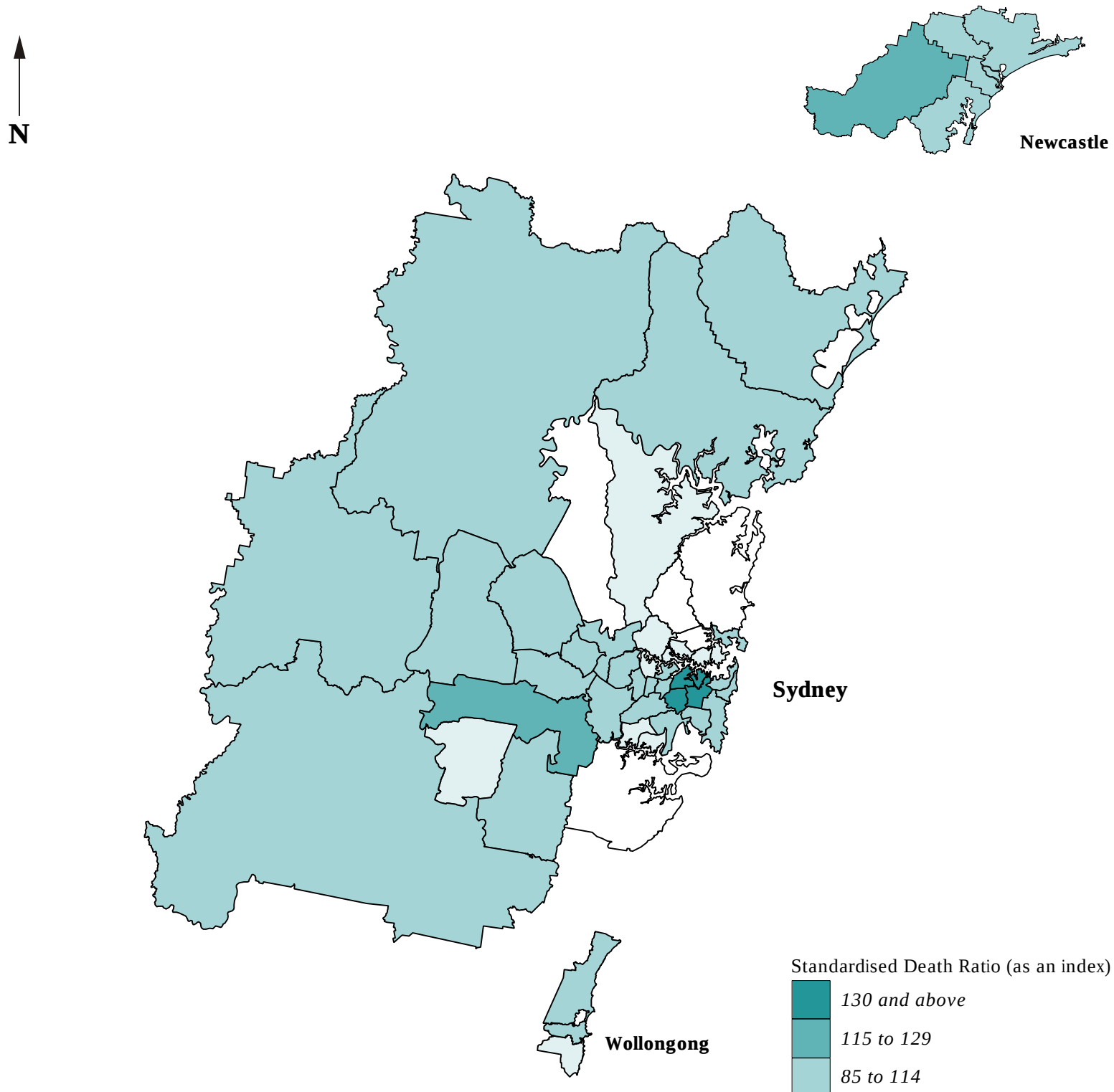
Wollongong

The SDR recorded for the major urban centre of **Wollongong** was marginally lower than that in **Sydney**, an SDR of 95 and a total of 1,030 deaths of males from all causes in the 15 to 64 year age group. All three SLAs in **Wollongong** recorded fewer deaths than expected in comparison to the New South Wales rates. The City of Wollongong recorded the highest SDR (97) and Kiama recorded the lowest, with an SDR of 81 (19 per cent fewer deaths than expected).

Map 5.9

Deaths of males aged 15 to 64 years from all causes, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



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

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Deaths of males aged 15 to 64 years from all causes, 1992 to 1995

State/Territory comparison (Australia as the Standard)

Standardised Death Ratios (SDRs) for males aged from 15 to 64 years over the years 1992 to 1995 were higher in the *Rest of State/Territory* areas than in the capital cities. At the *Whole of State/Territory* level, the Northern Territory (199**), Tasmania (110**) and New South Wales (104**) had more deaths than expected from the Australian rates. The Australian Capital Territory had the lowest ratio (an SDR of 78**).

Most States had similar differentials (from the Australian rates) in the SDR recorded for their non-metropolitan areas in the later period shown in **Table 5.14**. The major exceptions were Western Australia, with a higher SDR (suggesting an increase in death rates relative to the Australian experience), and the Northern Territory, with a lower SDR. While the SDR for males in the non-metropolitan areas of the Northern Territory was 7.1 per cent lower in this later period (suggesting a decline in death rates relative to the Australian experience), it continues to be substantially elevated, and more than twice the next highest ratio.

Table 5.14: Deaths of males aged 15 to 64 years from all causes, State/Territory
Standardised death ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	99	92**	94**	93**	87**	103	143**	81**[1]	94**
Other major urban centres[2]	104*	114**	96	..	..	..	..	..	102
Rest of State/Territory	113**	103*	105**	108**	112**	114**	260**	–[3]	110**
Whole of State/Territory	104**	95**	100	98	94**	110**	199**	78**	100
1985 to 1989									
Rest of State/Territory	113**	105**	110**	106**	103	109**	280**	–[3]	111**

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Over the four years from 1992 to 1995, the major causes of premature death for male residents of the non-metropolitan areas of New South Wales were circulatory system diseases, malignant neoplasms (cancer) and the combined external causes of accidents, poisonings and violence. There were 28,396 deaths of males resident in these non-metropolitan areas, 55.5 per cent of all deaths. Of these deaths, 7,406 deaths were of males aged from 15 to 64 years, 26.1 per cent of all male deaths.

Rest of State (New South Wales as the Standard)

There were 7,406 deaths of males aged from 15 to 64 years and resident in the non-metropolitan areas of New South Wales, 9 per cent more than expected from the State rates (an SDR of 109**).

As many of the SDRs in **Map 5.10** are very high, the ranges mapped have been changed to enhance the pattern of differentiation in the map. The highest and lowest ranges have been set at 60 per cent, rather than 30 per cent as in the map of **Sydney** for this variable.

SLAs with the highest SDRs were mainly located in the middle and western parts of the State. In total, 11 areas were mapped in the highest range, with SDRs of 60 per cent or more higher than the level expected. Three quarters of SLAs in the non-metropolitan areas of New South Wales had SDRs within 30 per cent of the level expected, and only two SLAs recorded ratios of below 40.

Highly elevated SDRs were recorded for residents of Brewarrina (276**), Central Darling (238**), Bourke (216**), Walgett (216**), Young (181**) and Blayney Part A (166**).

Of those SLAs mapped in the middle range the highest SDRs were recorded in Manilla, Unincorporated Far West and Wentworth, all with ratios elevated by 29 per cent. Dungog and Cooma-Monaro recorded the lowest SDRs in this range, both with 29 per cent fewer deaths than expected from the State rates.

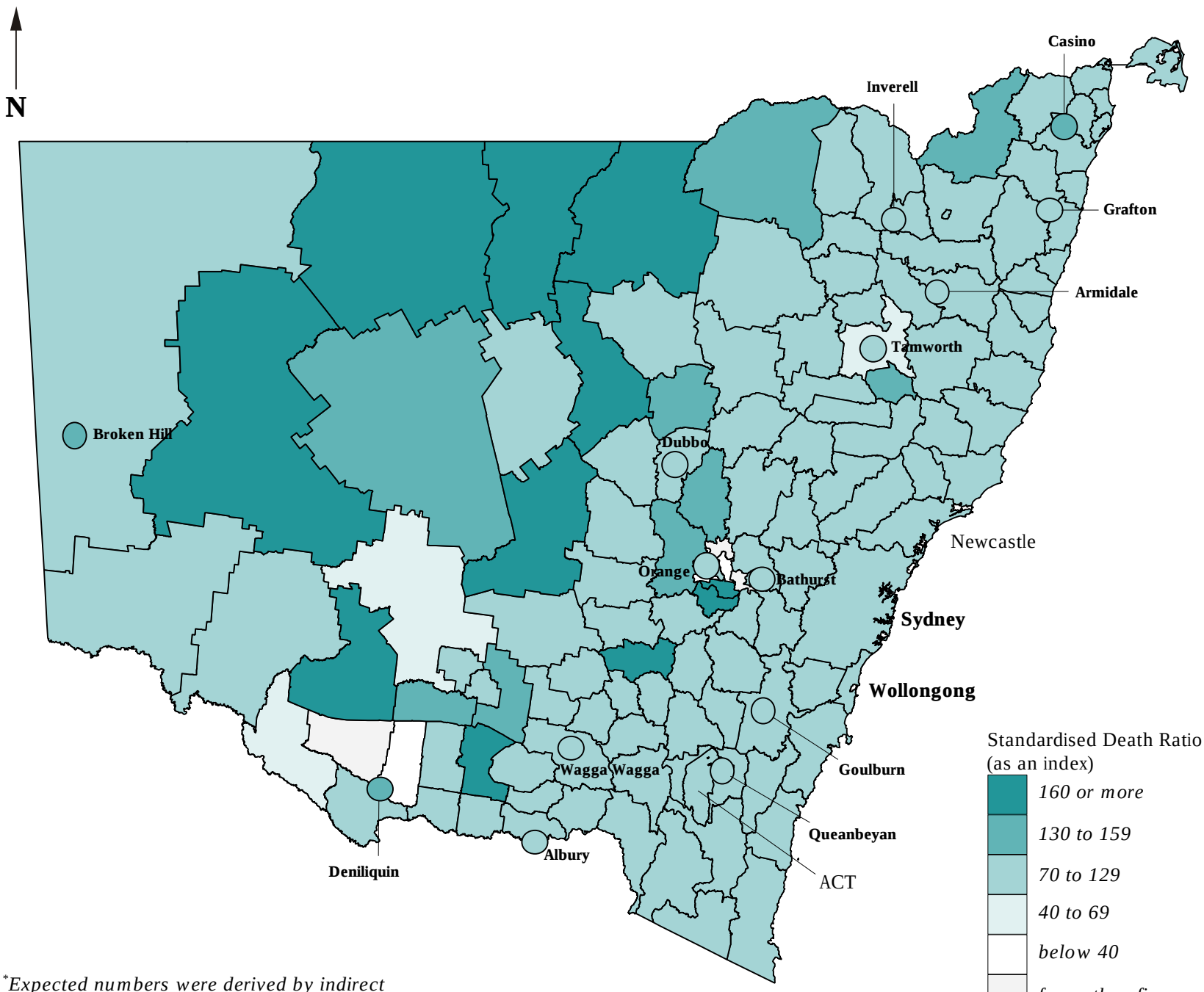
Conargo (27*) and Cabonne Part A (30*) were the only SLAs which recorded SDRs in the lowest range mapped. Both had small numbers of deaths over this four year period with two deaths in Conargo (when the State rates would indicate seven deaths) and three deaths in Cabonne Part A (when ten were indicated). Fewer deaths than expected were also recorded in Carrathool, Wakool and Parry, all of which were mapped in the range of 31 per cent to 60 per cent lower than expected.

The largest numbers of deaths of males aged from 15 to 64 years in the non-metropolitan areas of New South Wales were in Shoalhaven and Hastings, with 393 and 226 deaths respectively.

There were correlations of meaningful significance with the variables for the Indigenous population (0.65) and dwellings with no motor vehicle (0.52), and weaker correlations with the other indicators of socioeconomic disadvantage. These results, together with the inverse correlation with the IRSD (-0.53), indicate the existence of an association at the SLA level between high rates of premature deaths of males and socioeconomic disadvantage.

Map 5.10
Deaths of males aged 15 to 64 years from all causes, New South Wales, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



Expected numbers were derived by indirect age standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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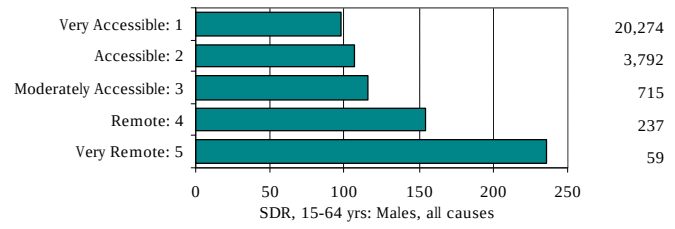


Male deaths

The ARIA graph for deaths of males aged from 15 to 64 years shows a steep increase in SDRs with increasing remoteness. As for the previous graph (infant death rates), the highly elevated SDRs in the Very Remote (an SDR of 236) and the Remote (154) categories, are likely to reflect the very high premature death rates experienced by Indigenous males.

Source: Calculated on ARIA classification, DHAC

National Social Health Atlas Project, 1999

Deaths of females aged 15 to 64 years from all causes, 1992 to 1995

Capital city comparison (Australia as the Standard)

Over the four years from 1992 to 1995, Standardised Death Ratios (SDRs) for females aged from 15 to 64 years ranged from 87** in **Canberra** to 115** in **Hobart** and 126** in **Darwin**. The other capital cities had ratios of below 100, indicating that there were fewer deaths than were expected from the Australian rates.

There was a higher differential (from the Australian rates) in the SDR recorded for **Darwin** in the later period (from 1992 to 1995) shown in **Table 5.15**. The higher SDR suggests a worsening (relative to the Australian rates) in the female death rates from all causes between the periods analysed. The remaining States and Territories experienced small increases (**Adelaide**, **Perth** and **Hobart**) or decreases (**Sydney**, **Melbourne**, **Brisbane** and **Canberra**) in their ratios.

Table 5.15: Deaths of females aged 15 to 64 years from all causes, capital cities
Standardised death ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	98*	92**	96	98	90**	115**	126**	87**	95**
1985-89	100	95**	98	93**	86**	112**	112	88**	96**

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

As for males, cancer was the main cause of premature death (deaths between the ages of 15 to 64 years) for females, followed by diseases of the circulatory system and the combined causes of accidents, poisonings and violence. Overall, there were 60,286 deaths of female residents in **Sydney** and the other major urban centres, of whom 9,079 were of females aged from 15 to 64 years. The data that have been mapped for this variable therefore represents 15.1 per cent of all female deaths.

Females most likely to die prematurely include Aboriginal and Torres Strait Islander women; single mothers; those earning low incomes; and those who were unemployed.

Sydney (New South Wales as the Standard)

There were 7,443 deaths of 15 to 64 year old females in **Sydney**, 4 per cent fewer deaths than expected from the New South Wales rates (an SDR of 96**). This represented a decline in the number of deaths per year, down from 2,230 per year (over the years from 1985 to 1989) to 1,861 per year (from 1992 to 1995).

SLAs in the highest range mapped were located in the city and nearby inner SLAs (**Map 5.11**). The two SLAs mapped in the lowest range were the higher socioeconomic status areas of Ku-ring-gai and Baulkham Hills, just north of the city. A large proportion of **Sydney's** SLAs recorded SDRs in the range from 85 to 114.

The highest SDR was recorded in the SLA of Sydney, with 88 per cent more deaths of females than expected in this age group (an SDR of 188**). This high SDR is consistent with the large number of disadvantaged people in this area, including single parent families and those people unemployed. South Sydney (159**), Leichhardt (125**) and Strathfield (122) also recorded elevated SDRs. Overall there were more deaths than expected from the State rates in 20 SLAs.

The remaining 24 SLAs in **Sydney** had fewer deaths than expected. The lowest SDR was recorded for female residents of Ku-ring-gai (an SDR of 60**), with Baulkham Hills (69**) and Kogarah (71**) also recording low SDRs.

Female deaths accounted for 34 per cent of premature deaths of residents of **Sydney,** a total of 7,443 female and 14,685 male deaths. The SLAs of Blacktown, with 466 deaths and Bankstown, with 366 deaths, had the largest number of female deaths. The only SLAs to record fewer than 30 deaths over the four year period from 1992 and 1995 of females aged from 15 to 64 years were Sydney (24 deaths) and Hunter's Hill (26 deaths).

There were correlations of meaningful significance at the SLA level with the variables for dwellings with no motor vehicle (0.70), single parent families (0.61), dwellings rented from the State housing authority (0.57) and low income families (0.53), all indicators of socioeconomic disadvantage. An inverse correlation was also recorded with the variable for female labour force participation (-0.58). These results, together with the inverse correlation with the IRSD (-0.47), support the existence at the SLA level of an association between high rates of premature deaths of females and socioeconomic disadvantage.

Newcastle

Newcastle had the highest SDR among the major urban centres, with 11 per cent more deaths of females than expected from the State rates (an SDR of 111**). This figure was higher than the SDR for females in **Sydney** (96**).

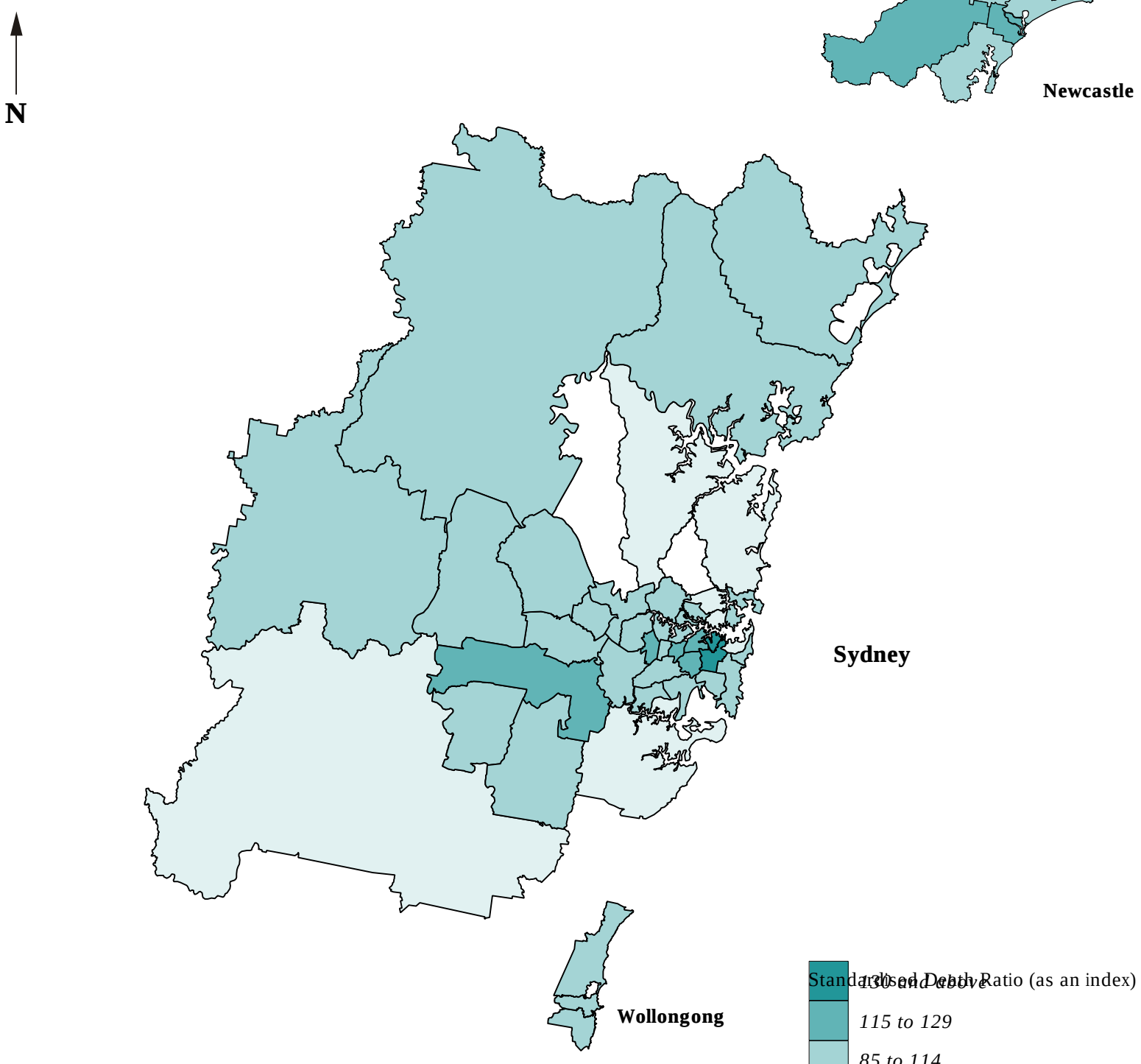
The SLAs of Newcastle, Cessnock, Lake Macquarie and Maitland all had more deaths than expected from the New South Wales rates. By contrast, there were fewer deaths than expected in Port Stephens (an SDR of 97).

Wollongong

In total there were 1,569 deaths of females in **Wollongong**, of which approximately one third were deaths of females (539 deaths): the SDR was 99. All three SLAs had SDRs in the range of 85 to 114. Shellharbour had an SDR of 106, while Wollongong and Kiama had 2 and 10 per cent respectively fewer female deaths than expected from the State rates.

Map 5.11
Deaths of females aged 15 to 64 years from all causes, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Death Ratio: number of people in each Statistical Local Area compared with the number expected*



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

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Deaths of females aged 15 to 64 years from all causes, 1992 to 1995

State/Territory comparison (Australia as the Standard)

Standardised Death Ratios (SDRs) for females aged from 15 to 64 years were higher in the *Rest of State/Territory* areas than in the capital cities, with the most highly elevated ratio being in the Northern Territory (an SDR of 289**). At the *Whole of State/Territory* level, only Tasmania (116**) and the Northern Territory (210**) had substantially more female deaths than expected from the Australian rates.

Most States had similar differentials (from the Australian rates) in the SDR recorded for their non-metropolitan areas in the later period shown in **Table 5.16**. The major exceptions were Tasmania, South Australia and Western Australia, with higher SDRs (suggesting an increase in death rates relative to the Australian experience); and the Northern Territory and New South Wales, with lower SDRs (suggesting a decline in death rates relative to the Australian experience). The SDR for females aged from 15 to 64 years in the Northern Territory, however, remains substantially elevated, at more than twice the next highest level.

Table 5.16: Deaths of females aged 15 to 64 years from all causes, State/Territory
Standardised death ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	98*	92**	96	98	90**	115**	126**	87**[1]	95**
Other major urban centres[2]	109**	109	96	..	..	..	..	..	105*
Rest of State/Territory	108**	101	106**	109*	112**	117**	289**	–[3]	109**
Whole of State/Territory	102	94**	101	101	96*	116**	210**	86**	100
1985 to 1989									
Rest of State/Territory	113**	101	106**	96	105	106	328**	–[3]	108**

[1] Includes Queanbeyan (C)
[2] Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Unlike males living in the non-metropolitan areas of New South Wales, the major cause of premature death among female residents was malignant neoplasms (cancer), followed by circulatory system diseases and the combined causes of accidents, poisonings and violence. These are the same for residents of **Sydney** and the other major urban centres. The premature deaths mapped for this variable accounted for 16.2 per cent of all female deaths. This figure was some two thirds of that recorded for males (26.1 per cent), highlighting the fact that female life expectancy is higher.

Rest of State (New South Wales as the Standard)

There were 3,678 deaths of females aged from 15 to 64 years living in the non-metropolitan areas of New South Wales, 6 per cent more deaths than were expected from the State rates (an SDR of 106**). Deaths of females accounted for 33.2 per cent of deaths in this age group.

As many of the SDRs in **Map 5.12** are very high, the ranges mapped have been changed to enhance the pattern of differentiation in the map. The highest and lowest ranges have been set at 60 per cent, rather than 30 per cent as in the map for **Sydney** for this variable.

It can be seen from the map that SLAs for much of the State had SDRs in the range of 70 to 129 (82 SLAs). Only two areas were mapped in the lowest range, with SDRs of 40 or below, and eight in the highest, with SDRs of 160 or above. Data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates.

The SLA of Central Darling, located in the far west, had the highest SDR of 231**. Other highly elevated SDRs that were statistically significant were recorded in Blayney Part A (230**), Bourke (221**) and Walgett (179**). In total, eight SLAs outside of the major urban centres had ratios elevated by 60 per cent or more.

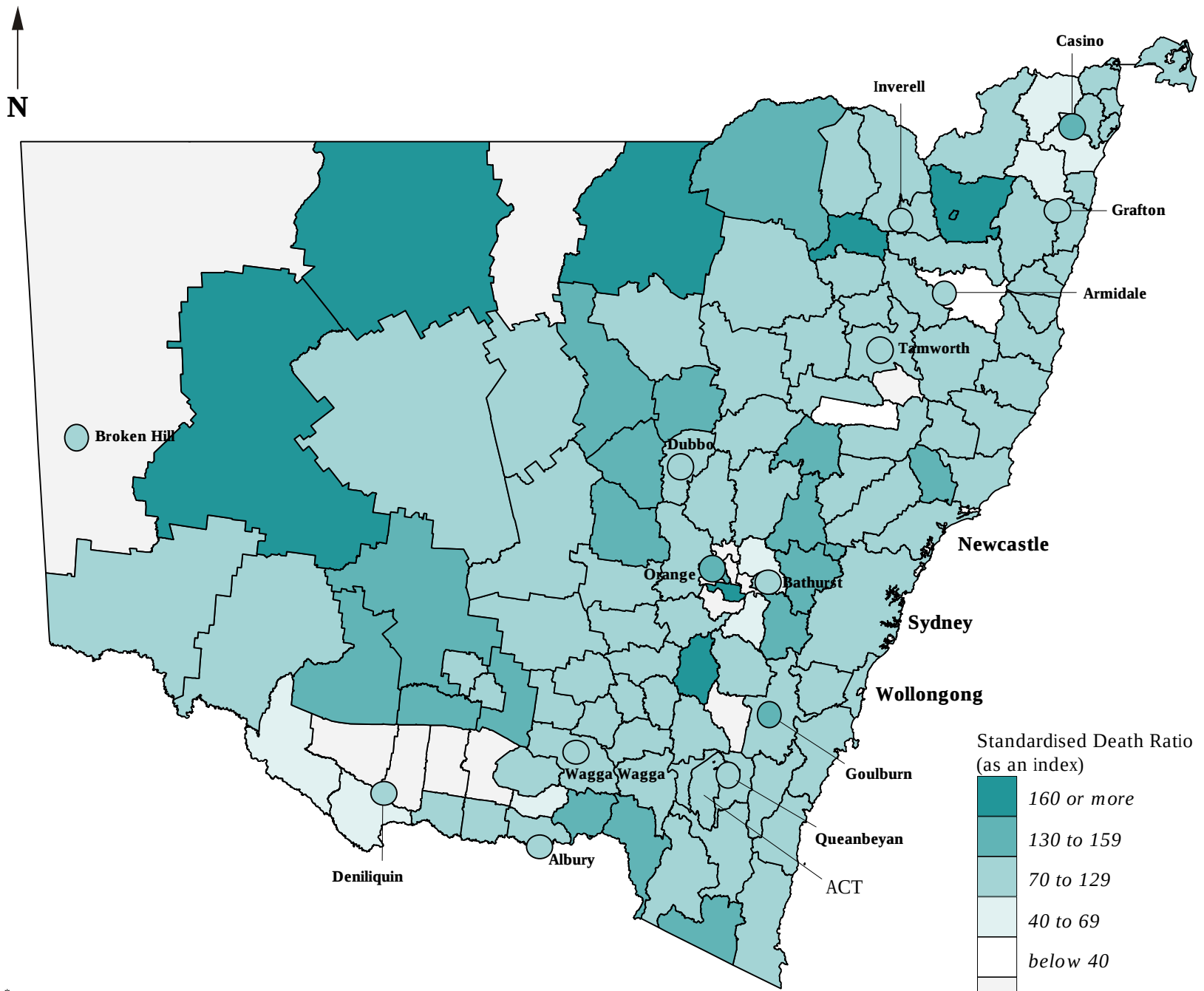
Only the SLAs of Murrurundi and Dumaresq had SDRs in the lowest range mapped for deaths of females aged from 15 to 64 years from all causes. In Murrurundi there were 83 per cent fewer deaths than expected (an SDR of 17*, with only one death when the State rates would indicate six deaths), and Dumaresq recorded 75 per cent less (an SDR of 25*, with only two deaths when eight were indicated). Residents of Murray, Evans Part B, Copmanhurst and Kyogle also had the relatively low ratios, ranging from 47 to 58, none of which were statistically significant.

The largest numbers of deaths were recorded for females aged from 15 to 64 years in Shoalhaven (193 deaths), Hastings (132 deaths) and Greater Taree (116 deaths).

There were weak correlations at the SLA level with a majority of the indicators of socioeconomic disadvantage, and weak inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.36), suggest the existence at the SLA level of an association between high rates of premature deaths of females and socioeconomic disadvantage.

Map 5.12
Deaths of females aged 15 to 64 years from all causes, New South Wales, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*

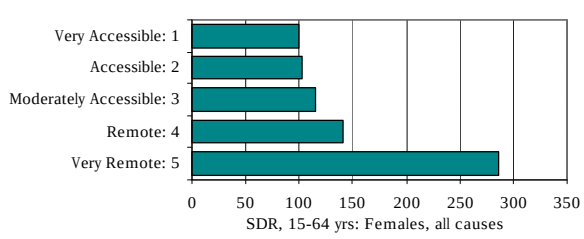


Expected numbers were derived by indirect age standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



	Female deaths
Very Accessible: 1	10,440
Accessible: 2	1,857
Moderately Accessible: 3	340
Remote: 4	89
Very Remote: 5	31

Standardised Death Ratios for females show an even stronger gradient than was seen for males, from a low of 99 in the Very Accessible category to a highly elevated 286 in the Very Remote category (and 31 deaths of females in this four year period). SDRs in the other ARIA categories were similar to those recorded for males. The extremely highly elevated SDR in the most remote areas is likely to reflect the high death rates experienced by Indigenous females.

Source: Calculated on ARIA classification, DHAC

Deaths of people aged 15 to 64 years from cancer, 1992 to 1995

Capital city comparison (Australia as the Standard)

Over the four years from 1992 to 1995, **Darwin**, with a Standardised Death Ratio (SDR) of 117*, and **Hobart**, with an SDR of 112*, were the only capital cities with elevated ratios for deaths from cancer of people aged from 15 to 64 years. **Canberra** had the lowest ratio, with 9 per cent fewer deaths than expected from the Australian rates: ratios in the other capitals were close to the *All capitals* average.

Overall, the variations from the Australian rates in SDRs from cancer between the two time periods analysed (**Table 5.17**) were marginal, with the exception of **Darwin**, where there was a substantial differential (from the Australian rates) between the two periods. The higher SDR in the later period suggests a worsening (relative to the Australian rates) in the death rates for residents of **Darwin** from this cause.

Table 5.17: Deaths of people aged 15 to 64 years from cancer, capital cities
Standardised death ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	99	100	98	97	95**	112*	117*	91*	98*
1985-89	100	102	100	96*	99	109*	96	92*	100

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Deaths from cancer (malignant neoplasms) were the second most common cause of death of residents of all ages of **Sydney** and the other major urban centres, accounting for 26.8 per cent of all deaths (33,668 deaths) over the four years from 1992 to 1995. Moreover, it was the most common cause of death in the 15 to 64 year age group, representing 36.9 per cent of deaths.

Different cancers have different causes and are influenced by a range of risk factors, the most widely accepted being tobacco smoking (it is estimated that as many as one in three cancer deaths are caused by smoking and could therefore be prevented (AIHW 1998)) and dietary influences. Both the incidence and mortality of cancer are higher among males than among females, a fact largely attributed to their greater use of tobacco.

There is a strong association between socioeconomic status and certain types of cancer. Mathers (1994) has examined the extent of disparities in mortality rates, which are related to socioeconomic status of area of residence. Differentials in mortality rates from cancers were clearly evident for males aged from 25 to 64 years in the most socioeconomically disadvantaged areas: 28 per cent more male deaths than in the most advantaged areas, with the highest elevation being 60 per cent for lung cancer. Deaths of females in the most disadvantaged areas were less highly elevated (by 10 per cent over deaths in the most advantaged areas), although lung cancer rates were elevated by 58 per cent. In more recent work, Mathers (in press) has reported that the socioeconomic differentials in mortality rates related to cancer have persisted in 1995-97 (**Table 5.2**). In NSW in 1990-94 an inverse relationship was specifically found between high socioeconomic status and cervical cancer (-0.22) and lung cancer (-0.25) (NSW Health Department 1997). In Victoria in 1996 increased rates of (age standardised) years of life lost were found for mouth, stomach, lung and larynx cancer for males and lung cancer for females in the lowest compared to the highest socioeconomic quintiles of the population (Department of Human Services Victoria, in press).

Sydney (New South Wales as the Standard)

There were 8,122 deaths from cancer of 15 to 64 year olds in **Sydney** over the period from 1992 to 1995, 2 per cent fewer than expected from the State rates (an SDR of 98). Males accounted for over half (54.9 per cent) of deaths at these ages.

A majority of SLAs had ratios mapped in the middle range, within 15 per cent of the expected number, with no area recording an ratio in the lowest range (**Map 5.13**). Inner city suburbs had the highest ratios, a phenomenon consistent with the distribution of SDRs for all causes of death for both males and females. The most highly elevated ratio of statistical significance was in South Sydney, where there were 82 per cent more deaths than expected from the State rates (an SDR of 182**). Leichhardt (150**), Sydney (149*), and Marrickville (120**) also had elevated ratios. There were more female deaths than male deaths in each of these SLAs. The lowest ratios were recorded in the SLAs of Ku-ring-gai, Baulkham Hills, Willoughby, Hornsby, Warringah-Pittwater and Sutherland.

There were correlations of meaningful significance at the SLA level with the variables for dwellings with no motor vehicle (0.70), single parent families (0.60) and dwellings rented from the State housing authority (0.52). These results, together with the weak inverse correlation with the IRSD (-0.32), support the existence of an association at the SLA level between high rates premature deaths from cancer and socioeconomic disadvantage.

Newcastle

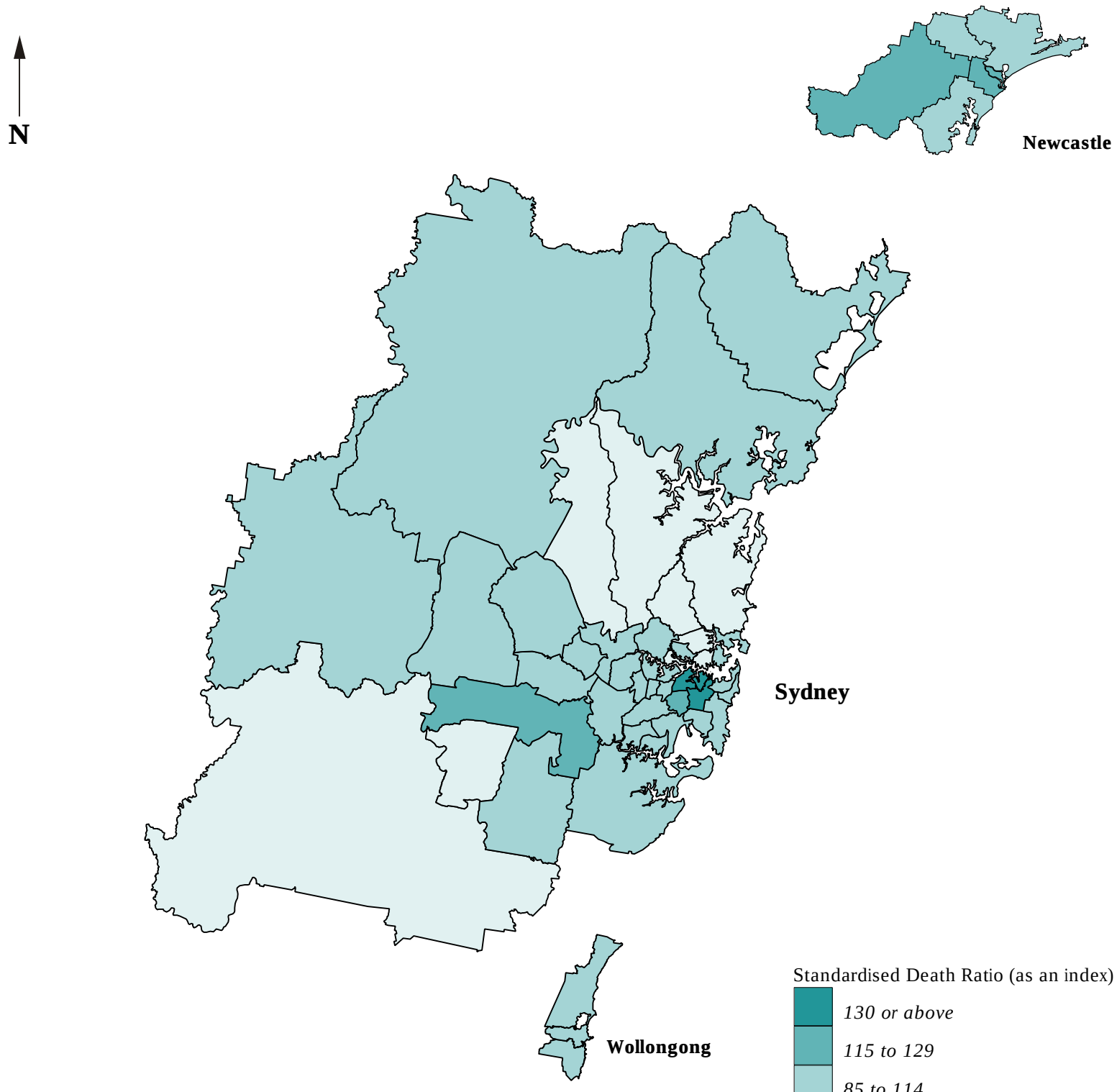
There were 8 per cent more premature deaths from cancer in **Newcastle** than expected from the State rates (an SDR of 108**), with 1,139 deaths, of which 648 were males and 491 females. The lowest ratio was recorded in Maitland, with 8 per cent fewer deaths than expected. The other SLAs had elevated ratios, although only that in the SLA of Newcastle was statistically significant, with an SDR of 116**.

Wollongong

There were 597 deaths from cancer in this age group in **Wollongong** (an SDR of 100), of which 57 per cent were males and 43 per cent were females. Elevated ratios were recorded in the SLAs of Shellharbour (an SDR of 113) and Kiama (111), while the City of Wollongong had 4 per cent fewer deaths from cancer than expected from the New South Wales rates (an SDR of 96).

Map 5.13
Deaths of people aged 15 to 64 years from cancer, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Deaths of people aged 15 to 64 years from cancer, 1992 to 1995

State/Territory comparison (Australia as the Standard)

The highest Standardised Death Ratio (SDR) for deaths from cancer of people aged from 15 to 64 years in the *Rest of State/Territory* areas was recorded in the Northern Territory (an SDR of 148**). The other States all had SDRs within 10 per cent of the level expected from the Australian rates. At the *Whole of State/Territory* level, only the Northern Territory (137**) and Tasmania (110**) had notably more deaths from cancer than expected from the Australian rates.

The non-metropolitan areas of New South Wales, Victoria and Queensland had similar differentials (from the Australian rates) in the SDR recorded in the later period shown in **Table 5.18**. The Northern Territory had the highest SDR (suggesting a worsening in death rates relative to the Australian experience); South Australia, Western Australia and Tasmania also had noticeably higher SDRs in the later period, although with much smaller increases than that for the Northern Territory.

Table 5.18: Deaths of people aged 15 to 64 years from cancer, State/Territory
Standardised death ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	99	100	98	97	95**	112*	117*	91*[1]	98*
Other major urban centres[2]	106*	123**	99	..	..	..	..	..	105**
Rest of State/Territory	103	105**	100	96	93*	109*	148**	–[3]	102*
Whole of State/Territory	101	102	99	97	94**	110**	137**	91*	100
1985 to 1989									
Rest of State/Territory	103	104*	98	86**	87**	103	123**	–[3]	99

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

As for **Sydney** and the other major urban centres, deaths from cancer (malignant neoplasms) were also the second most common cause of death of people of all ages in the non-metropolitan areas of New South Wales, accounting for 26.0 per cent of all deaths (13,279 deaths) over the four year period from 1992 to 1995. Cancer was, however, the most common cause of premature death, accounting for 35.2 per cent of all deaths of people aged from 15 to 64 years. Although the largest numbers of cancer deaths were recorded for people aged 65 years and over, they accounted for only 23.9 per cent of deaths at those ages.

Rest of State (New South Wales as the Standard)

There were 3,898 deaths from all cancers of people aged from 15 to 64 years in the non-metropolitan areas of New South Wales, 2.0 per cent more than expected from the State rates (an SDR of 102). Male deaths (2,206) exceeded female deaths (1,691) for these causes.

The pattern of distribution in **Map 5.14** shows that a high proportion of SLAs with SDRs in the lowest range mapped were located in the north-eastern region of the State, with the 18 SDRs mapped in the highest range being distributed throughout much of inland New South Wales. The majority of the State's SLAs were mapped in the middle range, within 15 per cent of the level expected.

Over the period from 1992 to 1995 the most highly elevated SDRs were recorded in Blayney Part A (almost twice the number of deaths expected from the State rates, an SDR of 199**), Murrumbidgee (160) and Bourke (160). Only three other SLAs (Casino, Orange and Greater Taree) had ratios that were significantly elevated.

Of those SLAs that were mapped in the middle range (within 15 per cent of the level expected), the highest ratios were located to the north of **Sydney** in Maclean (with an SDR of 114) and Ulmarra (113). At the other end of the scale were the SLAs of Richmond River, Scone and Dungog, each with an SDR of 85. Although a large proportion of SLAs was mapped in this range, no area recorded a ratio of statistical significance.

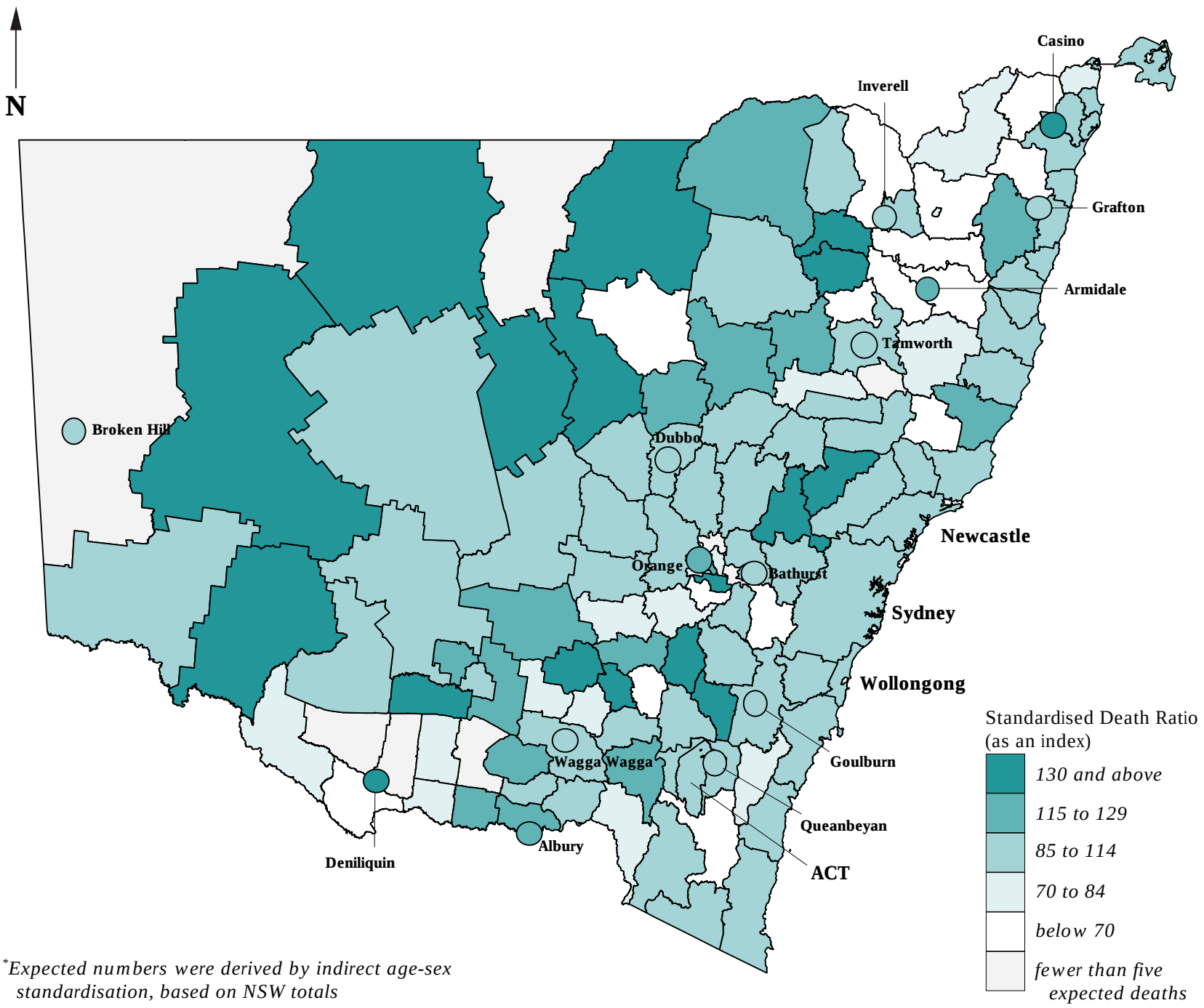
Residents of Copmanhurst, Oberon and Dumaresq recorded the lowest SDRs from cancer deaths in the 15 to 64 year age group. There were 80 per cent fewer deaths than expected from the State rates for residents of Copmanhurst, an SDR of 20* (two deaths were recorded, when the State rates would indicate ten deaths). Oberon and Dumaresq had SDRs of 22* (two deaths) and 32* (three deaths) respectively.

The largest numbers of deaths were recorded in Shoalhaven, with 225 deaths, Hastings, with 164 deaths, and Greater Taree, with 135 deaths.

Although not consistent, there appears to be a weak association evident in the correlation analysis at the SLA level between high rates of premature death from cancer and many of the indicators of socioeconomic disadvantage.

Map 5.14
Deaths of people aged 15 to 64 years from cancer, New South Wales, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*

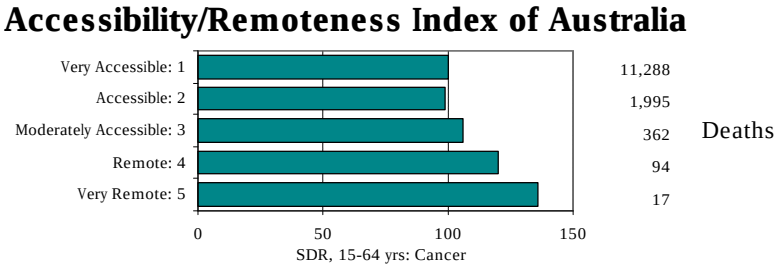


Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



The SDRs for deaths from all cancers are similarly close to the level expected from the State rates in the two most accessible ARIA categories, before increasing to the highest level in the Very Remote category, with an SDR of 136 and 94 deaths of 15 to 64 year olds over four years. The ratio in the Remote category was 120, with 94 deaths.

Source: Calculated on ARIA classification, DHAC

National Social Health Atlas Project, 1999

Deaths of people aged 15 to 64 years from lung cancer, 1992 to 1995

Capital city comparison (Australia as the Standard)

Over the four years from 1992 to 1995, **Darwin** with a Standardised Death Ratio (SDR) of 164**, and **Hobart**, with an SDR of 120, had the most highly elevated ratios of the capital cities for deaths from lung cancer of people aged from 15 to 64 years. **Canberra** (77*) had the lowest ratio, with 23 per cent fewer deaths than expected from the Australian rates; ratios in the other capitals were close to the *All capitals* average.

Overall, the variations from the Australian rates between the two time periods analysed (**Table 5.19**) were relatively small, with the exception of ratios in **Darwin** and **Hobart**. In **Darwin**, the higher SDR in the later period suggests a worsening (relative to the Australian rates) in the death rates for residents from lung cancer between the periods analysed. This is in line with the rates for deaths from all cancers and all causes, recorded above. The lower SDR for **Hobart** suggests an improvement relative to the Australian deaths 'experience.

Table 5.19: Deaths of people aged 15 to 64 years from lung cancer, capital cities
Standardised death ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	102	94*	103	95	90*	120	164**	77*	98*
1985-89	101	99	108*	92*	99	134**	131	82*	100

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

In **Sydney** and the other major urban centres, deaths from cancer of the trachea, bronchus and lung (referred to here as lung cancer) accounted for 19.5 per cent of all cancer deaths among 15 to 64 year olds from 1992 to 1995. Although males account for around three quarters of these deaths, the rate among females has increased sharply since the 1970s, as a result of increased cigarette smoking since the 1950s. For example, the ratio of male to female mortality rates from lung cancer in the 1970s and 1980s was consistently above 5; however, in 1996 the ratio fell to an all time low of 2.9 (AIHW, 1998).

A relationship also exists between socioeconomic status and lung cancer. Standardised death rates from lung cancer for both males and females from low socioeconomic status areas were highly elevated in relation to those from high socioeconomic status areas (Mathers 1994). The rates were 60 per cent higher for males and 58 per cent higher for females.

Sydney (New South Wales as the Standard)

There were 1,590 deaths from lung cancer in metropolitan **Sydney** over the four years from 1992 to 1995, two per cent fewer than expected from the State rates (an SDR of 98).

The inner SLAs of South Sydney (with an SDR of 178**), Leichhardt (175**) and Marrickville (136*) had the highest SDRs for this variable. Liverpool and Penrith, located in the outer western suburbs, and Concord, situated in the inner western region, also had ratios elevated by 30 per cent or more.

Sixteen SLAs were mapped in the middle range within 15 per cent of the level expected from the State rates. Within this range the only SLAs to record SDRs lower than expected were Rockdale (with a ratio of 95), Strathfield (89), and Ryde (87). The highest SDRs in this group were recorded in Hunter's Hill (although with only seven deaths), Lane Cove and Auburn.

The areas with SDRs mapped in the lowest range were clustered to the north and south of the city (**Map 5.15**). Statistically significant ratios below the level expected were recorded in Ku-ring-gai, (29**) Hornsby (48**), Sutherland (55**) and Baulkham Hills (55**). Manly and Burwood (both with SDRs of 58), and Willoughby (with an SDR of 64), were also mapped in the lowest range, although the figures were not statistically significant.

The largest numbers of deaths from lung cancer were recorded for residents of the SLAs of Blacktown (108 deaths), Bankstown (81 deaths) and Fairfield (78 deaths).

The correlation analysis revealed positive correlations of meaningful significance at the SLA level with the variables for single parent families (0.67), the Indigenous population (0.63) and dwellings rented from the State housing authority (0.59). These results, together with the inverse correlation with the IRSD (-0.50), indicate a positive association at the SLA level between high rates of deaths from lung cancer and socioeconomic disadvantage.

Newcastle

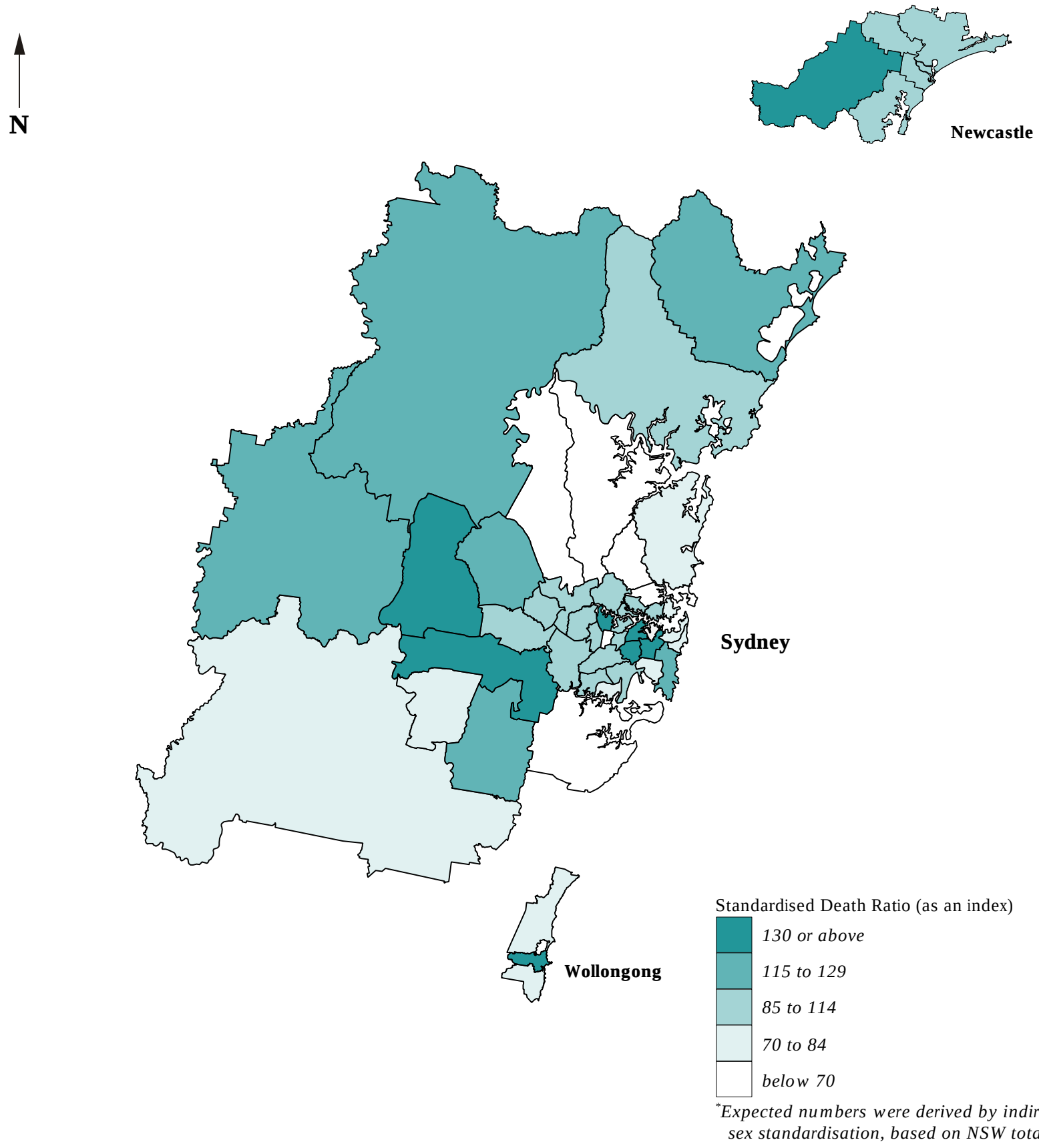
There were 222 deaths from lung cancer in the 15 to 64 year age group in **Newcastle**, 6 per cent more deaths than were expected from the State rates (an SDR of 106). The SDRs ranged from 32 per cent lower (Cessnock) to 9 per cent higher (Port Stephens) than expected.

Wollongong

There were 111 deaths from lung cancer in the 15 to 64 year age group in **Wollongong**, 7 per cent fewer deaths than were expected from the State rates (an SDR of 93). The SLAs of Kiama (73) and Wollongong (75**) had markedly fewer deaths than expected and Shellharbour had a highly elevated ratio of 172** (with 39 deaths).

Map 5.15
Deaths of people aged 15 to 64 years from lung cancer, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Deaths of people aged 15 to 64 years from lung cancer, 1992 to 1995

State/Territory comparison (Australia as the Standard)

The highest Standardised Death Ratio (SDR) for deaths from lung cancer of people aged from 15 to 64 years in the *Rest of State/Territory* areas was recorded in the Northern Territory (an SDR of 258**). Apart from the relatively low ratio in South Australia (an SDR of 84*), the other States all had SDRs within 10 per cent of the level expected from the Australian rates. At the *Whole of State/Territory* level, only the Northern Territory (214**) had substantially more deaths from lung cancer than expected from the Australian rates.

Most States had similar differentials (from the Australian rates) in the SDR recorded for their non-metropolitan areas in the later period shown in **Table 5.20**. The major exception is the Northern Territory, with a markedly higher SDR (suggesting an increase in death rates relative to the Australian experience) between the periods analysed.

Table 5.20: Deaths of people aged 15 to 64 years from lung cancer, State/Territory
Standardised death ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	102	94*	103	95	90*	120	164**	77*[1]	98*
Other major urban centres[2]	105	125	104	..	..	..	..	..	107
Rest of State/Territory	106	100	99	84*	96	107	258**	–[3]	102
Whole of State/Territory	104	97	102	92*	92*	113	214**	80*	100
1985 to 1989									
Rest of State/Territory	100	98	99	83**	94	112	165**	–[3]	99

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

In the non-metropolitan areas of New South Wales**,** 20.3 per cent of all cancer deaths were from cancers of the trachea, bronchus and lung (referred to here as lung cancer). This was a minor cause of death in the non-metropolitan areas, accounting for 5.3 per cent of deaths at all ages; 4.9 per cent of deaths of people aged 65 years and over; and 6.6 per cent of all deaths before age 65.

Rest of State (New South Wales as the Standard)

There were 795 deaths from lung cancer of residents of the non-metropolitan areas of New South Wales over the years from 1992 to 1995, of which 71 per cent were males and 29 per cent were females. As for all cancers, deaths of 15 to 64 year old non-metropolitan residents varied little from the New South Wales rates (up by 3 per cent).

As can be seen from **Map 5.16**, data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates.

Of the SLAs mapped, Narrabri was the only one to record a ratio of statistical significance (with 14 deaths and an SDR of 194*). Cabonne Part C (with an SDR of 160), located in the central west, and Casino (159) and Byron (152), situated in the far north-east, had ratios elevated by more than 50 per cent. In total there were 14 non-metropolitan SLAs mapped in the highest range.

Seventeen SLAs recorded SDRs in the range within 15 per cent of the level expected from the New South Wales rates. Within this range the highest SDRs were in Albury (114) and Bellingen (114) and the lowest ratios were in Maclean (85) and Kempsey (88).

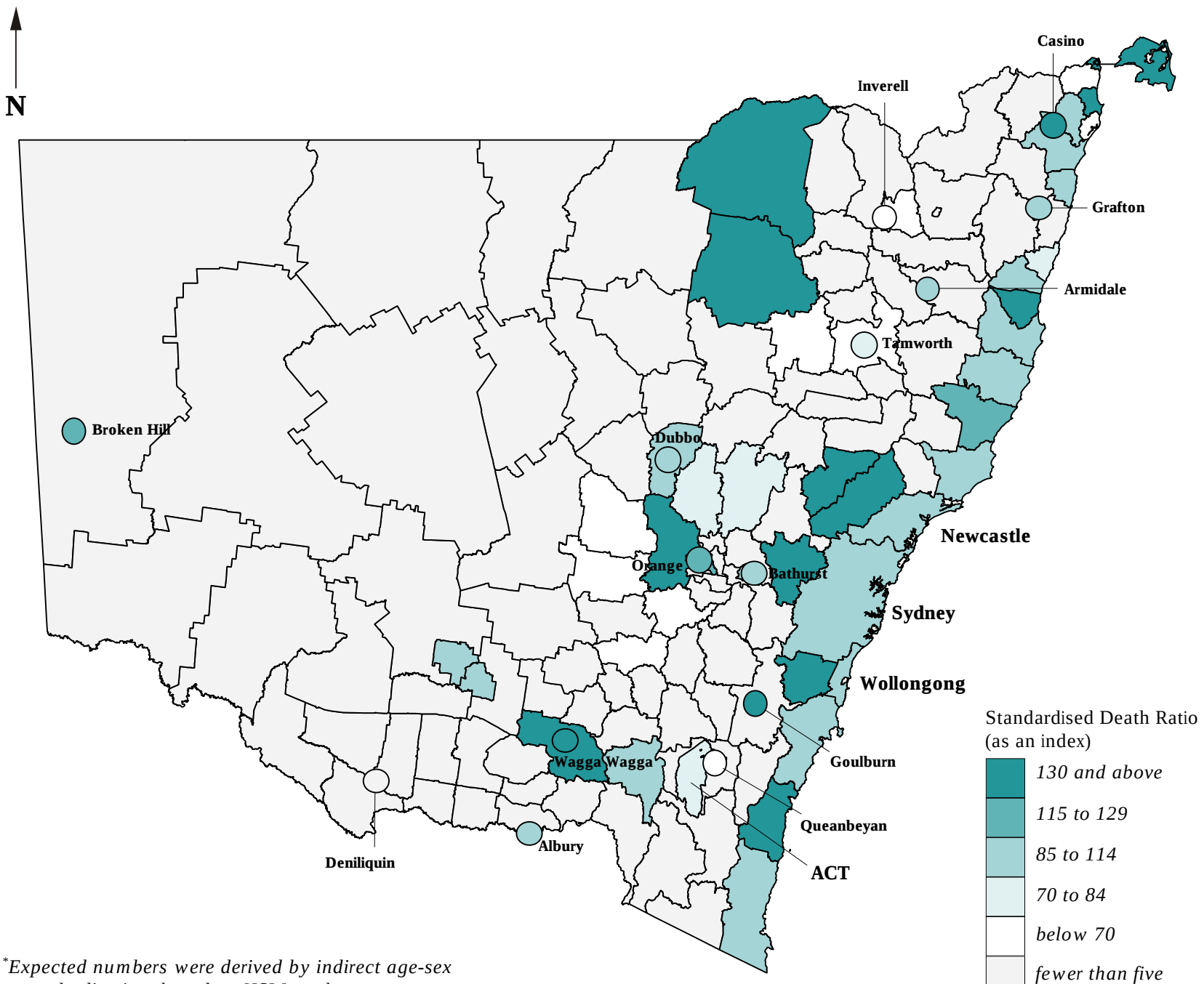
The majority of SLAs mapped in the lowest range were located inland, the exceptions being Tweed Part B and Ballina, on the north-east coast. Residents of Parry (with an SDR of 31, but with 150 only two deaths), Forbes (40; and two deaths) and Parkes (43; and three deaths) had the lowest SDRs.

The largest numbers of deaths were recorded in Shoalhaven (48 deaths), Hastings (35 deaths), and Wagga Wagga (28 deaths).

The correlation analysis was not undertaken as there were too many SLAs with small numbers of cases.

Map 5.16
Deaths of people aged 15 to 64 years from lung cancer, New South Wales, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*

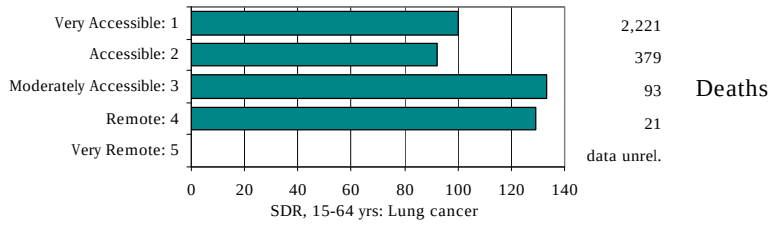


*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



The overall number of premature deaths from lung cancer is relatively small, even when examined by these ARIA categories. The graph shows there to be two distinct groupings, with the lowest ratios in the two most accessible categories (the lowest in the Accessible category, an SDR of 92) and the highest ratios in the next two categories (an SDR of 133 in Moderately Accessible and 129 in the Remote category).

Source: Calculated on ARIA classification, DHAC

Deaths of people aged 15 to 64 years from circulatory system diseases, 1992 to 1995

Capital city comparison (Australia as the Standard)

Over the four years from 1992 to 1995, Standardised Death Ratios (SDRs) for deaths from circulatory system diseases of people aged from 15 to 64 years ranged from 77** in **Canberra** to 118 in **Darwin**. With the exception of **Hobart** (with an SDR of 105), the other capital cities had fewer deaths than expected from the Australian rates. **Perth** and **Melbourne** also had relatively low ratios, of 82** and 85**, respectively. There was a higher differential (from the Australian rates) in the SDR recorded for **Darwin** in the later period shown in **Table 5.21**, although neither of the SDRs was statistically significant. The higher SDR in this later period suggests a worsening (relative to the Australian rates) in rates of death from circulatory system diseases between the periods analysed. The movement in the ratios for **Brisbane** suggests an improvement in death rates relative to the Australian rates, although neither ratio was statistically significant.

Table 5.21: Deaths of people aged 15 to 64 years from circulatory system diseases, capital cities
Standardised Death Ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	98	85**	96	94*	82**	105	118	77**	91**
1985-89	101	87**	103	94**	80**	104	94	77**	94**

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Circulatory system diseases (diseases of the heart and blood vessels) are the major cause of death in the population. In **Sydney** and the other major urban centres**,** they accounted for 44.8 per cent of deaths of all ages (56,390 deaths) and 24.4 per cent of deaths (6,535 deaths) of people aged from 15 to 64 years over the period from 1992 to 1995. Overall, roughly equal numbers of males and females die from these causes, although it is an important cause of death for males at a much earlier age than for females. For example, the ratio of male to female deaths from this cause was approximately 3:1 between the ages of 45 and 64 years, and it is only above age 75 years that it changes to 2:3 (male to female deaths).

The main causes of death within this group were heart disease (67.5 per cent, in particular ischaemic heart disease) and cerebrovascular disease (stroke, 24.9 per cent). The AIHW (1994) reports that among people aged 35 to 69 years, men who were current smokers had 2.9 times the age-adjusted risk of a first coronary event (fatal or non-fatal) than non-smokers. For female current smokers, the risk was 3.5 times that of non-smokers.

Sydney (New South Wales as the Standard)

There were 5,244 premature deaths from circulatory system diseases in **Sydney**, 9 per cent fewer than expected from the New South Wales rates (an SDR of 91**). The majority (72.0 per cent, 3,777 deaths) were males, with male deaths at these ages exceeding female deaths in every SLA in **Sydney**.

Map 5.17 shows that the majority of SLAs with SDRs in the lowest category are located in the eastern and south-eastern areas of **Sydney**. The SLAs with ratios in the highest range mapped reflect the distribution of male and female deaths from all causes.

There were 67 per cent more deaths from circulatory system diseases in South Sydney than expected from the New South Wales rates (an SDR of 167**); Auburn (141**), Leichhardt (138**), Ashfield (137**) and Sydney (131) also had ratios elevated by 30 per cent or more.

There were also a number of areas with low ratios, including Woollahra which had the lowest SDR, of 48**, indicating that there were 52 per cent fewer deaths than expected from the State rates. Ku-ring-gai, Baulkham Hills, Willoughby, Warringah-Pittwater and Hornsby, located to the north of the city; and Kogarah and Sutherland to the south, all recorded ratios that were significantly lower than expected.

The largest numbers of deaths from circulatory system diseases were for residents in Blacktown (385 deaths), Fairfield (290 deaths) and Bankstown (267 deaths). Only 17 deaths from these causes were recorded for residents of the city of Sydney, with 18 from Hunter's Hill, and 24 from Mosman.

There were correlations of substantial significance with the variables for single parent families (0.72) and the Indigenous population (0.71); and correlations of meaningful significance with the variables for low income families (0.67), unemployed people (0.66), dwellings rented from the State housing authority (0.64), dwellings with no motor vehicle (0.55) and unskilled and semi-skilled workers (0.52). Inverse correlations were recorded with the variables for high income families (-0.60) and female labour force participation (-0.57). These results, together with the inverse correlation with the IRSD (-0.71), indicate an association at the SLA level between high rates of death from circulatory system diseases and socioeconomic disadvantage.

Newcastle

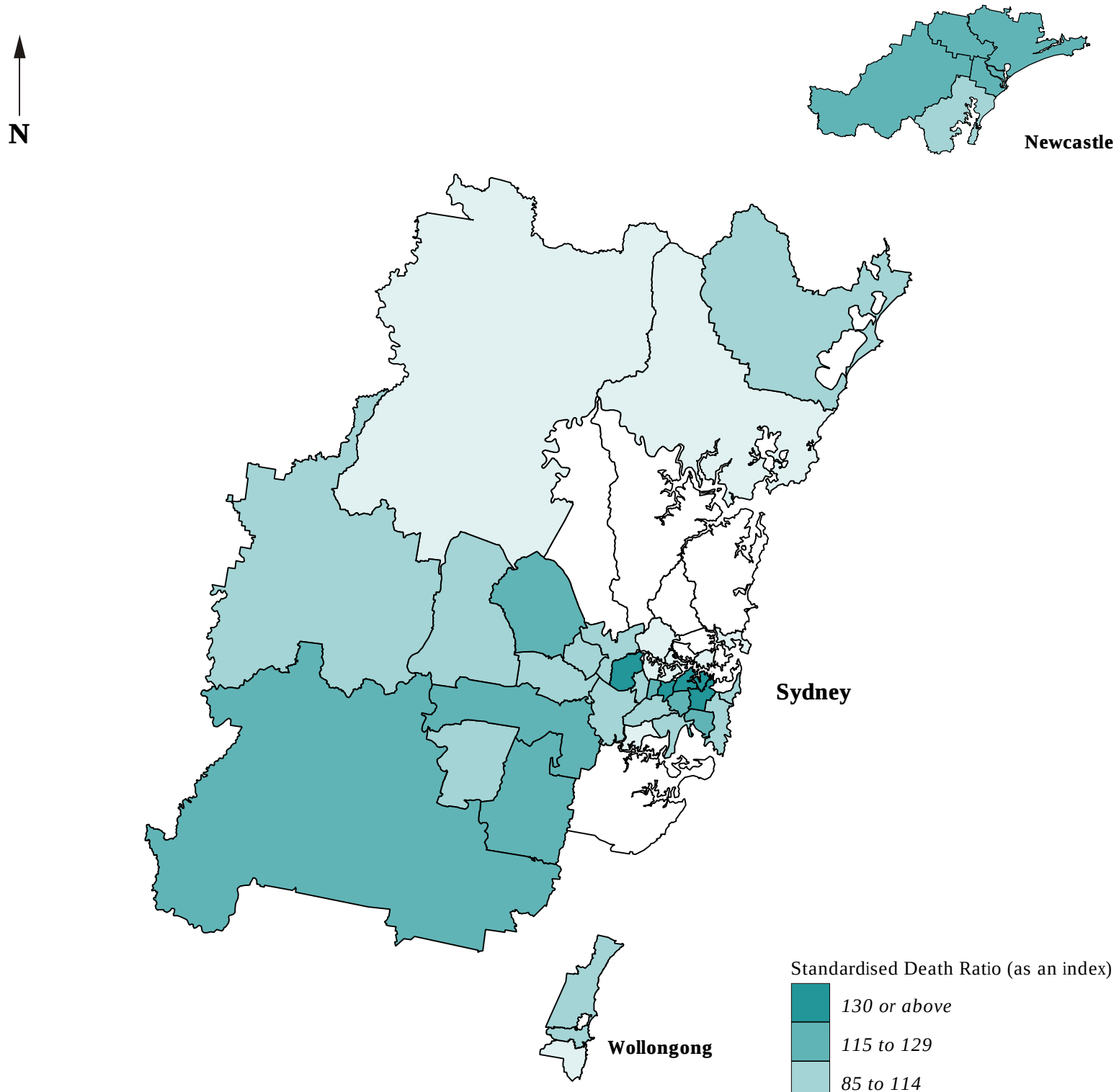
There was an elevated SDR for deaths of residents of **Newcastle** from circulatory system diseases**,** with 14 per cent more deaths than expected from the State rates (an SDR of 114**). All five SLAs had SDRs of above 100, the highest being 124* in Maitland.

Wollongong

The SDR recorded for **Wollongong** was marginally lower than that for **Newcastle**, a ratio of 108. Kiama had the lowest SDR for deaths from circulatory system diseases, with 21 per cent fewer deaths than expected; there were elevated ratios in both Shellharbour (105) and the City of Wollongong (111).

Map 5.17
Deaths of people aged 15 to 64 years from circulatory system diseases, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Deaths of people aged 15 to 64 years from circulatory system diseases, 1992 to 1995

State/Territory comparison (Australia as the Standard)

Residents of the non-metropolitan areas of all States and the Northern Territory had higher Standardised Death Ratios (SDRs) from diseases of the circulatory system than those living in the capital cities. The largest differentials were in the Northern Territory and Western Australia, with the Northern Territory also recording the highest non-metropolitan SDR, of 289**. At the *Whole of State/Territory* level SDRs ranged from 26 per cent lower than expected in the Australian Capital Territory, an SDR of 74**, to almost twice the number of deaths expected in the Northern Territory, an SDR of 191**.

There was little difference in the SDRs for the two periods shown in **Table 5.22** for most States and Territories, although the higher SDRs in the later period for the Northern Territory, Tasmania and Western Australia suggest a worsening (relative to the Australian rates) in the death rates from these causes.

Table 5.22: Deaths of people aged 15 to 64 years from circulatory system diseases, State/Territory
Standardised death ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	98	85**	96	94*	82**	105	118	77**[1]	91**
Other major urban centres[2]	120**	107	95	..	..	..	..	..	111**
Rest of State/Territory	121**	101	109**	117**	112**	127**	289**	–[3]	115**
Whole of State/Territory	107**	90**	101	101	90**	118**	191**	74**	100
1985 to 1989									
Rest of State/Territory	119**	99	105**	114**	103	120**	260**	–[3]	111**

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Over the four year period from 1992 to 1995, 45.0 per cent of deaths of people of all ages (23,004 deaths) in the non-metropolitan areas of New South Wales were attributable to circulatory system diseases. These causes of death accounted for 26.7 per cent of deaths of people aged from 15 to 64 years and 51.1 per cent of deaths of people aged 65 years and over.

Deaths from circulatory system diseases were a more important cause of death for males at a much earlier age than for females. Between the ages of 45 and 64 years, there were 1,947 male deaths and only 737 female deaths from these causes (over the years from 1992 to 1995). This relationship turned around at the age of 75 years and over, when the number of female deaths (8,389) exceeded the number of male deaths (6,306).

Rest of State (New South Wales as the Standard)

In the non-metropolitan areas of New South Wales, there were 3,060 deaths of 15 to 64 year olds from circulatory system diseases, 13 per cent more deaths than expected from the State rates (an SDR of 113**). The majority were males (72.6 per cent, 2,223 deaths).

Overall, 41 SLAs were mapped in the highest category, with SDRs of 130 and above in SLAs scattered throughout the State, with a high concentration in the central and northern regions of the State (**Map 5.18**). SLAs with SDRs of below 70 were located throughout the State with no notable pattern. In addition, data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates.

Residents of Bourke (with an SDR of 276**), Walgett (249**), Gilgandra (208**) and Moree Plains (203**) had the highest SDRs, all recording more than twice the number of deaths than were expected from the State rates. Highly elevated ratios of statistical significance were also recorded in Young (187**), Broken Hill (180**) and Tenterfield (176**).

The lowest SDR for deaths from circulatory system diseases was recorded in the SLA of Nymboida, with 86 per cent fewer deaths than expected, an SDR of 14* (with one death when State rates would indicate seven). Fewer deaths than expected were also recorded in Dumaresq (with three deaths when the State rates would indicate seven deaths, an SDR of 46), Walcha (with three deaths compared to an expected six deaths, an SDR of 48) and Corowa (with eight deaths compared to an expected 16 deaths, an SDR of 49*).

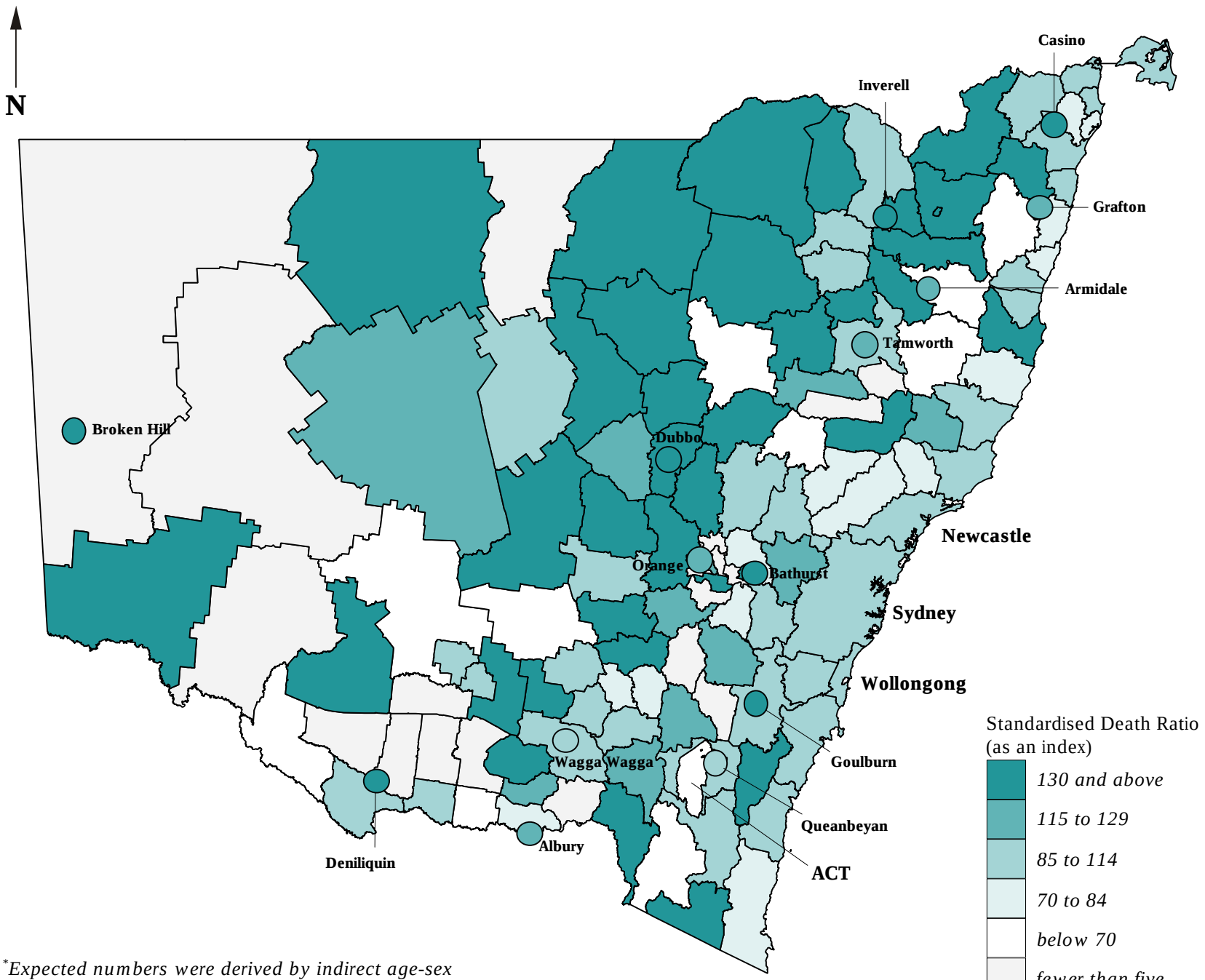
The largest numbers of deaths were recorded in Shoalhaven (162 deaths), in Greater Taree (91) and in Hastings (87).

The correlation analysis was not undertaken as there were too many SLAs with small numbers of cases.

Map 5.18

Deaths of people aged 15 to 64 years from circulatory system diseases, New South Wales, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*

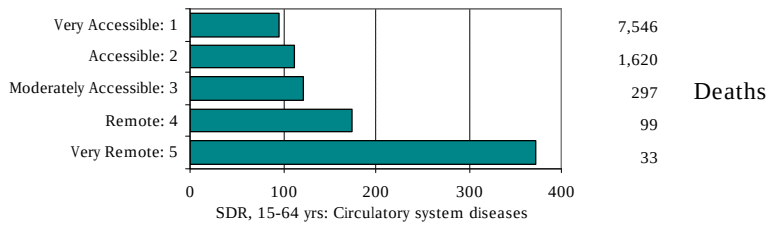


*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



Death rates of people aged from 15 to 64 years from circulatory system diseases also vary markedly across the ARIA categories. They increase from an SDR of 99 in the Very Accessible category through to an SDR of 122 in category 3, before rising substantially to a ratio of 174 in the Remote category and to 372 in the Very Remote category (33 deaths in four years). The high ratios in the remote areas may reflect the high proportions of Indigenous people in these areas.

Source: Calculated on ARIA classification, DHAC

Deaths of people aged 15 to 64 years from respiratory system diseases, 1992 to 1995

Capital city comparison (Australia as the Standard)

Over the four years from 1992 to 1995, Standardised Death Ratios (SDRs) for deaths from respiratory system diseases of people aged from 15 to 64 years ranged from 64** in **Perth** to 193** in **Darwin**. With the exception of **Hobart** (with an SDR of 115), the other capital cities had fewer deaths than expected. There was a larger differential (from the Australian rates) in the SDR recorded in a number of the capital cities in the later period shown in **Table 5.23**, with the largest in **Darwin**. The higher SDR in this later period suggests a worsening (relative to the Australian rates) in rates of death from respiratory system diseases between the periods analysed. The movement in the ratios for **Perth** and **Melbourne** suggest a marked improvement in death rates relative to the Australian rates.

Table 5.23: Deaths of people aged 15 to 64 years from respiratory system diseases, capital cities
Standardised death ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	94	79**	98	87*	64**	115	193**	79	87**
1985-89	90**	90**	101	74**	73**	98	124	71**	88**

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

The organs of the respiratory system include the nose, pharynx, larynx, trachea, bronchi and lungs. There were 9,400 deaths from diseases of the respiratory system over the period from 1992 to 1995, 7.5 per cent of all deaths of residents of **Sydney** and the other major urban centres. More than two thirds (66.8 per cent) of deaths from diseases of the respiratory system were from chronic obstructive pulmonary disease (largely deaths from bronchitis, emphysema or asthma), while 15.5 per cent were deaths from pneumonia and influenza. People aged from 15 to 64 years accounted for 12.6 per cent of these deaths. It is these premature deaths that are presented in **Map 5.19**.

There is a strong association between deaths from respiratory system diseases and socioeconomic status. Mathers (1994) noted substantial differentials in mortality rates from respiratory system diseases among working age Australians: men aged from 25 to 64 years living in areas of greatest socioeconomic disadvantage had death rates 2.3 times higher than those living in areas of least disadvantage (rates elevated by 130 per cent). For females the differential was just more than double (106 per cent). These differentials have persisted in 1995-97 (**Table 5.2**). In NSW, a marked correlation (-0.45) has been found between premature deaths from respiratory illness and socioeconomic status over the period 1990-94 (NSW Health Department 1997). Increased rates of (age standardised) years of life lost have also been found in the lowest socioeconomic quintile in Victoria in 1996 (Department of Human Services Victoria, in press).

Deaths from respiratory system diseases are also a major cause of death for Aboriginal people. Over the period from 1992 to 1994, these death rates were reported to be over 7 times higher than expected in SA, WA and the NT. This represented 17 per cent of the excess deaths in Indigenous men and 12 per cent of the excess deaths in Indigenous women in these States (ABS/AIHW 1996). More recent figures indicate that respiratory diseases accounted for 13.4 per cent of excess deaths in Indigenous men and 15.8 per cent of excess deaths in Indigenous women in SA, WA and the NT (ABS/AIHW 1999).

Sydney (New South Wales as the Standard)

Over the period from 1992 to 1995, 951 people in **Sydney** aged from 15 to 64 years died from respiratory system diseases, some 538 males and 413 females. Unlike deaths from all causes, where the proportion of male deaths was almost double that of females, there was little difference in the number of female and male deaths. Overall there were 8 per cent fewer deaths in **Sydney** than expected from the State rates, an SDR of 92*.

The inner SLAs of South Sydney (with an SDR of 270**), Blacktown (163** and with 89 deaths, the largest number of deaths), Auburn (155) and Leichhardt (143) recorded the highest SDRs. Wyong (140*), north-east of the city, and the Blue Mountains (134), situated in the west, also had elevated ratios (**Map 5.19**). There were 53 deaths of residents of Bankstown.

Waverley had by far the lowest ratio for deaths from respiratory system diseases among this age group, an SDR of 6**, with only one death when 16 were expected from the State rates. Ku-ring-gai (with an SDR of 25**) and Sutherland (43**) also recorded ratios substantially lower than expected from the State rates.

There were correlations of meaningful significance at the SLA level with the variables for Indigenous Australians (0.67), low income families (0.62), single parent families (0.61), dwellings rented from the State housing authority (0.60) and unemployed people (0.54). Inverse correlations of meaningful significance were recorded with high income families (-0.53) and female labour force participation (-0.50). These results, together with the inverse correlation with the IRSD (-0.60), indicate an association at the SLA level between high rates of death from respiratory system diseases and socioeconomic disadvantage.

Newcastle

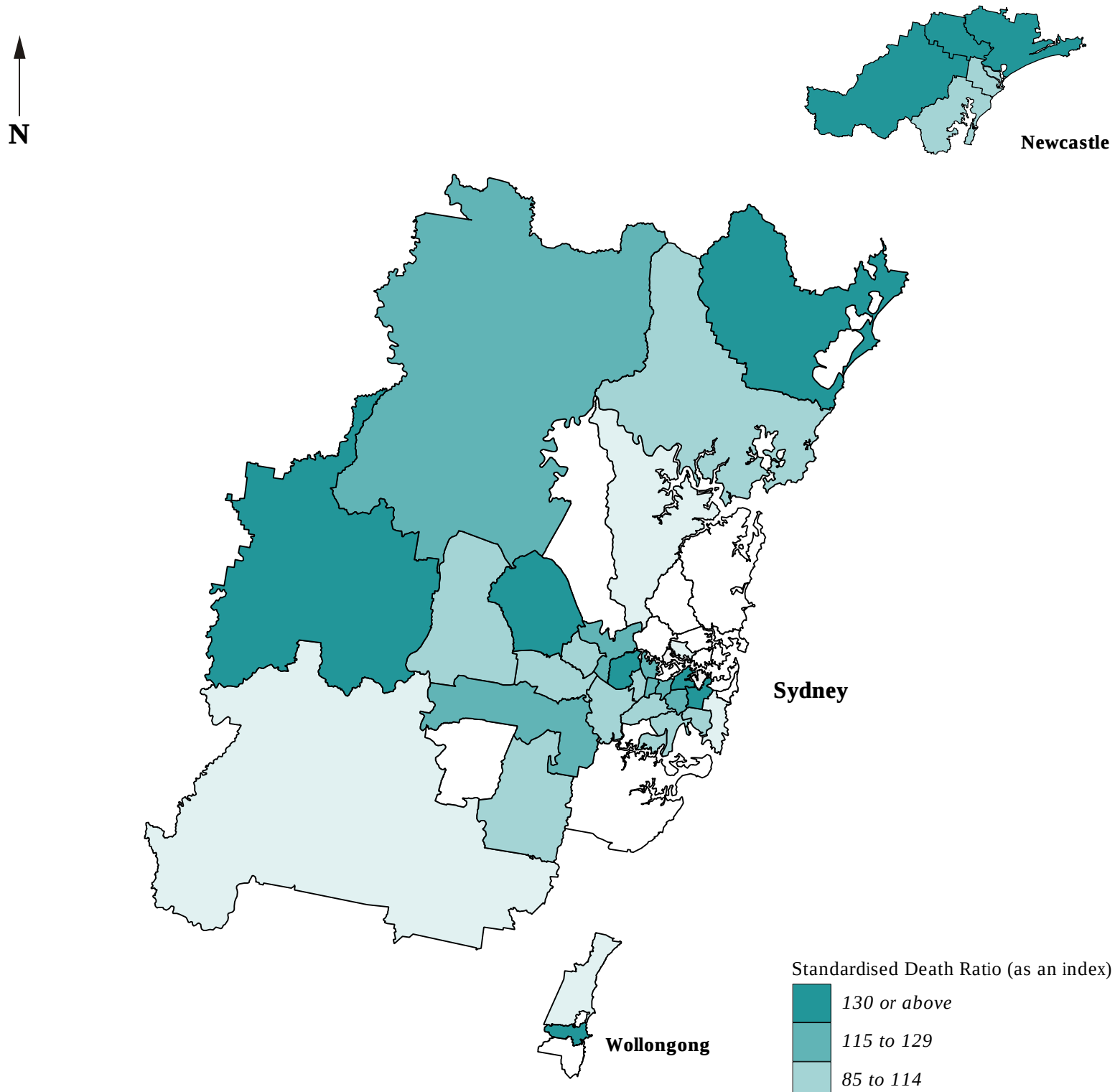
Over the period from 1992 to 1995 there were 162 deaths from respiratory system diseases, 21 per cent more deaths in the 15 to 64 year age group than were expected in **Newcastle,** an SDR of 121*. The SLAs of Cessnock (166*), Maitland (160*) and Port Stephens (155*) all had ratios in the highest range mapped.

Wollongong

In **Wollongong** there were 12 per cent fewer deaths than expected (an SDR of 88), with a highly elevated SDR in Shellharbour (159*) and low SDRs in the City of Wollongong (75) and Kiama (38).

Map 5.19
Deaths of people aged 15 to 64 years from respiratory system diseases, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Deaths of people aged 15 to 64 years from respiratory system diseases, 1992 to 1995

State/Territory comparison (Australia as the Standard)

Residents of the non-metropolitan areas of all States and the Northern Territory had higher Standardised Death Ratios (SDRs) from diseases of the respiratory system than those living in the capital cities. The largest differentials were in the Northern Territory, Tasmania and Western Australia, with the Northern Territory also recording the highest non-metropolitan ratio, an exceptionally high SDR of 908**.

There were differences in the SDRs for the two periods shown in **Table 5.24** for all but Victoria; the higher SDRs in the later period for Tasmania, the Northern Territory, South Australia and Western Australia suggest a worsening (relative to the Australian rates) in the death rates from these causes.

Table 5.24: Deaths of people aged 15 to 64 years from respiratory system diseases, State/Territory
Standardised death ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	94	79**	98	87*	64**	115	193**	79[1]	87**
Other major urban centres[2]	112	90	75**	..	..	..	..	..	98
Rest of State/Territory	116**	111*	118**	123*	134**	133**	908**	–[3]	128**
Whole of State/Territory	102	88**	104	97	82**	125**	511**	76	100
1985 to 1989									
Rest of State/Territory	127**	111*	129**	98	115	93	805**	–[3]	124**

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

There were 4,200 deaths from diseases of the respiratory system over the period from 1992 to 1995 in the non-metropolitan areas of New South Wales, 8.2 per cent of all deaths**.** The majority of these deaths (86.2 per cent, 3,621 deaths) were of people aged 65 years and over, with 13.2 per cent being of deaths of people aged from 15 to 64 years. Deaths from these causes represented 5.0 per cent of all deaths for this age group.

Rest of State (New South Wales as the Standard)

There were 553 deaths of 15 to 64 year old residents in the non-metropolitan areas of New South Wales from respiratory system diseases, 12 per cent more deaths than were expected from the State rates (112*). Males accounted for almost two thirds (64.1 per cent) of these deaths.

Data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates. The SLAs that were mapped are located mainly in coastal regions (**Map 5.20**).

Elevated ratios of statistical significance were recorded in the SLAs of Goulburn (with nearly three times more deaths than expected from the State rate, an SDR of 296**), Orange (183**) and Bega Valley (169*). Although not statistically significant, the ratio in Grafton (171) was also in the highest range mapped.

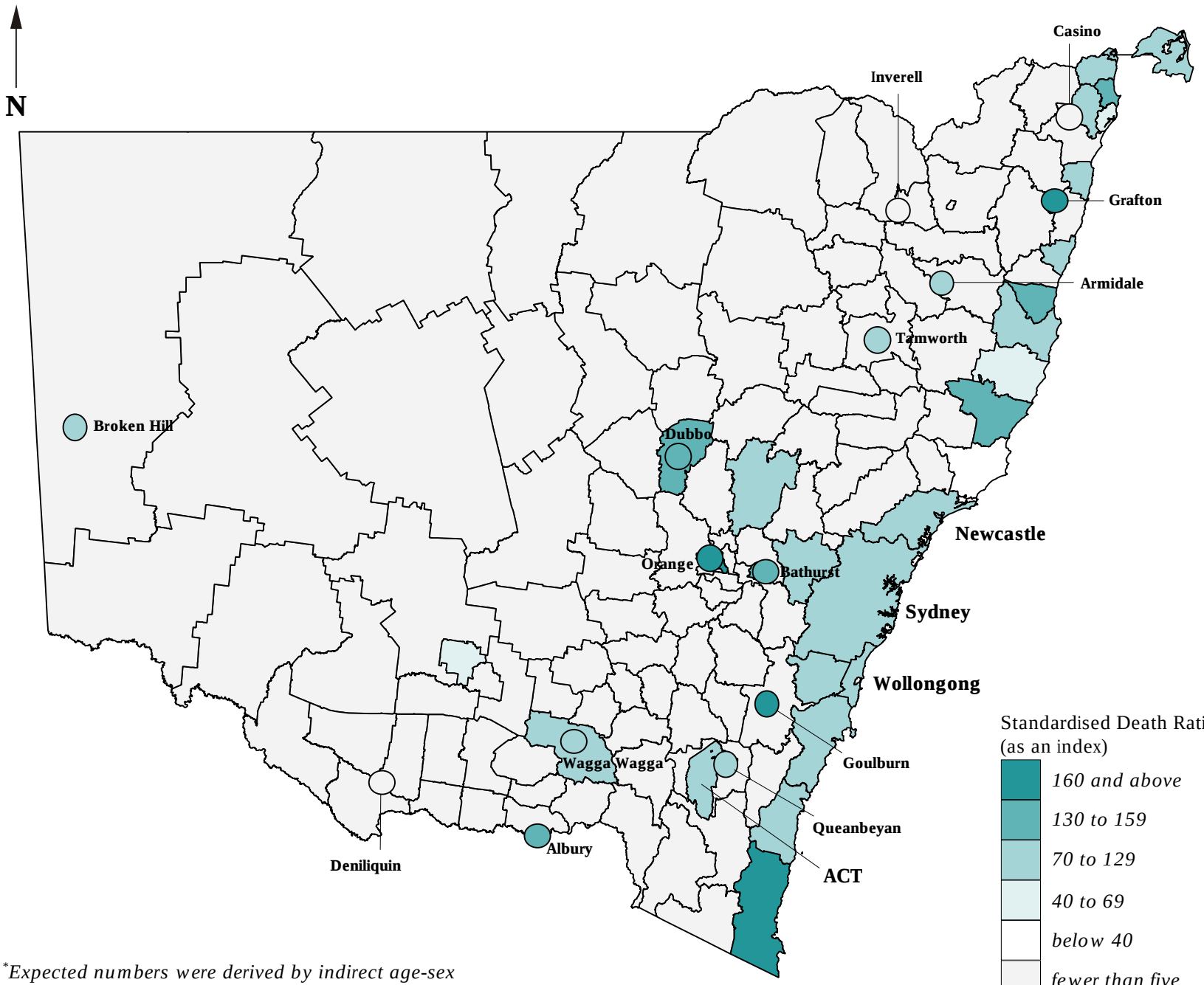
Residents of the SLA of Great Lakes had an extremely low SDR, with 92 per cent fewer deaths from respiratory system diseases than expected, an SDR of 8**: this SDR was based on one death when the State rates would indicate 12 deaths. This was the only low ratio that was highly significantly. Residents of Griffith (48), Ballina (51) and Hastings (65) had the next lowest ratios.

The largest numbers of deaths from respiratory system diseases were recorded in Shoalhaven and Greater Taree, with 26 and 19 deaths respectively.

The correlation analysis was not undertaken as there were too many SLAs with small numbers of cases.

Map 5.20
Deaths of people aged 15 to 64 years from respiratory system diseases, New South Wales, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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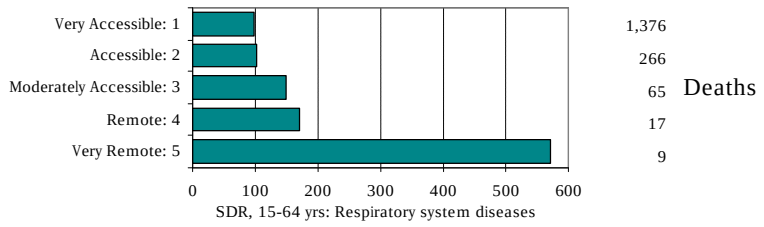

SDRs for deaths of people aged from 15 to 64 years from respiratory system diseases were close the level expected from the State rates in both the Very Accessible and Accessible categories. The ratios than increased substantially, to an SDR of 148 in the Moderately Accessible category and 170 in the Remote category. The high ratios in the remote areas may reflect the high proportions of Indigenous people in these areas.

Source: Calculated on ARIA classification, DHAC

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Accidents, poisonings and violence as a cause of death

Introduction

Accidental and violent deaths are classified according to the external cause of death, that is, according to the circumstances of the accident or violent incident that produced the fatal injury, rather than the nature of the injury. This differs from the other causes of death analysed, which are classified according to the underlying disease or condition.

The main causes of death in this classification of accidents, poisonings and violence are comprised of the following:

- suicide (31.6 per cent);
- motor vehicle traffic accidents (25.9 per cent);
- accidental falls (14.3 per cent, mainly of elderly people);
- accidental drownings (4.4 per cent); and
- accidental poisonings (4.4 per cent).

Although representing only 5.3 per cent of deaths of people of all ages, deaths from the external causes of accidents, poisonings and violence are a major cause of premature death, accounting for 16.9 per cent of deaths in the 15 to 64 year age group. Among people aged from 15 to 64 years, the major causes of death from external causes are as follows:

- suicide (38.9 per cent);
- motor vehicle traffic accidents (28.4 per cent);
- accidental poisonings (5.8 per cent); and
- assault without weapon or weapon not specified (5.1 per cent).

Over the period from 1992 to 1995, there were 1,578 deaths in New South Wales from the combined external causes of accidents, poisonings and violence among people aged from 15 to 24 years, representing 68.3 per cent of all deaths in this age group. Motor vehicle traffic accidents and suicides accounted for the majority of these deaths (75.2 per cent in total: 43.3 per cent from motor vehicle traffic accidents and 31.9 per cent from suicides).

Males predominated in these causes of death, accounting for 78.0 per cent of deaths from these causes in the 15 to 64 year age group (ranging from 80.9 per cent of suicides to 73.8 per cent of motor vehicle traffic accidents) and 80.0 per cent of deaths among 15 to 24 year olds (see **Table 5.25**).

Table 5.25: Deaths from accidents, poisonings & violence, by cause, New South Wales, 1992 to 1995

Age (years) and sex	Motor vehicle traffic accidents		Suicides		All accidents, poisonings & violence[1]	
	No.	%	No.	%	No.	%
15 to 24						
Males	515	75.4	432	85.7	1,263	80.0
Females	168	24.6	72	14.3	315	20.0
Total	**683**	**100.0**	**504**	**100.0**	**1,578**	**100.0**
15 to 64						
Males	1,344	73.8	2,016	80.9	4,995	78.0
Females	476	26.2	477	19.1	1,412	22.0
Total	**1,820**	**100.0**	**2,493**	**100.0**	**6,407**	**100.0**

[1]Includes other accidents, poisonings and violence
Source: See *Data sources*, Appendix 1.3

As can be seen from **Table 5.26**, death rates from the combined causes of accidents, poisonings and violence were substantially higher, across all age groups, in the non-metropolitan areas of New South Wales than in **Sydney**. The biggest difference was recorded among males aged from 15 to 24 years, where the rates ranged from 99.7 per 100,000 population in the non-metropolitan areas to 57.6 per 100,000 population in **Sydney**.

Table 5.26: Deaths from accidents, poisonings and violence, by area of residence, New South Wales, 1992 to 1995

Age (years) and sex	Sydney		Rest of New South Wales		Total	
	No.	Rate	No.	Rate	No.	Rate
15 to 24						
Males	684	57.6	423	99.7	1,263	68.3
Females	187	16.3	81	20.6	315	17.8
Total	**871**	**37.3**	**504**	**61.7**	**1,578**	**43.6**
15 to 64						
Males	2,786	54.4	1,588	81.1	4,995	61.7
Females	847	16.8	372	19.5	1,412	17.8
Total	**3,633**	**35.7**	**1,960**	**50.8**	**6,407**	**39.9**
All ages						
Males	3,697	49.5	2,084	69.1	6,604	54.9
Females	1,696	22.4	752	24.6	2,803	23.0
Total	**5,393**	**35.9**	**2,836**	**46.7**	**9,407**	**38.9**

[1]Rate per 100,000 population of same age and sex
Source: See *Data sources*, Appendix 1.3

Mathers (1994) noted substantial differentials in mortality rates from accidents, poisonings and violence among working age Australians, with men aged from 25 to 64 years living in areas of greatest socioeconomic disadvantage having death rates almost twice as high (96 per cent higher) as those living in areas of least disadvantage. For females the differential was 69 per cent. Similar differentials for males and females have persisted over the period from 1995 to 1997, with differentials for motor vehicle traffic accidents becoming substantially larger (**Table 5.2**).

The NSW Health Department (1997) found an inverse relationship (-0.23) between high socioeconomic status and death by accidents, poisoning and violence in 15 to 64 year olds over the period from 1990 to 94.

Indigenous people also have higher death rates from these causes. The ABS and AIHW (1999) report that for Indigenous men, the standardised mortality ratio (from accidents, poisonings and violence) was 3.2 times that expected from the overall Australian rates, and deaths from causes in this group were responsible for 19.3 per cent of the excess mortality experienced. For Indigenous women, the standardised mortality ratio was 3.6 times that expected, and deaths from causes in this group were responsible for 16.9 per cent of the excess mortality. These figures were derived from data for deaths of Indigenous people in SA, WA and the NT for the three-year period 1995-1997.

Years of potential life lost from accidents, poisonings and violence

Estimates have been made of the number of years of potential life lost (YPLL: see discussion on page 172 for additional details of this concept) from deaths from the external causes of accidents, poisonings and violence (Ginpil et al 1992). For people of 'working life' (ages 18 to 65 years) it is estimated that 180,234 years of (potential) life have been lost due to premature deaths from these external causes. This is 34.2 per cent of the total number of YPLL from all causes of death, of which 15.0 per cent were from road crashes, 8.9 per cent from suicides, 8.4 per cent from other accidents, and 1.9 per cent from violence. For males, 32.5 per cent of YPLL during their working life were from these external causes and, for females, 16.0 per cent.

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Deaths of people aged 15 to 64 years from accidents, poisonings and violence, 1992 to 1995

Capital city comparison (Australia as the Standard)

Over the four years from 1992 to 1995, Standardised Death Ratios (SDRs) for deaths from accidents, poisonings and violence, of people aged from 15 to 64 years ranged from 75** in **Canberra** to 149** in **Darwin**. With the exception of **Darwin**, and **Hobart** (an SDR of 114*), the other capital cities had fewer deaths than expected. **Melbourne** and **Sydney** also had relatively low ratios, of 80** and 84**, respectively.

There was a higher differential (from the Australian rates) in the SDRs recorded for **Hobart** and **Darwin** in the later period shown in **Table 5.27**, suggesting a worsening (relative to the Australian rates) in rates of death from accidents, poisonings and violence between the periods analysed. The movement in the ratios for **Canberra** indicates an improvement in death rates relative to the Australian rates; similar, but smaller movements were evident in the ratios for **Sydney** and **Melbourne**.

Table 5.27: Deaths of people aged 15 to 64 years from accidents, poisonings and violence, capital cities
Standardised death ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	84**	80**	99	96	95	114*	149**	75**	88**
1985-89	91**	86**	92**	86**	82**	98	141**	88**	89**

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Within **Sydney** and the other major urban centres**,** there were 6,471 deaths from the combined causes of accidents, poisonings and violence (52.6 per cent of all deaths from these causes). Some 67.7 per cent of these (4,381 deaths) were deaths of 15 to 64 year olds, and 76.7 per cent were males. There were 19.8 per cent fewer deaths of 15 to 64 year olds resident in **Sydney** from these external causes over the period from 1992 to 1995 than over the years from 1985 to 1989, declining from an average of 1,132 deaths per year to 908 per year.

Sydney (New South Wales as the Standard)

There were 3,633 premature deaths from accidents, poisonings and violence for residents of **Sydney** over the four years from 1992 to 1995, 11 per cent fewer than expected from the State rates (an SDR of 89**). Three quarters of the deaths (76.7 per cent) were males.

In **Sydney**, the two SLAs with 30 per cent or more deaths than expected from the State rates were located in the inner suburbs, and SLAs with at least 30 per cent fewer deaths than expected were situated to the north and south of the city (**Map 5.21**).

The SLA of Sydney had more than twice the number of deaths of 15 to 64 year olds from this group of external causes than expected from the State rates (an SDR of 236**). South Sydney (180**), Hunter's Hill (128) and Woollahra (127*) also had elevated ratios.

In contrast, low SDRs were recorded in Lane Cove, with an SDR of 44**, Kogarah (57**) and Baulkham Hills (59**).

The largest numbers of deaths from these external causes were recorded in the SLAs of Blacktown (with 249 deaths), Fairfield (198 deaths) and Penrith (173 deaths).

Although not consistent, there appears to be a weak association evident in the correlation analysis at the SLA level between high rates of premature death from these causes and many of the indicators of socioeconomic disadvantage.

The correlations between the indicators socioeconomic disadvantage and premature deaths from these causes of 15 to 24 year olds were more consistent and slightly stronger.

Newcastle

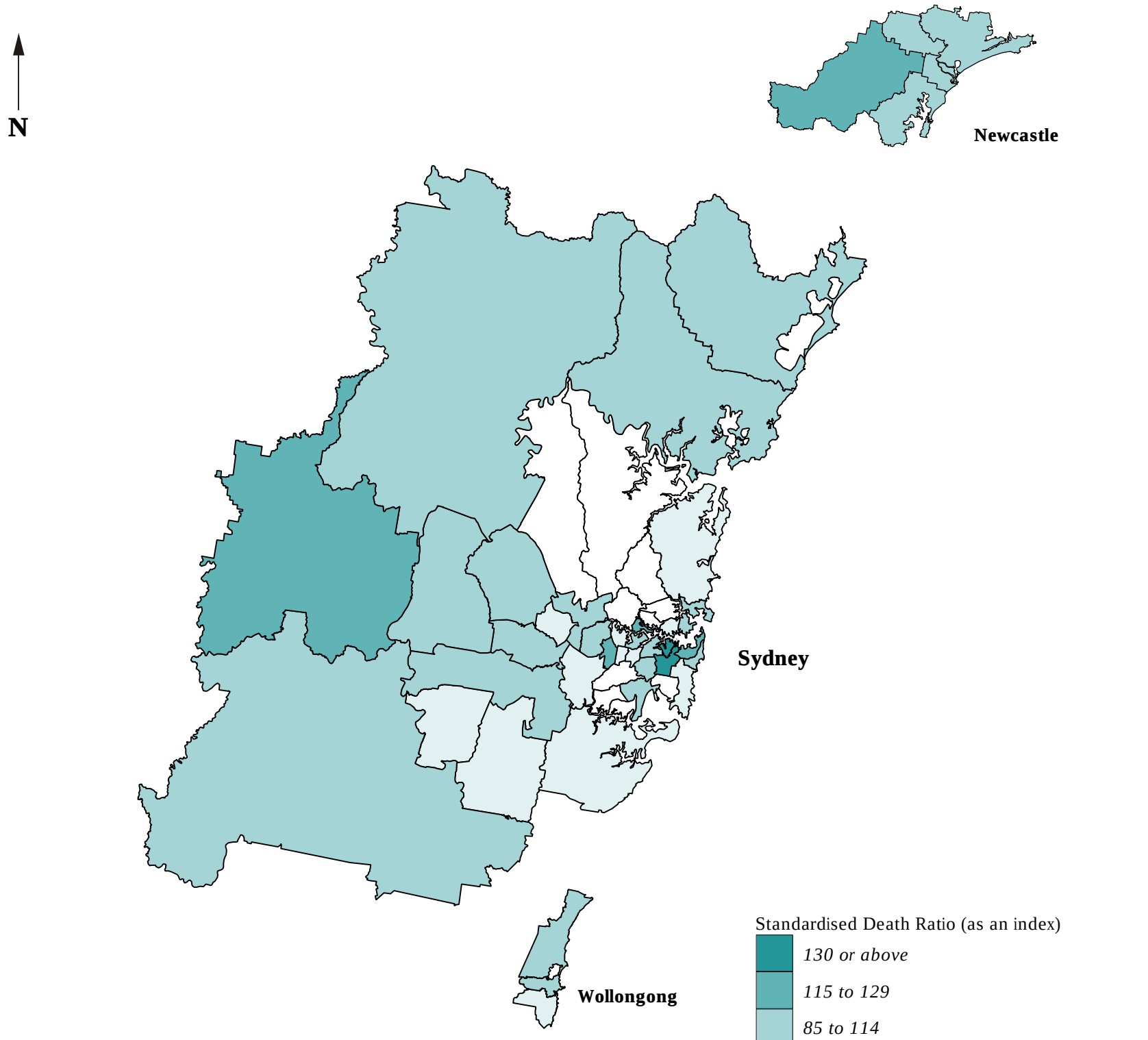
In **Newcastle** there were 3 per cent more deaths of 15 to 64 year olds from this group of external causes than were expected, an SDR of 103. Cessnock (with an SDR of 116), the City of Newcastle (105), Port Stephens (105) and Maitland (104) all had more deaths than expected from the State rates. The only SLA with an SDR below 100 was Lake Macquarie, with an SDR of 98.

Wollongong

There were 255 deaths from this group of external causes in the major urban centre of **Wollongong**, 5 per cent fewer deaths than expected from the State rates. All three SLAs had fewer deaths than expected, with the City of Wollongong (97) and Shellharbour (92) recording SDRs in the middle range mapped, and Kiama (with an SDR of 82) mapped in the lowest range.

Map 5.21
Deaths of people aged 15 to 64 years from accidents, poisonings and violence, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Deaths of people aged 15 to 64 years from accidents, poisonings and violence, 1992 to 1995

State/Territory comparison (Australia as the Standard)

Residents of the non-metropolitan areas of all States and the Northern Territory had higher Standardised Death Ratios (SDRs) from the external causes of accidents, poisonings and violence than those living in the capital cities. Apart from Tasmania, the differentials were substantial, with the largest being in the Northern Territory: the Northern Territory also had the highest non-metropolitan SDR, of 254**.

The main differences from the Australian rates in the SDRs for the two periods shown in **Table 5.28** were in Western Australia (the higher SDR in the later period suggesting a worsening, relative to the Australian rates, in the death rates from these external causes) and the Northern Territory, with a somewhat lower ratio, suggesting an improvement (relative to the Australian rates) in the death rates from these causes.

Table 5.28: Deaths of people aged 15 to 64 years from accidents, poisonings and violence, State/Territory
Standardised death ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	84**	80**	99	96	95	114*	149**	75**[1]	88**
Other major urban centres[2]	95	111	108	..	..	..	..	..	101
Rest of State/Territory	121**	108**	131**	132**	152**	129**	254**	–[3]	127**
Whole of State/Territory	94**	88**	113**	105*	110**	123**	204**	74**	100
1985 to 1989									
Rest of State/Territory	122**	120**	133**	126**	123**	116**	285**	–[3]	126**

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

There were 2,936 deaths in the non-metropolitan areas of New South Wales attributable to accidents, poisonings and violence, representing 5.7 per cent of deaths for all ages. Unlike deaths from all causes, where the highest proportion is experienced among people aged 65 years and over, deaths from accidents, poisonings and violence are a major cause of premature death, of people between the ages of 15 and 64 years. Premature deaths accounted for 69.0 per cent of the 2,936 deaths recorded in the non-metropolitan areas of New South Wales; in comparison only 25.0 per cent of these deaths occurred at the age of 65 years and over.

Rest of State (New South Wales as the Standard)

There were 2,026 deaths of 15 to 64 year old non-metropolitan residents from the external causes of accidents, poisonings and violence, 27 per cent more than expected from the State rates (an SDR of 127**). There was a marked differential in the SDRs between these residents and those living in **Sydney**, for whom the SDR was 89**.

Males were four times more likely to die from these external causes than females, recording 1,636 and 390 deaths respectively.

More than half of the SLAs in the non-metropolitan areas of New South Wales had elevated SDRs, five of which were more than twice the level expected from the State rates (**Map 5.22**). These five were Lachlan (303**) and Corowa (215**) in the central west, Walgett (273**) in the north, Ulmarra (262**) on the mid-north coast, and Young (214**), south-east of **Sydney**, all with highly significant ratios.

Wakool recorded the lowest SDR, of 38, with two deaths when five were expected from the State rates. Other very low SDRs were recorded in Yass (with an SDR of 52 and five deaths), Narromine (69 and five deaths) and Grafton (70 and 12 deaths).

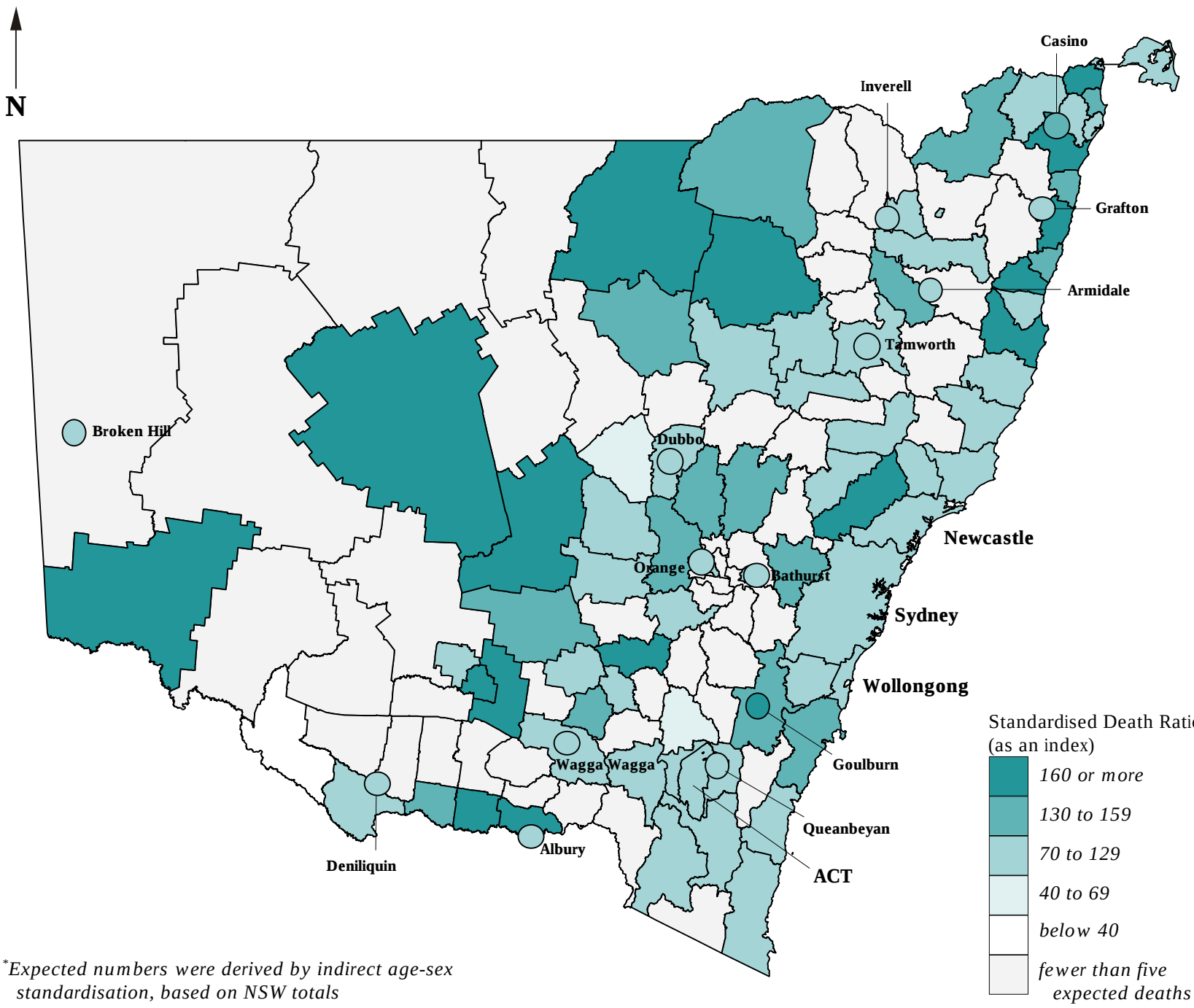
Data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates.

The SLA of Shoalhaven had the largest number of deaths from the external causes of accidents, poisonings and violence in this age group, with 94 deaths.

The correlation analysis was not undertaken as there were too many SLAs with small numbers of cases.

Map 5.22
Deaths of people aged 15 to 64 years from accidents, poisonings and violence, New South Wales, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*

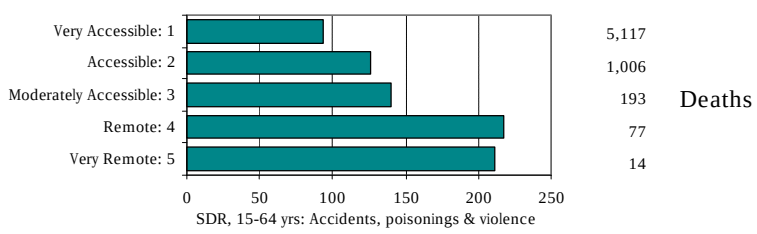


*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



There are major differences in SDRs for accidents, poisonings and violence across the ARIA categories. The most highly elevated ratios are almost twice the level in the lowest ARIA category, with SDRs of 217 and 211 in the Very Remote and Remote categories, respectively, compared with a ratio of 94 in the Very Accessible category. The Accessible and Moderately categories also had elevated ratios. The high ratios in the remote areas may reflect the high proportions of Indigenous people in these areas.

Source: Calculated on ARIA classification, DHAC

Deaths of people aged 15 to 24 years from accidents, poisonings and violence, 1992 to 1995

Capital city comparison (Australia as the Standard)

Over the four years from 1992 to 1995, Standardised Death Ratios (SDRs) for deaths from accidents, poisonings and violence of people aged from 15 to 24 years ranged from 65** in **Canberra** to 127* in **Hobart**. With the exception of **Darwin** (with an SDR of 124) and **Brisbane** (104), the other capital cities recorded fewer deaths than expected. **Sydney** and **Melbourne** also had relatively low ratios, of 76** and 78**, respectively.

There was a higher differential (from the Australian rates) in the SDRs recorded for **Perth**, **Brisbane**, **Hobart** and **Darwin** in the later period shown in **Table 5.29**, suggesting a worsening (relative to the Australian rates) in rates of death from accidents, poisonings and violence between the periods analysed. The movements in the ratios for the other capitals (and in particular in **Canberra**) indicate an improvement in death rates relative to the Australian rates.

Table 5.29: Deaths of people aged 15 to 24 years from accidents, poisonings and violence, capital cities
Standardised death ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1992-95	76**	78**	104	85**	97	127*	124	65**	84**
1985-89	88**	81**	83**	89*	76**	95	112	97	85**

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Deaths from the external causes of accidents, poisonings and violence were the major cause of death for people aged from 15 to 24 years. Over the four year period from 1992 to 1995, they represented 64.6 per cent of all deaths in New South Wales in this age group - 69.0 per cent of male deaths and 52.2 per cent of female deaths. Males predominated, accounting for 78.5 per cent of all deaths from these external causes. Almost half (40.8 per cent) of male deaths were from motor vehicle traffic accidents and more than one third (34.2 per cent) were from suicides.

Mathers (1994) examined the extent of disparities (related to socioeconomic status of areas of residence) in mortality rates according to the major cause of death. Differentials in mortality rates for deaths from injury and poisonings were clearly evident for both males and females (aged from 15 to 24 years) from the most socioeconomically disadvantaged areas - 47 per cent more deaths of males than in the most advantaged areas, and 66 per cent for females. This relationship was also evident between socioeconomic status and suicides, with 35 per cent more male deaths and 30 per cent more female deaths in the most socioeconomically disadvantaged areas than there were in the most advantaged areas. Mathers (in press) has recently reported an increase in the rates of male suicide in areas of low socioeconomic status over the decade from 1985.

Sydney (New South Wales as the Standard)

There were 35 per cent fewer deaths of 15 to 24 year olds from accidents, poisonings and violence in **Sydney** over the period from 1992 to 1995 than over the years from 1985 to 1989, down from 337 per year to 218 per year. Deaths from these external causes were 15 per cent lower than expected (based on New South Wales rates) for residents of **Sydney,** an SDR of 85**.

The Blue Mountains was the only SLA to record an elevated ratio of statistical significance, with an SDR of 169**. The lower northern suburb of Mosman had 49 per cent more deaths than expected from the State rates (an SDR of 149) and Hawkesbury (126) and Penrith (117), located in the outer west; and Wyong (115), situated on the northern beaches, also had elevated ratios (**Map 5.23**).

Low ratios were recorded in Lane Cove (no deaths were recorded when the State rates would indicate eight deaths), Ryde (with an SDR of 40**), Canterbury (45**), Randwick (46**), Hurstville (49*) and Hornsby (60*).

The largest numbers of deaths were recorded in Blacktown (with 76 deaths), Fairfield (60 deaths) and Penrith (56 deaths).

There was a weak association evident in the data at the SLA level with indicators of socioeconomic disadvantage, the strongest being with the variables for the Indigenous population (0.44) and single parent families (0.42); there were also weak inverse correlations with indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.21), suggest the existence of an association at the SLA level between high rates of premature death of young adults from these causes and socioeconomic disadvantage.

Newcastle

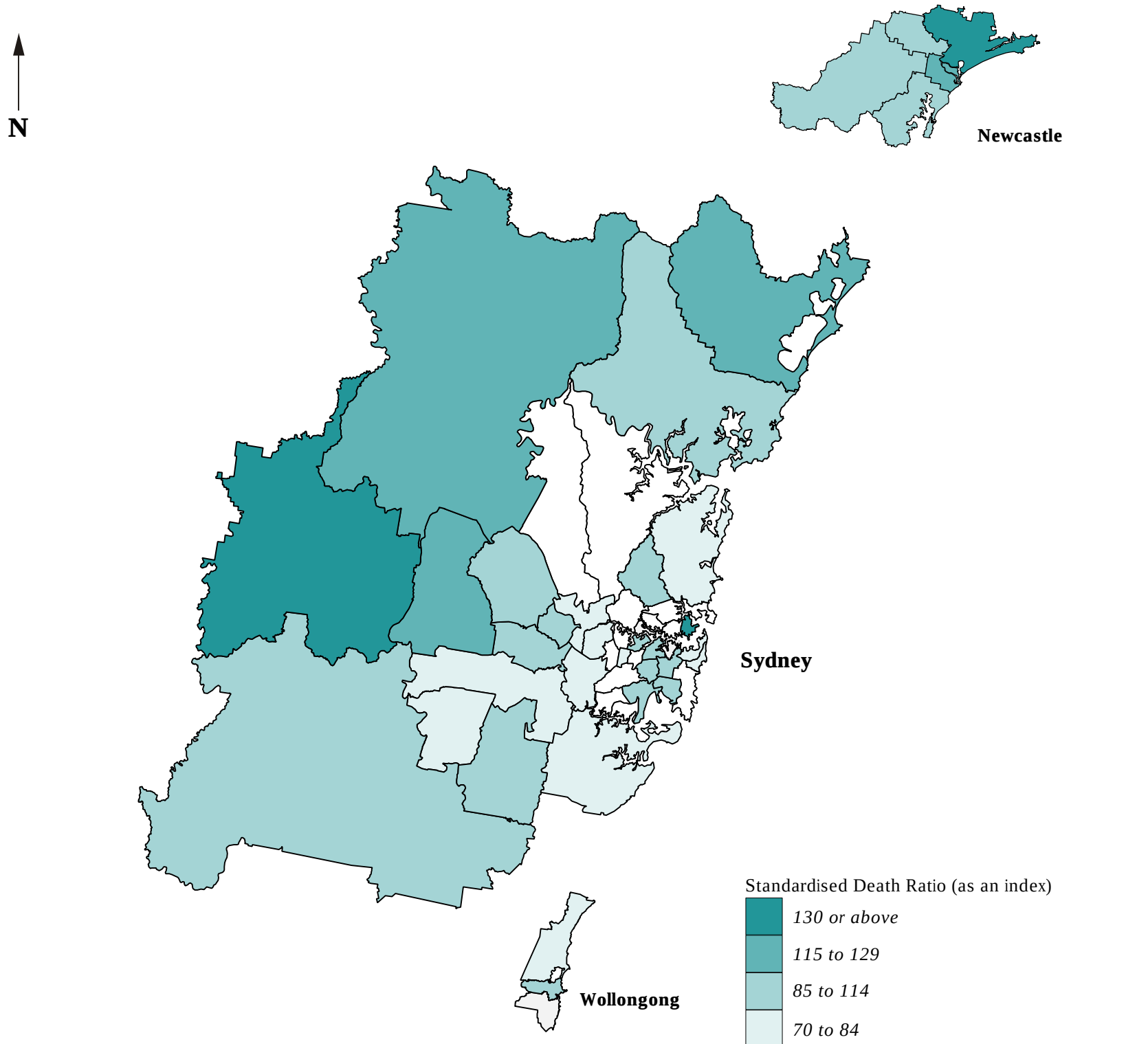
There were 132 deaths of 15 to 24 year olds from accidents, poisonings and violence in **Newcastle**, 10 per cent more deaths than were expected from the State rates, an SDR of 110. Port Stephens (with an SDR of 133), the SLA of Newcastle (115), Cessnock (110) and Lake Macquarie (103) all had more deaths than expected. Maitland had an SDR of 97.

Wollongong

Residents of **Wollongong** aged from 15 to 24 years recorded 55 deaths from these external causes, 18 per cent fewer than expected from the State rates (an SDR of 82). Shellharbour (with an SDR of 85) and Wollongong (78) had fewer deaths than expected, while Kiama (with five deaths and an SDR of 132) had an elevated ratio.

Map 5.23
Deaths of people aged 15 to 24 years from accidents, poisonings and violence, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Deaths of people aged 15 to 24 years from accidents, poisonings and violence, 1992 to 1995

State/Territory comparison (Australia as the Standard)

Residents of the non-metropolitan areas of all States and the Northern Territory had higher Standardised Death Ratios (SDRs) from the external causes of accidents, poisonings and violence than those living in the capital cities. In all cases the differentials were substantial, with the largest being in the Northern Territory, Western Australia and South Australia: the Northern Territory also had the highest non-metropolitan SDR, of 267**.

The main differences from the Australian rates in the SDRs for the two periods shown in **Table 5.30** were in the ratios for Western Australia and the Northern Territory, with the higher SDRs in the later period suggesting a worsening, relative to the Australian rates, in the death rates from these causes.

Table 5.30: Deaths of people aged 15 to 24 years from accidents, poisonings and violence, State/Territory
Standardised death ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1992 to 1995									
Capital city	76**	78**	104	85**	97	127*	124	65**[1]	84**
Other major urban centres[2]	89	94	110	..	..	..	..	..	98
Rest of State/Territory	127**	123**	136**	158**	188**	144**	267**	–[3]	140**
Whole of State/Territory	89**	89**	117**	102	120**	137**	202**	66**	100
1985 to 1989									
Rest of State/Territory	135**	132**	132**	146**	139**	130**	235**	–[3]	136**

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Over the four year period from 1992 to 1995, there were 520 deaths of people aged from 15 to 24 years from this group of external causes in the non-metropolitan areas of New South Wales. This was a rate of 61.7 per 100,000 population, higher than the **Sydney** rate of 37.3 per 100,000 population. Although this was a relatively small number of deaths, they accounted for 75.3 per cent of all deaths in this age group – 79.5 per cent of male deaths and 59.3 per cent of female deaths. The data analysed for this variable represented 17.7 per cent of deaths at all ages from this cause.

Rest of State (New South Wales as the Standard)

Deaths of 15 to 24 year olds from the combined causes of accidents, poisonings and violence were substantially (41 per cent) higher in the non-metropolitan areas of New South Wales than expected from the New South Wales total (an SDR of 141**).

Given the high SDRs, the ranges mapped (**Map 5.24**) have been changed to enhance the pattern of differentiation by setting the highest and lowest ranges at 60 per cent, rather than 30 per cent as in the map of **Sydney** for this variable.

Data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates. The majority of SLAs that were mapped were situated in coastal regions, with the remaining few located inland.

Elevated ratios were found in the vast majority of SLAs, with the highest occurring in Greater Lithgow, with the SDR of 261** indicating that there were more than two and a half times the number of deaths that were expected from State rates (**Map 5.24**). The other five SLAs mapped in the highest range were Singleton (195*), Goulburn (180*), Greater Taree (171*), Shoalhaven (163*) and Tweed Part A (162**).

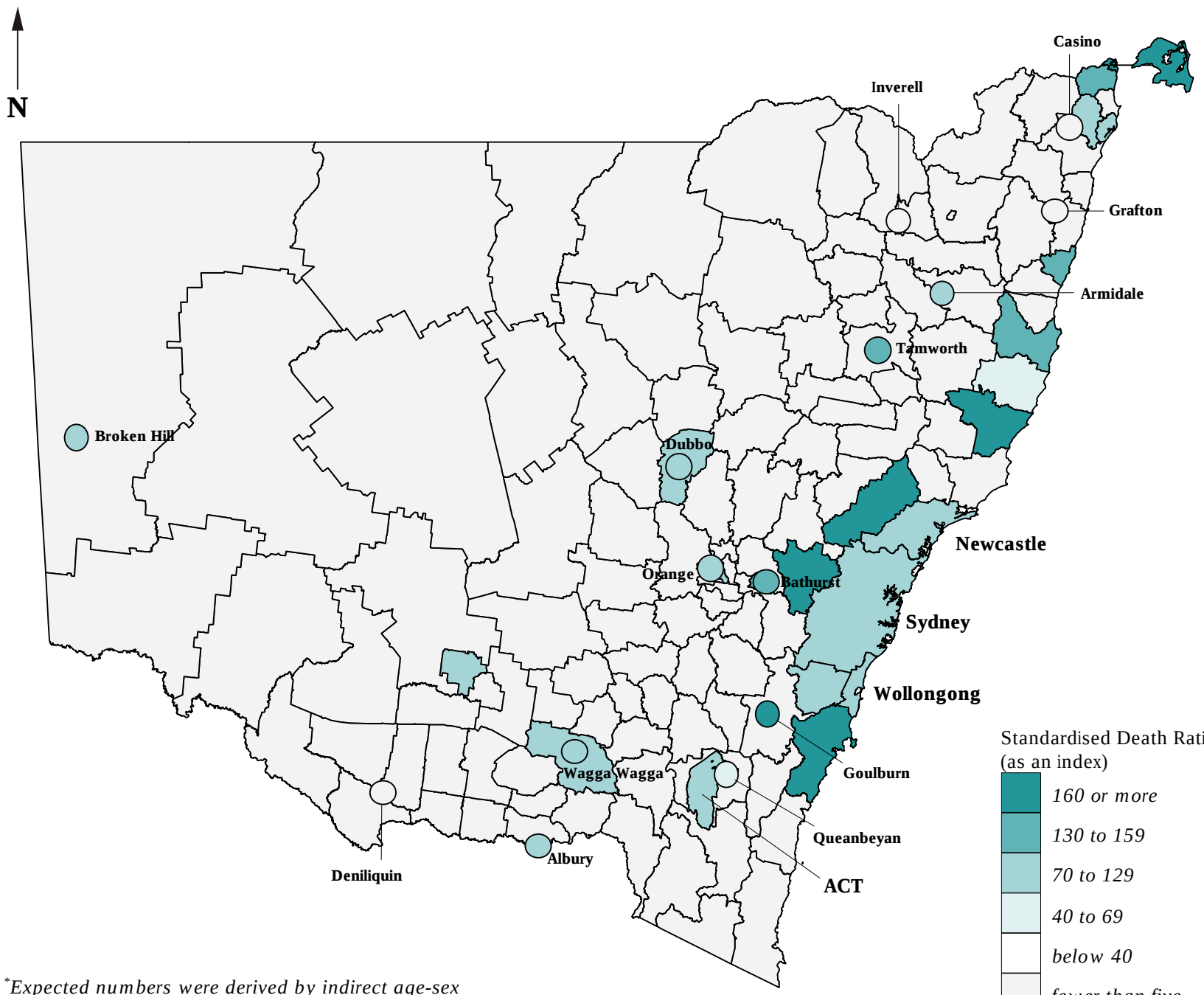
No SLA recorded an SDR in the lowest range mapped: Hastings, with a ratio of 54 (five deaths were recorded when the State rates would indicate nine) and Queanbeyan, with a ratio of 68 (6 deaths compared with an expected nine), had the lowest SDRs. Fewer deaths than expected were also recorded in Albury (with an SDR of 80), Armidale (82) and Griffith (98).

The largest numbers of deaths from this group of external causes were of 15 to 24 year old residents of the SLAs of Shoalhaven (23 deaths), Wagga Wagga (21) and Coffs Harbour (17 deaths). There were five deaths of 15 to 24 year old residents of Griffith and six deaths of residents of Broken Hill.

The correlation analysis was not undertaken as there were too many SLAs with small numbers of cases.

Map 5.24
Deaths of people aged 15 to 24 years from accidents, poisonings and violence, New South Wales, 1992 to 1995

Standardised Death Ratio: number of deaths in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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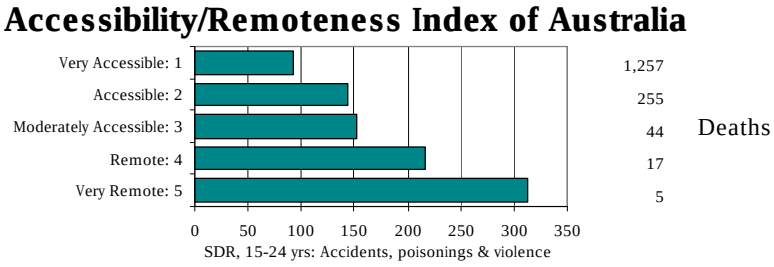


The differences across the ARIA categories in SDRs for accidents, poisonings and violence among 15 to 24 year olds are similar to those for the 15 to 64 year age group. The re were more than twice the number of deaths in the Remote and more than three times in the Very Remote categories than expected from the State rates (SDRs of 216 and 313, respectively), compared with a ratio of 92 in the Very Accessible category.

Source: Calculated on ARIA classification, DHAC

Deaths of people aged 15 to 64 years: years of potential life lost, 1992 to 1995

Capital city comparison (Australia as the Standard)

One measure of the impact of premature death is the number of potential years of life lost as a result of death before the age of 65 years. This measure is calculated as the sum of all the years of life that could potentially have been lived had people not died before the age of 65 years. The total number of years of potential life lost (YPLL) is calculated by assuming that people who died at 17 years of age would have otherwise lived to the age of 65 years (ie. 65 minus 17 years), or 48 years. In this analysis, deaths included were of people aged from 15 to 64 years. The results are expressed as rates per 100,000 population, and age standardised to the Australian population.

People in most capital cities had fewer years of potential life lost (YPLL) than were expected from the Australian rates, with the lowest standardised ratios (SRs) in **Canberra** (81**), **Perth** (89**) and **Melbourne** (90**) (**Table 5.31**). **Darwin** (with an SR of 137**) and **Hobart** (108**) had the only elevated ratios: the ratio of 137** in **Darwin** indicates that there were 37 per cent more YPLL by 15 to 64 year old residents of **Darwin** than would be expected from the Australian rates. Overall, ratios for females (95**) were generally higher than for males (94**), the exceptions being **Sydney** and **Darwin** (**Table 5.31**).

Table 5.31: Deaths of people aged 15 to 64 years: years of potential life lost, capital cities, 1992 to 1995
Standardised ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
Males	**99****	**90****	**93****	**93****	**88****	**104****	**144****	**79****	**94****
Females	**96****	**91****	**97****	**100**	**91****	**114****	**122****	**84****	**95****
Total	**98****	**90****	**94****	**96****	**89****	**108****	**137****	**81****	**94****

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Sydney (New South Wales as the Standard)

Over the years from 1992 to 1995, there were an estimated 604,445 YPLL as a result of deaths of residents of **Sydney** aged from 15 to 64 years, 4 per cent fewer than were expected from the State rates (an SR of 96**). Males accounted for almost two thirds (64.0 per cent) of all YPLL.

The highest standardised ratio, of 275**, was recorded in the SLA of Sydney, indicating that there were more than two and a half times the number of YPLL than were expected from the State rates. Ratios elevated by 30 per cent or more were also recorded in the inner city areas of South Sydney (with an SR of 271**), Leichhardt (145**) and Marrickville (145**). Liverpool and Blue Mountains, situated in the west, recorded ratios of 114** and 111** respectively (**Map 5.25**).

Residents of Ku-ring-gai had the lowest ratio for this variable, with 37 per cent fewer YPLL than were expected from the State rates, an SR of 63**. Low ratios were also recorded to the north of **Sydney** in Baulkham Hills (64**) and Willoughby (67**).

The greatest impact of premature death (when measured by YPLL by the population aged from 15 to 64 years) was recorded for residents of Blacktown, a total of 39,299 years. High numbers of YPLL were also recorded in South Sydney (35,837 years), Fairfield (28,740 years), Penrith (24,867 years) and Parramatta (24,518).

The distribution of standardised ratios for males across **Sydney** was identical to that recorded for females (both had an SR of 96**). However, there was a notable difference for residents of South Sydney (with a male ratio of 318** and a female ratio of 163**), Sydney (297** compared to 214**) and Woollahra (126** compared to 72**), where the ratios recorded for males were substantially higher than those for females. By way of contrast, female ratios greatly exceeded those for males in Strathfield (a female ratio of 131** compared to a male ratio of 89**), Lane Cove (97** compared to 59**) and Concord (113** compared to 79**). These differentials are likely to reflect local circumstances such as the location of boarding houses or other special purpose accommodation for men and women.

There were correlations of significance at the SLA level with many indicators of socioeconomic disadvantage, including with the variables for dwellings with no motor vehicle (0.80), single parent families (0.56) and dwellings rented from the State housing authority (0.53). An inverse correlation of meaningful significance was also recorded with the variable for female labour force participation (-0.50). These results, together with the weak inverse correlation with the IRSD (-0.32), support the existence of an association at the SLA level between high rates of premature death and socioeconomic disadvantage.

Newcastle

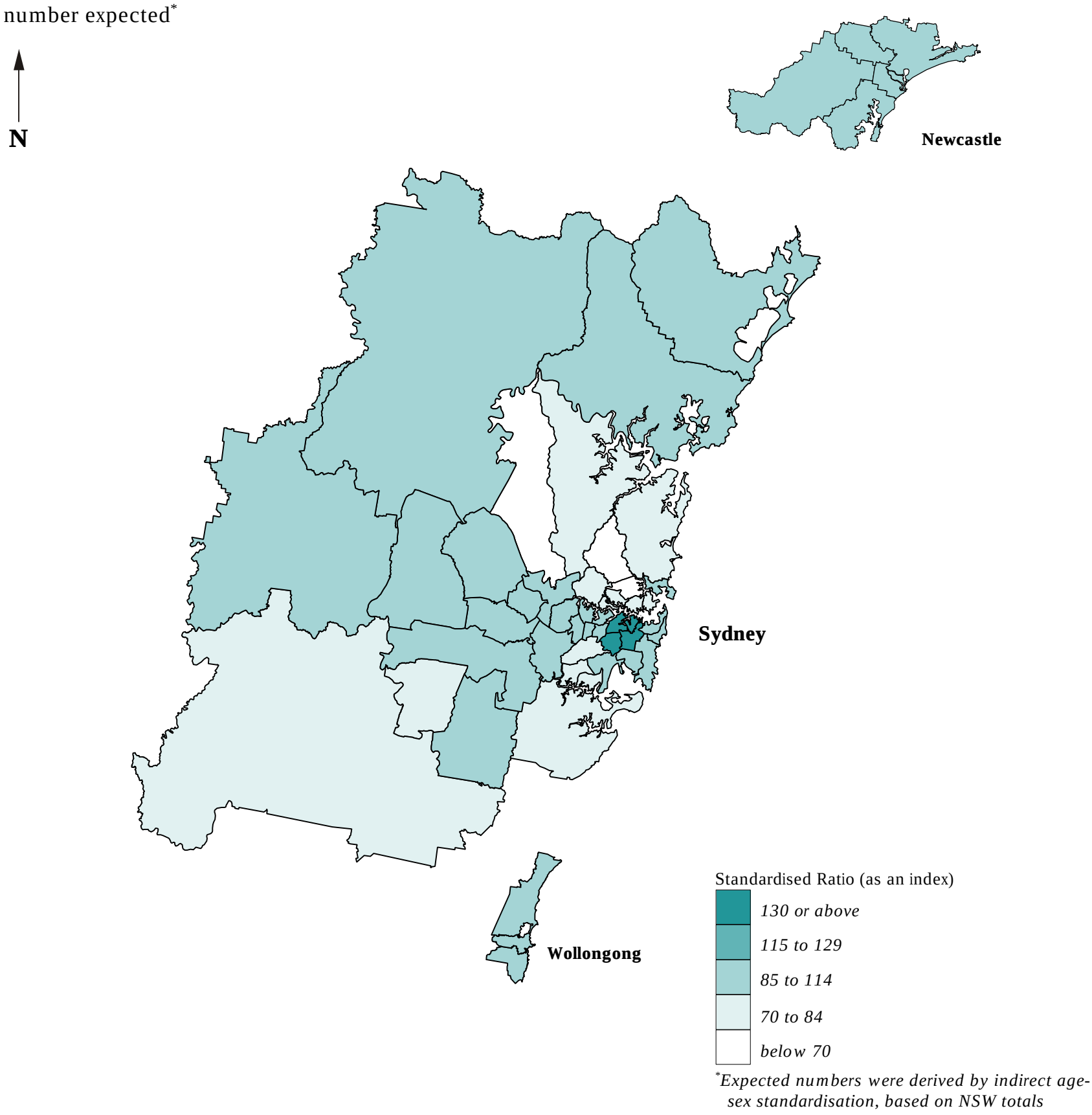
There were 79,622 years of potential life lost recorded for residents of **Newcastle** aged from 15 to 64 years, 5 per cent more than were expected from the State rates (an SR of 105**). Elevated SRs were recorded in Cessnock (112**), the SLA of Newcastle (112**) and Port Stephens (104**). The lowest ratio was in Maitland (96**).

Wollongong

There were 5 per cent fewer YPLL for 15 to 64 year old residents of **Wollongong** than were expected from the State rates, an SR of 95** (40,754 years). The highest ratio, of 97**, was recorded in the City of Wollongong and the lowest was recorded in Kiama (86**).

Map 5.25
Deaths of people aged 15 to 64 years: years of potential life lost, Sydney, Newcastle and Wollongong, 1992 to 1995

Standardised Ratio: number of years of potential life lost in each Statistical Local Area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Deaths of people aged 15 to 64 years: years of potential life lost, 1992 to 1995

State/Territory comparison (Australia as the Standard)

All of the *Rest of State/Territory* areas in **Table 5.32** had higher standardised ratios (SRs) for years of potential life lost (YPLL) than were calculated for the capital cities. The largest differential was in the Northern Territory, with more than twice the SR in the *Rest of State/Territory* areas than was calculated for **Darwin**; the next highest differential was in Western Australia. In contrast to the male and female rates recorded in the metropolitan areas, male rates (113**) were generally above those recorded for females (111**), with the exceptions being Queensland, the Northern Territory and Tasmania.

Table 5.32: Deaths of people aged 15 to 64 years; years of potential life lost, State/Territory, 1992 to 1995
Standardised Death Ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	98**	90**	94**	96**	89**	108**	137**	81**[1]	94**
Other major urban centres[2]	104**	108**	97**	..	..	..	..	..	102**
Rest of State/Territory	112**	102**	109**	112**	118**	117**	278**	–[3]	113**
Whole of State/Territory	102**	94**	101**	100	97**	113**	210**	79**	100
Rest of State/Territory									
Males	114**	103**	108**	112**	119**	117**	273**	–[3]	113**
Females	108**	102**	110**	112**	117**	117**	287**	–[3]	111**

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3
Statistical significance: * significance at 5 per cent; ** significance at 1 per cent

Rest of State (New South Wales as the Standard)

There were an estimated 288,400 YPLL as a result of deaths of residents of the non-metropolitan areas of New South Wales aged from 15 to 64 years, 9 per cent more than were expected from the State rates (an SR of 109**). The elevated ratio is in contrast to the lower than expected rate calculated for residents of the capital cities and other major urban centres. Males accounted for nearly two thirds (63.9 per cent) of these YPLL, some 184,335 years.

Several SLAs had standardised ratios in the highest range mapped, the highest being 367** in the SLA of Brewarrina (with more than three and a half times the number of YPLL than were expected from the State rates). Ratios of at least twice the level expected were recorded in the SLAs of Central Darling (with an SR of 243**), Walgett (211**) and Bourke (209**). Relatively high ratios were also recorded in Unincorporated Far West (199**), Blayney Part A (175**), Lachlan (173**), Nundle (168**), Warren (168**), Gunning (164**) and Hay (162**). As can be seen from **Map 5.26**, a large proportion of the north-western region of the State was mapped in the highest range.

In total, 45 SLAs were mapped in the middle range, with SRs within 15 per cent of the level expected. Within this range 14 per cent more YPLL were estimated for residents of Eurobodalla and Orange and 15 per cent fewer were estimated in Inverell [Part A] and Wingecarribee.

At the other end of the scale only six SLAs had ratios of 30 per cent or more below the level expected from the State rates. These were Cabonne Part A (with a ratio of 53**), Conargo (56**), Wakool (58**), Jerilderie (60**), Dumaresq (66**) and Murrurundi (68**).

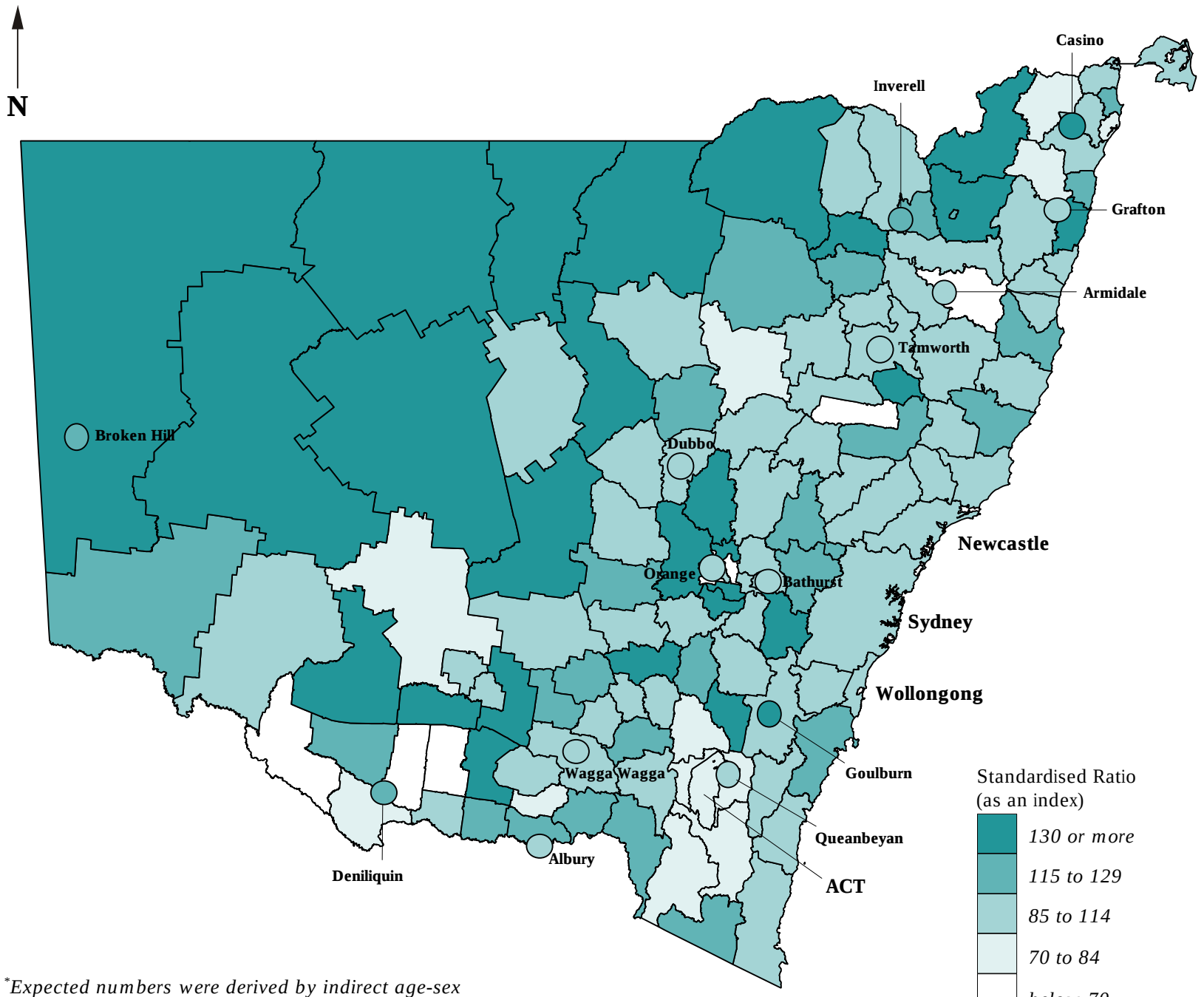
The most notable differences in the SRs for males and females were in Cabonne Part B, where the ratio recorded for females was zero and that recorded for males was 217**, representing 188 YPLL. In contrast, female ratios were substantially higher in Unincorporated Far West (302** compared to 157**), Brewarrina (459** compared to 319**) and Bingara (209** compared to 90**).

The greatest impact of premature death (when measured by YPLL by the population aged from 15 to 64 years) was recorded for residents of Shoalhaven (14,627 years), Coffs Harbour (8,675 years), Greater Taree (8,482 years), Hastings (8,445 years) and Wagga Wagga (8,223 years).

The only correlation of substantial significance at the SLA level was that recorded with the variable for Indigenous Australians (0.72). There were, however, positive correlations with the other indicators of socioeconomic disadvantage and inverse correlations with the indicators of high socioeconomic status. These results, together with the inverse correlation with the IRSD (-0.49), support the existence of an association at the SLA level between high rates of premature death and socioeconomic disadvantage.

Map 5.26
Deaths of people aged 15 to 64 years: years of potential life lost, New South Wales, 1992 to 1995

Standardised Ratio: number of years of potential life lost in each Statistical Local Area compared with the number expected*



Expected numbers were derived by indirect age-sex standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3 ***Details of map boundaries are in Appendix 1.2***

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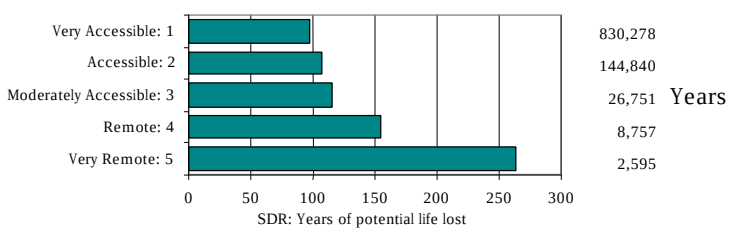

As a summary measure of the impact of premature deaths over the years from 1992 to 1995, the ARIA graph of years of potential life lost highlights the overall impact evident in the previous graphs. There is, again, a clear gradient evident in the ratios, with the most substantial increases occurring between the Remote (an SDR of 155) and Very Remote (263) categories. The influence of Indigenous deaths is again likely to be an important influence in the ratios for the most remote areas.

Source: Calculated on ARIA classification, DHAC

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Total Fertility Rate

Introduction

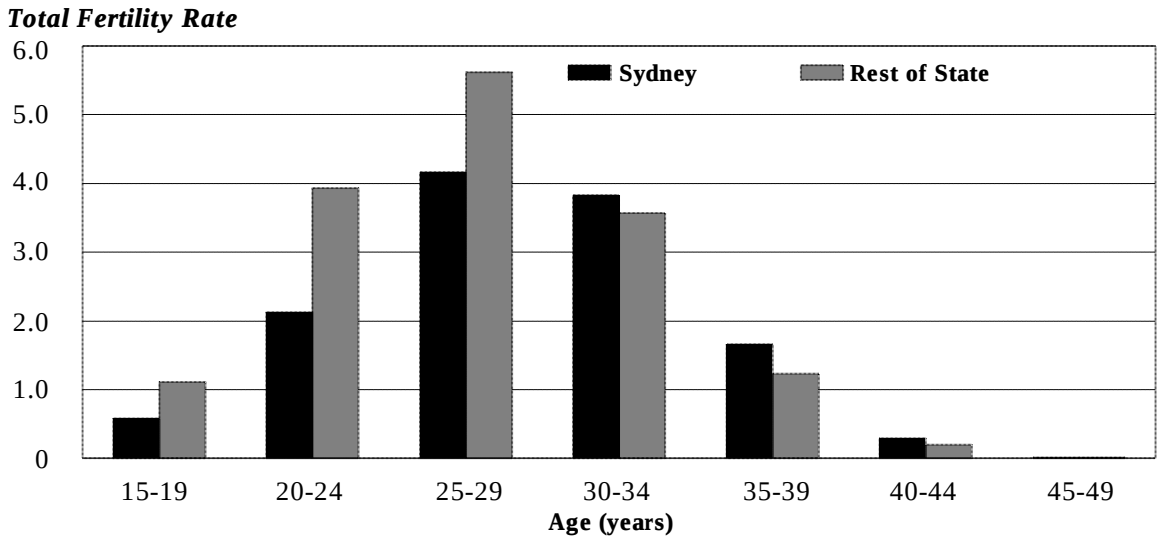
The Total Fertility Rate (TFR) is a measure of the production of children and is calculated from details of the age of the female population, the number of live births and the age of the mother at birth. It represents the mean number of children which females, living right through their child-bearing period, will (on average) bear, if they are subject to the fertility conditions holding in a particular area during the given period.

A TFR of 2.11 is the level at which a population replaces itself over the long term – ie. each woman has, on average, 2.11 births. In order to keep the ranges as simple as possible, the distribution mapped here has been split at 1.5 or 2.0 (and at intervals of 0.5 above and below), rather than at the replacement level figure of 2.11.

Details of the TFR are included in this chapter (rather than in Chapter 3 with the other demographic variables) because they have been compiled on the same boundaries as other data in this chapter. Common boundaries are important in enabling the correlation and cluster analysis to be undertaken, and to enhance the value of the maps in highlighting associations in the patterns of distribution.

The highest Total Fertility Rates (TFRs) in New South Wales are those for females aged from 25 to 29 years living in areas outside **Sydney** (**Figure 5.10**). Females aged from 25 to 29 years and living in **Sydney**, as well as those aged from 20 to 24 years and living in the non-metropolitan areas of New South Wales, and those aged from 30 to 34 years, regardless of residence, had the next highest TFRs. The largest difference in TFRs between residents of **Sydney** and the rest of New South Wales was in the 20 to 24 year age group.

Figure 5.10: Total Fertility Rate, Sydney and Rest of State, 1992 to 1995



Source: See *Data sources*, Appendix 1.3

Total Fertility Rate, 1992 to 1995

Capital city comparison

The capital cities recorded similar Total Fertility Rates (TFRs) over the four years from 1992 to 1995 (**Table 5.33**), with the exception of a higher rate in **Darwin** (2.06). The lowest TFR was that in **Adelaide** (1.64).

Table 5.33: Total Fertility Rate, capital cities, 1992 to 1995

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra[1]	All capitals
1.81	1.70	1.73	1.64	1.76	1.79	2.06	1.72	1.75

[1]Includes Queanbeyan (C)
Source: See *Data sources*, Appendix 1.3

Areas with fewer than 20 births over this four year period have been excluded from the analysis.

Sydney

The Total Fertility Rate (TFR) for female residents of **Sydney** over the four year period from 1992 to 1995 was 1.81, slightly lower than the State rate of 1.91. The highest TFRs were recorded for women aged from 25 to 29 years (a TFR of 4.17), followed by those aged from 30 to 34 (a TFR of 3.83) (**Figure 5.10**, previous page).

The majority of SLAs in **Sydney** had TFRs of between 1.50 and 2.50, with none in the highest range (greater than 2.50) and only two in the lowest (lower than 1.00).

Map 5.27 shows that SLAs with high rates of total fertility were located in the outer northern and western areas, with the highest TFRs recorded to the west of the city in Camden (with a rate of 2.47) and Auburn (with a rate of 2.43). Liverpool, Blacktown, Canterbury, Campbelltown, Wollondilly, Penrith, Fairfield, Blue Mountains, Bankstown and Holroyd, also located in the west, recorded TFRs ranging from 2.35 to 2.03. Those situated in the outer north included Wyong (2.32), Gosford (2.21) and Hawkesbury (2.12).

Just over one third (38.6 per cent) of SLAs in **Sydney** had TFRs of between 1.50 and 2.00. TFRs in this range were generally located just north or south of the Parramatta River, with the highest rates being in Botany (1.84), Rockdale (1.82), Sutherland (1.79), Warringah-Pittwater (1.75), Hornsby (1.73), Hunter's Hill (1.69), Kogarah (1.67), Hurstville (1.67), Concord (1.65) and Marrickville (1.64).

However, SLAs located in the inner city region generally recorded the lowest total fertility rates, with Waverley recording 1.24, Mosman 1.21, Leichhardt 1.17 and Woollahra 1.02. South Sydney, with a rate of 0.95 and North Sydney, with a rate of 0.91 had the lowest TFRs in metropolitan area.

Over the four year period from 1992 to 1995, there were 222,116 births to mothers aged from 15 to 49 years, with the largest numbers in Blacktown (17,668 births), Fairfield (13,012), and Penrith (11,997). At the other end of the scale fewer than 600 births were recorded in the SLAs of Hunter's Hill (524) and Sydney (395).

As would be expected, there was a correlation of substantial significance between high TFRs and high proportions of children aged from 0 to 4 years (0.90). There were also correlations of substantial significance at the SLA level with the variables for early school leavers (0.85) and unskilled and semi-skilled workers (0.79), and inverse correlations with managers and administrators, and professionals (-0.83) and high income families (-0.72). These results, together with the inverse correlation with the IRSD (-0.63), indicate the existence of an association at the SLA level between high Total Fertility Rates and socioeconomic disadvantage.

Newcastle

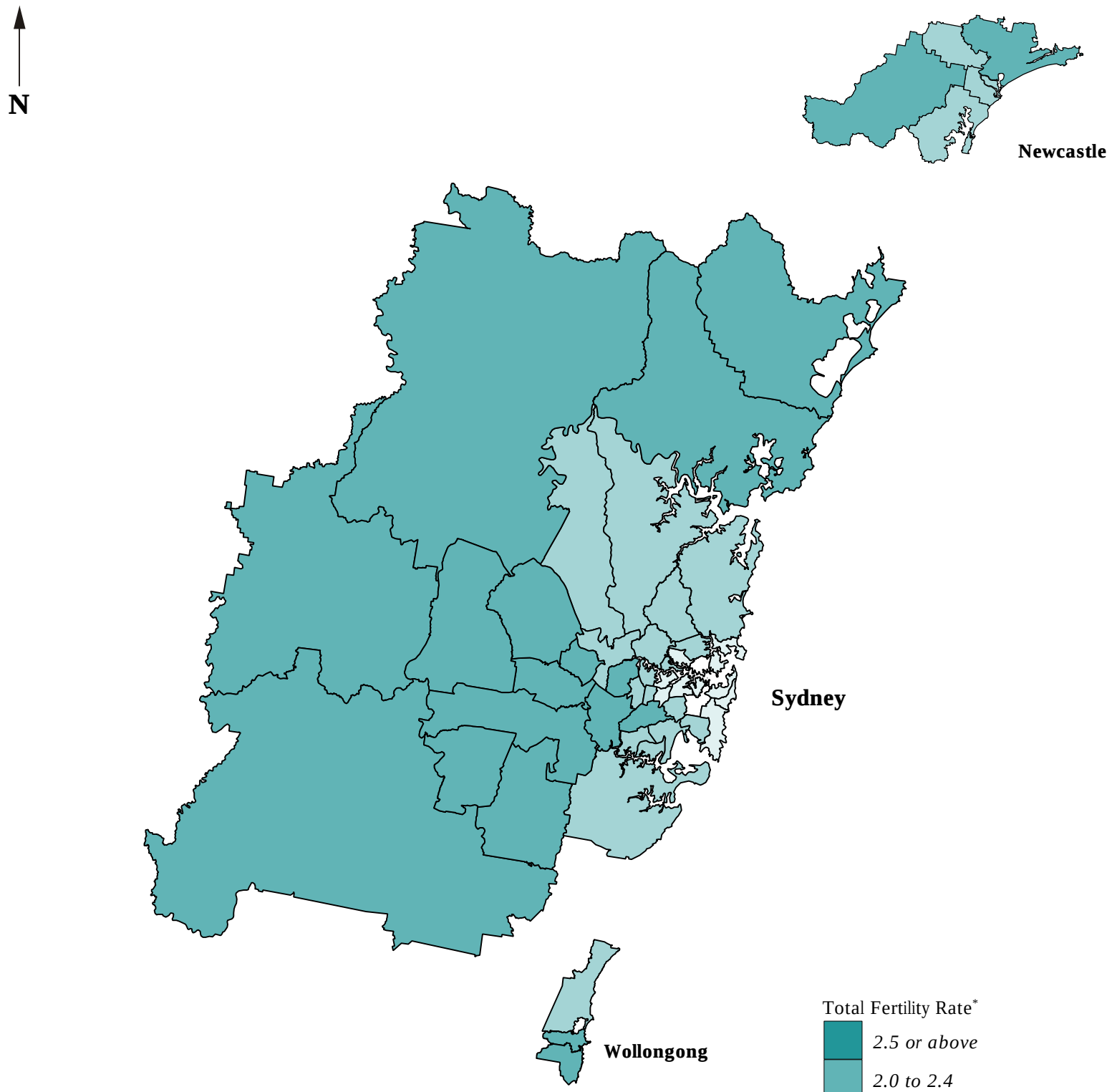
Females in the major urban centre of **Newcastle** had a TFR of 1.89 over the same period. The highest rates were recorded in the outer SLAs of Port Stephens, with a TFR of 2.23 and Cessnock, with a TFR of 2.11. Lake Macquarie, Maitland and the City of Newcastle had TFRs of 1.96, 1.94 and 1.64 respectively.

Wollongong

The TFR in **Wollongong** was 1.95, the highest among the major urban centres outside of the capital cities. TFRs of above 2.00 were recorded in both Kiama (2.15) and Shellharbour (2.08), while the City of Wollongong had a lower TFR of 1.90.

Map 5.27
Total Fertility Rate*, Sydney, Newcastle and Wollongong, 1992 to 1995

Total Fertility Rate* in each Statistical Local Area



*The Total Fertility Rate is a measure of the number of children a woman can expect to bear in her lifetime: it was derived by indirect age standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

Total Fertility Rate, 1992 to 1995

State/Territory comparison

The Total Fertility Rates (TFRs) were higher in the non-metropolitan areas of Australia in each State and the Northern Territory (**Table 5.34**). The Northern Territory had the highest non-metropolitan rate, as did **Darwin** among the capital cities, although there was less difference between the rates than was evident for the capital cities. The lowest non-metropolitan TFRs were in Tasmania (2.06) and Queensland (2.07). At the *Whole of State/Territory* level, the Northern Territory again had the highest rate and the Australian Capital Territory and South Australia had the lowest rates.

Table 5.34: Total Fertility Rate, State/Territory, 1992 to 1995

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	1.81	1.70	1.73	1.64	1.76	1.79	2.06	1.72[1]	1.75
Other major urban centres[2]	1.91	1.86	1.73	..	..	..	..	..	1.84
Rest of State/Territory	2.24	2.15	2.07	2.12	2.22	2.08	2.66	–[3]	2.16
Whole State/Territory	1.91	1.79	1.86	1.75	1.87	1.95	2.38	1.69	1.86

[1]Includes Queanbeyan (C)
[2]Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)
[3] Data included with ACT total
Source: See *Data sources*, Appendix 1.3

Rest of State

Over the four year period from 1992 to 1995 the TFR for the non-metropolitan areas of New South Wales was 2.24, 23.7 per cent above the **Sydney** rate of 1.81. The highest TFRs were recorded for women aged from 25 to 29 years (a TFR of 5.62), followed by those aged from 20 to 24 years (a TFR of 3.93) (see **Figure 5.10,** page 177).

As many of the TFRs in **Map 5.28** are relatively high, the ranges mapped have been changed from those used on the previous page, to enhance the pattern of differentiation in the map. The highest and lowest ranges have been set at greater than 3.00 and less than 1.50 respectively, rather than 2.50 and 1.00 as in the map of **Sydney**.

There was no notable pattern in the spatial distribution of TFRs across New South Wales, with the exception of a band of high rates through the centre of the State. The highest rates were recorded in the SLAs of Windouran (a TFR of 5.54) and Urana (3.37), located in the south-west; and Brewarrina (3.48), Bogan (3.02), Central Darling (3.00) and Coonamble (3.00) in the far north-west. Relatively high rates were also evident in Lachlan, with a TFR of 3.08 and Bingara, with a TFR of 3.07.

Generally speaking, there was little variation in TFRs across the areas mapped, with over half of the SLAs (59.8 per cent) recording rates of between 2.00 and 2.50. The highest TFRs in this range were in the SLAs of Wentworth (with a TFR of 2.49) and Warren (a TFR of 2.48). Lismore (2.00), Queanbeyan (2.00) and Dungog (2.01) recorded the lowest rates in this range.

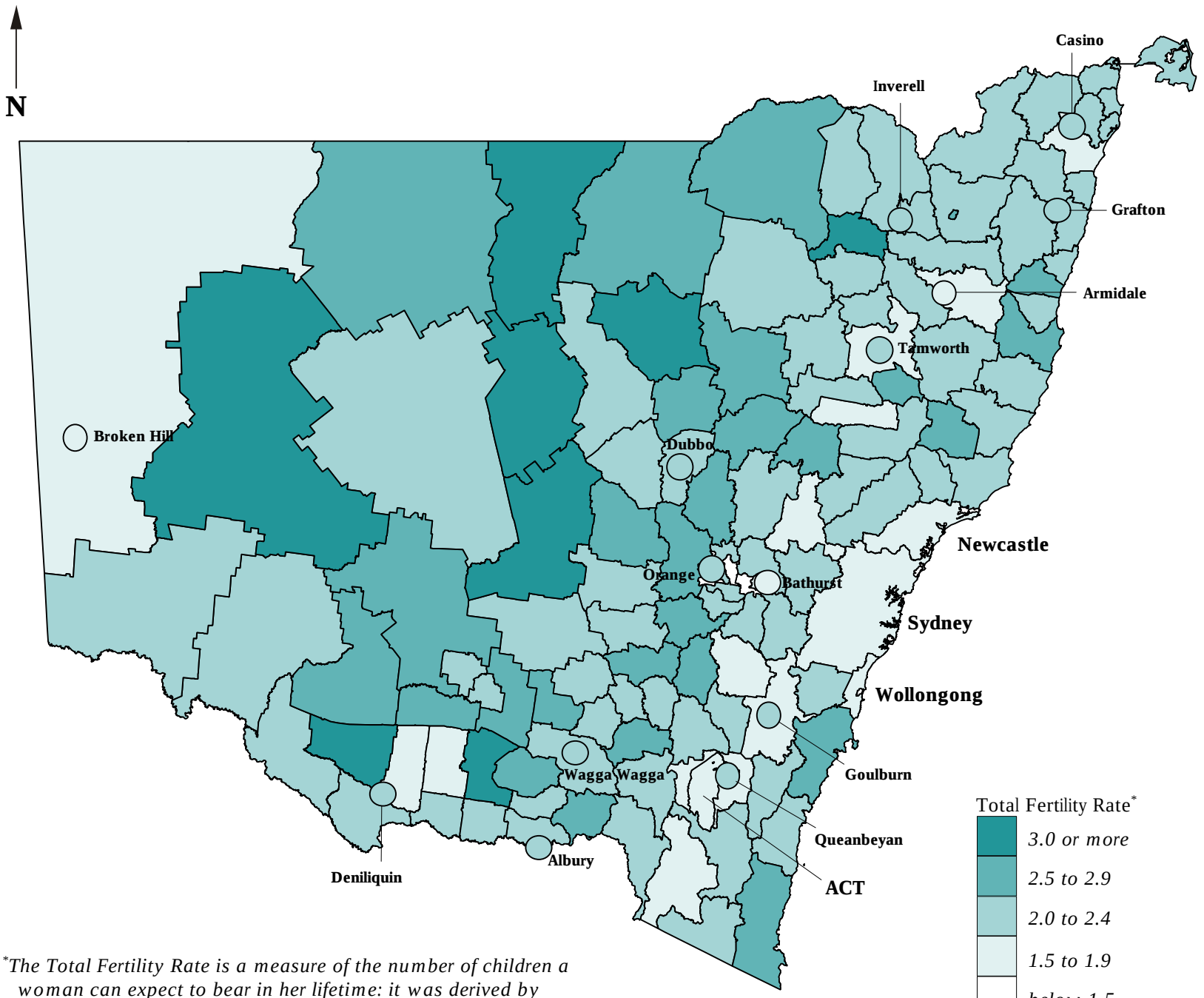
The lowest TFRs were recorded in Evans Part A (a TFR of 1.05 and 31 births) and Cabonne Part A (a TFR of 1.16 and 57 births).

In the non-metropolitan areas of New South Wales, the largest numbers of births to mothers aged from 15 to 49 years over the four years from 1992 to 1995 were recorded in the SLAs of Shoalhaven (4,465 births), Wagga Wagga (3,796), Coffs Harbour (2,983), Albury (2,747), and Dubbo (2,556).

The only correlations of meaningful significance at the SLA level were recorded with the variables for children aged from 0 to 4 years (0.51). There were, however, positive correlations with the indicators of socioeconomic disadvantage and inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.38), suggest the existence of an association at the SLA level between high Total Fertility Rates and socioeconomic disadvantage.

Map 5.28
Total Fertility Rate*, New South Wales, 1992 to 1995

Total Fertility Rate* in each Statistical Local Area

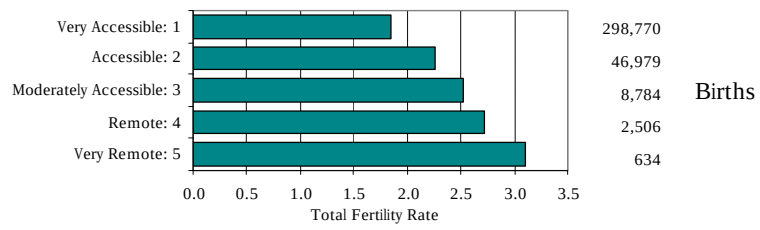


*The Total Fertility Rate is a measure of the number of children a woman can expect to bear in her lifetime: it was derived by indirect age standardisation, based on NSW totals

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



The Total Fertility Rate increases fairly evenly across the ARIA categories, from a low of 1.85 in the Very Accessible category to 3.11 in the Very Remote category. The high TFRs in the remote areas are likely to reflect the higher fertility rates of the Indigenous population.

Source: Calculated on ARIA classification, DHAC

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