5 Health status

Introduction

Differences in social and economic circumstances have been illustrated in the previous chapters for areas of the Australian Capital Territory. 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 the Australian Capital Territory, 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 'a 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 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.

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

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 69.

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.

Other 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 13 and 14 for further details. Thus, estimates of the completeness of Indigenous birth and death notifications for some States and

[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.

Territories (which are, in part, based on Census counts) will need to be reviewed.

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 (Muller, 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.

The homeless

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 'on 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 8) 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 registered over the four year period from 1992 to 1995. For statistical purposes, each death was allocated the code of the Statistical Local Area (SLA) of usual residence of the deceased.

However, during the data collection period a number of changes were made to some SLA boundaries in the Australian Capital Territory. As a result, it has been necessary to merge some SLAs when presenting data for deaths which were registered over the period from 1992 to 1995.

In describing these data in the text, groupings of merged SLAs have been assigned a generic name. The generic names of key SLA groupings, together with the SLAs which comprise the grouping, are shown in **Table 5.3**. Only those SLA groupings which appear regularly in the text have been included in the table.

Table 5.3: Generic names for merged Statistical Local Areas

Grouping of 1996 SLAs resulting from boundary changes	Generic name used in text
Banks, Condor, Tuggeranong-Balance	Banks/Condor/Tuggeranong (Balance)
Ngunnawal, Nicholls, Palmerston, Gungahlin-Hall (Balance)	Ngunnawal/Nicholls/Palmerston/Gungahlin (Balance)

Source: Compiled from project sources

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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 65, 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), has been estimated at the SLA level (using the synthetic prediction technique) and included in this atlas. The PCS 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).

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

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 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 47,000 people in the Australian Capital Territory (15.8 per cent of the population) had a disability. Of these, 44,000 (14.8 per cent of the population) were living in 'households', the remainder living in establishments such as nursing homes and hostels.

The majority (36,200, or 12.1 per cent of the population) of those with a disability had a handicap of varying levels of severity, ranging from profound (14.9 per cent of all people with a handicap), through severe (14.9 per cent) and moderate (20.4 per cent), to mild (31.2 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 9.1, 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 5.4**, 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 5.4: 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

Canberra-Queanbeyan (ACT as the standard)

Overall, the number of people (33,274 or 15.0 per cent of the population) reporting their health as fair or poor (as distinct from those who reported their health as being good, very good or excellent) in **Canberra-Queanbeyan** in 1995, was as predicted from the ACT rates (an SR of 100).

In Queanbeyan, an estimated 2,958 residents aged 18 years and over reported that their health was fair or poor (15.7 per cent of the population). This was 3 per cent more than expected from the ACT rates (an SR of 103).

Postcodes

Postcode areas with more highly elevated SRs tended to be located in the eastern and central areas of **Canberra** (**Map 5.1**). Ratios elevated by more than 10 per cent above the expected level were recorded in Eastern Fringe (with an SR of 116, 17.9 per cent of the population) and Kowen/Majura (112, 13.0 per cent of the population) although these represented relatively low numbers of 157 and 33 people respectively.

Fair or poor health was reported by between 5 and 10 per cent more residents than were expected from the ACT rates in the postcode areas of Woden Central (with an SR of 109**), Canberra Central (109**), Canberra North (108**, representing the highest proportion of 18.2 per cent of the area's population) and Tuggeranong North West (105). Elevated ratios were also recorded in Canberra South (with an SR of 104), Belconnen West (104*), Kambah and Tuggeranong South East (both with 102) and Belconnen (Balance) (101).

The lowest ratios were recorded in Gungahlin-Hall and Tuggeranong North East (both with an SR of 90**), Woden South and Woden North (both with 91**), Weston Creek (93**) and Belconnen South (94**).

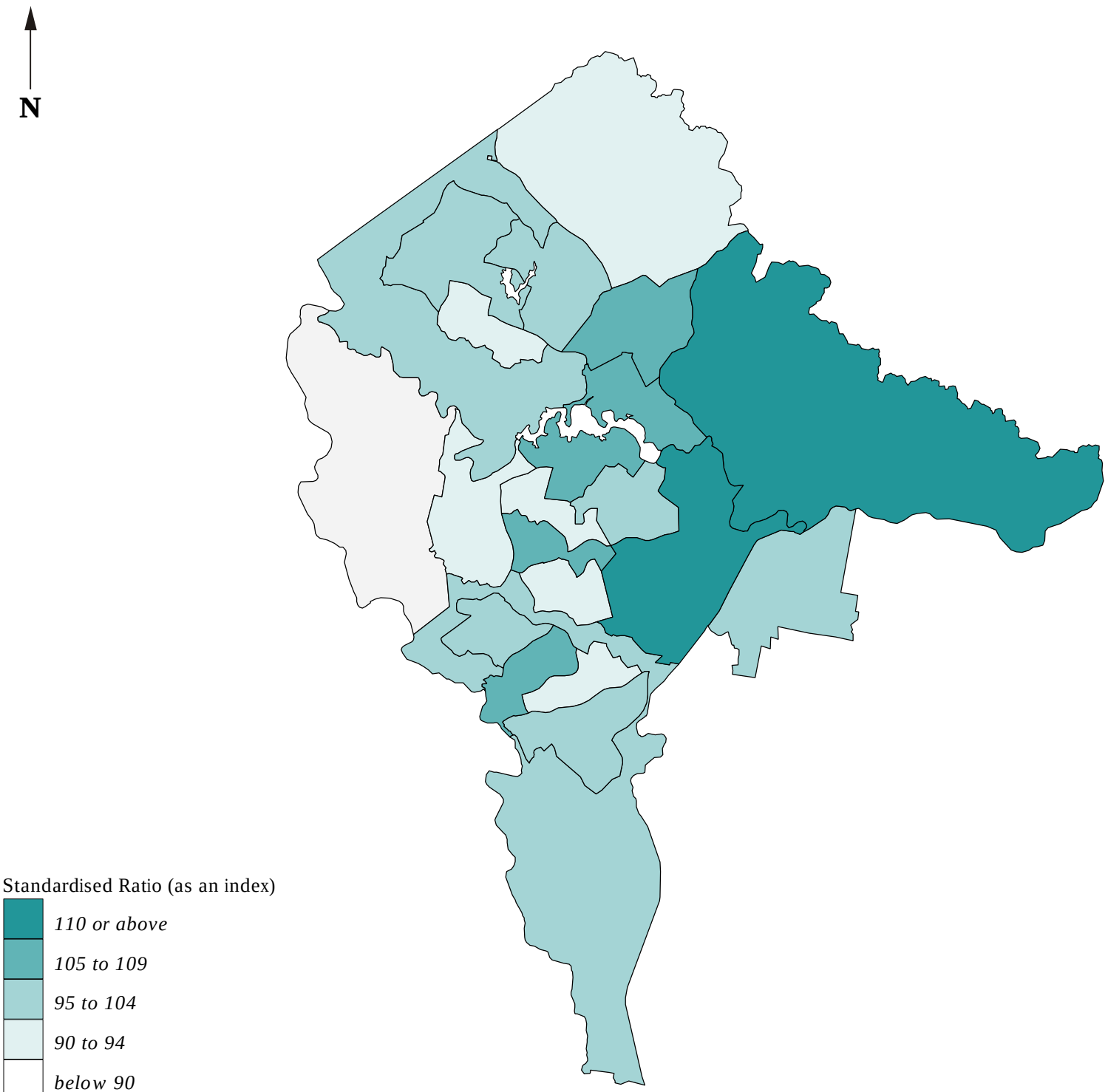
The largest numbers of people reporting fair or poor health were estimated for Belconnen West (3,972 people), Canberra North (3,313), Weston Creek (2,509) and Canberra Central (2,434).

There were correlations of meaningful significance with the variables for low income families (0.56) and private dwellings without a motor vehicle (0.50); and an inverse correlation with high income families (-0.74). These results, together with the inverse correlation of substantial significance with the IRSD (-0.76), indicate the existence of an association at the SLA level between high proportions of people reporting their health as fair or poor and socioeconomic disadvantage. There was an inverse correlation of substantial significance with the variable for the Physical Component Summary (-0.74).

The variable for people reporting their health as fair or poor was not calculated for the ACT-Balance Statistical Subdivision.

Map 5.1
People reporting their health as fair or poor, Canberra-Queanbeyan, 1995

Standardised Ratio: number of people in each area* compared with the number expected#



Standardised Ratio (as an index)

- *110 or above*
- *105 to 109*
- *95 to 104*
- *90 to 94*
- *below 90*
- *data excluded€*

*SLAs have been grouped to approximate postcode areas

#Expected numbers were derived by age-sex standardisation, based on ACT totals

€Data have been excluded when the population of the area is less than 100

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

Capital city comparison (Australia as the Standard)

The Physical Component Summary (PCS) 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

Canberra-Queanbeyan (ACT as the standard)

The PCS score recorded in **Canberra-Queanbeyan** in 1995 was 50.9, as expected from the ACT rates for a population of this size and age/sex composition.

The PCS score estimated for residents of Queanbeyan was 50.8, which was as expected from the ACT rates.

Postcode-based areas

The distribution of mean scores across **Canberra-Queanbeyan** is similar to that recorded for the IRSD, with the highest scores (indicating better physical health) in postcode areas of high socioeconomic status by ACT standards (**Map 5.2**). The range of mean scores was narrow, extending from 50.2 to 51.5, with the below average mean scores recorded in the central areas of **Canberra**.

The highest PCS score was estimated for residents of Gungahlin-Hall, with a mean score of 51.5. Relatively high scores were also recorded in the southern areas of Tuggeranong South and Tuggeranong North East and Kowen/Majura in the east (all with 51.3).

Above average PCS scores were also estimated for the central and western areas of Woden North (with a mean score of 51.2), Belconnen (Balance), Woden South and Belconnen South (all with 51.1) and Weston Creek, Canberra Central and Belconnen North (all with 51.0). Residents of the southern area of Tuggeranong South East also recorded a PCS score of 51.0.

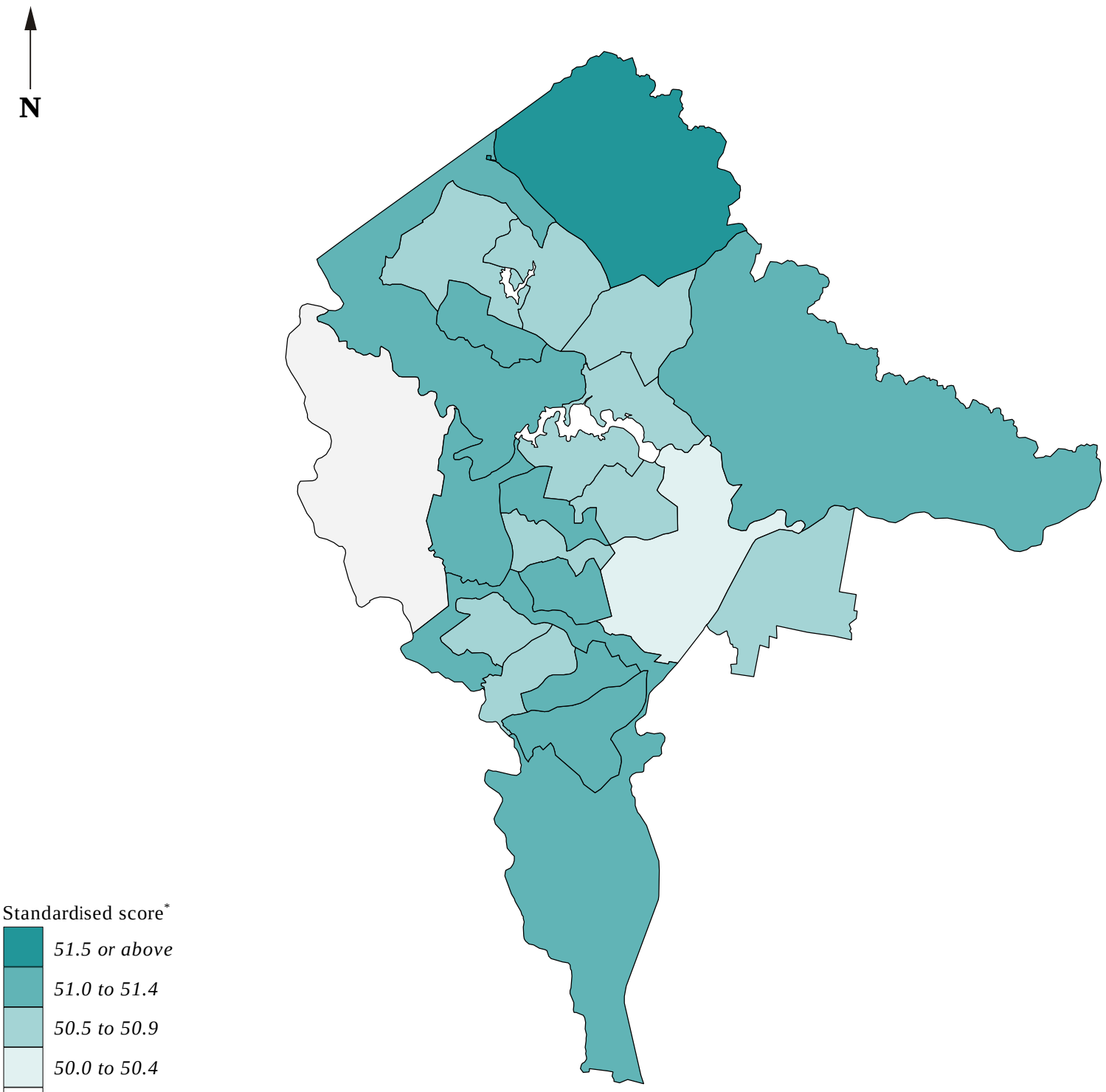
Below average scores were estimated for Kambah (with a PCS score of 50.8), Belconnen West and Canberra South (both with 50.7), Tuggeranong North West and Woden Central (both with 50.6) and Canberra North (50.5). The lowest PCS score, 50.2, was estimated for Eastern Fringe.

There were correlations of meaningful significance with the variables for high income families (0.70) and female labour force participation (0.51), and inverse correlations with the variables for low income families (of substantial significance, -0.77), the Indigenous population (-0.70) and unemployed people (-0.68). These results, together with the positive correlation of substantial significance with the IRSD (-0.75), indicate the existence of an association at the SLA level between high PCS scores and high socioeconomic status. There were inverse correlations of substantial significance with the variables for people reporting fair or poor health status (-0.74) and years of potential life lost (-0.71).

The Physical Component Summary was not calculated for the ACT-Balance Statistical Subdivision.

Map 5.2
Physical Component Summary*, SF-36, Canberra-Queanbeyan, 1995

mean Physical Component Summary (PCS) score in each area#



Standardised score*

- *51.5 or above*
- *51.0 to 51.4*
- *50.5 to 50.9*
- *50.0 to 50.4*
- *below 50.0*
- *data excluded¢*

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

#SLAs have been grouped to approximate postcode areas

¢Data have been excluded when the population of the area is less than 100

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

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 5.6**). Most other capital cities had SRs in 1993 which were close to the level expected from the Australian rates.

Table 5.6: 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.

Canberra-Queanbeyan (ACT as the Standard)

In 1993, there were 33,057 people with a handicap resident in **Canberra-Queanbeyan**, just one per cent fewer than expected from the ACT rates (an SR of 99*).

Statistical Local Areas (SLAs)

The majority of SLAs mapped in the highest range were located in the central area of **Canberra**, and all SLAs mapped in the lowest two ranges were located in the southern region of the city (**Map 5.3a**). Over half (57.3 per cent) of the SLAs in **Canberra-Queanbeyan** had SRs within five per cent of the level expected from the ACT rates.

The two highest ratios, representing relatively low numbers of people with a handicap, were recorded in Acton (with an SR of 179*, and 14 people) and Symonston (an SR of 162 and nine people). Other SLAs with ratios elevated by more than 10 per cent included Barton (with an SR of 129*), Kingston (119*), Braddon (118**), Turner (115*), Reid (115*), Ainslie (110**) and Lyneham (110*).

The lowest ratios were recorded in Calwell (with an SR of 87**), Theodore (87*), Bonython (87) and Banks/Conder/Tuggeranong (Balance) (an SR of 87 representing just nine people with a handicap). Low ratios were also recorded in Isabella Plains (89*) and Chisholm (91*).

The largest numbers of people with a handicap lived in Kambah (1,750 people), Wanniassa (994), Kaleen (869) and Narrabundah (795).

There were 2,454 people in Queanbeyan with a handicap, 14 per cent fewer than expected from the ACT rates (SAR of 86**).

Postcode-based areas

The highest ratio at the postcode level was recorded in Eastern Fringe (an SR of 113) (**Map 5.3b**). Ratios between 105 and 109 were recorded in a core of central-eastern postcode areas formed by Canberra Central (with an SR of 108**), Canberra North (108**), Kowen/Majura (108), Canberra South (107**) and Woden Central (106).

The lowest ratios were recorded Tuggeranong South East (90**) and Tuggeranong North East (95) in the south, and in Belconnen North, Woden North and Woden South (all with an SR of 97).

The largest numbers of people with a handicap at the postcode level lived in Belconnen West (4,135 people), Canberra North (3,740) and Weston Creek (2,915).

There was no consistent evidence in the correlation analysis of an association at the SLA level in **Canberra** between high levels of people with a handicap and socioeconomic status.

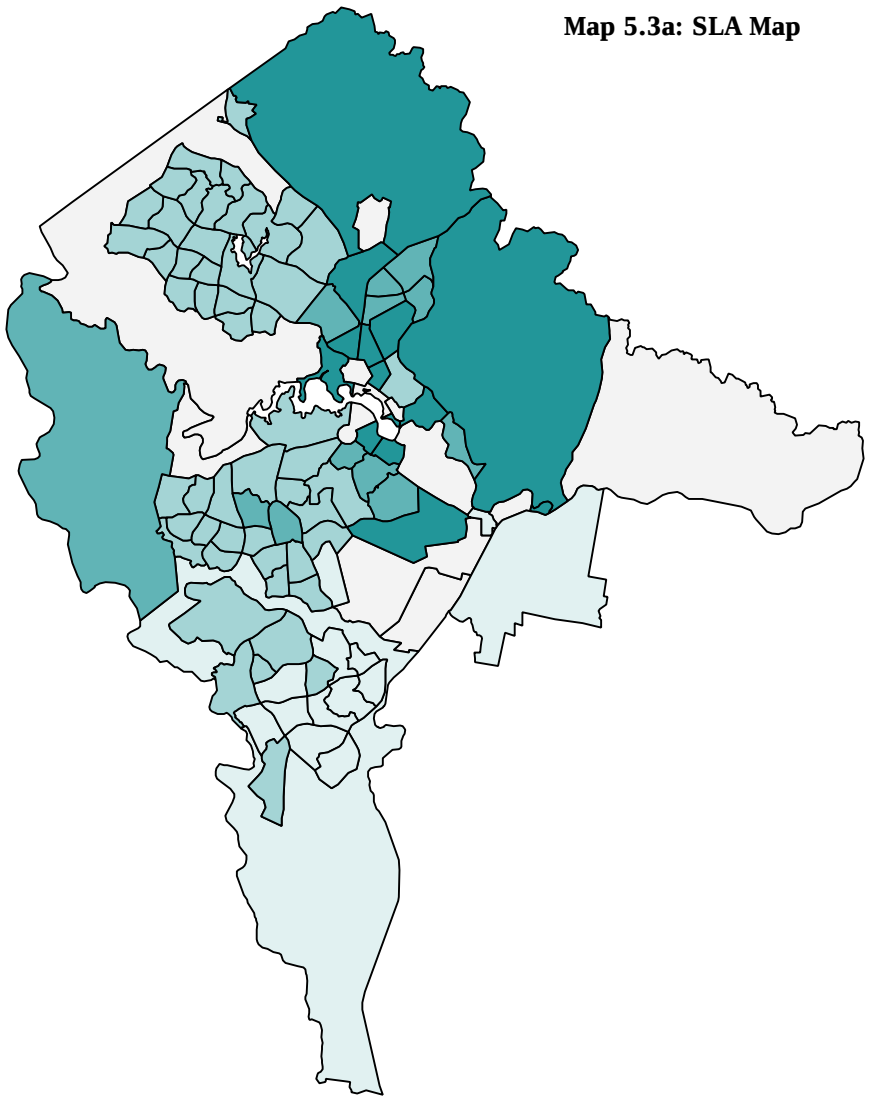
There were estimated to be 34 people in the ACT-Balance Statistical Subdivision with a handicap, 5 per cent fewer than expected from the ACT rates (an SAR of 95).

Map 5.3
Estimated number of people with a handicap, Canberra-Queanbeyan, 1993

Standardised Ratio: number of people in each area compared with the number expected*

N

Map 5.3a: SLA Map



Map 5.3b: Postcode Map#

Standardised Ratio (as an index)

- 110 and above
- 105 to 109
- 95 to 104
- 85 to 94
- below 85
- *data excluded€*

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

#SLAs have been grouped to approximate postcode areas

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected cases

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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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.

Australian Capital Territory

The number of deaths in the Australian Capital Territory over the nine year period from 1986 to 1995 increased by 8.4 per cent, rising from 1,028 in 1986 to 1,114 in 1995. Male deaths increased by 6.7 per cent, while a more substantial increase of 10.4 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 17.9 per cent). In 1995, there were 21 infant deaths (6 males and 15 females) recorded in the Australian Capital Territory, a decrease of 40.0 per cent since 1986. There was also a decrease in the number of deaths of people aged from 15 to 64 years, down by 3.2 per cent, from 348 deaths in 1986 to 337 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).

Australian Capital Territory

In the Australian Capital Territory, 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 53.8 per cent (**Figure 5.2**). Other large decreases were recorded for deaths from accidents, poisonings and violence (28.4 per cent); respiratory system diseases (9.4 per cent); and cancer (2.1 per cent).

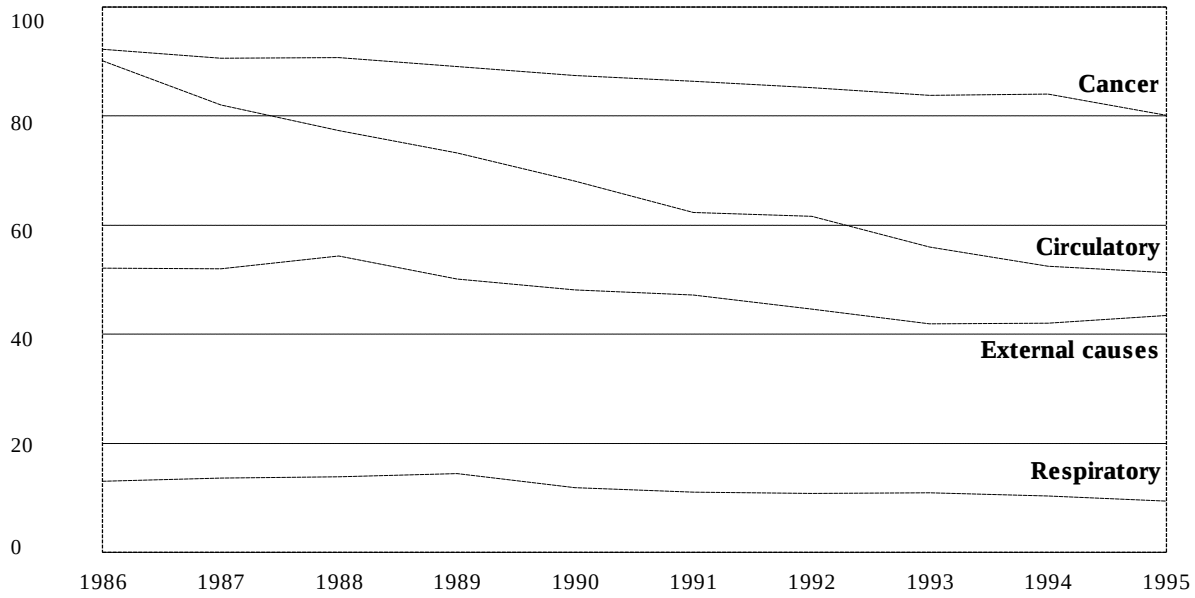
Changes in death rates by age group and sex, 1986 to 1995

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

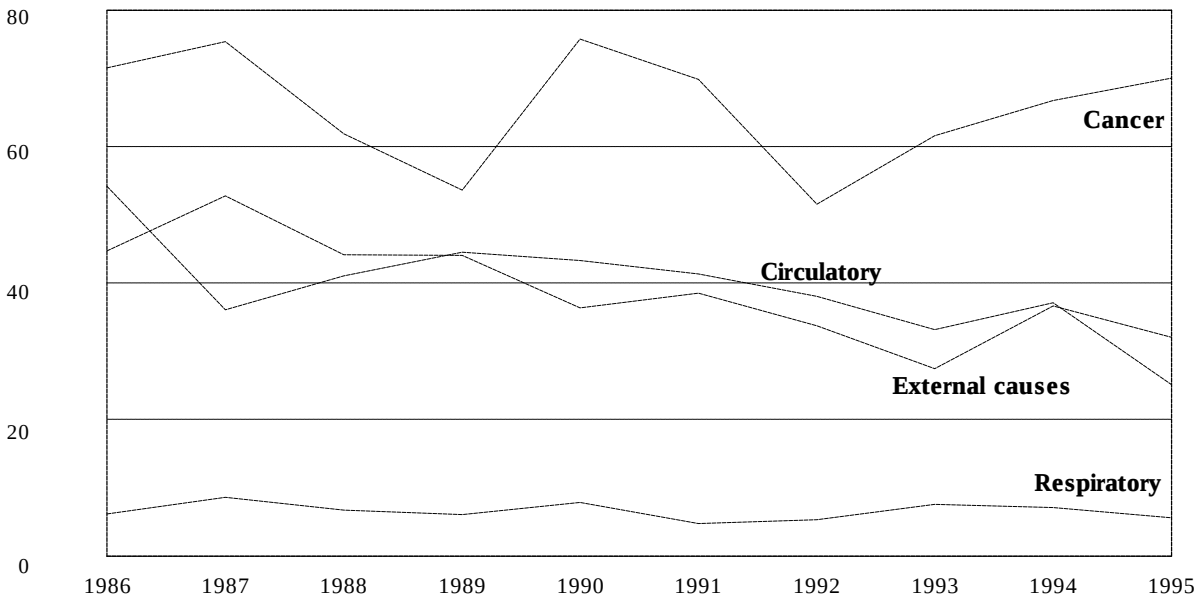
Deaths per 100,000



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, Australian Capital Territory

Deaths per 100,000



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.

Australian Capital Territory

In the Australian Capital Territory, premature death rates of males (down by 19.2 per cent) and females (19.8 per cent) declined at similar rates. Female death rates from diseases of the circulatory system decreased by 67.1 per cent, while male death rates decreased by a lower 48.8 per cent, and female death rates from the combined causes of accidents, poisonings and violence declined 58.9 per cent, compared with 14.6 per cent for males. Death rates recorded for malignant neoplasms over this nine year period showed the reverse of this pattern. Between 1986 and 1995, male death rates from malignant neoplasms decreased at a rate of 19.8 per cent, while female death rates increased by 17.8 per cent. Although the number of deaths due to diseases of the respiratory system decreased by only 9.4 per cent over the nine year period, this overall pattern was the result of a 34.3 per cent decrease in female death rates (from 5.6 deaths per 100,000 population in 1986 to 3.7 in 1995) while there was an 11.8 per cent increase in male death rates (from 6.7 deaths per 100,000 population in 1986 to 7.4 in 1995).

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' sections has Australia as the standard (as do the tables in this section), whereas the discussion describing 'Canberra-Queanbeyan' has the Australian Capital Territory as the standard. In this way the capital cities, States, etc., can be compared with each other against the Australian rates, and the smaller area data within each State and Territory can be compared with 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 5.7** 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 5.7: Deaths by cause and age, Australian Capital Territory, 1992 to 1995

Age at death	Cancers	Circulatory system diseases	Respiratory system diseases	Accidents, poisonings & violence	All other causes	Total deaths
Infant	**0**	**1**	**1**	**5**	**82**	**89**
15 to 64 years	**532**	**277**	**54**	**273**	**201**	**1,337**
males	291	198	30	215	134	868
females	241	79	24	58	67	469
Other ages	**851**	**1,480**	**260**	**62**	**420**	**3,073**
All ages	**1,383**	**1,785**	**315**	**340**	**703**	**4,499**

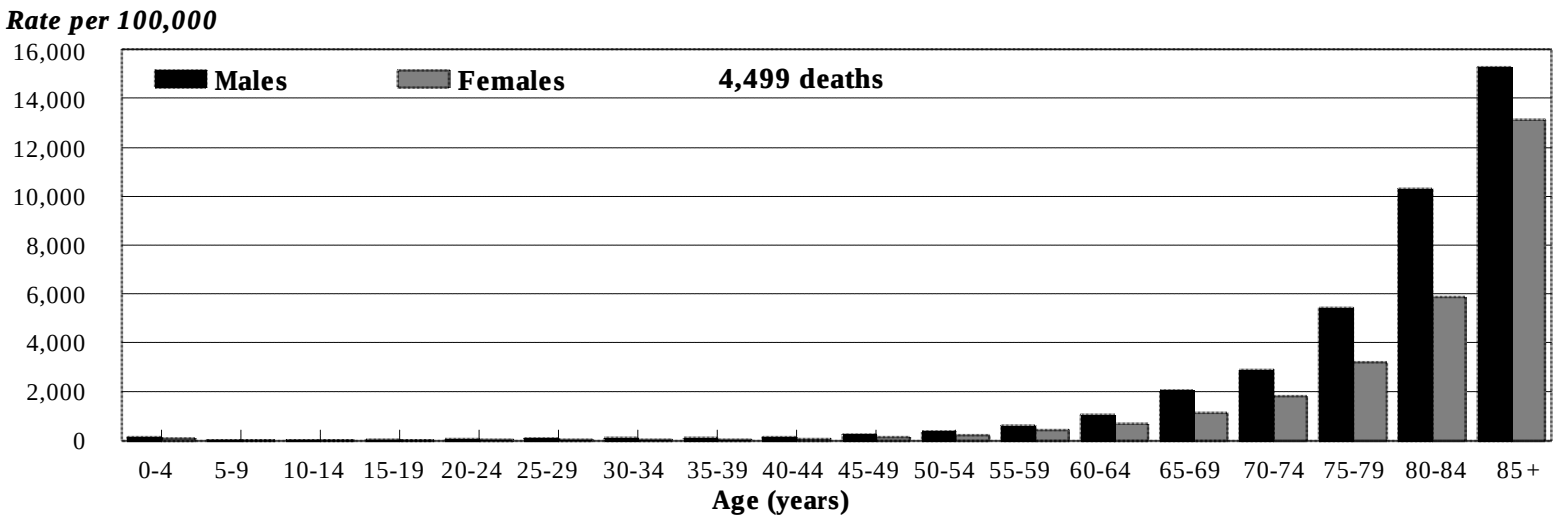
Source: ABS deaths bulletins, 1992 to 1995

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 84.

Figures 5.3 to **5.7** give a graphical presentation of death rates in the Australian Capital by age and sex for each of the major causes analysed (apart from infant deaths). Please note that the scale 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.

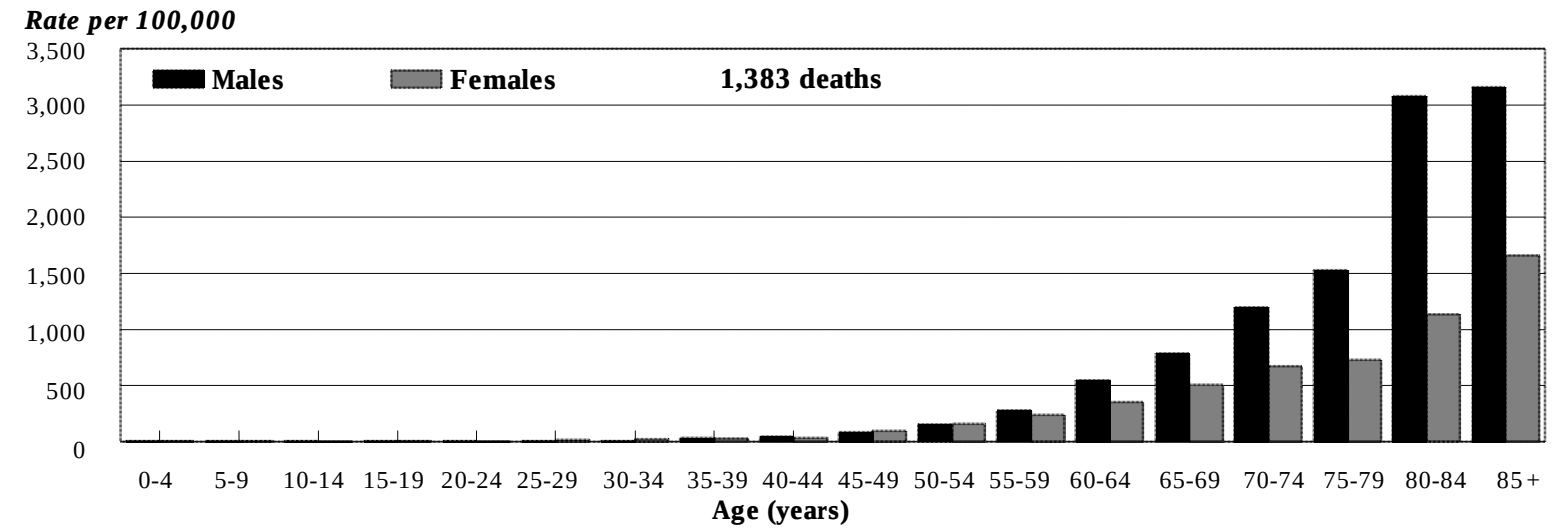
Figure 5.3: Deaths from all causes, by age and sex, the Australian Capital Territory, 1992 to 1995



Source: See *Data sources*, Appendix 1.3

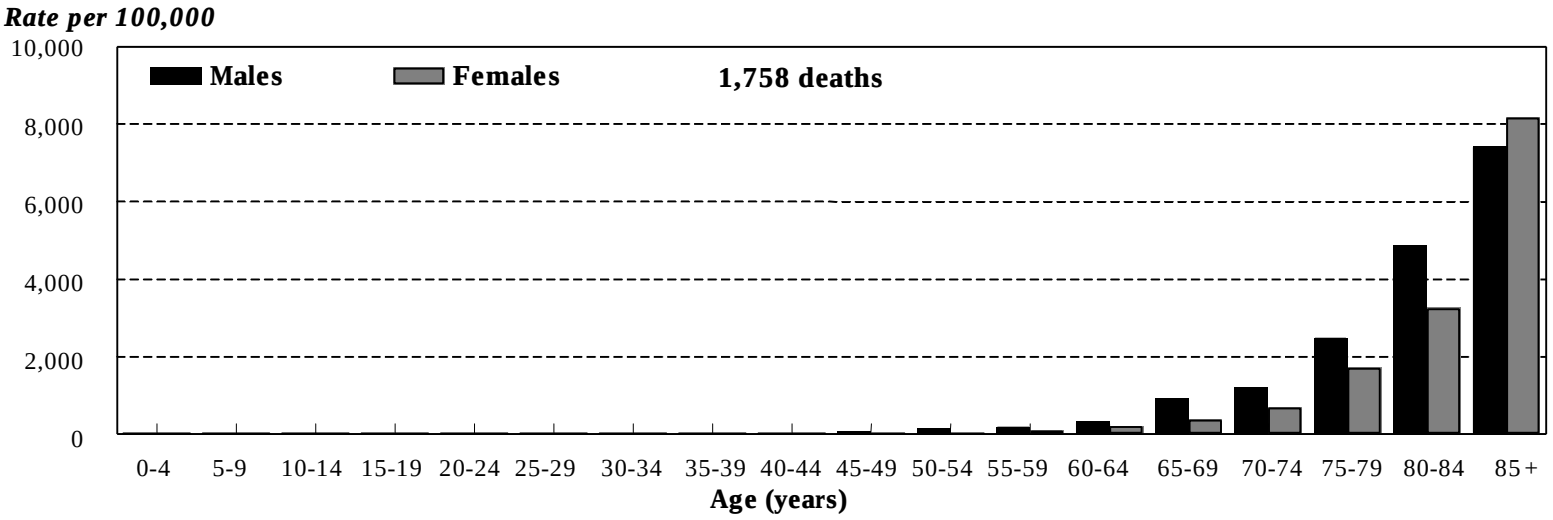
Figure 5.4 shows the predominance of males in deaths from cancer, whereas in **Figure 5.5** the similar pattern for deaths from circulatory system diseases is broken in the 85 years and over age group, where female death rates closely approximate those of males. Death rates from respiratory system diseases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

Figure 5.4: Deaths from cancer, by age and sex, the Australian Capital Territory, 1992 to 1995



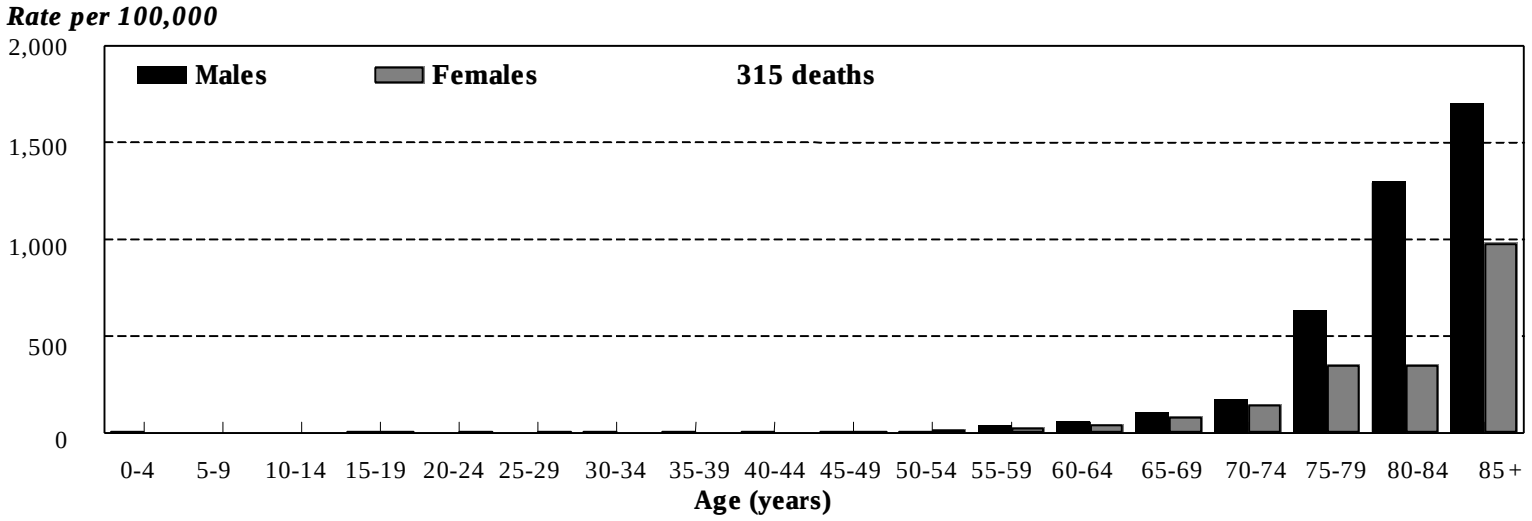
Source: See *Data sources*, Appendix 1.3

Figure 5.5: Deaths from circulatory system diseases, by age and sex, the Australian Capital Territory, 1992 to 1995



Source: See *Data sources*, Appendix 1.3

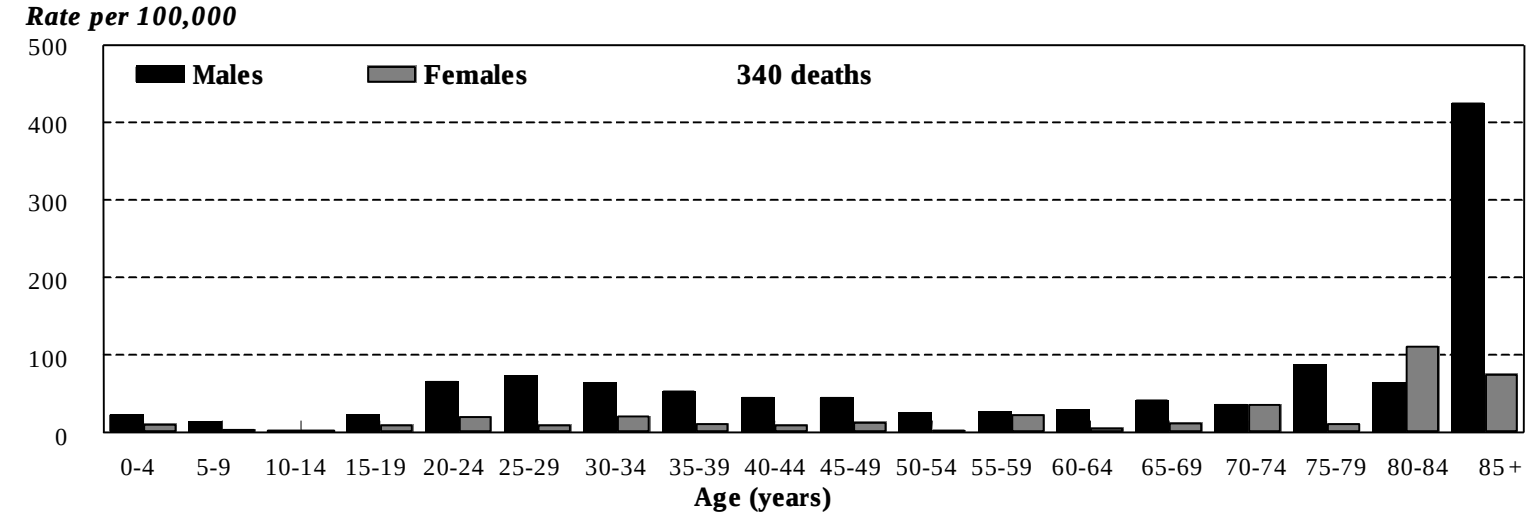
Figure 5.6: Deaths from respiratory system diseases, by age and sex, the Australian Capital Territory 1992 to 1995



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), in middle age (50 to 59) and in the oldest age group shown (85 years and over).

Figure 5.7: Deaths from accidents, poisonings and violence diseases, by age and sex, the Australian Capital Territory, 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 the Australian Capital Territory as a whole.

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 330 deaths of all ages from suicide in the Australian Capital Territory over the nine year period from 1986 to 1995. Of these, 93.0 per cent (307) were aged from 15 to 64 years and 24.5 per cent (81) were aged from 15 to 24 years at death. Over this time period there has been a 3.0 per cent decrease in the number of deaths recorded for suicides at all ages, dropping from 33 in 1986 to 32 in 1995. An even more substantial decrease was recorded among 15 to 24 year olds, where the number of suicides declined from 32 in 1986 to 29 in 1995, a decrease of 9.4 per cent.

Males predominated in these deaths, accounting for 79.1 per cent of all suicides of all ages, 79.2 per cent of 15 to 64 year olds and 75.3 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

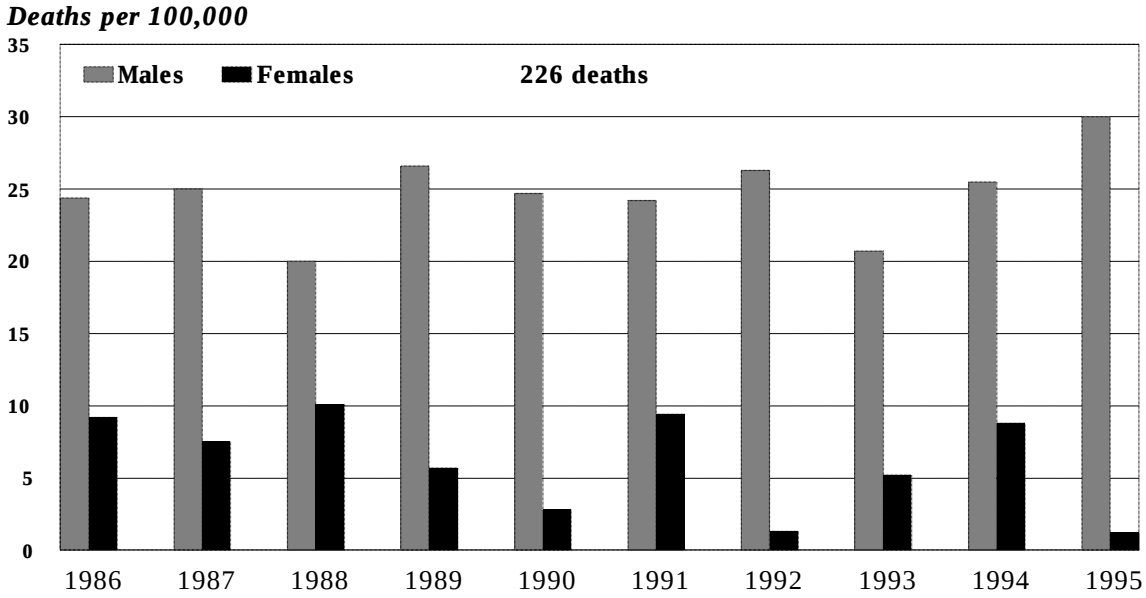
A study by the Health Department of Western Australia (1996) found that over the period from 1981 to 1993 attempted suicide rates were considerably higher among females than males, an age standardised rate of 162 compared to 105 per 100,000 person-years respectively. Female rates were highest in the 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.

In 1995, death rates from suicide among 25 to 64 year olds were substantially higher among males than among females, a rate of 30.0 per 100,000 population compared to 1.2 per 100,000, respectively. This was the largest of the differentials in the male and female rates for the years from 1986 to 1995 (**Figure 5.8**).

Rates of death from suicide were also substantially higher among males than females for the 15 to 24 year age group (**Figure 5.9**). In the first three years of data analysed, rates of death from suicide were higher for the 15 to 24 year age group than for the 25 to 64 year age group: in 1991 and later years the reverse was the case.

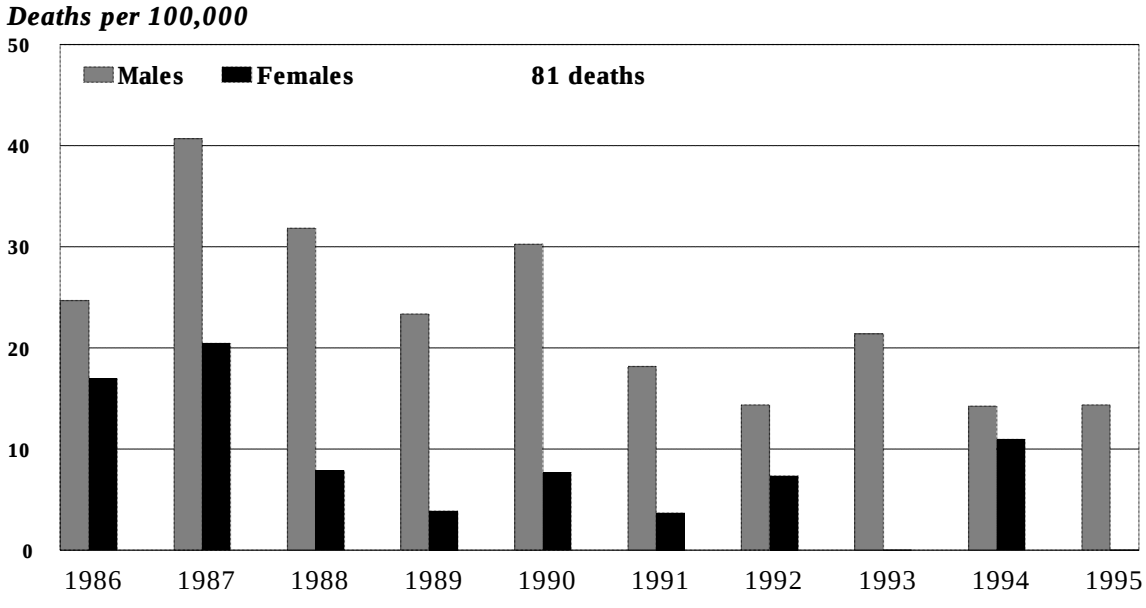
[5]Suicide is also an important cause of death at older ages.

Figure 5.8: Suicide rates of males and females aged from 25 to 64 years, Australian Capital Territory



Source: Based on data from the ABS

Figure 5.9: Suicide rates of males and females aged from 15 to 24 years, Australian Capital Territory



Source: Based on data from the ABS

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 5.8**). As noted earlier (page 79), 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 5.8: 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

Neonatal deaths (deaths of infants aged under 28 days) accounted for 70.8 per cent of all infant deaths in the Australian Capital Territory. 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.

Canberra-Queanbeyan (ACT as the standard)

Over the years from 1992 to 1995, there were 116 infant deaths of children resident in **Canberra-Queanbeyan**, a decline from an average 38 to 29 infant deaths per year between the two periods analysed.

There were only 116 infant deaths in **Canberra-Queanbeyan** over the four year period from 1992 to 1995, resulting in a relatively small number of deaths in this cause group for the majority of SLAs. Overall there were 5.9 infant deaths per 1,000 live births.

Statistical Local Areas (SLAs)

The only SLAs to record at least five deaths were Charnwood (five deaths) and Kambah (eight deaths), with 19.5 and 8.0 infant deaths per 1,000 live births, respectively. The remaining SLAs were not mapped for this variable as they had fewer than five infant deaths and were considered to have too few cases to produce reliable results

A total of 28 infant deaths were recorded in the SLA of Queanbeyan, an infant death rate of 13.7 per 1,000 live births.

Postcodes

Even at the postcode level, there were just nine postcode areas (including Queanbeyan) with five or more infant deaths (**Map 5.4**). The highest rate outside of Queanbeyan was 10.8 infant deaths per 1,000 live births, in Canberra South, accounting for seven infant deaths. The next highest rates were recorded in Kambah (8.0 infant deaths per 1,000 live births), Tuggeranong North East (7.8) and Belconnen South (6.4).

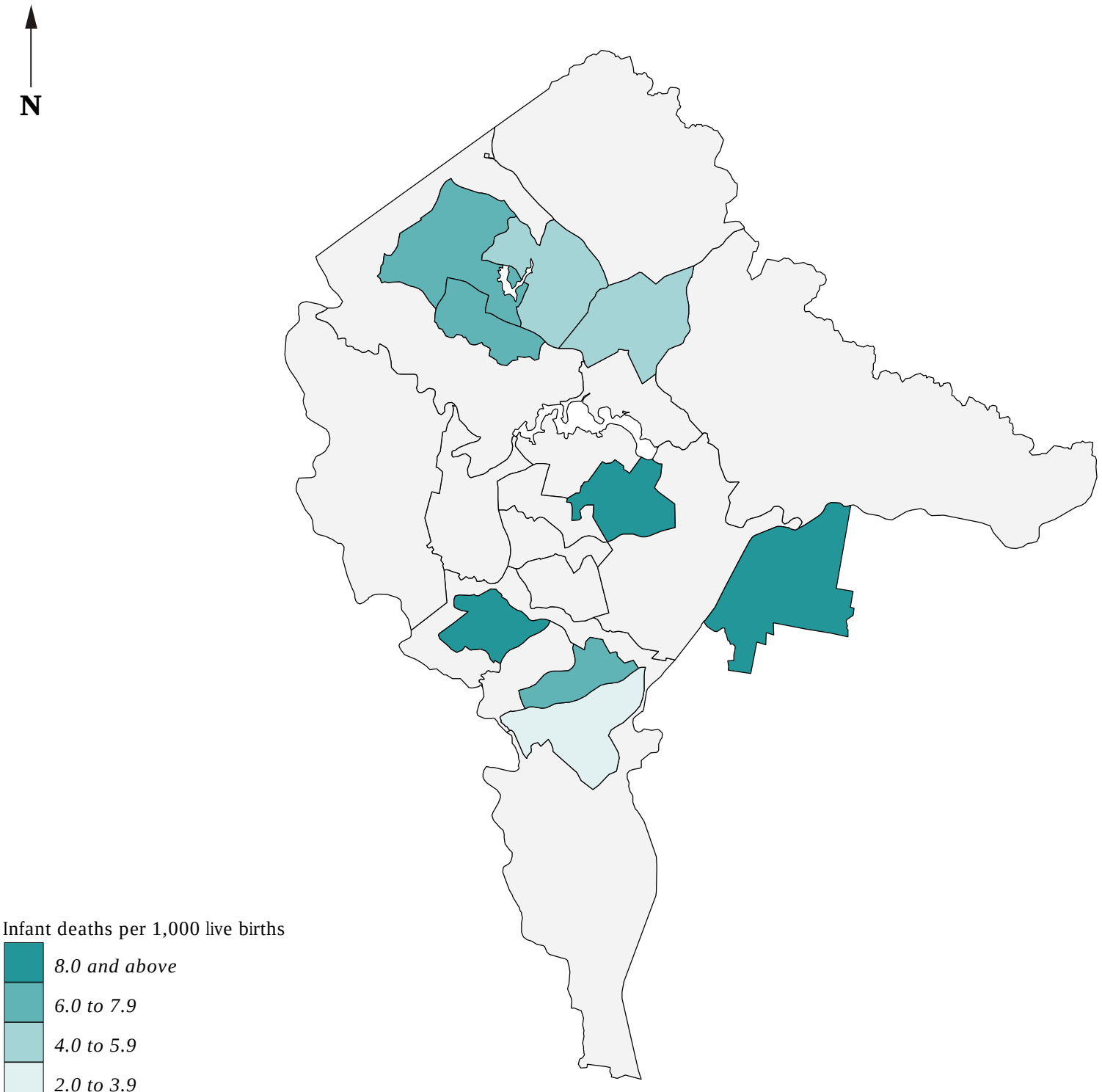
The largest numbers of infant deaths were recorded in Belconnen West (15 deaths) and Tuggeranong South East (11 deaths).

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

There were no infant deaths in the ACT-Balance Statistical Subdivision over this four year period.

Map 5.4
Infant deaths, Canberra-Queanbeyan, 1992 to 1995

infant deaths per 1,000 live births in each area*



Infant deaths per 1,000 live births

- *8.0 and above*
- *6.0 to 7.9*
- *4.0 to 5.9*
- *2.0 to 3.9*
- *below 2.0*
- *data excluded#*

*SLAs have been grouped to approximate postcode areas

#Data have been excluded when the population of the area is less than 100, or where there were fewer than five deaths

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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 5.9**. 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 5.9: 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 age of 15 to 64 years) for males over this period. There were 2,436 deaths of males in the Australian Capital Territory over the period from 1992 to 1995, of which 868 (35.6 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.

Canberra-Queanbeyan (ACT as the Standard)

There were 244 deaths of 15 to 64 year old males in **Canberra-Queanbeyan** each year in the period from 1992 to 1995, down from 254 per year over the period from 1985 to 1989.

Statistical Local Areas (SLAs)

SLAs not mapped for this variable (ie. where fewer than five deaths were expected) were located in the eastern and western regions. Ratios in the SLAs mapped were distributed throughout **Canberra-Queanbeyan** in no notable pattern (**Map 5.5a**).

In total, 13 SLAs had SDRs for premature deaths of males elevated by 30 per cent or more. The SLA of Ainslie had the highest ratio, with more than two and a half times the number of deaths expected from the ACT rates, an SDR of 259**. Statistically significant ratios were also recorded in the SLAs of Narrabundah, Braddon and Lyons, with SDRs of 230**, 221**, and 167* respectively.

At the other end of the scale the SLAs of Bruce, with a ratio of 19, McKellar (24*), and Isabella Plains (30*), all recorded substantially lower SDRs: however, these ratios represented just one, two and three male deaths, respectively. Other statistically significant ratios below the level expected from the ACT rates were recorded in Torrens and Fisher.

The SLA of Kambah recorded the largest number of male deaths from all causes in the 15 to 64 year age group, with 50 deaths.

More than 20 deaths were also recorded for residents of Ainslie (34 deaths), Narrabundah (32), and Wanniassa and Kaleen (both with 23 deaths). Residents in the majority of SLAs recorded fewer than ten deaths over these four years.

There were 114 deaths of males residents of Queanbeyan aged from 15 to 64 years over the four year period from 1992 to 1995, 45 per cent more deaths than expected from the ACT rates (an SDR of 145**).

Postcode-based areas

The highest SDRs at the postcode level were clustered in the eastern central region of **Canberra-Queanbeyan** (**Map 5.5b**). Although the postcode area of Eastern Fringe recorded the highest ratio (an SDR of 209*), this accounted for just 11 deaths. Other highly elevated ratios were recorded in Canberra North (with an SDR of 148**), Canberra Central and Canberra South (both with 145**). The only other areas with elevated ratios were Woden Central (123) and Tuggeranong South (SDR of 110).

The lowest SDRs were recorded for males from Gungahlin-Hall (with an SDR of 62) and adjacent Belconnen North (69*). Tuggeranong South East (with an SDR of 73*) was the only other area to record a low ratio of statistical significance.

The largest numbers of deaths of 15 to 64 year old males were recorded in Canberra North (120 deaths), Belconnen West (108) and Canberra Central (81).

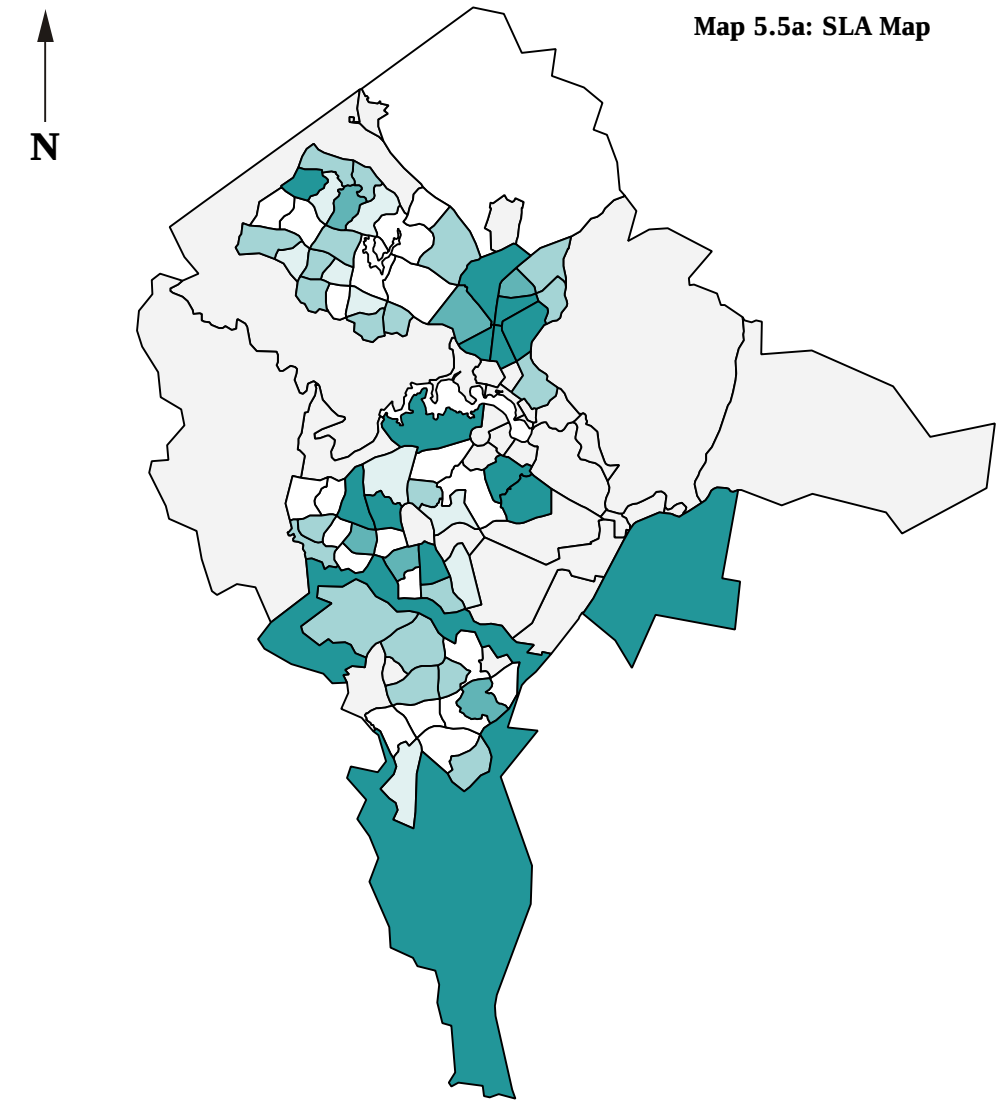
Correlations of substantial significance were recorded with the variables for low income families (0.85), unemployed people (0.84) and the Indigenous population (0.76). Inverse correlations of substantial significance were recorded with high income families (0.77) and female labour force participation (-0.76). These results, together with the inverse correlation of substantial significance with the IRSD (-0.83), indicate the existence of an association at the postcode level between high rates of premature male deaths and socioeconomic disadvantage.

There were three premature deaths of males in the ACT-Balance Statistical Subdivision, too few cases from which to calculate reliable rates.

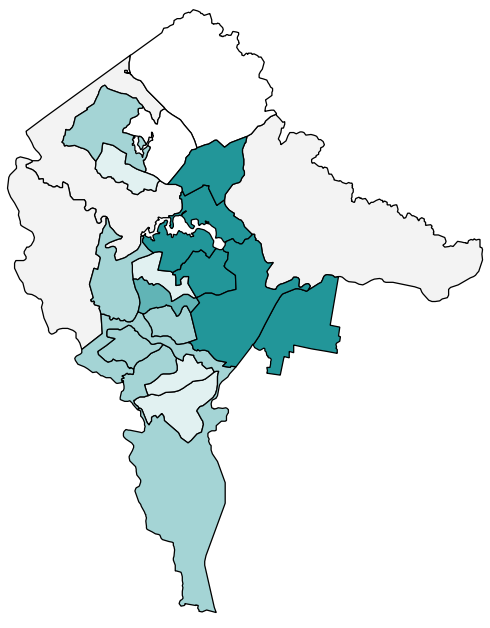
Map 5.5
Deaths of males aged 15 to 64 years from all causes, Canberra-Queanbeyan, 1992 to 1995

Standardised Death Ratio: number of deaths in each area compared with the number expected*

Map 5.5a: SLA Map



Map 5.5b: Postcode Map#



Standardised Death Ratio (as an index)

- 130 and above
- 115 to 129
- 85 to 114
- 70 to 84
- below 70
- *data excluded*€

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

#SLAs have been grouped to approximate postcode areas

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected deaths

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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 5.10**. 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 5.10: 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 (death 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 2,063 deaths of female residents of the Australian Capital Territory, of whom 22.7 per cent were aged from 15 to 64 years. Females most likely to die prematurely include Aboriginal and Torres Strait Islander women; single mothers; those earning low incomes; and those who were unemployed.

Canberra-Queanbeyan (ACT as the Standard)

There were 131 deaths of 15 to 64 year old females in **Canberra-Queanbeyan** each year over the period from 1992 to 1995, up from 124 per year over the years from 1985 to 1989. Female deaths accounted for just over one third (34.8 per cent) of all premature deaths in **Canberra-Queanbeyan,** a total of 522 deaths.

Statistical Local Areas (SLAs)

SLAs with five or more expected deaths for this variable were distributed throughout the inner suburbs in no notable pattern (**Map 5.6a**). Most of the remaining (outer) SLAs have not been mapped, as they were considered to have too few deaths to produce reliable results.

The south-eastern SLA of Narrabundah had the highest ratio in **Canberra-Queanbeyan**, with almost three times more deaths than expected for this age group (an SDR of 280**). Waramanga (with an SDR of 225**), O'Connor (198**), Holt (185*) and Ainslie (178*) all had highly elevated ratios. In total, 22 SLAs (22.0 per cent of all SLAs) had more deaths than expected from the ACT rates.

Of the SLAs mapped in the middle range (within 15 per cent of the level expected) those with elevated ratios included Curtin (with an SDR of 113), Pearce (107) and Garran (105), situated in the south-west, Hackett (112), located in the north-east, and Cook (100), in the north-west.

Residents of 30 SLAs in **Canberra-Queanbeyan** had fewer deaths than expected from the ACT rates, with all but two SLAs recording fewer than ten deaths. Calwell had the lowest ratio, with 83 per cent fewer deaths than expected (an SDR of 17*). Lyons (34) and Giralang (35) also recorded very low ratios, although there was only one death in Calwell and two in each of Lyons and Giralang.

The largest numbers of deaths of females aged from 15 to 64 years were recorded for residents of Narrabundah (25 deaths), Kambah (23) and O'Connor (17 deaths).

Over the four year period from 1992 to 1995, there were 54 deaths of 15 to 64 year old female residents of Queanbeyan, 33 per cent more deaths than expected from the ACT rates (an SDR of 133*).

Postcode-based areas

Five of the postcode areas in **Canberra-Queanbeyan** had elevated SDRs for deaths of 15 to 64 year old females (**Map 5.6b**). The only ratios of statistical significance were in Canberra South (an SDR of 193**) and Canberra North (136**), which had 93 per cent and 36 per cent more female deaths than were expected from the ACT rates, respectively. Elevated ratios were also recorded in Canberra Central (with an SDR of 121), Belconnen South (114) and Belconnen West (101).

Four postcode areas had ratios in the lowest range mapped. Although Gungahlin-Hall recorded the lowest ratio of 47, this represented just three deaths (when 6.4 deaths were expected from the ACT rates). Statistically significant ratios were recorded for deaths of females from Tuggeranong North East (an SDR of 51*), Belconnen North (56*) and Tuggeranong South East (60*).

The largest number of deaths of 15 to 64 year old females was recorded in Canberra North (69 deaths).

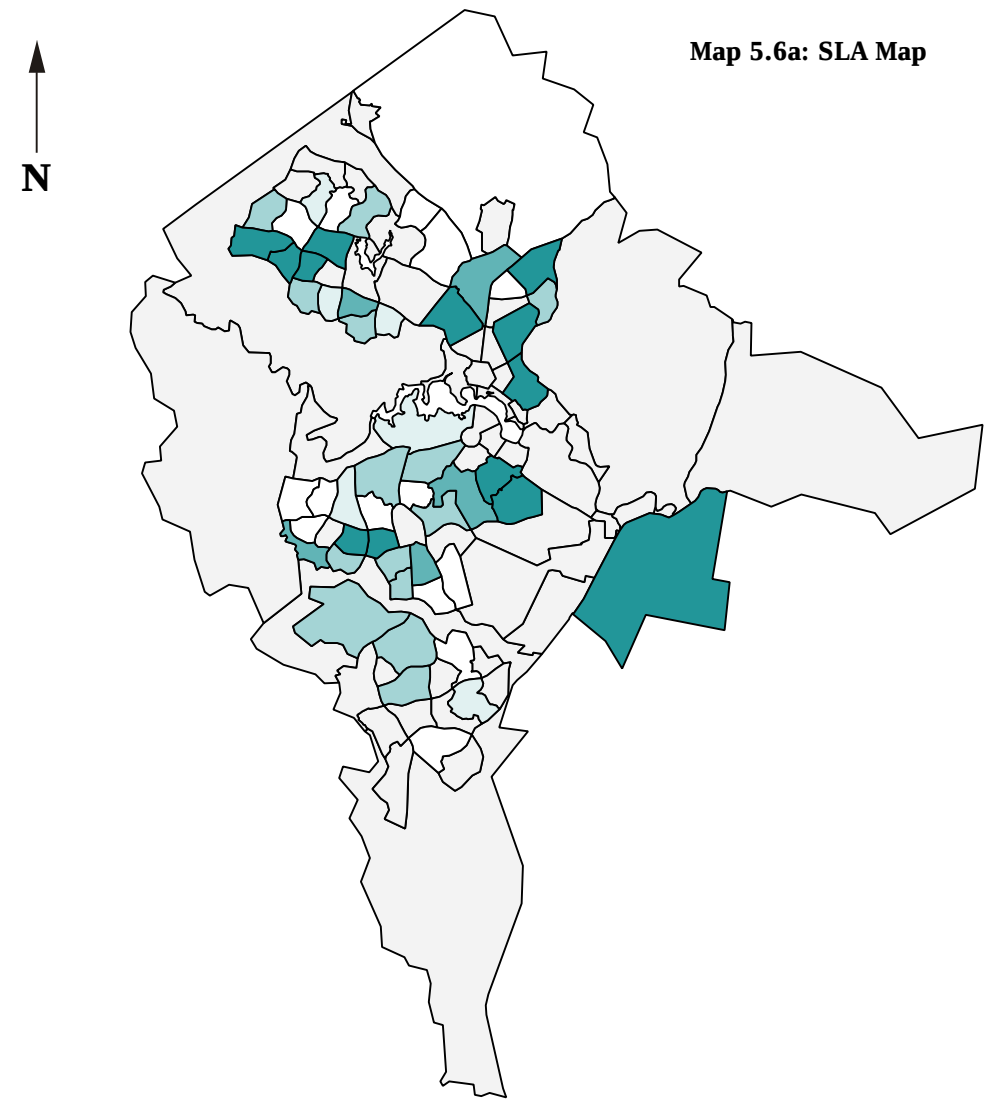
There were correlations of substantial significance with the variables for low income families (0.79) and people aged 65 years and over (0.74), and of meaningful significance with single parent families (0.56), unemployed people (0.58) and public rental housing (0.64). An inverse correlation of meaningful significance was recorded with female labour force participation (-0.57). These results, together with the inverse correlation with the IRSD (-0.48), indicate the existence of an association at the postcode level between high rates of premature female deaths and socioeconomic disadvantage.

There was only one premature female death in the ACT-Balance Statistical Subdivision in the period from 1992 to 1995, too few cases to calculate reliable rates.

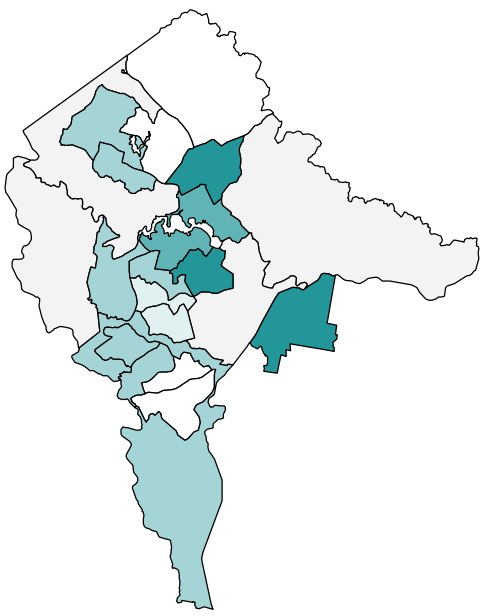
Map 5.6
Deaths of females aged 15 to 64 years from all causes, Canberra-Queanbeyan, 1992 to 1995

Standardised Death Ratio: number of deaths in each area compared with the number expected*

Map 5.6a: SLA Map



Map 5.6b: Postcode Map#



Standardised Ratio (as an index)

- *130 and above*
- *115 to 129*
- *85 to 114*
- *70 to 84*
- *below 70*
- *data excluded€*

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

#SLAs have been grouped to approximate postcode areas

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected deaths

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 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 5.11**) 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 5.11: 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 the Australian Capital Territory, accounting for 30.7 per cent of all deaths (1,383 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 39.8 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).

Canberra-Queanbeyan (ACT as the Standard)

There were 145 deaths from cancer of 15 to 64 year olds in **Canberra-Queanbeyan** each year over the period from 1992 to 1995, up from 133 per year over the years from 1985 to 1989. Over 1992-95, there were 580 cancer deaths in this age group, of which 320 were males and 260 were females.

Statistical Local Areas (SLAs)

A number of SLAs (those in which fewer than five deaths were expected) have not been mapped for this variable: of the remainder, the majority had fewer than ten deaths of 15 to 64 year olds from cancer (**Map 5.7a**). The south-western SLA of Waramanga recorded the most highly elevated ratio of statistical significance, with more than twice the number of deaths expected from the ACT rates (an SDR of 210**). Griffith, Mawson and Scullin also had highly elevated SDRs, with ratios of 200*, 170 and 165 respectively. The lowest ratios, recorded in the SLAs of Latham (with an SDR of 28), Giralang (30) and Lyons (43) represented just two, two and three deaths, respectively.

Over the period form 1992 to 1995, the largest numbers of deaths from cancer in the 15 to 64 year age group were recorded for residents of Kambah (30 deaths) and Narrabundah (15).

There were 50 premature deaths of residents of Queanbeyan from cancers, 7 per cent more deaths than expected from the ACT rates (an SDR of 107).

Postcode-based areas

The highest, and only elevated, ratio of statistical significance was recorded in Tuggeranong South, with 12 premature deaths from cancer when 5.8 were expected from the ACT rates (an SDR of 209**). A further seven areas recorded elevated ratios (**Map 5.7b**), including Canberra South (with an SDR of 132), Belconnen South (125) and Canberra North (115). The lowest ratio was recorded in Belconnen North (with an SDR of 56**). Other low ratios were recorded in Gungahlin-Hall (61) and Tuggeranong North East (63), accounting for four and twelve deaths respectively.

The largest numbers of deaths were recorded for residents of Canberra North (63 deaths) and Belconnen West (62).

Although only weak, there were positive correlations with the indicators of socioeconomic disadvantage and inverse correlations with indicators of high socioeconomic status.

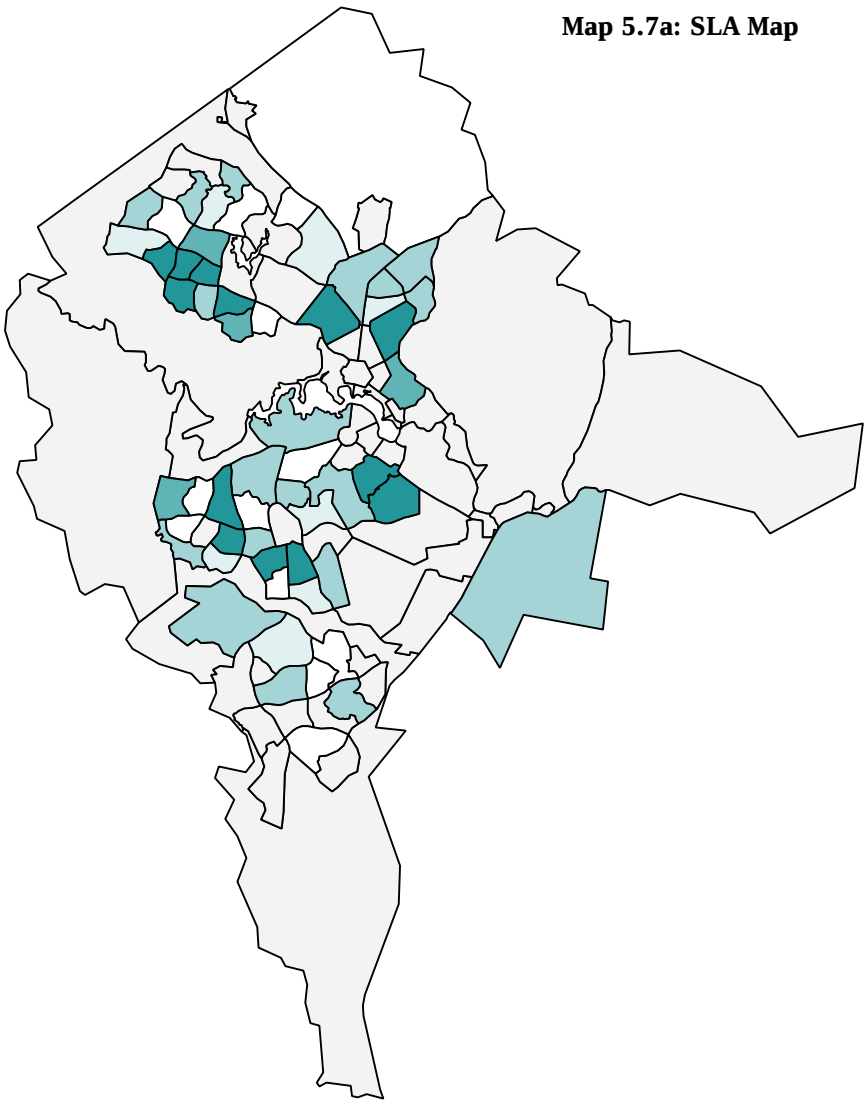
There were two deaths from cancer of 15 to 64 year olds in the ACT-Balance Statistical Subdivision, too few case to calculate reliable rates.

Map 5.7
Deaths of people aged 15 to 64 years from cancer, Canberra-Queanbeyan, 1992 to 1995

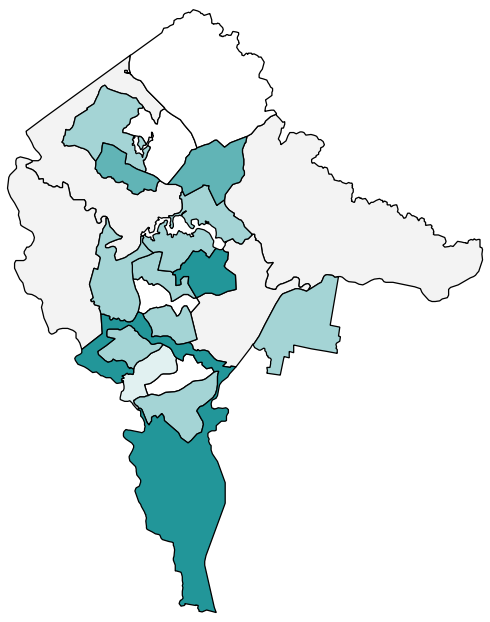
Standardised Death Ratio: number of deaths in each area compared with the number expected*

N

Map 5.7a: SLA Map



Map 5.7b: Postcode Map#



Standardised Death Ratio (as an index)

- *130 and above*
- *115 to 129*
- *85 to 114*
- *70 to 84*
- *below 70*
- *data excluded€*

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

#SLAs have been grouped to approximate postcode areas

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected deaths

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

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 5.12**) 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 5.12: 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 the Australian Capital Territory, deaths from cancer of the trachea, bronchus and lung (referred to here as lung cancer) accounted for 15.8 per cent of all cancer deaths among 15 to 64 year olds from 1992 to 1995. Although males account for around two thirds 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.

Canberra-Queanbeyan (ACT as the Standard)

Only 89 premature deaths from lung cancer were recorded for residents of **Canberra-Queanbeyan** over the four years from 1992 to 1995, five per cent fewer than expected from the ACT rates (an SDR of 95).

Statistical Local Areas (SLAs)

There were six deaths of residents of Queanbeyan from lung cancer (when 7.4 deaths were expected from the ACT rates), 19 per cent fewer than expected (an SDR of 81). Fewer than five deaths were expected in all other SLAs in **Canberra-Queanbeyan**, too few deaths to produce reliable results.

Postcode-based areas

Just eight postcode areas had five or more expected deaths (**Map 5.8**). Of these eight areas, Canberra North was the only one to record an elevated ratio, an SDR of 141, and accounted for the largest number of deaths from lung cancer (13 deaths).

The second largest number of deaths, was recorded in Canberra South (11 deaths). Although this area has not been mapped as only 4.7 cases were expected for a population of this size and age-sex composition.

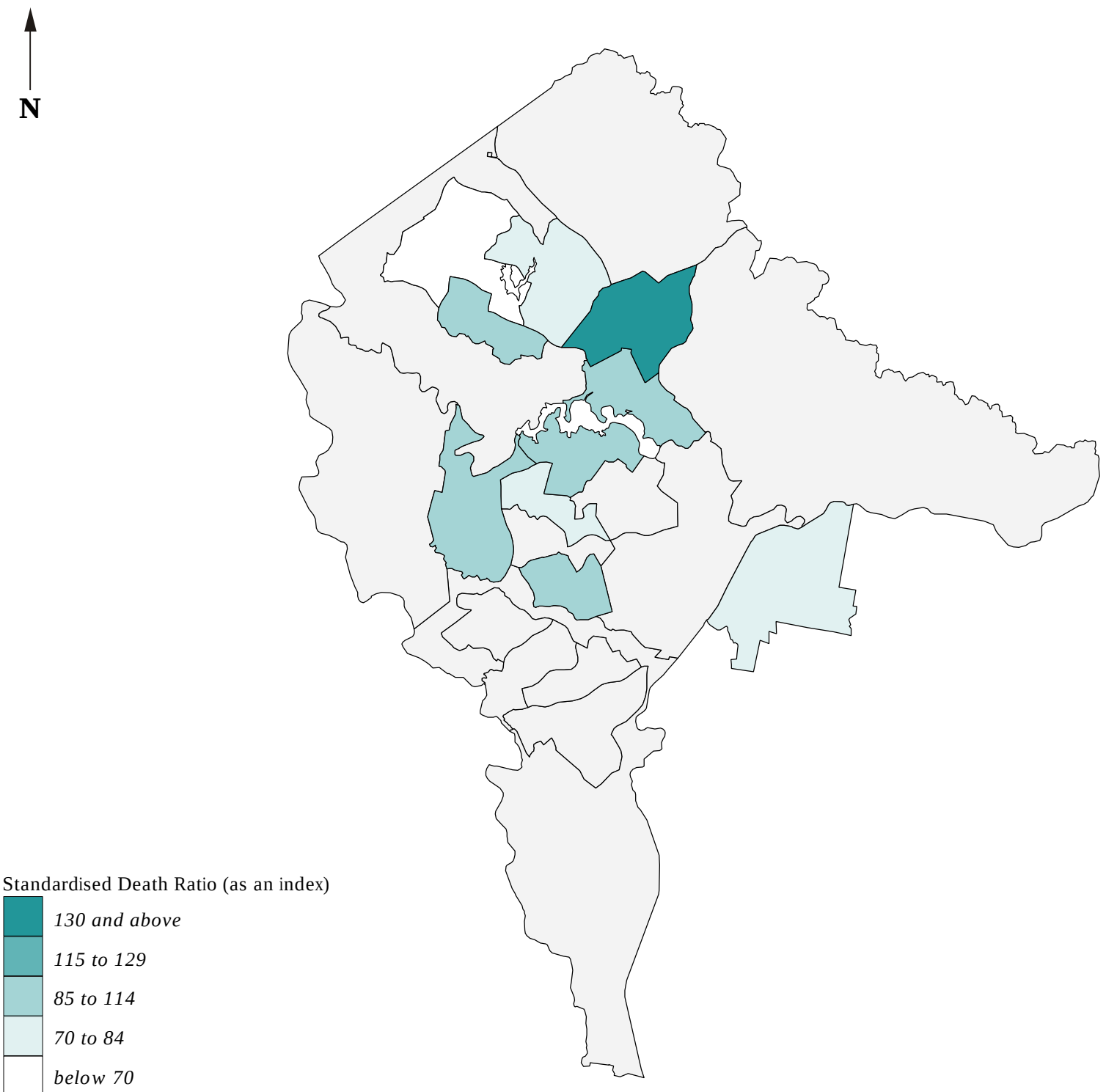
The remaining postcode areas recorded fewer than 10 deaths from lung cancer, all being below the expected level. The lowest rate was recorded in Belconnen West (47, five deaths when 10.5 were expected).

The correlation analysis was not undertaken as there were to many postcode areas with small numbers of cases.

There was only one death from lung cancer of 15 to 64 year olds in the ACT-Balance Statistical Subdivision over the period from 1992 to 1995, too few case to calculate reliable rates.

Map 5.8
Deaths of people aged 15 to 64 years from lung cancer, Canberra-Queanbeyan, 1992 to 1995

Standardised Death Ratio: number of deaths in each area* compared with the number expected#



Standardised Death Ratio (as an index)

- *130 and above*
- *115 to 129*
- *85 to 114*
- *70 to 84*
- *below 70*
- *data excluded€*

**SLAs have been grouped to approximate postcode areas*

#Expected numbers were derived by age-sex standardisation, based on ACT totals

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected deaths

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 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 5.13**, 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 5.13: 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 the Australian Capital Territory, they accounted for 39.1 per cent of deaths of all ages (1,758 deaths) and 20.7 per cent of deaths (277 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 5:2, between the ages of 45 to 64 years, and it is only above age 75 years that it changes to approximately 2:3 (male to female deaths).

The main causes of death within this group were heart disease (70.1 per cent, in particular ischaemic heart disease) and cerebrovascular disease (stroke, 20.8 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.

Canberra-Queanbeyan (ACT as the Standard)

There were 314 premature deaths from circulatory system diseases in **Canberra-Queanbeyan** over the four years from 1992 to 1995, of which over two thirds (71.3 per cent) were males. The higher proportion of male deaths was evident in each of the SLAs that were mapped in **Canberra-Queanbeyan**.

Statistical Local Areas (SLAs)

As only six SLAs in **Canberra-Queanbeyan** had five or more expected cases for this variable, there is no map at the SLA level.

The highest ratio (an SDR of 135) was recorded in Farrer, with seven deaths from circulatory system diseases in the 15 to 64 year age group when 5.2 were expected from the State rates. Other elevated ratios were recorded in Evatt, Curtin and Wanniassa, with SDRs of 131, 105 and 102 respectively.

Residents of Kaleen and Kambah recorded fewer deaths than expected, with ratios of 87 and 79, respectively.

Over the period from 1992 to 1995, the largest number of premature deaths from circulatory system diseases was recorded for residents of Kambah (12 deaths).

Residents of Queanbeyan had 38 deaths from circulatory system diseases, 55 per cent more than expected in this age group, an SDR of 155**.

Postcode-based areas

Even with the larger populations in the postcode areas, six areas in **Canberra-Queanbeyan** had fewer than five expected deaths from circulatory system diseases at these ages and were not mapped. Of the postcode areas mapped (excluding Queanbeyan, discussed above), four had elevated ratios for this variable; Canberra North (with an SDR of 170**), Canberra Central (154*), Canberra South (129) and Woden Central (120) (**Map 5.9**).

There were two postcode areas with SDRs in the lowest range mapped; Weston Creek (with an SDR of 65*) recorded 35 per cent fewer deaths from circulatory system diseases than were expected from the ACT rates and Belconnen North (68) had 32 per cent fewer deaths. Tuggeranong South East (78) and Kambah (80) had ratios in the next range mapped.

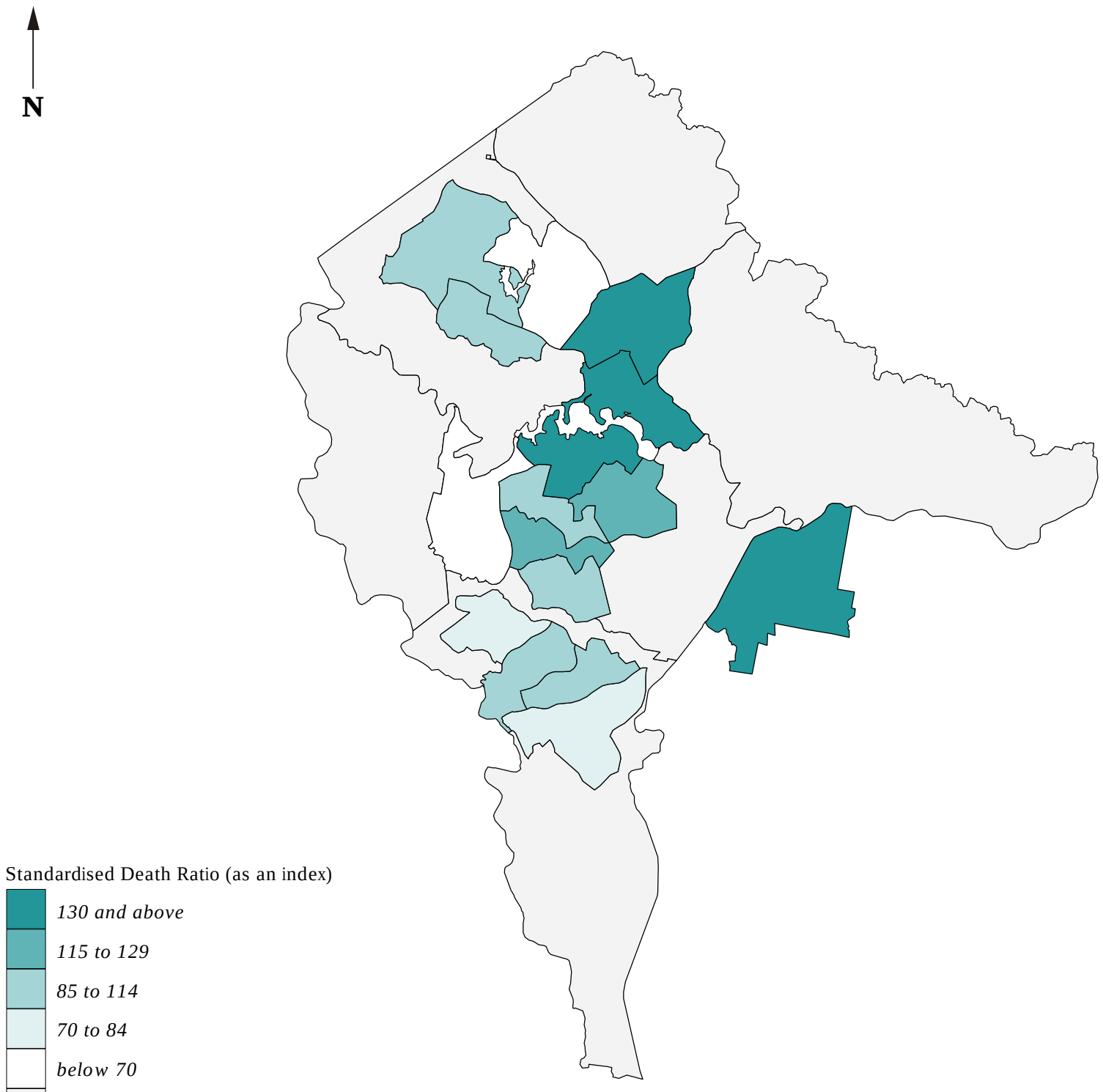
Overall, the numbers of deaths for this variable at the postcode level were low. The largest number (49 deaths) was recorded in Canberra North, with 31 deaths in Belconnen West and 27 deaths in Canberra Central.

The correlation analysis has not been undertaken as there were too many postcode areas with small numbers of cases.

There were no premature deaths from circulatory system diseases in the ACT-Balance Statistical Subdivision.

Map 5.9
Deaths of people aged 15 to 64 years from circulatory system diseases, Canberra-Queanbeyan, 1992 to 1995

Standardised Death Ratio: number of deaths in each area* compared with the number expected#



Standardised Death Ratio (as an index)

- *130 and above*
- *115 to 129*
- *85 to 114*
- *70 to 84*
- *below 70*
- *data excluded€*

*SLAs have been grouped to approximate postcode areas

#Expected numbers were derived by age-sex standardisation, based on ACT totals

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected deaths

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 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 5.14**, 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 5.14: 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 315 deaths from diseases of the respiratory system over the period from 1992 to 1995, 7.0 per cent of all deaths of residents of the Australian Capital Territory**.** Two thirds (66.7 per cent) of deaths from diseases of the respiratory system were from chronic obstructive pulmonary disease (largely deaths from bronchitis, emphysema, and asthma), while 18.1 per cent were deaths from pneumonia and influenza. People aged from 15 to 64 years accounted for 17.1 per cent of these deaths.

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).

Canberra-Queanbeyan (ACT as the Standard)

Over the period from 1992 to 1995, 60 people in **Canberra-Queanbeyan** aged from 15 to 64 years died from respiratory system diseases. Unlike deaths from all causes, where the proportion of male deaths was almost double that of females, males accounted for just over half (55.0 per cent) of the deaths from respiratory system diseases.

Statistical Local Areas (SLAs)

As all of the SLAs in **Canberra-Queanbeyan** had fewer than five expected deaths, SDRs have not been calculated and no map has been shown. The largest number of deaths from respiratory system diseases were recorded for residents of Queanbeyan (seven deaths when 4.8 were expected).

Postcode-based areas

Even at the postcode level, just four of the 20 postcode areas had five or more expected deaths from respiratory system diseases, and all of the postcode areas recorded fewer than 12 deaths (**Map 5.10**).

Elevated ratios were recorded in Canberra North (an SDR of 188*, with the largest number of 11 deaths when 5.9 deaths were expected from the ACT rates) and in Belconnen West (101, seven deaths).

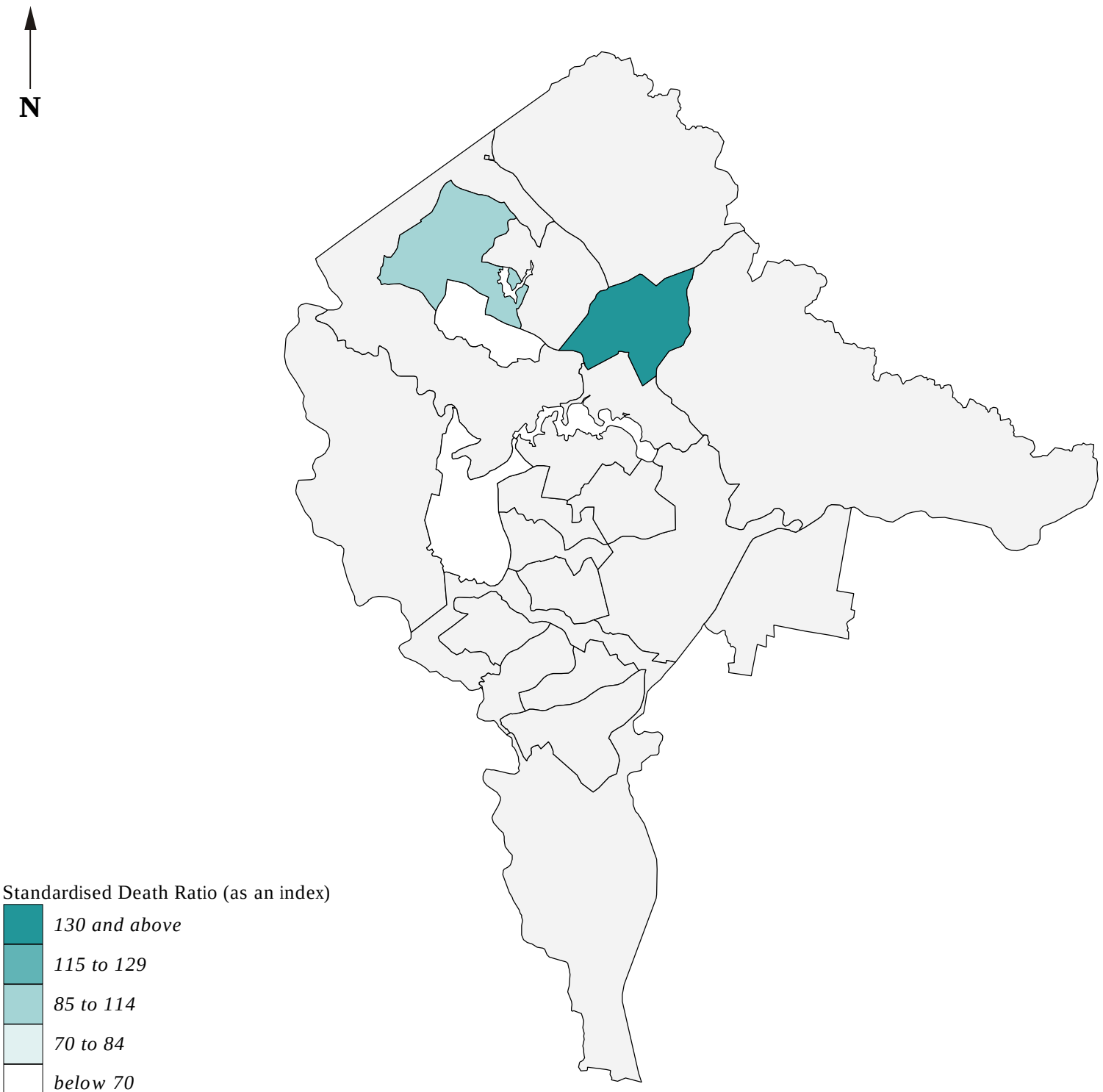
Residents of the postcode areas of Weston Creek (three deaths) and Belconnen South (two deaths) recorded 48 per cent and 60 per cent fewer deaths from respiratory system diseases than were expected from the ACT rates respectively.

The correlation analysis has not been undertaken as there were too many postcode areas with small numbers of cases.

There was only one death from respiratory system diseases of people aged 15 to 64 years in the ACT-Balance Statistical Subdivision, too few cases to calculate reliable rates.

Map 5.10
Deaths of people aged 15 to 64 years from respiratory system diseases, Canberra-Queanbeyan, 1992 to 1995

Standardised Death Ratio: number of deaths in each area* compared with the number expected#



Standardised Death Ratio (as an index)

- *130 and above*
- *115 to 129*
- *85 to 114*
- *70 to 84*
- *below 70*
- *data excluded€*

*SLAs have been grouped to approximate postcode areas

#Expected numbers were derived by age-sex standardisation, based on ACT totals

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected deaths

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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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 (37.6 per cent);
- motor vehicle traffic accidents (25.3 per cent);
- accidental falls (7.6 per cent, mainly of elderly people); and
- accidental poisonings (7.1 per cent).

Although representing only 7.3 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 20.1 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 (43.9 per cent);
- motor vehicle traffic accidents (25.3 per cent);
- accidental poisonings (8.4 per cent); and
- accidental falls (3.3 per cent).

Over the period from 1992 to 1995, there were 80 deaths in the Australian Capital Territory from the combined causes of accidents, poisonings and violence among people aged from 15 to 24 years, representing 70.2 per cent of all deaths in this age group. Motor vehicle traffic accidents and suicide accounted for the majority of these deaths (68.9 per cent in total: 37.8 per cent form motor vehicle traffic accidents and 31.1 per cent from suicides).

Males predominated in these causes of death, accounting for 73.8 per cent of deaths from these causes in the 15 to 64 year age group (ranging from 71.0 per cent of suicides to 71.0 per cent of motor vehicle traffic accidents) and 75.7 per cent of deaths among 15 to 24 year olds (see **Table 5.15**).

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**).

Table 5.15: Deaths from accidents, poisonings & violence, by cause, Australian Capital Territory, 1992 to 1995

Age (years) and sex	Motor vehicle traffic accidents		Suicides		All accidents, poisonings & violence[1]	
	No.	%	No.	%	No.	%
15 to 24						
Males	22	78.6	18	78.3	56	75.7
Females	6	21.4	5	21.7	18	24.3
Total	**28**	**100.0**	**23**	**100.0**	**74**	**100.0**
15 to 64						
Males	49	71.0	100	83.3	215	78.8
Females	20	29.0	20	16.7	58	21.2
Total	**69**	**100.0**	**120**	**100.0**	**273**	**100.0**

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

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 106 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.

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 5.16**, 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 5.16: 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

There were 340 deaths from the combined causes of accidents, poisonings and violence in the Australian Capital Territory. Over three quarters (80.3 per cent) of these deaths were of people aged from 15 to 64 years, and over three quarters (78.8 per cent) were males.

Canberra-Queanbeyan (ACT as the Standard)

There were 301 deaths from the combined causes of accidents, poisonings and violence in **Canberra-Queanbeyan**, one per cent more than expected from the ACT rates (an SDR of 101). There were 24.7 per cent fewer deaths of 15 to 64 year olds resident in **Canberra-Queanbeyan** from these external causes over the period from 1992 to 1995 than over the years from 1985 to 1989, declining from an average of 94 deaths per year to 75 per annum.

Statistical Local Areas (SLAs)

Only 12 SLAs were expected to have five or more deaths of 15 to 64 year olds from accidents, poisonings and violence: the remaining SLAs were not mapped (**Map 5.11a**).

Kambah recorded the highest ratio (an SDR of 120). The only other SLA to record more deaths than expected was Florey, with a ratio of 119 (although this accounted for just six deaths, when five were expected from the ACT rates).

Over the period from 1992 to 1995, there were 31 deaths of 15 to 64 year olds from Queanbeyan from the external causes of accidents, poisoning and violence, 22 per cent more than expected from the ACT rate (an SDR of 122).

Overall, the numbers of deaths from these external causes were low, with the largest numbers recorded in Kambah (20 deaths when 16.6 were expected), Narrabundah (17 deaths when 4.1 were expected) and Ainslie (10 deaths when 4.1 were expected). All other SLAs recorded fewer than 10 deaths.

Postcode-based areas

The most highly elevated SDRs tended to be in the central postcode areas (**Map 5.11b**). There were twice the expected number of deaths from the external causes of accidents, poisonings and violence in Canberra Central (an SDR of 200**) and almost twice the expected number in Canberra South (193**). Ratios elevated by 30 per cent or more were recorded in Woden Central (an SDR of 159, 12 deaths when 7.6 were expected) and Canberra North (155**). Elevated ratios were also recorded in Kambah (120) and Belconnen West (109).

The lowest ratios were recorded in Tuggeranong South East (with an SDR of 44**, and 12 deaths when 27.5 were expected), Tuggeranong North East (54) and Belconnen North (54*).

The largest numbers of deaths of 15 to 64 year olds from these external causes were recorded in Belconnen West (42 deaths), Canberra Central (37), Canberra North (36) and Canberra South (22).

Correlations of substantial significance were recorded with the variables for private dwellings without a vehicle (0.87), public rental housing (0.86), low income families (0.75) and unemployed people (0.72); and of meaningful significance with single parent families (0.56). An inverse correlation of meaningful significance was recorded with female labour force participation (-0.53). These results, together with the inverse correlation of meaningful significance with the IRSD (-0.55), indicate an association at the postcode level between high death rates from the external causes of accidents, poisonings and violence and socioeconomic disadvantage.

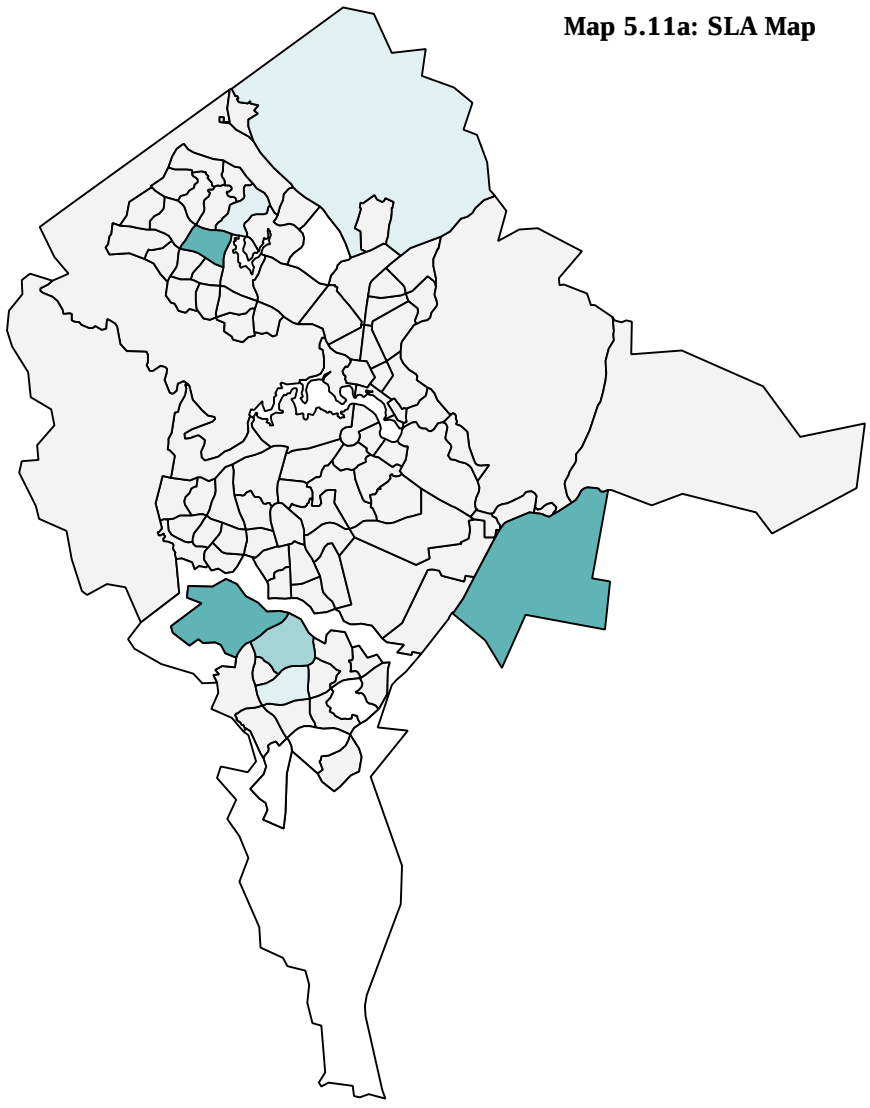
There were no deaths of people aged 15 to 64 years from the combined causes of accidents, poisonings and violence in the ACT-Balance Statistical Subdivision.

Map 5.11
Deaths of people aged 15 to 64 years from accidents, poisonings and violence, Canberra-Queanbeyan, 1992 to 1995

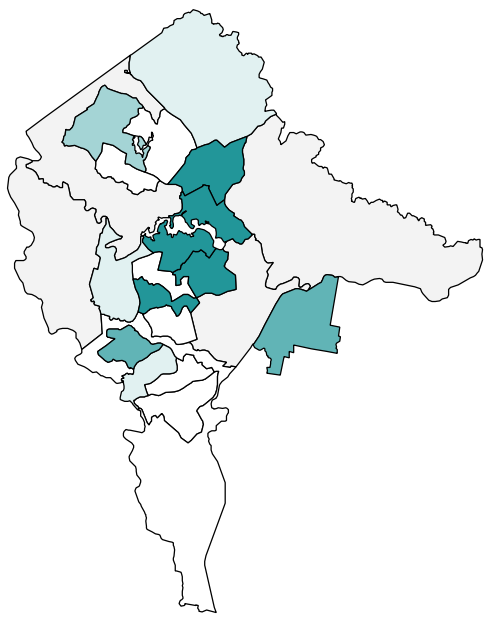
Standardised Death Ratio: number of deaths in each area compared with the number expected*

N

Map 5.11a: SLA Map



Map 5.11b: Postcode Map#



Standardised Death Ratio (as an index)

- *130 and above*
- *115 to 129*
- *85 to 114*
- *70 to 84*
- *below 70*
- *data excluded€*

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

#SLAs have been grouped to approximate postcode areas

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected deaths

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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 5.17**, 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 5.17: 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, poisoning 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 71.2 per cent of all deaths in this age group - 77.8 per cent of male deaths and 56.3 per cent of female deaths. Males predominated, accounting for 75.7 per cent of all deaths from these external causes. More than one third (39.3 per cent) of male deaths were from motor vehicle traffic accidents and just under one third (32.1 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.

Canberra-Queanbeyan (ACT as the Standard)

There were 80 deaths from the combined causes of accidents, poisonings and violence of 15 to 24 year olds in **Canberra-Queanbeyan** over the period from 1992 to 1995, one per cent fewer than expected from the ACT rates (an SDR of 101).

Statistical Local Areas (SLAs)

As a large number of SLAs in **Canberra-Queanbeyan** had fewer than five expected deaths of 15 to 24 year olds from these causes, SDRs have not been calculated and no map has been shown.

The SDR (92) recorded in Queanbeyan indicated that there were eight per cent fewer deaths from external causes in this age group than expected from the ACT rates; this represented a total of six deaths when 6.6 were expected from the ACT rates.

Postcode-based areas

Despite the larger size and population of the postcode areas, in only seven areas, including Queanbeyan, were five or more deaths expected of 15 to 24 year olds from accidents, poisonings and violence. All of these areas were located in the north western part of **Canberra**. Three of the seven had elevated ratios: Canberra Central (with an SDR of 183*, 13 deaths when 7.1 were expected), Belconnen West (145, 17 deaths when 11.7 were expected) and Canberra North (139, 8 deaths when 5.8 were expected). These three areas also recorded the largest numbers of deaths from external causes at the postcode level.

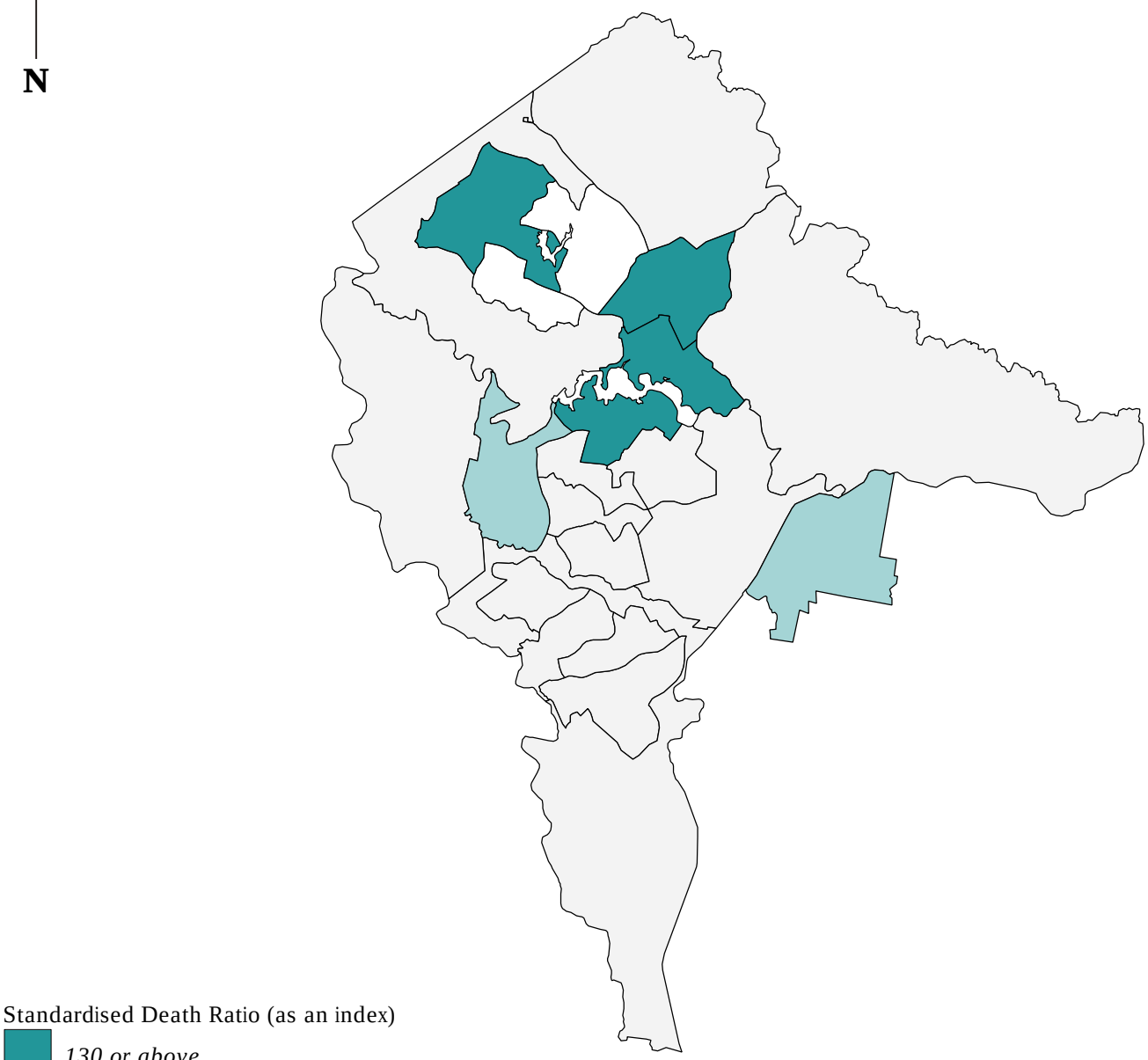
The lowest ratio (an SDR of 32) was recorded in Belconnen North, but represented just two deaths of 15 to 24 year olds when 6.2 were expected. Belconnen South (with an SDR of 34) also recorded two deaths, when 5.8 were expected.

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

There were no deaths of people aged 15 to 24 years from the combined causes of accidents, poisonings and violence in the ACT-Balance Statistical Subdivision.

Map 5.12
Deaths of people aged 15 to 24 years from accidents, poisonings and violence, Canberra-Queanbeyan, 1992 to 1995

Standardised Death Ratio: number of deaths in each area* compared with the number expected#



Standardised Death Ratio (as an index)

- *130 or above*
- *115 to 129*
- *85 to 114*
- *70 to 84*
- *below 70*
- *data excluded€*

*SLAs have been grouped to approximate postcode areas

#Expected numbers were derived by age-sex standardisation, based on ACT totals

€Data have been excluded when the population of the area is less than 100, or where there were fewer than five expected cases

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: 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 5.18**). **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 5.18**).

Table 5.18: 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

Canberra-Queanbeyan (ACT as the Standard)

Over the period from 1992 to 1995, 43,137 years of potential life were lost as a result of premature deaths of residents of **Canberra-Queanbeyan**. Almost two thirds of these years lost (62.7 per cent) were accounted for by males.

Statistical Local Areas (SLAs)

The ratios for YPLL in Canberra were distributed over a very wide range (**Map 5.13a**), with the highest (an SDR of 405**) recorded in Oaks Estate, with 179 years of life lost, over four times the number expected from the ACT rates. Many of the SLAs with high ratios were just south and north of Lake Burley Griffin. Barton (with an SDR of 336**) recorded the second highest ratio having over three times the expected number of YPLL. Narrabundah (261**) and Kingston (234**) also had very high ratios. There was a cluster of SLAs with ratios in the top range immediately north of City which included Ainslie (with an SDR of 225**), Reid (188**), Campbell (147**) and O'Connor (136**). To the south, O'Malley (209**) and Mawson (153**) also had high ratios, as did Holt (146**) and Higgins (143**) in the north west of **Canberra.** Although Fyshwick has not been mapped as it has a population below 100, it was notable that a YPLL of 97 was recorded when only 10 was expected (an SDR of 970**).

Twenty five SLAs had ratios in the lowest range mapped and all were highly significant. Harman and Stromlo recorded no YPLL even though 28.8 and 14.4 were expected, respectively. Very low ratios were also recorded in Bruce (an SDR of 5**), Belconnen Town Centre (9**), McKellar (19**), Calwell (32**) and City (34**). However, numbers of YPLL were low in these SLAs with Calwell recording the highest number of 201 years.

The largest numbers of YPLL were recorded for residents of Kambah (2,221 years), Narrabundah (1,619 years), Ainslie (1,329 years) and Wanniassa (1,070 years).

There were 4,602 YPLL of residents of Queanbeyan, 32 per cent more than expected from the ACT rates (an SDR of 132**). Males accounted for almost two thirds (63.9 per cent) of the number of YPLL.

Postcode-based areas

Map 5.13b shows that the four postcode areas where numbers of YPLL were elevated by more than 30 per cent were in the eastern central areas of **Canberra**. The highest ratios were in Eastern Fringe (with an SDR of 196**), Canberra South (170**), Canberra North (141**) and Canberra Central (138**).

The majority of postcode areas had lower than expected numbers of YPLL, with residents of Belconnen (Balance) and Stromlo not recording any. Kowen/Majura had 57 per cent fewer YPLL than expected and, contrary to patterns in most other areas where male YPLL outnumbered female YPLL, the total of 22 years lost were all of females. Other low ratios were recorded in Tuggeranong South East (with an SDR of 59**) and Gungahlin-Hall (64**).

The largest numbers of YPLL were in Belconnen West (5,418 years), Canberra North (4,985), Weston Creek (3,479) and Canberra Central (3,418).

A correlation of substantial significance was recorded with the variable for private dwellings without a vehicle (0.83), and of meaningful significance with the Indigenous population (0.69), low income families (0.67) and unemployed people (0.53). Inverse correlations of meaningful significance were recorded with the variables for female labour force participation (-0.67) and high income families (-0.54). These results, together with the inverse correlation of meaningful significance with the IRSD (-0.57), indicate the existence of an association between high rates of premature death and socioeconomic disadvantage.

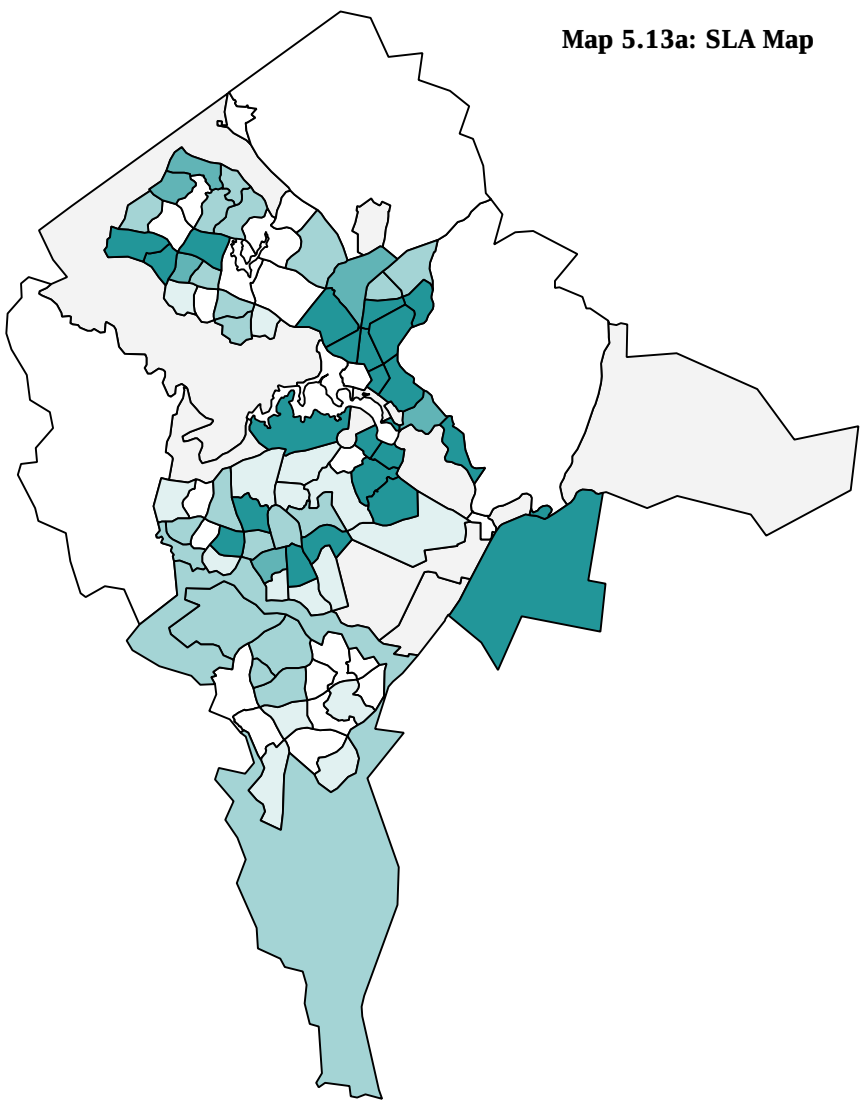
There were an estimated 83 YPLL as a result of deaths of residents in the ACT-Balance Statistical Subdivision aged from 15 to 64 years, 65 per cent more than were expected from the ACT rates (an SR of 165**).

Map 5.13
Deaths of people aged 15 to 64 years: years of potential life lost, Canberra–Queanbeyan, 1992 to 1995

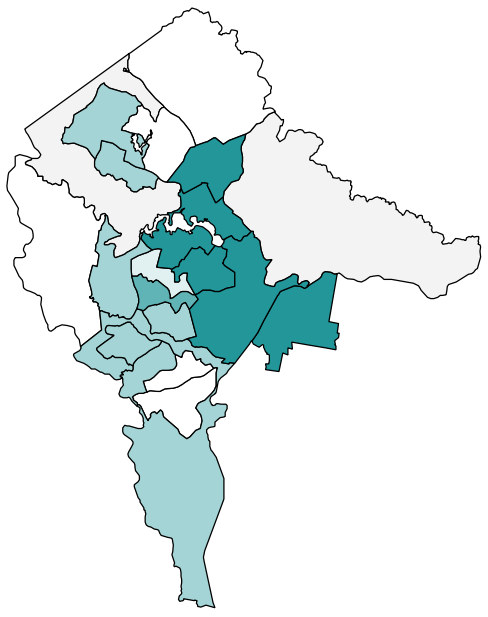
Standardised Ratio: number of years of potential life lost in each area compared with the number expected*

N

Map 5.13a: SLA Map



Map 5.13b: Postcode Map#



Standardised Ratio (as an index)

- *130 and above*
- *115 to 129*
- *85 to 114*
- *70 to 84*
- *below 70*
- *data excluded¢*

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

#SLAs have been grouped to approximate postcode areas

¢Data have been excluded when the population of the area is less than 100

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

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Total Fertility Rate

Introduction

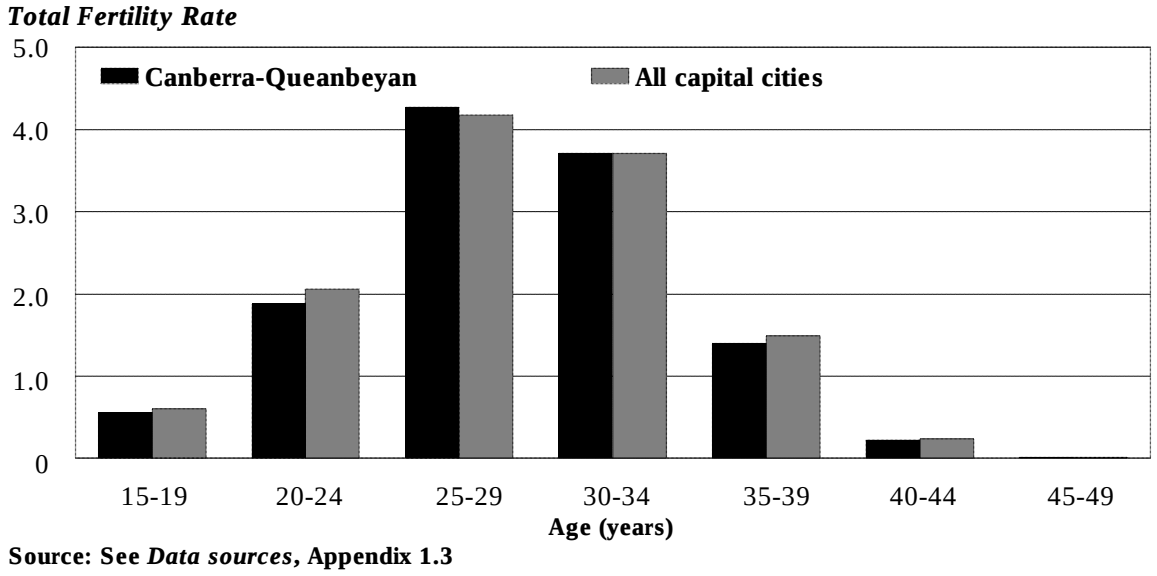
The Total Fertility Rate (TFR) is a measure of the production of children and is calculated from details of the age of the female population, the number of live births and the age of the mother at birth. It represents the mean number of children which females, living right through their child-bearing 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 **Canberra-Queanbeyan** are those for females aged from 25 to 29 years (**Figure 5.10**). Females aged from 30 to 34 years and those aged from 20 to 24 years, had the next highest TFRs. The TFR was marginally higher in **Canberra-Queanbeyan** than the *All capital cities* figures in the 25 to 29 year age group. The largest difference in TFRs between residents of **Canberra-Queanbeyan** and the *All capital cities* figure was in the 20 to 24 year age group.

Figure 5.10: Total Fertility Rate, Canberra-Queanbeyan and All capital cities, 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 5.19**), with the exception of a higher rate in **Darwin** (2.06). The lowest TFR was that in **Adelaide** (1.64).

Table 5.19: 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.

Canberra-Queanbeyan (ACT as the standard)

The Total Fertility Rate (TFR) for **Canberra-Queanbeyan** over the four year period from 1992 to 1995 was 1.72. The highest TFRs were recorded for women aged 25 to 29 years (a TFR of 4.27), followed by those aged 30 to 34 (a TFR of 3.71).

Statistical Local Areas (SLAs)

The majority of SLAs in **Canberra-Queanbeyan** had TFRs of between 1.50 and 2.00, with only five areas and three areas in each of the highest (TFRs of above 2.50) and lowest (lower than 1.00) ranges, respectively.

SLAs with high TFRs were more frequently located in the southern areas, with the highest rates recorded in Harman (with a rate of 5.00) and Theodore (with a rate of 2.97) (**Map 5.14a**). Calwell, Macarthur and Bonython, also located in the south, had TFRs of 2.61, 2.58 and 2.58, respectively.

Just over half (54.8 per cent) the SLAs had rates of between 1.50 and 2.00: SLAs in this range were generally distributed to the north and south of the city. The highest rates were recorded in the southern SLAs of Torrens (a TFR of 1.98), Chisholm (1.91) and Kambah (1.82); and in the northern SLAs of Ngunnawal/Nicholls/Palmerston/Gungahlin (Balance) (1.97), Latham (1.93), Charnwood (1.92), Evatt (1.87) and Holt (1.82).

SLAs located in the inner city region generally reported the lowest rates, with Lyneham recording a TFR of 1.23; Griffith, 1.20; Turner, 1.17; and Bruce, 1.02. O Malley, with a TFR of 0.95; Belconnen Town Centre, with a TFR of 0.86; and Philip, with a TFR of 0.67; had the lowest rates in **Canberra-Queanbeyan**.

The SLA of Queanbeyan recorded a total of 2,050 births, a TFR of 2.00.

Over the four year period from 1992 to 1995, there were 19,589 births to mothers aged from 15 to 49 years, with the largest numbers being in Kambah (996 births), Calwell (703), and in the combined SLAs of Banks/Conder/Tuggeranong (Balance) (642).

Postcodes

The highest Total Fertility Rate (2.57) was recorded in the postcode area of Eastern Fringe, representing 110 births. Other TFRs above the replacement level were recorded in Tuggeranong South East (2.38) and Tuggeranong South (2.2). The majority of postcode areas recorded TFRs in the middle range mapped, from 1.50 to 1.99, including Gungahlin-Hall (1.99), Kambah (1.82), Tuggeranong North East (1.82) and Belconnen West (1.69).

The postcode areas of Canberra North, Canberra Central and Woden Central had the lowest TFRs of 1.43, 1.34 and 1.28 respectively.

The largest numbers of births were recorded in Tuggeranong South East (3,246 births), Belconnen West (2,383) and Canberra North (1,301).

There were correlations of meaningful significance with the variables for early school leavers (0.70), semi-skilled and unskilled workers (0.66) and children aged from 0 to 4 years (0.51). These results, together with the weak inverse correlation with the IRSD (-0.16), suggest the existence of an association at the SLA level between high Total Fertility Rates and socioeconomic disadvantage.

There were correlations of meaningful significance with the variables for early school leavers (0.70) and unskilled and semi-skilled workers (0.66) and generally weak associations with the other indicators of socioeconomic status (positive correlations with indicators of socioeconomic disadvantage and inverse with indicators of high socioeconomic status). These results, together with the weak inverse correlation with the IRSD (-0.16), suggest the existence of an association at the postcode level between high Total Fertility Rates and socioeconomic disadvantage. Correlations of substantial significance were recorded with the variables for admissions for hysterectomies (0.79) and Caesarean sections (0.75).

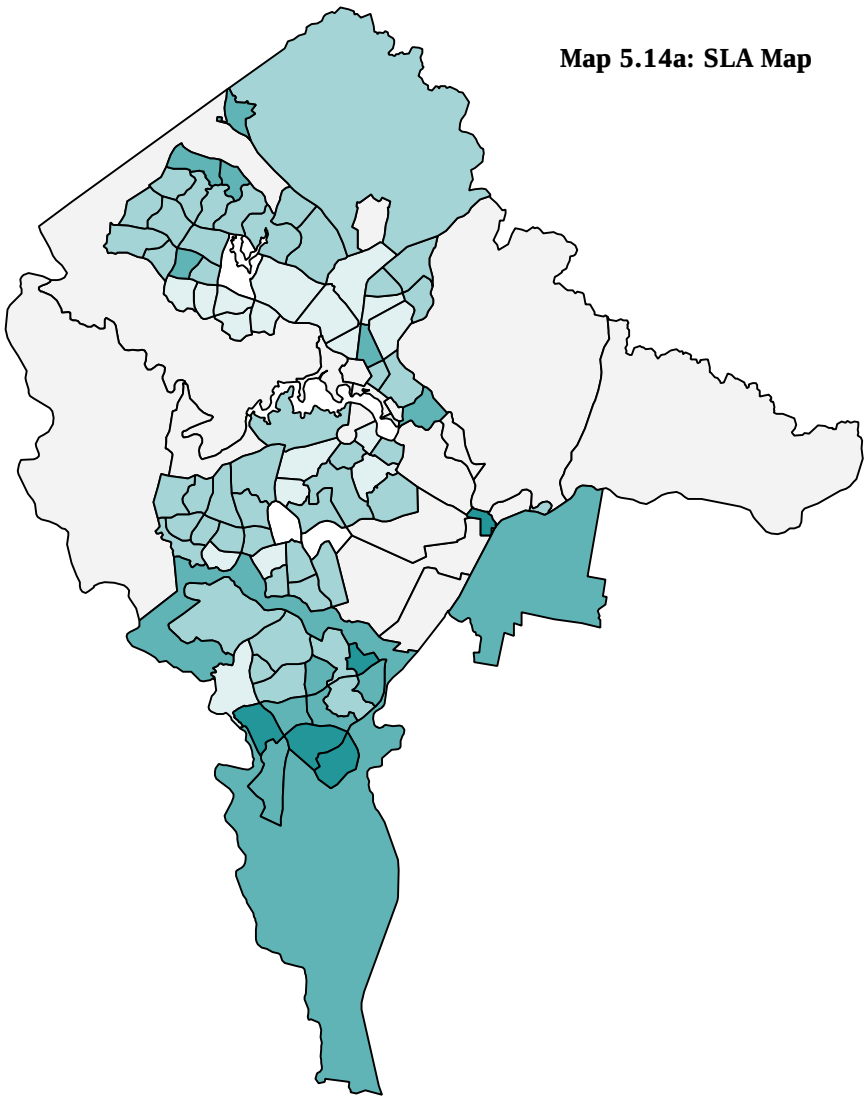
There were 27 births to 103 women aged 15 to 64 years in the ACT-Balance Statistical Subdivision, a Total Fertility Rate of 1.89.

Map 5.14
Total Fertility Rate*, Canberra-Queanbeyan, 1992 to 1995

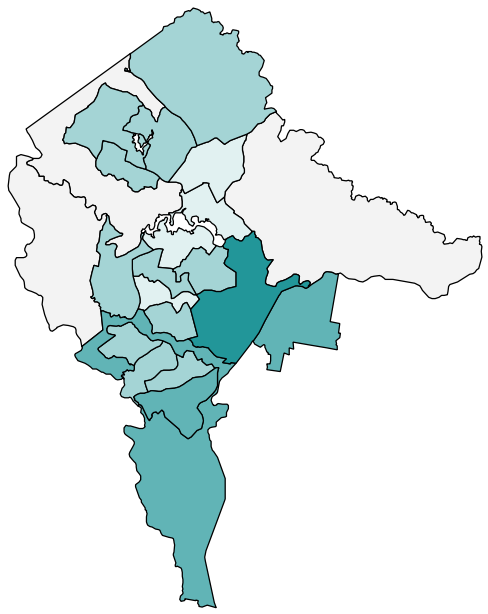
Total Fertility Rate* in each area

N

Map 5.14a: SLA Map



Map 5.14b: Postcode Map#



Total Fertility Rate*

- *2.5 and above*
- *2.0 to 2.4*
- *1.5 to 1.9*
- *1.0 to 1.4*
- *below 1.0*
- *data excluded¢*

**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 ACT totals*

#SLAs have been grouped to approximate postcode areas

¢Data have been excluded when the population of the area is less than 100, or where there were fewer than 20 expected births

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

National Social Health Atlas Project, 1999

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