

## 6 Utilisation of health services

### Introduction

Aggregate rates of health service usage provide an important 'proxy' indicator of population health status. For example, the extent of the population's use of general medical practitioner (GP) services, or of episodes of hospitalisation, is likely to be indicative of overall levels of illness in the community. As discussed in Chapter 1, it has been known for some time that the

most disadvantaged groups make the most use of primary and secondary health services (especially when there is universal access to services) and make the least use of preventative services. It is also clear that their poorer health status largely explains their greater use. Details of some of the differentials evident in the Australian data are in **Table 6.1**.

**Table 6.1: Health service use 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) health status, health service use and risk measures	Rate/ratio for quintile of socioeconomic disadvantage of area			
	Males		Females	
	1st quintile	5th quintile	1st quintile	5th quintile
<b>Children (0 to 14 years)</b>				
hospital episodes	1.00	0.89	1.00	2.21
doctor visits	1.00	1.02	1.00	1.16*
dental visits	1.00	0.80**	1.00	0.59***
<b>Youth (15 to 24 years)</b>				
hospital episodes	1.00	1.30	1.00	1.16
doctor visits	1.00	1.25**	1.00	1.18**
dental visits	1.00	0.70***	1.00	1.01
<b>Adults (25 to 64 years)</b>				
hospital episodes	1.00	0.97	1.00	0.95
doctor visits	1.00	1.24***	1.00	1.04
dental visits	1.00	1.02	1.00	0.85**
<b>Older people (65 years and over)</b>				
hospital episodes	1.00	1.22	1.00	1.26
doctor visits	1.00	0.88*	1.00	1.28***
dental visits	1.00	1.36**	1.00	0.57***
<b>All ages</b>				
hospital episodes	1.00	1.05	1.00	1.16
doctor visits	1.00	1.10***	1.00	1.12***
dental visits	1.00	0.96	1.00	0.79***

**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, AGPS, Canberra, 1994**

It is possible, however, that despite higher rates of use, health or service needs are not fully met. This means that variations in rates between sub groups of the population (eg. for women, children, the aged, or for Indigenous Australians) may be indicating inequality of access, either physical access (which can be limited by factors such as lack of transport and cost, particularly the cost of services not covered by Medicare), or the quality of care provided (such as the level and quality of information provided as to the options for treatment, and alternatives which might otherwise reduce use of services).

### Data mapped

The health services described include the use of public and private hospitals, services provided by GPs and rates of immunisation of children at the age of 12 months. These are services for which data necessary for analysis at a small area level can be obtained: such data includes the age, sex and postcode or Statistical Local Area (SLA) of usual residence of the patient.

### Measure mapped

Age-sex standardised ratios have been calculated and mapped for admissions to hospital and services provided by GPs by place of usual residence of the patient or client, to illustrate the extent

of variation in health service use between the populations of these areas. A brief description of the technique of standardisation, its purposes, and method of calculation, is in Appendix 1.3.

### Variables mapped

The variables mapped represent only a selection of the full range of variables that could potentially be mapped from each data set. For example, admissions to hospital (see box on page 187 for the definition of admission) of patients with all types of cancer, and those with lung cancer specifically are mapped, but admissions resulting from cancer of the prostate are not mapped, as there were too few cases at the small area level from which to calculate reliable rates. The number of variables analysed and mapped was also constrained by the size of the atlas. Therefore the variables mapped are those that represent a significant proportion of the activity for the topic; are known to be more prevalent among a particular population group; or are known to have a distribution which varies regionally.

A comparison of the mapped distribution of these measures of health service use with the maps in the other chapters indicates

the extent of association at the small area level between health service use and socioeconomic status and health status. The extent of association is also indicated by the results of the correlation analysis in Chapter 8.

## Gaps and deficiencies in the data

### Data collections

The coverage and availability of data from nation-wide statistical collections describing health service provision *at the small area level* have changed little since the first edition of the atlas was published in 1992.

An important development is that hospital inpatient data at the small area level are now largely available from a single source (the Australian Institute of Health and Welfare (AIHW) National Hospital Morbidity Database). This contrasts with the situation in producing the first edition of the atlas when hospital data were collected directly from State and Territory health authorities. Further, only New South Wales, Queensland, South Australia and Western Australia had complete collections at that time<sup>1</sup>. There are, however, relatively small but significant deficiencies in the database. These deficiencies are described under *Deficiencies in the admissions data* (page 195).

As was the case in 1992, only the age and sex of the patients of GPs are available to be mapped. There is, for example, no information at a small area level of consultations with GPs which includes other client characteristics, such as reason for attendance (eg. patient is unwell and nature of illness, has an injury, or is seeking advice), type of services provided (eg. patient referred to other health practitioner, pharmaceutical drugs prescribed), or outcome (eg. patient referred to other health practitioner, course of treatment established). The lack of information on GP services represents a major gap in our ability to describe the work of these important primary health care providers, to understand the appropriateness of the services provided, and to assess the outcomes achieved.

Other major gaps in the availability of service usage data at the small area level are data describing:

- services provided to those using public hospital outpatient departments and accident and emergency clinics (a majority of these services are specialist medical consultations);
- services provided by specialist public psychiatric hospitals and other specialist mental health services;
- services provided through community based care (e.g. community health services, including community mental health services), domiciliary care services and home based nursing and care services;

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<sup>1</sup>The data for the private hospital in the Northern Territory were not available for the year of analysis (1989), but data for 1987 (before the private hospital was established) were available and used.

- health promotion and other public health programs, as well as information on community knowledge, attitudes and behaviours as to health, health status and health risks;
- the dispensing of prescribed pharmaceutical items, especially by type of medication; and
- terminations of pregnancy (see additional comments below).

Some of these issues are discussed elsewhere in this chapter and details on statistics for cancer incidence and screening are included. As regards the data for termination of pregnancy, terminations are undertaken both in hospitals and in clinics which are not hospitals. These clinics are not, therefore, included in the State and Territory hospital data collections. In an attempt to obtain a complete dataset, details of the age and area of residence of women undergoing a pregnancy termination other than in a hospital were obtained from Health Insurance Commission data and added to the hospitals' dataset. This combined dataset was compared with the data from States with complete coverage in their hospital collections, to see if it provided an accurate picture. Unfortunately the combined dataset was inconsistent with data from the other sources and therefore, this variable was not mapped.

### Other data issues

Similarly, due to inadequate identification of Indigenous Australians in hospital inpatient collections, admissions to hospital of Indigenous Australians remain understated and have not been mapped separately.

As discussed in Chapter 2, the lack of data items, such as income or education, in health statistics collections and the consequent inability to identify and analyse socioeconomic status directly is a major deficiency in the Australian data. Therefore, the socioeconomic status of the area of usual residence of the client or patient is used as a proxy for the socioeconomic status of the client or patient. The limitations of this approach are discussed in Chapter 2, *Methods* under the heading *Usual residence*.

An over-riding deficiency in the hospital inpatient data is the lack of a unique identifier to allow for the analysis of data for individuals rather than admissions. This is discussed in more detail under *Deficiencies in the admissions data* (page 195).

# Admissions to hospitals

## Introduction

There were almost 5.2 million admissions (see the box below) to hospitals in Australia in 1995/96, providing a major database of information for examining the more serious health problems faced by Australians, subject to the qualifications discussed below (*Deficiencies in the admissions data*, page 195).

Information available for admissions includes the age, sex, diagnoses and surgical and other procedures, as recorded in the patient's case notes at the time of discharge, transfer or death. Importantly for spatial analysis, the postcode or SLA of the address of usual residence of the patient is also recorded.

### Recording details for a hospital episode (admissions)

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

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

The maps in this chapter show the spatial patterns of admissions for a range of conditions, diseases and procedures. The following text describes some of the differences evident in the data in hospitalisation rates for specific population groups. Where available, comparisons are made with the data from the first edition of the atlas.

## Differences in admission rates for specific population groups

### Differences related to socioeconomic status

Those who are socioeconomically disadvantaged have higher admission rates than the population in general. Esterman et al. (1990) examined admissions in **Adelaide** by postcode of usual residence, and compared standardised admission rates of

residents of postcodes categorised as low, medium and high income (based on household income). They found that when **Adelaide** postcodes were divided into three categories according to household income, hospital admissions were found to be 34 per cent more frequent for residents of the poorest than for the most affluent category. No condition showed a consistent upward trend in admission rates with increasing affluence, whereas the poorer areas had higher rates for a wide range of diseases and conditions, including ischaemic heart disease; infectious diseases; stroke; digestive system disorders; hypertension; cancer; skin diseases; respiratory diseases; genitourinary conditions; injuries; musculo-skeletal conditions; diabetes mellitus; nutritional, immunity and other endocrine disorders; perinatal disorders; and metabolic disorders.

Summary results of the analysis of the 1989-90 National Health Survey (noted above in **Table 6.1**) show variations in hospitalisation rates by socioeconomic status. A study by The Centre for South Australian Economic Studies (1993) estimated that the variation in admission rates between postcodes can be linked to socioeconomic effects was as high as 47 per cent.

### Differences for Aboriginal people

The Australian Bureau of Statistics and the Australian Institute of Health and Welfare have published age-standardised admission ratios for admissions of Indigenous Australians (ABS/AIHW 1999), highlighting the higher rates of admission of Indigenous people, both overall and for most specific causes (**Table 6.2**). For both men and women, the age-standardised admission rates were 1.7 times higher for Indigenous people than they were for other Australians (1.4 times when admissions for dialysis were excluded). The largest differentials in the rates for Indigenous Australians and other Australians were for admissions for dialysis (10.2 times higher for Indigenous females and 6.1 times higher for Indigenous males); diseases of the skin and subcutaneous tissue (3.2; 2.8); endocrine, nutritional and metabolic diseases and immunity disorders (both 2.8); infectious and parasitic diseases (2.2; 2.0); injury and poisoning (2.2; 1.7); and respiratory system diseases (2.3; 2.0). For Indigenous males, mental disorders were also recorded as a major cause of admission (2.5 times higher). It is likely that, given the low rate of identification of Indigenous people in the hospital admissions data, these statistics understate the extent of differentials in admission rates.

The higher admission rates of Indigenous Australians for individual causes are discussed in the introduction to each topic.

**Table 6.2: Admissions of Indigenous Australians to public acute and private hospitals<sup>1</sup>, by cause, Australia, 1996/97**

Cause	Admissions identified as Indigenous		Age-standardised admission ratio <sup>2</sup>		Proportion of total separations (%)	
	Males	Females	Males	Females	Males	Females
Infectious & parasitic diseases	2,286	2,253	2.0	2.2	3.6	2.8
Malignant neoplasms	1,040	1,396	0.7	0.7	1.7	1.7
Endocrine, nutritional & metabolic diseases & immunity disorders	1,259	1,531	2.8	2.8	2.0	1.9
Diseases of the blood & blood-forming organs	269	455	0.6	1.1	0.4	0.6
Mental Disorders	4,045	2,867	2.5	1.6	6.4	3.5
Diseases of the nervous system	3,197	2,695	1.4	1.3	5.1	3.3
Diseases of the circulatory system	3,143	2,742	1.7	2.0	5.0	3.4
Diseases of the respiratory system	7,665	7,073	2.0	2.3	12.2	8.7
Diseases of the digestive system	5,052	4,943	1.1	1.0	8.0	6.1
Diseases of the genitourinary system	1,558	4,548	1.1	1.2	2.5	5.6
Complications of pregnancy, childbirth and the puerperium	..	13,937	..	1.4	..	17.1
Diseases of the skin & subcutaneous tissue	2,382	2,303	2.8	3.2	3.8	2.8
Diseases of the musculoskeletal system & connective tissue	1,721	1,649	0.8	0.9	2.7	2.0
Congenital anomalies	338	300	0.5	0.6	0.5	0.4
Certain conditions originating in the perinatal period	980	850	0.8	0.9	1.6	1.0
Symptoms, signs & ill-defined conditions	3,459	3,879	1.5	1.5	5.5	4.8
Injury and poisoning	7,888	6,211	1.7	2.2	12.6	7.6
Other reasons for contact						
Dialysis	13,545	18,172	6.1	10.2	21.6	22.3
Other	2,876	3,755	0.8	0.9	4.6	4.6
Total	16,421	21,927	2.9	3.7	26.1	26.9
<b>All causes (excluding dialysis)</b>	<b>49,293</b>	<b>63,454</b>	<b>1.4</b>	<b>1.4</b>	<b>78.4</b>	<b>77.7</b>
<b>All causes (including dialysis)</b>	<b>62,838</b>	<b>81,626</b>	<b>1.7</b>	<b>1.7</b>	<b>100.0</b>	<b>100.0</b>

<sup>1</sup> Excludes admissions to the Darwin Private Hospital

<sup>2</sup> Age-standardised hospital admission ratio is equal to hospital admissions identified as being of Indigenous people, divided by expected admissions, based on all-Australian rates

Source: ABS/AIHW, *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples*, Table 7.19, pp. 112, 1999

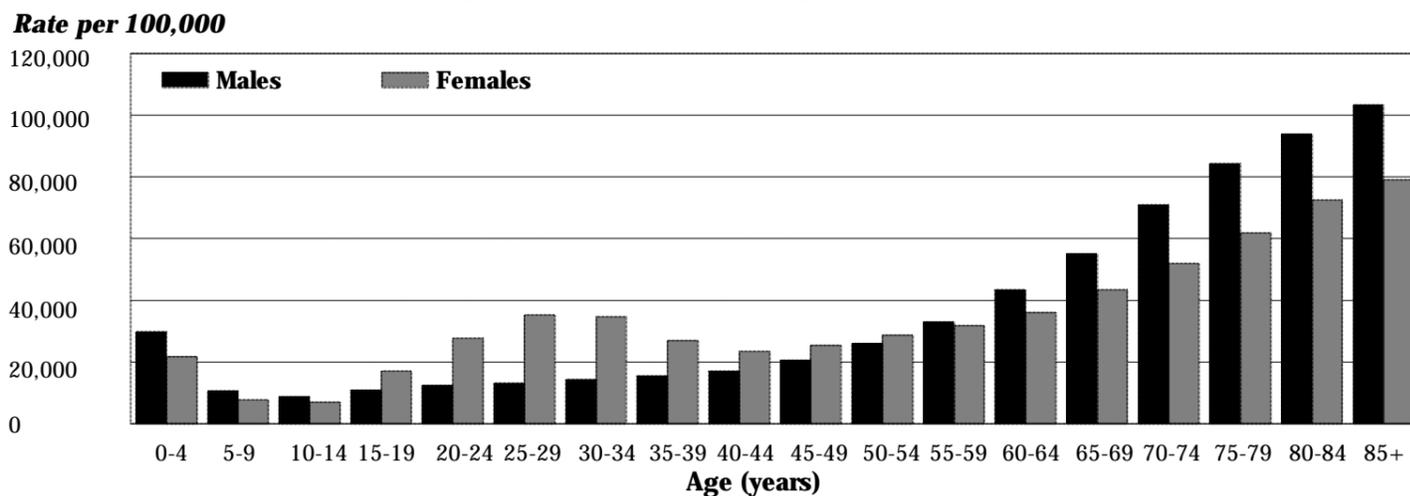
### Differences related to age, sex and hospital type

Figures 6.1 to 6.9 show, for a selection of the variables mapped, the rates of admission for each five year age group per 100,000 population for residents of Australia admitted to a hospital.

Females accounted for 55.1 per cent of admissions, 18.5 per cent more than males in 1995/96 (Figure 6.1). This pattern is not consistent across all age groups. The largest divergence in admission rates (admissions per 100,000 population) for males and females occurs in the 25 to 29 year age group, with the female rate 2.7 times that for males.

Female rates in the 20 to 24 (2.2 times), 30 to 34 (2.4 times) and 35 to 39 (1.7 times) year age groups were still well above those for males. These higher admission rates largely reflect episodes of hospitalisation for childbirth and associated admissions. The rates for males were higher than for females among those aged 0 to 4, 5 to 9 and 10 to 14 years (1.4 times as high), and from age 55 (the greatest disparity being the rates for 70 to 74 and 75 to 79 year old males) averaging 1.4 times higher than the corresponding female rate.

**Figure 6.1: Admissions to public acute and private hospitals, by age and sex, Australia, 1995/96**



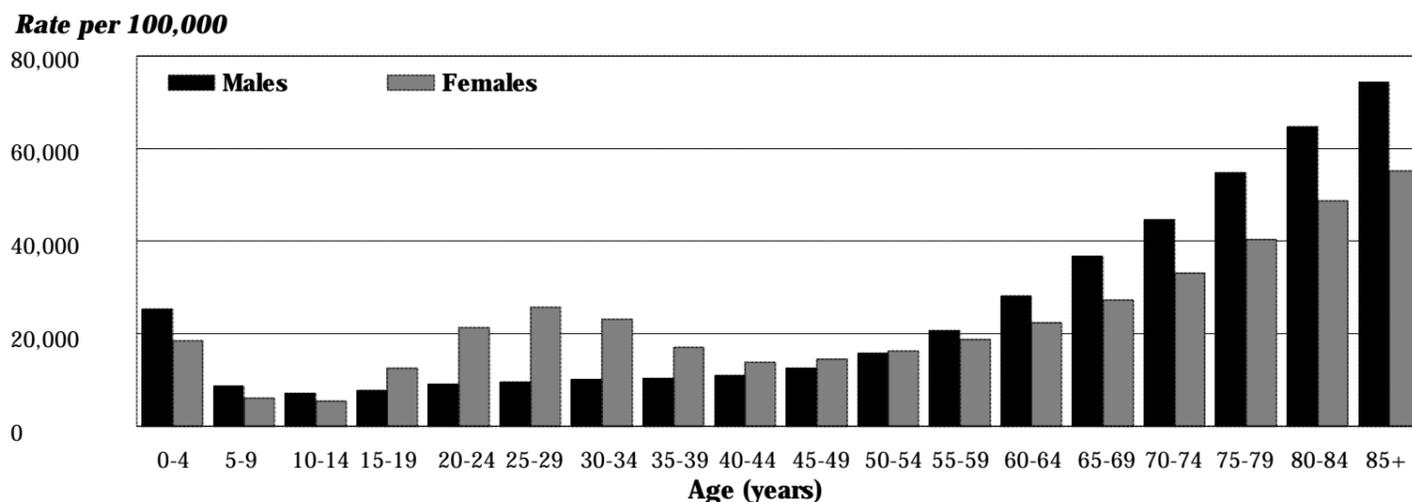
Source: See Data sources, Appendix 1.3

The profile of admissions to public acute hospitals (**Figure 6.2**) is markedly similar to that for all admissions (**Figure 6.1**). Higher rates of admissions of females are evident from the 15 to 19 year age group through to the 50 to 54 year age group. Male rates are higher at the youngest ages, and again from the 55 to 59 year age group onwards.

Overall, private hospitals accounted for 32.3 per cent of the admissions analysed for Australia. Females make marginally

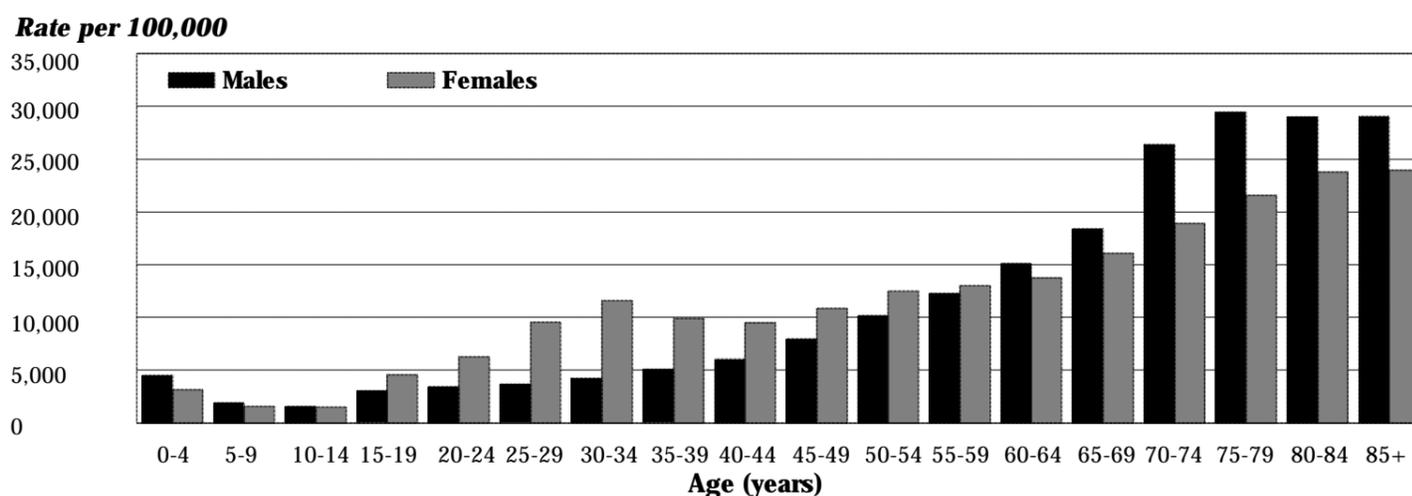
more use of private hospitals than do males, with admissions to private hospitals representing 33.1 per cent of all female admissions studied (compared with 31.3 per cent for males) and accounting for 56.5 per cent of private hospital admissions (54.5 per cent in public acute hospitals). The pattern of admissions to private hospitals by age and sex (**Figure 6.3**) is again similar to that in the previous graphs.

**Figure 6.2: Admissions to public acute hospitals, by age and sex, Australia, 1995/96**



Source: See Data sources, Appendix 1.3

**Figure 6.3: Admissions to private hospitals, by age and sex, Australia, 1995/96**

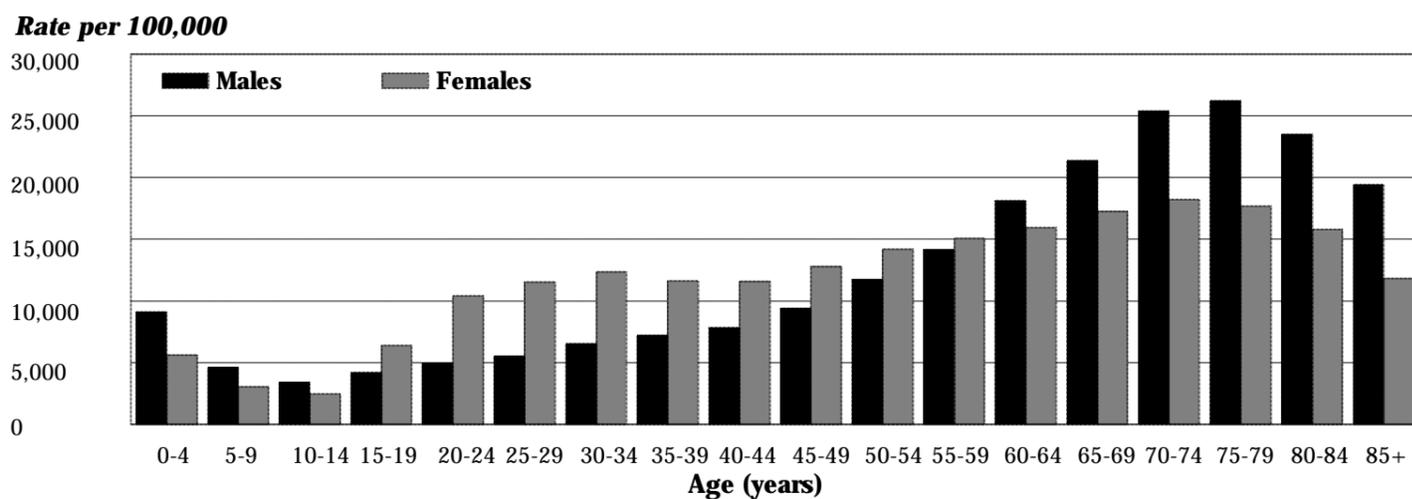


Source: See Data sources, Appendix 1.3

The general pattern of higher admission rates among females aged from 15 to 44 years and males in the youngest and oldest age groups, is also evident for same day admissions (**Figure 6.4**). However, there are some notable differences. From the age of 25 years, female rates remain reasonably consistent, increasing

marginally in the 50 to 54 age group before declining at the age of 75 years and over. Same day admission rates for males are similar to the rates recorded for total admissions until the 75 to 79 year age group, from where they begin to decline.

**Figure 6.4: Same day admissions, by age and sex, Australia, 1995/96**

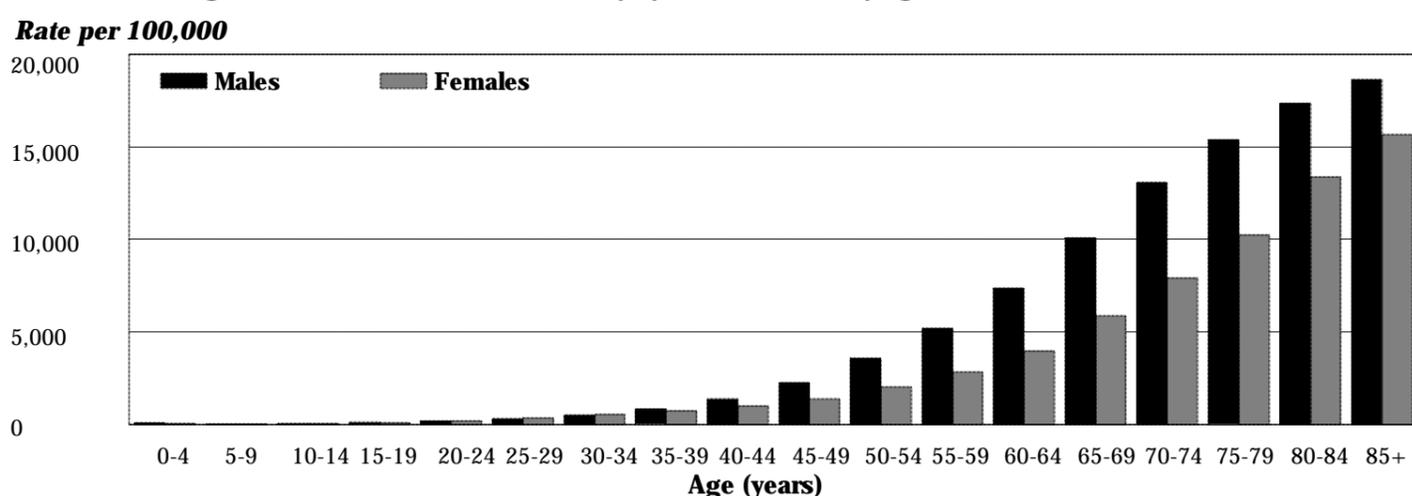


Source: See Data sources, Appendix 1.3

**Figure 6.5** and **Figure 6.6** show admissions for circulatory and respiratory system diseases, respectively. **Figure 6.5** highlights the steep rise in hospital admissions for circulatory system diseases from the age of 30 years, with males predominating across almost all age groups. Admission rates for respiratory

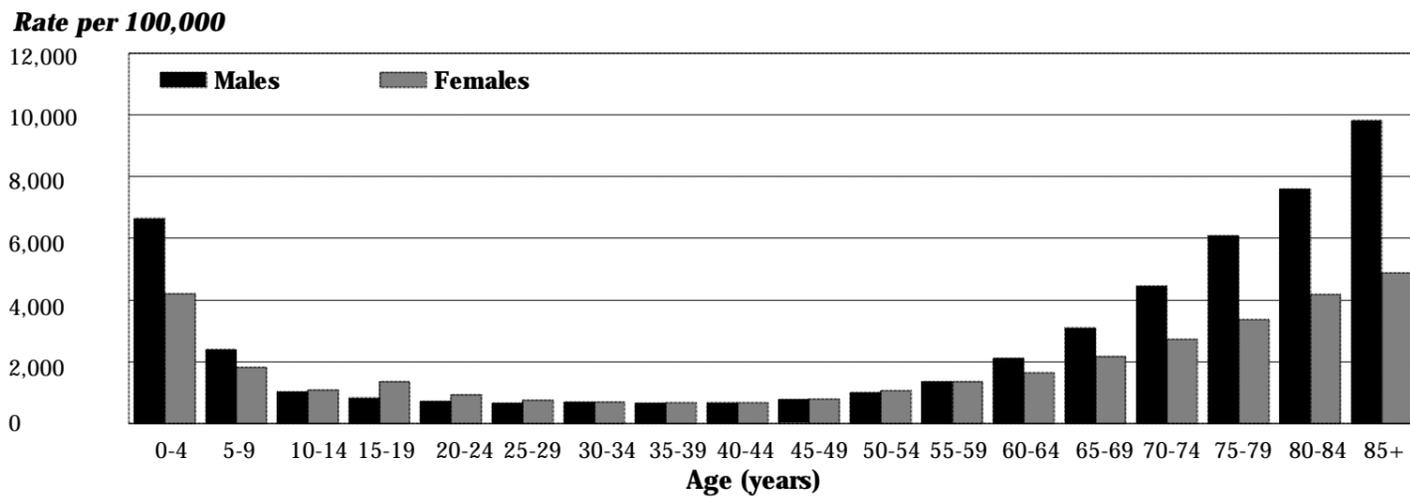
system diseases were highest among children aged from 0 to 4 and people aged from 75 years, with little difference between the age groups from 20 to 54 years (**Figure 6.6**): males predominate in the majority of these groups.

**Figure 6.5: Admissions for circulatory system diseases, by age and sex, Australia, 1995/96**



Source: See Data sources, Appendix 1.3

**Figure 6.6: Admissions for respiratory system diseases, by age and sex, Australia, 1995/96**

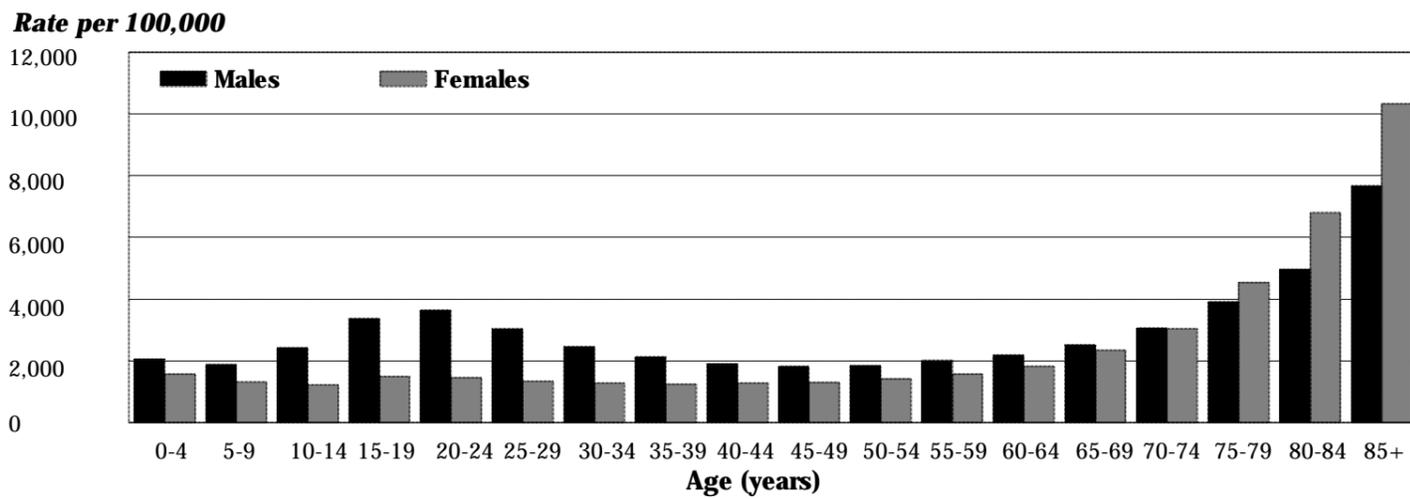


Source: See *Data sources*, Appendix 1.3

Male and female admission rates for accidents, poisonings and violence (**Figure 6.7**) are in direct contrast with the pattern for total admissions (**Figure 6.1**). Males predominate in all age groups up to and including the 70 to 74 year age group, with the largest differentials between the ages of 10 to 29 years. Female

admission rates are consistent across most of the age groups until around the 65 to 69 year age group, after which the rates begin to increase steadily, and to exceed eventually those for males.

**Figure 6.7: Admissions from accidents, poisonings and violence, by age and sex Australia, 1995/96**

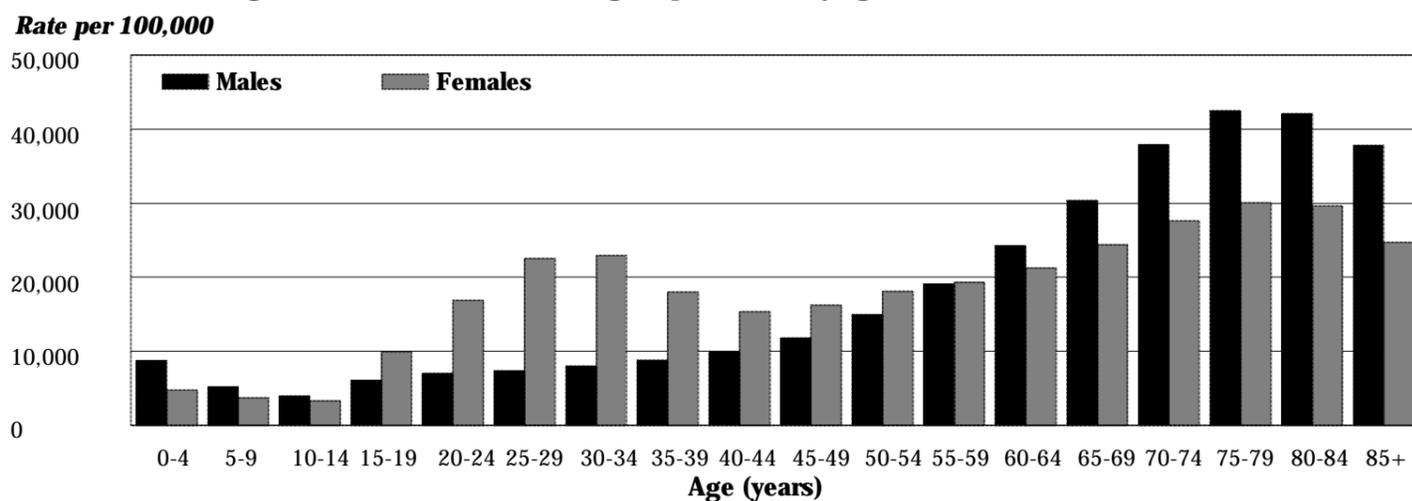


Source: See *Data sources*, Appendix 1.3

There is little variation in admission rates by either age or sex for admissions for a surgical procedure (Figure 6.8) and same day admissions for a surgical procedure (Figure 6.9), with the major difference occurring for females aged from 35 to 49 years.

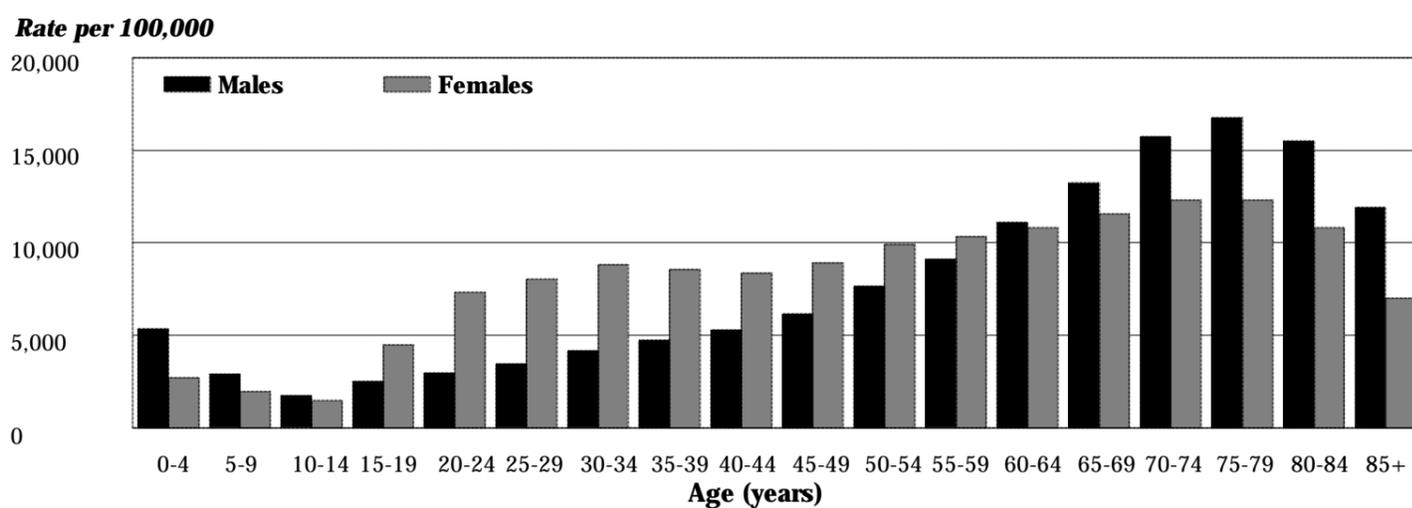
Within this age group, rates for same day admissions of females for a surgical procedure remained stable rather than decreasing as they do for total surgical admissions.

**Figure 6.8: Admissions for a surgical procedure, by age and sex, Australia, 1995/96**



Source: See *Data sources*, Appendix 1.3

**Figure 6.9: Same day admissions for a surgical procedure, by age and sex, Australia, 1995/96**



Source: See *Data sources*, Appendix 1.3

## Differences related to area of residence

In addition to the differences noted above in relation to variations in admission rates between population groups, there are notable variations in admission rates between residents of the capital cities and the non-metropolitan areas. In many instances, admission rates are considerably higher for country residents than they are for city residents. Examples of these differences can be seen in many of the tables in this chapter. Some suggested reasons for the higher rates of admissions of residents of these non-metropolitan areas are given below. In some cases, these comments reiterate those for the population groups discussed above.

Some suggested reasons for the higher admission rates of residents of the non-metropolitan areas:

### *Isolation and distance*

Factors such as distance and isolation of people living in these, often remote, areas are important. In country areas, people are more likely to be admitted 'for observation' than be sent home if their homes are a significant distance from the hospital.

### *Higher risks faced*

A higher proportion of the population of these areas are engaged in activities in agriculture and the mining industry, which have relatively high rates of accidents and injuries, often leading to hospitalisation. Higher rates of motor vehicle traffic accidents for people living in rural and remote areas, who are driving longer distances and more often, are also a contributing factor.

### *Lack of, or inadequate, alternative options/services such as community based care and respite care services*

In the absence of community based care, respite care and other services, hospitals in country areas often have a 'surrogate' caring role. This includes, in some instances, admitting people who would otherwise go to specialist psychiatric hospitals; and providing the respite care found in other types of institutions in major urban centres for the aged and younger people with physical and intellectual disabilities. There are also occasions where the circumstances of individuals or families are such that they do not have adequate resources and/or support available which result in hospital admissions. For example, a child of a single parent, living in a country town where there are limited family or community support services, may be more likely to be admitted to hospital for a minor condition, or for observation. This type of situation is often referred to as a 'social admission'.

### *Ready availability of beds*

There is clear evidence that if there is a ready supply of hospital beds, they will be used: this is particularly likely to occur when linked with a lack of appropriate alternative services as mentioned above. Generally more beds are available in country than in city hospitals.

### *Higher rates of admission of Aboriginal people*

In addition to the greater burden of ill health among Indigenous people noted above on page 187, higher rates of hospitalisation for Aboriginal people in the non-metropolitan areas are also likely to reflect significantly larger proportions of Indigenous people resident in these areas.

## Explanatory notes

### Classification of Hospitals

Hospitals can be classified as 'acute hospitals' or 'psychiatric hospitals'. Acute hospitals are those which

"provide at least minimal medical, surgical or obstetrical services for inpatients, and which provide round-the-clock comprehensive qualified nursing services as well as other necessary professional services. They must be licensed by the State health authority controlled by government departments. Most of the patients have acute conditions or temporary ailments and the average stay per admission is relatively short." (AIHW, 1998).

Acute hospitals are further classified as 'public' (those hospitals recognised under the Medicare agreement, plus Veterans' Affairs hospital) or 'private'.

Psychiatric hospitals mainly provide treatment and care to patients with psychiatric, mental or behavioural disorders. Public psychiatric hospitals treat people with the most severe psychiatric conditions: this group tends to be mainly older people, and to have longer lengths of stay. Public acute and private acute hospitals and private psychiatric hospitals treat people with less severe psychiatric conditions<sup>2</sup>.

Data for public psychiatric hospitals are not available for all States and Territories in a standard format and was not able to be included.

### Coverage

Hospital admissions data presented in this atlas includes episodes of hospitalisation in public acute and private (acute and psychiatric) hospitals. To enhance consistency, admissions of long stay nursing home type patients (patients with a length of stay in hospital of 35 days or longer and not considered to be 'acute' patients) have been excluded because the proportion of these patients in public hospitals varies between, and within, the States and Territories. The highest proportions of patients in this category generally occur in country areas where there is a lack of aged care facilities, and such patients are frequently cared for in an 'acute' hospital. The average across the non-metropolitan areas of Australia was 69.9 per cent, ranging from 24.9 per cent in the Northern Territory to 97.2 per cent in South Australia.

All admissions, including admissions of same day patients, have been included with the exception of admissions for renal dialysis. Same day admissions for renal dialysis have been excluded as they cover many repeat visits by a relatively small number of patients, who may have several admissions in a week. Further, an examination of the data suggests that some patients have changed address to live close to the location of renal dialysis facilities, thus distorting the patterns of use by address of usual residence. It should be noted that the acute episodes analysed also include repeat admissions, although not to the extent

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<sup>2</sup>Some larger acute public hospitals (generally teaching hospitals) have dedicated psychiatric units. However patients treated in public acute hospitals (but not in the psychiatric unit) and in private hospitals may also, at the end of their hospital episode, be given a diagnosis indicating their principal condition was a mental disorder. These cases are included in the data analysed and mapped here in this atlas.

occurring among same day patients (in particular those requiring chemotherapy or renal dialysis).

## Data issues

### Data mapped

Analysis of admissions has been restricted to examining admissions for all causes (separately for public acute and private hospitals, and for females and males), and selected diagnoses (based on the patient's principal diagnosis) and selected procedures (based on the patient's principal procedure), which

are major contributors to variations in the pattern of distribution of hospitalisation at the regional and small level, and are known to be associated with socioeconomic status. These admissions (**Table 6.3**) represent 93.3 per cent of total acute admissions for 1995/96.

Standardised admission ratios have been calculated for SSDs by indirect age-sex standardisation. A description of the technique of standardisation is in Appendix 1.3.

**Table 6.3: Public acute and private hospital admissions included in the analysis<sup>1</sup>, Australia, 1995/96**

Principal diagnosis/procedure	Same day		Overnight		Total	
	No.	% <sup>2</sup>	No.	% <sup>2</sup>	No.	% <sup>2</sup>
<b>Principal diagnosis</b>						
<b>Infectious and parasitic diseases</b>	22,082	1.2	62,340	2.1	84,422	1.8
<b>Cancer</b>						
lung cancer	2,701	0.1	12,871	0.4	15,572	0.3
cancer of the female breast	3,269	0.2	13,100	0.4	16,369	0.3
<b>Total cancer</b>	78,377	4.3	160,116	5.4	238,493	5.0
<b>Mental disorders</b>						
psychosis	23,973	1.3	64,679	2.2	88,652	1.9
neurotic, personality or other mental disorders	28,825	1.6	55,785	1.9	84,610	1.8
<b>Total mental disorders</b>	52,845	2.9	120,648	4.1	173,493	3.6
<b>Circulatory system diseases</b>						
ischaemic heart disease	21,041	1.2	130,495	4.4	151,986	3.2
<b>Total circulatory diseases/disorders</b>	66,345	3.6	344,457	11.7	410,802	8.6
<b>Respiratory system diseases</b>						
bronchitis, emphysema or asthma	7,489	0.4	68,486	2.3	75,975	1.6
<b>Total respiratory diseases/disorders</b>						
0 to 4 year olds	8,378	0.5	62,252	2.1	70,630	1.5
all ages	32,462	1.8	272,642	9.2	305,104	6.4
<b>Accidents, poisonings and violence</b>	99,216	5.5	292,708	9.9	391,924	8.2
<b>All causes (excl. renal dialysis)</b>						
Females	986,430	54.2	1,646,071	55.7	2,632,501	55.1
Males	832,351	45.8	1,309,895	44.3	2,142,246	44.9
<b>Public acute hospitals (excl. renal dialysis)</b>	1,085,599	59.7	2,147,049	72.6	3,232,648	67.7
<b>Private acute and psychiatric hospitals (excl. renal dialysis)</b>	733,182	40.3	808,917	27.4	1,542,099	32.3
<b>Total admissions (excl. renal dialysis)</b>	1,818,781	100.0	2,955,966	100.0	4,774,747	100.0
<b>Total admissions</b>						
Admissions for renal dialysis	343,217	15.9	2,267	0.1	345,484	6.7
All other admissions	1,818,781	84.1	2,955,966	99.9	4,774,747	93.3
<b>Total admissions (incl. renal dialysis)</b>	2,161,998	100.0	2,958,233	100.0	5,120,231	100.0
<b>Principal procedure</b>						
Tonsillectomy	600	0.0	31,644	2.3	32,244	1.2
Miringotomy	23,446	1.9	2,437	0.2	25,883	1.0
Caesarean section	90	0.0	46,912	3.4	47,002	1.8
Hysterectomy	24	0.0	33,111	2.4	33,135	1.3
Hip replacement	8	0.0	14,198	1.0	14,206	0.5
Lens insertion	51,283	4.3	40,761	2.9	92,044	3.5
Endoscopy	327,851	27.3	55,095	3.9	382,946	14.7
<b>Total (incl. all other) procedures</b>	1,202,933	100.0	1,395,241	100.0	2,598,174	100.0

<sup>1</sup>Excludes long stay nursing home type patients: includes admissions of residents of South Australia, regardless of the State/Territory of the hospital to which they were admitted

<sup>2</sup>Percentage is of Total admissions for Principal diagnosis and of Total procedures for Principal procedures

Source: See *Data sources*, Appendix 1.3

## Deficiencies in the admissions data

As noted above, the majority of hospital inpatient data at the small area level are now available from the Australian Institute of Health and Welfare National Hospital Morbidity Database. There are a number of deficiencies for small area analysis in this database.

For example, the database does not include the address of usual residence at the SLA level for admissions of people occurring outside of their home State or Territory. These admissions are of particular significance in places such as the Gold Coast, with people from New South Wales (and in particular from Tweed Heads), being major users of Gold Coast hospitals. Other examples are cross-border flows between Albury (in New South Wales) and Wodonga (in Victoria), and between Canberra and Queanbeyan and other surrounding parts of New South Wales (see **Table 6.5**).

Secondly, the Queensland Health Department does not provide the usual residence of the patient to the AIHW by SLA (as do other States and Territories), instead only making the data available by Statistical Subdivision.

In both of these instances, the State and Territory authorities were approached and provided the necessary data to make the database complete to enable mapping at the SLA level.

A third shortcoming of the National Hospital Morbidity Database is that the Darwin Private Hospital is not included in the Northern Territory hospital inpatient collection. This is the only hospital of significant size (across Australia) that was not included in the 1995/96 database, and remains so. As it accounts for some 20 per cent of admissions occurring in the Northern Territory, it is essential that it be included in any analysis and mapping at the SLA level. Fortunately the Manager of Patient Services at the Darwin Private Hospital arranged for the necessary details (of the age, sex, principal diagnosis, principal procedure and location of address (eg. suburb, town or locality) of each admission) to be provided to the atlas project. To maintain confidentiality of the hospital's data, admissions to the private hospital in the Northern Territory have not been mapped separately as they have for the other States and the Australian Capital Territory.

The lack of a unique patient identifier represents a major deficiency in analysing data for individuals rather than admissions. Although many hospitals have unique identifiers for patients within their hospitals, such identifiers do not exist between the hospital<sup>3</sup>. Thus the data includes repeat admissions and are, therefore, of limited value in describing patterns of hospitalisation for individuals. These issues also apply to many other collections of service utilisation data.

## Differences in data treatment between editions

In the first edition of the atlas all same day patients were excluded from the analysis, and were not mapped. The decision to exclude this group of patient episodes was based on a concern that the inclusion of such admissions could distort the patterns of

admission at the SLA level. This could occur because the measure mapped is the number of admissions, and not the number of individuals (for which data are not available). In any year an estimated 20 per cent of the population is admitted to hospital (ABS 1997) and most of those admitted have only one admission in any year. However, some conditions, because of their nature, require many repeat admissions. Admission rates for SLAs with above average proportions of such repeat admissions will be distorted. Examples of such admissions are those for renal dialysis and chemotherapy, which may require admission to hospital (or to a same day clinic) every few days, or even daily. It became evident from an examination of the patterns of distribution of admissions for same day patients that some people had moved residence to live in close proximity to the unit they attended for treatment. For this reason same day admissions were excluded from the analysis in the first edition.

Same day admissions have increased to comprise an even greater proportion of all admissions, and to cover a growing range of conditions and procedures, and this approach is no longer appropriate. Instead, the data analysed for this second edition includes all same day procedures with the exception of admissions for renal dialysis, as it is for these admissions that it appears likely that people may have moved residence. The exclusion of admissions for renal dialysis resulted in the exclusion of 345,484 admissions in 1995/96, 6.7 per cent of all admissions (**Table 6.2**). In this way the major distorting influence is removed, but the large number of other same day admissions is included. It should be noted that admissions for renal dialysis excluded were admissions specifically for dialysis (ie. for continuous ambulatory dialysis). Admissions during which renal dialysis was undertaken as an integral component of the episode are included.

In hindsight, it might have been more appropriate to have used this approach in the first edition of the atlas. Had this been done, a major differential evident between the standardised ratios for many of the variables for South Australia in relation to those for the other States could well have been explained (and, at least in part, removed). For example, in 1989-90, the standardised admission ratio (SAR) for both male and female residents of New South Wales was 80. The equivalent ratios for South Australians were 104 for males and 102 for females. For both males and females this represents a differential of just over 25 per cent.

In 1989-90, same day patients accounted for some 27.8 per cent of all admissions in New South Wales and a lower 22.7 per cent in South Australia (1989) (**Table 6.4**)<sup>4</sup>. It is likely that the inclusion of the same day figures in the analysis for the first edition may have reduced, or eliminated, the differentials reported. It is interesting to note that the differential in the proportion of admissions represented by same day patients in these two States has declined substantially, from 22.5 per cent in 1989, to 7.1 per cent in 1995/96. A similar narrowing has occurred across all of the States.

<sup>3</sup>Although potentially useful as an identifier, the Medicare number is not always included on inpatient records. Nor is it a unique identifier, with some individuals having more than one number.

<sup>4</sup>The comparison in **Table 6.4** has been limited to these two States out of the four mapped in the first edition because of the ready availability of the data for the earlier period shown: they were also the States with the greatest differentials in standardised ratios.

**Table 6.4: Public acute and private hospital admissions, by type of admission: Comparison between editions<sup>1</sup>**

Admission type	1989 <sup>2</sup>		1995/96	
	Number	Per cent	Number	Per cent
<b>South Australia</b>				
Same day				
Renal dialysis	13,927	3.9	34,897	7.5
Other	67,881	18.8	146,155	31.6
Total same day	81,808	22.7	181,052	39.1
Overnight stay	278,521	77.3	281,655	60.9
Total admissions	360,329	100.0	462,707	100.0
<b>New South Wales</b>				
Same day				
Renal dialysis	60,022	4.8		
Other	289,489	23.0		
Total same day	349,511	27.8	732,689	42.1
Overnight stay	904,099	72.2	1,008,677	57.9
Total admissions	1,253,610	100.0	1,741,366	100.0

<sup>1</sup> The comparison in this table has been limited to these two States out of the four mapped in the first edition of the atlas because of the ready availability of the data for the earlier period shown: they were also the States with the greatest differentials in standardised ratios

<sup>2</sup> 1989-90 for New South Wales

Source: See *data source*, Appendix 1.3

Most admissions to hospital in Australia occur in the State or Territory of usual residence of the person being admitted. The largest variations occur for the Northern Territory (with 92.5 per cent of admissions of residents of the Northern Territory occurring in their home Territory) and the Australian Capital Territory (with 92.4 per cent) (Table 6.5). Of the 7.5 per cent of admissions of Northern Territory residents occurring elsewhere in Australia, the majority were for admissions to hospitals in South Australia (4.4 per cent of all admissions in Australia of residents of the Northern Territory) and Queensland (1.5 per cent). For residents of the Australian Capital Territory, 6.6 per cent of admissions were recorded in New South Wales, a majority of which are likely to be to public and private hospitals in Sydney.

In the States, the proportions of admissions occurring in the home State were all in excess of 97 per cent. Variations in these proportions are largely related to the location of the residence of the population; for example, residents of Tweed (situated on the State's northern border) frequently go to a hospital in the Gold Coast; and those in Queanbeyan use hospitals in adjacent Canberra.

Note that it is the residential location of the person admitted to hospital that is mapped in this atlas, irrespective of the location of the hospital.

**Table 6.5: Admissions by State/Territory of residence of patient and State/Territory of location of hospital, 1995/96**

Place of residency		Hospital location								Total
		NSW	Vic	Qld	SA	WA	Tas	NT	ACT	
NSW	Number	1,598,531	12,732	18,860	2,288	419	161	189	11,073	1,644,254
	Per cent	97.22	0.77	1.15	0.14	0.03	0.01	0.01	0.67	100.00
Vic	Number	9,290	1,173,558	2,296	2,321	381	227	166	148	1,188,386
	Per cent	0.78	98.75	0.19	0.20	0.03	0.02	0.01	0.01	100.00
Qld	Number	8,461	1,038	873,618	345	299	116	195	102	884,174
	Per cent	0.96	0.12	98.81	0.04	0.03	0.01	0.02	0.01	100.00
SA	Number	1,059	1,309	507	419,704	191	34	189	38	423,031
	Per cent	0.25	0.31	0.12	99.21	0.05	0.01	0.04	0.01	100.00
WA	Number	606	468	344	336	418,892	48	431	25	421,150
	Per cent	0.14	0.11	0.08	0.08	99.46	0.01	0.10	0.01	100.00
Tas	Number	328	1,584	264	104	57	118,217	70	12	120,636
	Per cent	0.27	1.31	0.22	0.09	0.05	97.99	0.06	0.01	100.00
NT	Number	278	154	658	1,871	241	5	39,825	3	43,035
	Per cent	0.65	0.36	1.53	4.35	0.56	0.01	92.54	0.01	100.00
ACT	Number	3,325	230	156	58	27	16	17	46,252	50,081
	Per cent	6.64	0.46	0.31	0.12	0.05	0.03	0.03	92.35	100.00
Total	Number	1,627,548	1,191,440	896,703	427,339	420,759	118,824	41,102	60,240	4,783,955
	Per cent	33.95	24.95	18.77	8.92	8.79	2.49	0.86	1.26	100.00

Source: See *Data sources*, Appendix 1.3

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# Admissions to public acute hospitals and private hospitals, 1995/96

## Capital city comparison (Australia as the Standard)

The admissions included in this analysis are described in detail on page 191. In brief, they include acute admissions to hospitals in Australia, including admissions of same day patients (other than for renal dialysis), whether to a hospital or to a same day surgical unit. The area for which admissions are mapped relates to the address of usual residence recorded in the hospital's administrative records.

The low standardised admission ratios (SARs) in **Canberra** (70\*\*) and **Perth** (88\*\*) provided the largest variation from the *All capitals* ratio of 97\*\*, with only **Hobart** (102\*\*), **Adelaide** (101\*\*) and **Darwin** (101) recording ratios above the level expected from the Australian rates. The main difference evident in standardised admission ratios between the two periods shown in **Table 6.6** was the substantially lower differential (from the Australian rates) in the SAR recorded for **Sydney** in 1995/96. The higher SAR in this later period suggests an increase (relative to the Australian rates) in admission rates between the periods analysed. A similar, although substantially smaller, increase occurred in **Darwin**, while there was a small decrease (relative to the Australian rates) for admissions of residents of **Adelaide** and **Perth**.

**Table 6.6: Admissions to public acute hospitals and private<sup>1</sup> hospitals, capital cities**  
*Age-sex standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
1995/96 <sup>3</sup>	99**	97**	98**	101**	88**	102**	101	70**	97**
1989 <sup>4</sup>	80**	..	98*	103	93*	..	100*	..	89**

<sup>1</sup>Includes acute and psychiatric hospitals and day surgery facilities

<sup>2</sup>Includes Queanbeyan (C)

<sup>3</sup>Includes same day admissions, other than for renal dialysis

<sup>4</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Residents of the capital cities and other major urban centres accounted for 25,389.7 admissions per 100,000 population to public acute and private hospitals in 1995/96.

## Capital cities

There were 990,594 admissions to public acute and private hospitals of residents of **Sydney**, one per cent fewer admissions than expected from the Australian rates (an SAR of 99\*\*). The highest SARs were in **Inner Western Sydney** (an SAR of 110\*\*), **Inner Sydney** (107\*\*), **Gosford-Wyong** (105\*\*) and **Outer South Western Sydney** (104\*\*). The lowest ratios were in **Hornsby-Ku-ring-gai** (88\*\*), **Outer Western Sydney** (90\*\*) and **Lower Northern Sydney** (92\*\*). There were 111,930 admissions of residents of **St George-Sutherland**, 86,005 from **Blacktown-Baulkham Hills** residents, and 82,711 from **Canterbury-Bankstown**. Both **Newcastle** (with an SAR of 92\*\* and 116,558 admissions) and **Wollongong** (98\*\*; 66,103 admissions) reported fewer admissions than expected from the Australian rates.

Five Statistical Subdivisions (SSDs) in **Melbourne** had more admissions than expected from the Australian rates, with the highest ratios in **Southern Inner Melbourne** (an SAR of 110\*\*), **Western Fringe Melbourne** (108\*\*) and **Central Melbourne** (104\*\*). The lowest ratios were recorded in **Eastern Middle Melbourne** (86\*\*) and **South Eastern Inner Melbourne** (90\*\*). The largest numbers of admissions were of residents of **Eastern Outer Melbourne** (78,148), **Eastern Middle Melbourne** (65,158) and **Western Outer Melbourne** (62,692). The SAR for **Geelong** (83\*\*; 25,173 admissions) was lower than for any SSD in **Melbourne**.

In **Brisbane**, elevated ratios of statistical significance were recorded in **Ipswich-Moreton** (an SAR of 108\*\*), **Redcliffe** (105\*\*) and **Caboolture** (104\*\*). The lowest ratio was recorded

for residents of **Beaudesert** (an SAR of 76\*\*, 24 per cent fewer admissions than expected from the Australian rates). There were 212,699 admissions of residents of **Brisbane City**, 34,183 from **Logan**, and 32,033 admissions from **Ipswich-Moreton**. There were close to the expected numbers of admissions in both **Gold Coast-Tweed Heads** (an SAR of 98\*\*; 92,148 admissions) and **Townsville-Thuringowa** (96\*\*; 29,400 admissions).

The **Northern** (with an SAR of 106\*\*) and **Western** (102\*\*) SSDs in **Adelaide** had more admissions than were expected from the Australian rates. The lowest SAR was in **Eastern** (94\*\*). There were 89,500 admissions of residents of **Northern** SSD and 87,022 from **Southern** SSD.

In **Perth**, all SSDs had lower ratios than expected from the Australian rates. The highest ratios were in **East Metropolitan** (with an SAR of 93\*\*) and **South West Metropolitan** (90\*\*) and the lowest ratio was in **Central Metropolitan** (82\*\*). There were 86,213 admissions of residents of **North Metropolitan** and 61,194 from **South West Metropolitan**.

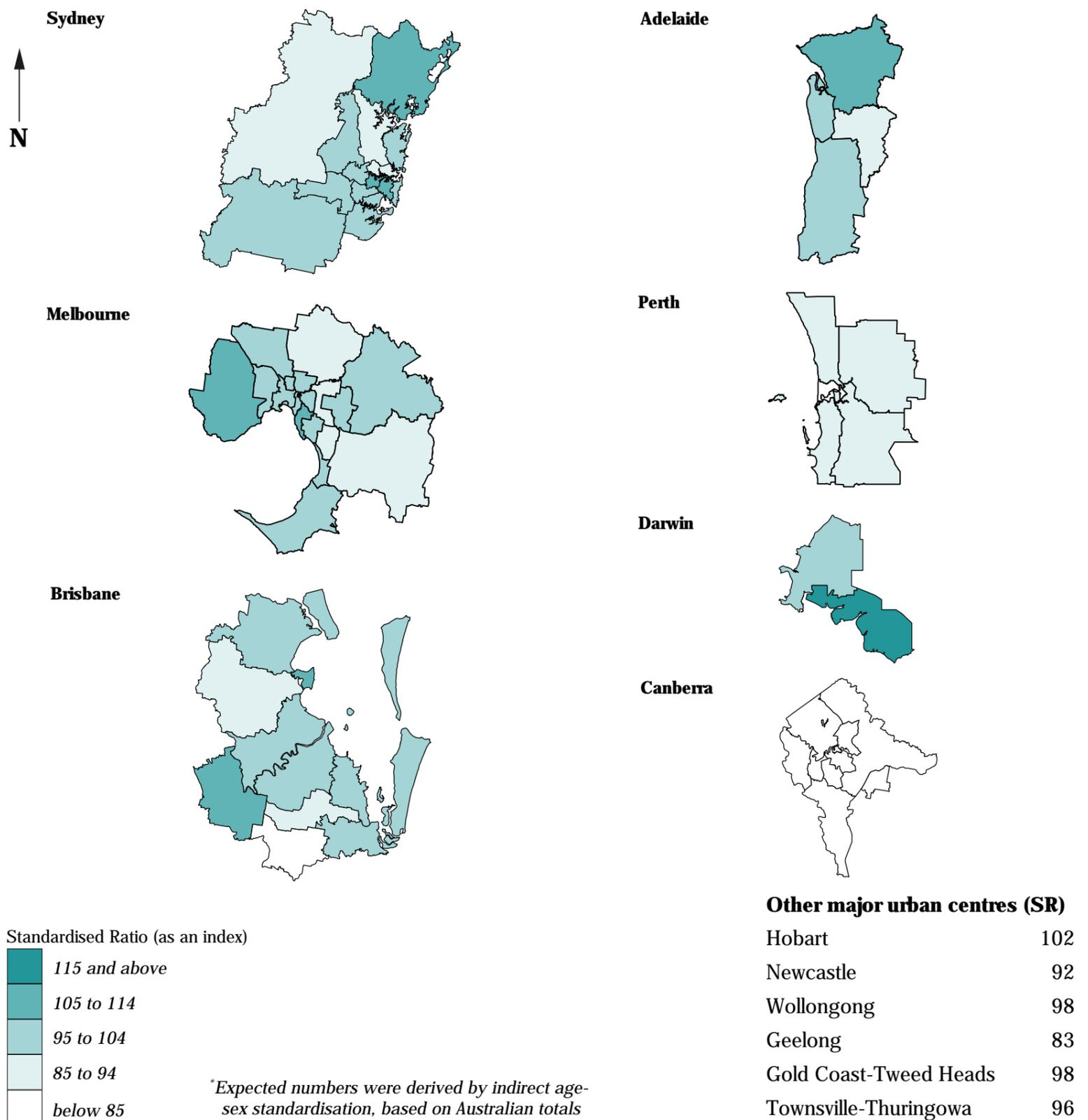
There were 52,979 admissions of residents of **Hobart** in 1995/96, an SAR of 102\*\*.

In **Darwin**, there were fewer admissions than expected from the Australian rates of residents of **Darwin City** (an SAR of 98\*\*; 14,746 admissions), and more admissions than expected in **Palmerston-East Arm** (120\*\*; 3,147 admissions).

In **Canberra**, there were fewer admissions than expected from the Australian rates in all SSDs, the highest being in **Outer Canberra** (an SAR of 72\*\*) and **Belconnen** (71\*\*). The lowest SAR was recorded in **Woden Valley** and **Weston Creek** (both with 66\*\*). The largest numbers of admissions were of residents of **Belconnen** (14,159 admissions) and **Tuggeranong** (12,893).

# Map 6.1: Admissions to public acute and private hospitals, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions to public acute hospitals and private hospitals, 1995/96

## State/Territory comparison (Australia as the Standard)

The most highly elevated standardised admission ratios (SARs) for residents of the non-metropolitan areas were those for the Northern Territory (123\*\*) and South Australia (118\*\*), with elevated SARs in all but Tasmania (Table 6.7). The notes on page 191, under the heading *Some suggested reasons for the higher rates of hospitalisation in country areas*, are of relevance in understanding these high admission rates. At the *Whole of State/Territory* level, the Northern Territory had the highest SAR in 1995/96 for this dataset (an SAR of 113\*\*), followed by South Australia (105\*\*) and Queensland (103\*\*).

In all of the States and Territories for which data are available for both periods, SARs were lower in the later period. The main differences are the substantially lower differentials (from the Australian rates) in the SARs recorded for the Northern Territory, Western Australia and South Australia in 1995/96. The lower SARs in this later period suggest a reduction (relative to the Australian rates) in admission rates for non-metropolitan residents between the periods analysed.

**Table 6.7: Admissions to public acute hospitals and private<sup>1</sup> hospitals, State/Territory**  
**Age-sex standardised admission ratios**

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>2</sup></b>									
Capital city	99**	97**	98**	101**	88**	102**	101	70**	97**
Other major urban centres <sup>3</sup>	94**	83**	97**	..	..	..	..	..	94**
Rest of State/Territory	107**	105**	111**	118**	112**	92**	123**	.. <sup>4</sup>	108**
Whole of State/Territory	101**	99**	103**	105**	95**	96**	113**	69**	100
<b>1989<sup>5</sup></b>									
Rest of State/Territory	118**	..	123**	136**	151**	..	172**	..	127**

<sup>1</sup>Includes acute and psychiatric hospitals and day surgery facilities

<sup>2</sup>Includes same day admissions, other than for renal dialysis

<sup>3</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>4</sup>Data unreliable: included with ACT total

<sup>5</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

There were 28,346.7 admissions per 100,000 population to public acute and private hospitals of residents of the non-metropolitan areas of Australia in 1995/96.

## Rest of Australia

Admissions to public acute and private hospitals in the non-metropolitan areas of New South Wales were higher than expected from the Australian rates in most Statistical Subdivisions (SSDs). Highly elevated ratios were recorded in **Upper Darling** (an SAR of 214\*\*, the highest of the non-metropolitan SSDs) and **Macquarie-Barwon** (155\*\*), with relatively high ratios in **Murray-Darling** (127\*\*), **Lachlan** and **North Central Plain** (both with 126\*\*). The lowest ratios were in **Queanbeyan** (82\*\*), **Northern Tablelands** and **Snowy** (both with 94\*\*). There were 44,576 admissions of residents of **Richmond-Tweed SD Balance**, 38,949 from **Hastings** and 36,629 from **Clarence**.

In Victoria, the most highly elevated ratios were recorded for residents of **North Goulburn** and **South Goulburn** (both with an SAR of 127\*\*), **Hopkins** (126\*\*) and **West Central Highlands** and **South Ovens-Murray** (both with an SAR of 120\*\*). The lowest ratios were in **East Barwon** (78\*\*) and **Gippsland Lakes** (80\*\*). The largest numbers of admissions were of people from **Ballarat** (23,633 admissions), **Hopkins** (20,230) and **East Barwon** (18,740).

In Queensland, only **Moreton SD Balance** (with an SAR of 95\*\*) and **Sunshine Coast** (94\*\*) had fewer admissions than were expected from the Australian rates. There were elevated SARs in the State's far north in **North West** (163\*\*), **Central West** (139\*\*),

**Far North SD Balance** (135\*\*) and **Mackay** (132\*\*). The largest numbers of admissions were of residents of **Darling Downs** (58,740 admissions) and **Wide Bay-Burnett SD Balance** (48,477).

The highest ratios in South Australia were in **West Coast** (an SAR of 190\*\*) and **Flinders Ranges** (153\*\*), with relatively high ratios also in **Whyalla** (139\*\*), **Pirie** (135\*\*) and **Upper South East** (131\*\*). Only **Onkaparinga** and **Barossa** (both with an SAR of 97\*\*) had fewer admissions than expected. The largest numbers of admissions were recorded in **Lower South East** (11,598 admissions) and **Riverland** (11,121).

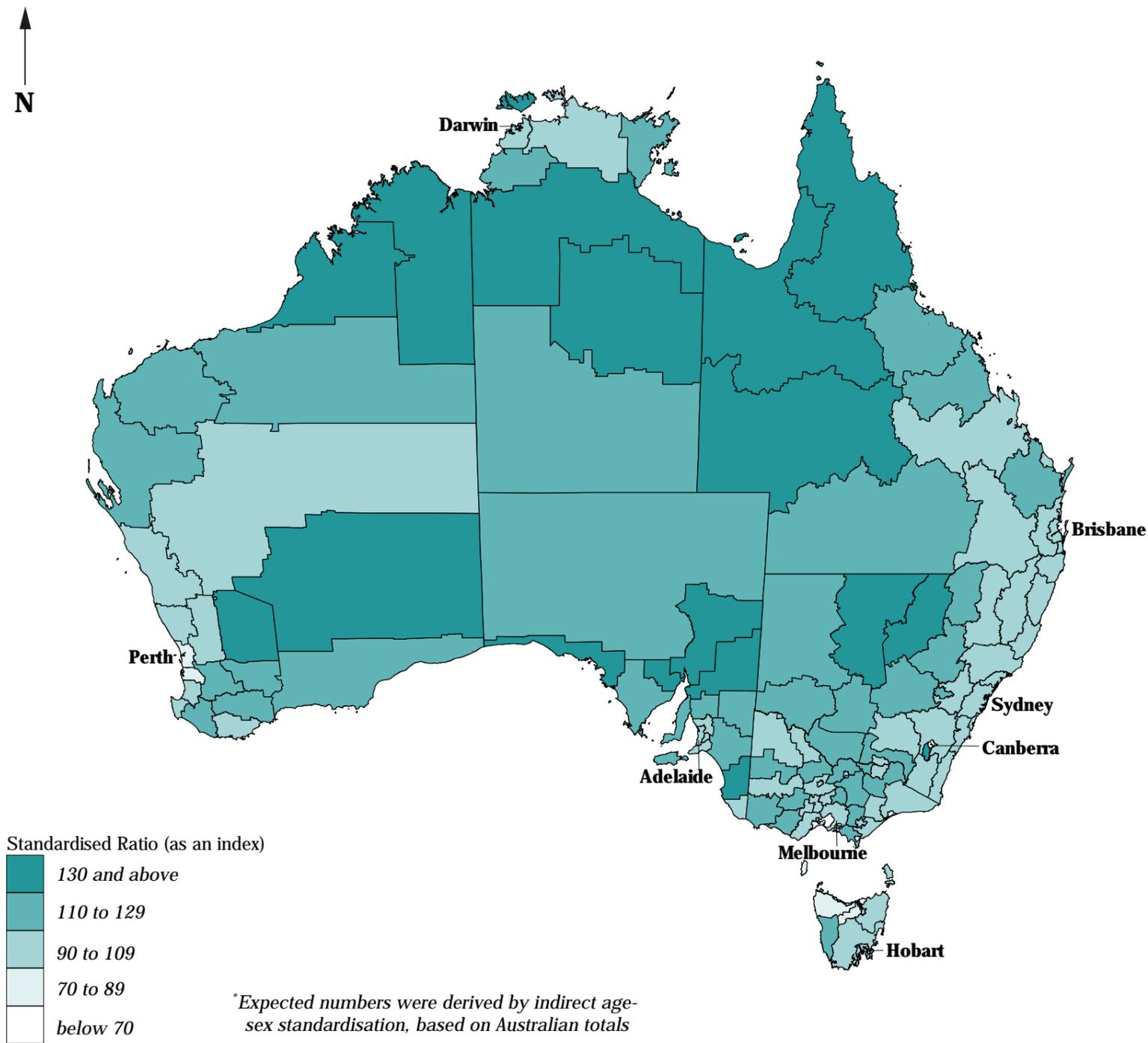
The **Ord** SSD, in Western Australia, had the second highest ratio of any non-metropolitan SSD (an SAR of 211\*\*). Very high admission ratios were also recorded in **Fitzroy** (179\*\*), **Campion** and **Lefroy** (both 132\*\*) and **Johnston** (129\*\*). There were 17,526 admissions of residents of **Preston**, 13,087 from **Dale** and 11,768 from **Greenough River**.

In Tasmania, only **Lyell** had an elevated ratio (with an SAR of 113\*\*), with ratios of 96\*\* in **North Eastern** and 98\*\* in **Burnie-Devonport**. The lowest ratio was in **North Western Rural** (80\*\*). The largest numbers of admissions were from **Launceston** (23,602 admissions) and **Burnie-Devonport** (20,873).

In the Northern Territory, there were elevated ratios in all but one SSD. The highest ratios were in **Barkly** (185\*\*) and **Bathurst-Melville** (148\*\*) and the lowest ratio was in **Darwin Rural Areas** (92\*\*). The largest numbers of admissions were in **Central NT** (9,236 admissions) and **Lower Top End NT** (4,581).

# Map 6.2: Admissions to public acute and private hospitals, Australia, 1995/96

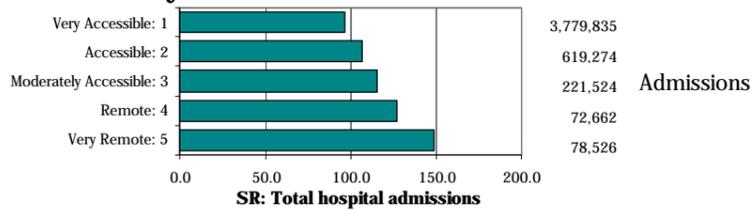
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



The rate of increase in standardised admission ratios for admissions to hospital increases steadily with remoteness, from an SAR of 97 in the Very Accessible ARIA category to 127 in the Remote category, before increasing more sharply to an SAR of 149 in the Very Remote category. Although numbers of admissions decline with increasing remoteness, this pattern is reversed in the Very Remote category.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions to public acute hospitals, 1995/96

## Capital city comparison (Australia as the Standard)

The admissions in this analysis are acute admissions to public acute hospitals (see page 191 for a definition of this hospital type) in Australia, including admissions of same day patients (other than for renal dialysis), whether to a hospital or to a same day surgical unit.

Residents of the capital cities have lower rates of admission than do residents of the non-metropolitan areas of Australia. This is evident from the standardised admission ratios (SARs) in **Table 6.8**, which vary from a high of 99\*\* in **Sydney** to a low of 79\*\* in **Hobart** and 81\*\* in **Canberra**.

**Table 6.8: Admissions to public acute hospitals<sup>1</sup>, capital cities, 1995/96**  
*Age-sex standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
99**	86**	89**	93**	88**	79**	87**	81**	92**

<sup>1</sup>Includes same day admissions other than for renal dialysis

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Admissions to public acute hospitals (excluding public psychiatric hospitals) accounted for 67.7 per cent of all admissions in Australia in 1995/96. The remaining 32.3 per cent of admissions were to private (acute or psychiatric) hospitals. For metropolitan residents, the proportion was 63.8 per cent, and for non-metropolitan residents, it was a substantially higher 75.8 per cent, reflecting both the higher rates of admissions of country residents and the greater availability of public hospitals and the lack of private hospitals.

The age profile for female (56.5 per cent of inpatient admissions) and male admissions is graphed in **Figure 6.1**, page 188. The most notable features are the higher admission rates for males at the youngest ages and from the mid-fifties, and the high admission rates for females from ages 15 to 49 years.

There were 16,204.3 public acute hospital admissions per 100,000 population of residents of the capital cities and other major urban centres in 1995/96. Females comprised 54.7 per cent of these admissions.

## Capital cities

Standardised admission ratios were elevated in most of **Sydney's** SSDs, with the highest ratios in **Inner Sydney** (with an SAR of 120\*\*), **Outer South Western Sydney** and **Inner Western Sydney** (both 118\*\*) and **Canterbury-Bankstown** (112\*\*). The lowest ratios were in **Hornsby-Ku-ring-gai** (62\*\*) and **Lower Northern Sydney** (82\*\*). The largest numbers of admissions were of residents of **St George-Sutherland** (69,224 admissions), **Canterbury-Bankstown** (61,498) and **Blacktown-Baulkham Hills** (60,364). Both **Wollongong** and **Newcastle** recorded fewer admissions than expected, with SARs of 89\*\* (46,534 admissions) and 99 (45,350 admissions), respectively.

In **Melbourne**, elevated ratios were recorded in only six SSDs. The highest ratios were in **Western Fringe Melbourne** (an SAR of 123\*\*), **Northern Inner Melbourne** (111\*\*) and **Western Outer Melbourne** and **Northern Middle Melbourne** (both with 106\*\*). The lowest ratios were in **Eastern Inner Melbourne** and **Eastern Middle Melbourne** (both with an SAR of 60\*\*). There were 46,858 admissions of residents of **Western Outer Melbourne**, 42,328 from **Western Inner Melbourne** and 40,349

from **Eastern Outer Melbourne**. There were 18,153 admissions to public hospitals of residents of **Geelong**, 11 per cent fewer than expected (an SAR of 89\*\*).

The highest ratios for SSDs in **Brisbane** were recorded in **Caboolture** (an SAR of 122\*\*) and **Redcliffe** (118\*\*), with the lowest in **Brisbane City** (81\*\*) and **Beaudesert** (78\*\*). There were 119,194 admissions of residents of **Brisbane City**, 24,700 from **Logan** and 20,561 from **Ipswich-Moreton**. There were low ratios in both **Gold Coast-Tweed Heads** (an SAR of 73\*\* and 46,039 admissions) and **Townsville-Thuringowa** (75\*\*; 15,641 admissions).

In **Adelaide**, only **Northern** SSD (with an SAR of 110\*\*) had more admissions than expected from the Australian rates. The lowest SAR was recorded in **Eastern** (70\*\*). There were 63,551 admissions of residents from **Northern** and 51,050 from **Southern**.

**East Metropolitan** (with an SAR of 102\*\*) was the only **Perth** SSD with more admissions than expected. Of the remaining SSDs, the highest ratio was in **South East Metropolitan** (an SAR of 92\*\*) and the lowest in **Central Metropolitan** (74\*\*). The largest numbers of admissions were of residents of **North Metropolitan** (57,025 admissions) and **South East Metropolitan** (42,525).

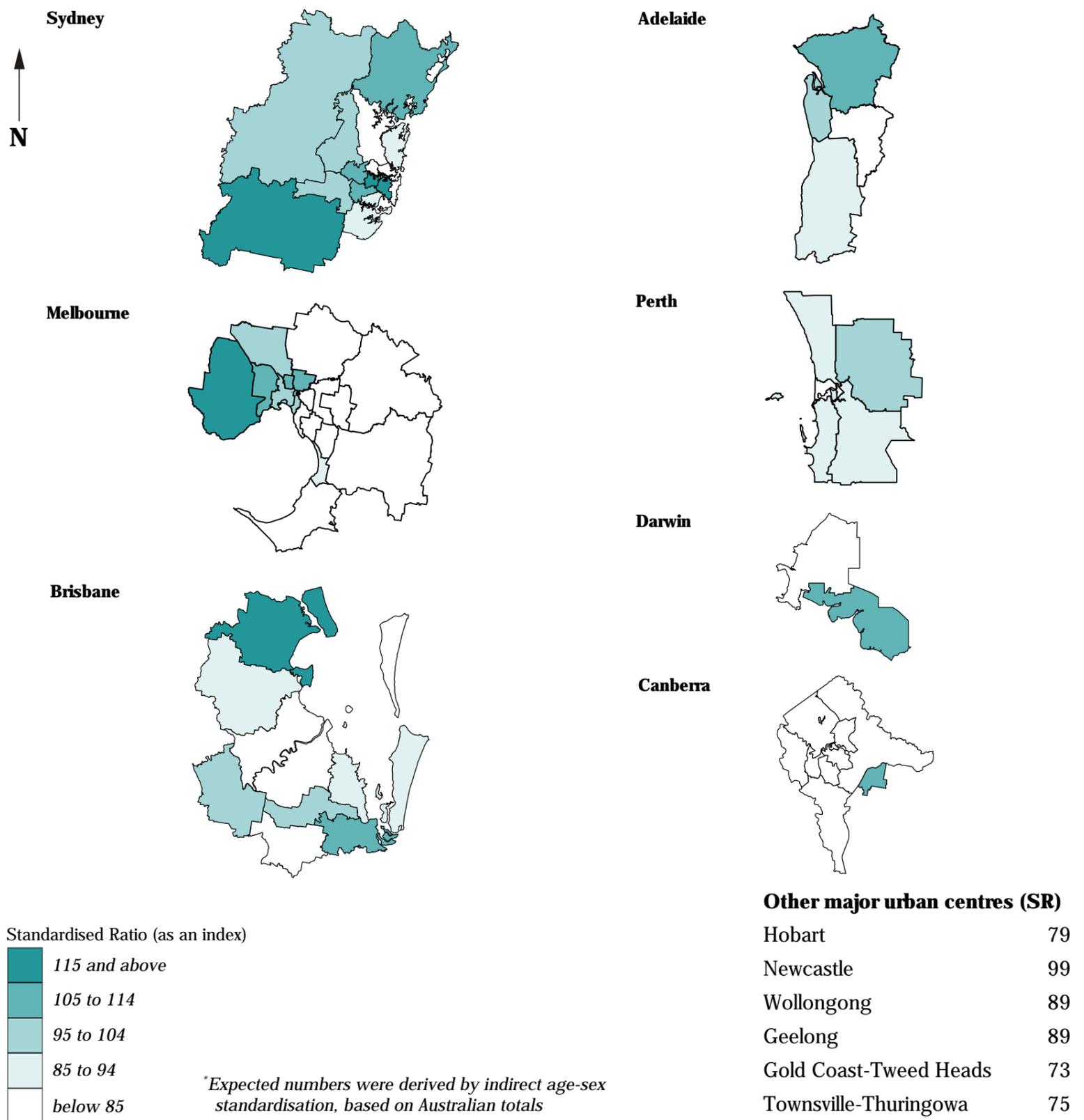
Residents of **Hobart** had 27,705 admissions to public acute hospitals, 21 per cent fewer than expected from the Australian rates (an SAR of 79\*\*).

In **Darwin**, there were more admissions than expected from the Australian rates in **Palmerston-East Arm** (an SAR of 108\*\*; 1,991 admissions) and fewer than expected in **Darwin City** (83\*\*; 8,574 admissions).

Lower than expected ratios were recorded in each SSD in **Canberra**. The highest SAR was in **Outer Canberra** (80\*\*), and the lowest in **Woden Valley** (73\*\*). There were 10,725 admissions of residents of **Belconnen** and 10,376 from **Tuggeranong**.

### Map 6.3: Admissions to public acute hospitals, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions to public acute hospitals, 1995/96

## State/Territory comparison (Australia as the Standard)

The most highly elevated standardised admission ratios (SARs) for admissions to public acute hospitals of residents of the non-metropolitan areas of Australia were in the Northern Territory (159\*\*), South Australia (149\*\*) and Western Australia (139\*\*): ratios were elevated by more than 20 per cent also in New South Wales and Victoria. Only in Tasmania were there fewer admissions of residents of the non-metropolitan areas than expected from the Australian rates (**Table 6.9**), although details of admissions to private hospitals (page 206 and **Table 6.11**) are also relevant.

At the *Whole of State/Territory* level, the Northern Territory had the highest SAR for admissions to public acute hospitals in 1995/96 (an SAR of 126\*\*), followed by South Australia (108\*\*) and New South Wales (105\*\*).

**Table 6.9: Admissions to public acute hospitals<sup>1</sup>, State/Territory, 1995/96**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	99**	86**	89**	93**	88**	79**	87**	81**	92**
Other major urban centres <sup>2</sup>	93**	89**	73**	..	..	..	..	..	86**
Rest of State/Territory	123**	122**	110**	149**	139**	80**	159**	- <sup>3</sup>	121**
Whole of State/Territory	105**	96**	96**	108**	102**	80**	126**	78**	100

<sup>1</sup>Includes same day admissions, other than for renal dialysis

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

In 1995/96, there were 21,485.6 admissions per 100,000 population to public acute hospitals of residents of the non-metropolitan areas of Australia. Females accounted for 54.1 per cent of these admissions.

## Rest of Australia

In New South Wales, there were more admissions than expected from the Australian rates in all Statistical Subdivisions (SSDs) except **Hastings** (with an SAR of 80\*\*) and **Tweed Heads** (91\*\*). The most highly elevated ratio was in **Upper Darling** (282\*\*), with nearly three times the expected number of admissions. Elevated ratios were also recorded in **Macquarie-Barwon** (197\*\*), **Murray-Darling** (175\*\*), **North Central Plain** (163\*\*) and **Far West** (160\*\*). There were 34,059 admissions of residents of **Richmond-Tweed SD Balance**, 27,536 from **Clarence** and 23,384 from **Illawarra SD Balance**.

Elevated ratios were recorded in all but four SSDs in non-metropolitan Victoria, with the highest ratios in **Glenelg** (with an SAR of 164\*\*), **South Ovens-Murray** (154\*\*), **North Wimmera** and **North Goulburn** (both with 152\*\*) and **North Ovens-Murray** (151\*\*). The lowest SARs were recorded for residents in **East Barwon** (an SAR of 72\*\*) and **Ballarat** and **South Loddon-Campaspe** (both with 88\*\*). The largest numbers of admissions were of residents of **Hopkins** (16,148 admissions), **La Trobe Valley** (15,362) and **Ballarat** (14,044).

In Queensland, there were more than twice the expected number of admissions to public hospitals in **North West** (an SAR of 214\*\*), with very high ratios also in **Central West** (177\*\*), **Far North SD Balance** (166\*\*) and **South West** (151\*\*). The lowest ratios were in **Sunshine Coast** (80\*\*) and **Rockhampton** (72\*\*). The largest numbers of admissions were of residents of the SSDs of **Wide Bay-Burnett SD Balance** (35,210 admissions), **Darling Downs** (34,436) and **Far North SD Balance** (28,663).

All but one of South Australia's SSDs had more admissions than expected. In **West Coast** (with an SAR of 262\*\*) and **Flinders Ranges** (203\*\*), there were more than twice the expected number of admissions. Elevated ratios were also recorded in **Whyalla** (194\*\*), **Pirie** (180\*\*) and **Lincoln** (172\*\*). The lowest ratio was recorded in **Onkaparinga SSD** (92\*\*). The largest numbers of admissions were recorded for residents of **Lower South East** (10,827 admissions), **Riverland** (10,279) and **Pirie** (9,060).

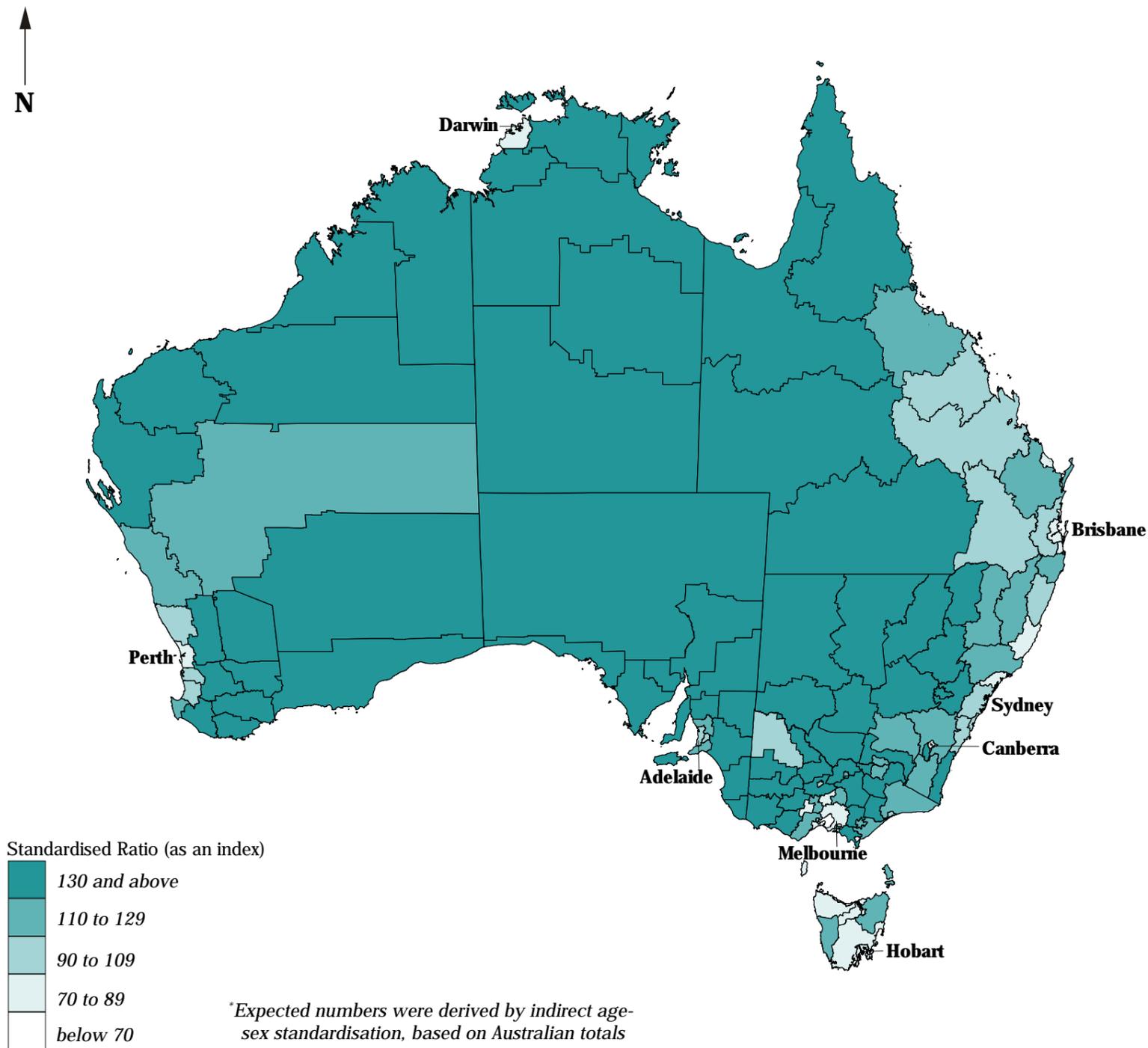
In Western Australia, ratios were elevated by more than twice the expected levels in **Ord** (an SAR of 291\*\*) and **Fitzroy** (250\*\*). There were also very high ratios in **Johnston** (173\*\*), **Lefroy** (169\*\*) and **Campion** (165\*\*). Five other non-metropolitan SSDs had ratios elevated by 50 per cent or more above the level expected. The lowest ratio was recorded in **Preston** (an SAR of 100). The largest numbers of admissions were of residents of **Preston** (12,034 admissions), **Dale** (10,324), **Lefroy** (10,232) and **King** (10,190).

There were more admissions than expected in the Tasmanian SSDs of **Lyell** (with an SAR of 121\*\*) and **North Eastern** (111\*\*). In the remaining SSDs, there were fewer admissions than expected, with the lowest ratios in **North Western Rural** (an SAR of 73\*\*) and **Burnie-Devonport** (62\*\*). There were 15,028 admissions of residents of **Launceston**, and 8,988 from **Burnie-Devonport**.

In the Northern Territory, ratios were highly elevated in all of the SSDs outside of **Darwin** with the exception of **Darwin Rural Areas**, where residents had 19 per cent fewer admissions than expected from the Australian rates (an SAR of 81\*\*). The most highly elevated ratios were in **Barkly** (an SAR of 256\*\*), **Bathurst-Melville** (209\*\*), **Lower Top End NT** (182\*\*) and **Central NT** (167\*\*). Residents of **Central NT** had 8,891 admissions, with 4,289 admissions from **Lower Top End NT**.

## Map 6.4: Admissions to public acute hospitals, Australia, 1995/96

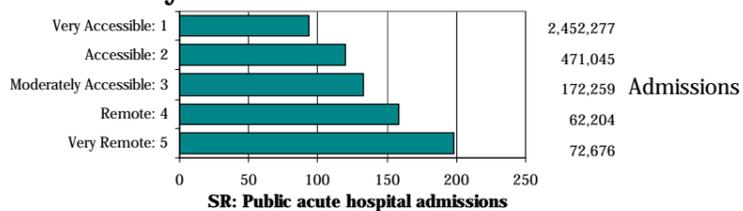
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions to public acute hospitals increase more markedly between the ARIA categories than do those for total admissions, cover a wider range and have a higher overall ratio for residents of areas in the Very Remote category, an SAR of 198. Again, numbers of admissions decline with increasing remoteness, apart from between the Remote and Very Remote categories.

Source: Calculated on ARIA classification, DHAC  
National Social Health Atlas Project, 1999

# Admissions to private hospitals, 1995/96

## Capital city comparison (Australia as the Standard)

The admissions included in this analysis are acute admissions to private hospitals in Australia (both private acute and private psychiatric hospitals: see page 191 for a definition of these hospital types). Admissions of same day patients (other than for renal dialysis) are included, whether to a hospital or to a same day surgical unit.

As most private hospitals are located in the capital cities, residents of these cities generally have higher rates of admission to private hospitals than does the population living in the non-metropolitan areas of Australia. This is evident from the standardised admission ratios (SARs) in **Table 6.10**, which are generally higher in the capital cities than expected from the Australian rates. The low level of provision of private hospital facilities in **Perth** and **Canberra** is reflected in the low ratios for these two capital cities. Details of admissions to public acute hospitals (page 200, **Table 6.8**) and levels of provisions of private hospitals (Chapter 7) are also relevant.

**Table 6.10: Admissions to private<sup>1</sup> hospitals, capital cities, 1995/96**  
*Age-sex standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
98**	121**	116**	116**	89**	150**	133**	46**	108**

<sup>1</sup>Includes acute and psychiatric hospitals and day surgery facilities, including same day admissions, other than for renal dialysis

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Admissions to private hospitals account for 32.3 per cent of all admissions (excluding those in public psychiatric hospitals, same day patients and long stay nursing home type patients) in 1995/96. The remaining 67.7 per cent of admissions were to public acute hospitals. For metropolitan residents, the proportion was higher, at 36.2 per cent, and for non-metropolitan residents, it was a substantially lower 24.2 per cent.

There were 9,185.5 admissions per 100,000 population to private hospitals of residents of the capital cities and major urban centre in 1995/96. Females accounted for 57.5 per cent of these admissions.

## Capital cities

In **Sydney**, elevated ratios for admissions to private hospitals were recorded for residents of the higher status Statistical Subdivisions (SSDs) of **Hornsby-Ku-ring-gai** (an SAR of 142\*\*), **Eastern Suburbs** (126\*\*), **Northern Beaches** (125\*\*), **St George-Sutherland** (117\*\*) and **Lower Northern Sydney** (115\*\*). The lowest SARs were in **Outer South Western Sydney** (74\*\*) and **Outer Western Sydney** (62\*\*). The largest numbers of admissions were of residents of **St George-Sutherland** (42,706 admissions), **Hornsby-Ku-ring-gai** (31,440) and **Lower Northern Sydney** (28,821). There were 40,023 admission in **Newcastle** (an SAR of 97\*\*), and 20,753 admissions in **Wollongong** (95\*\*).

Private hospital admissions were higher than expected in most **Melbourne** SSDs. Highly elevated ratios were recorded in **Southern Inner Melbourne** (an SAR of 186\*\*), **Eastern Inner Melbourne** (168\*\*) and **Eastern Outer Melbourne** and **Mornington Peninsula Outer** (both 143\*\*). **Western Fringe Melbourne** (73\*\*) and **Western Outer Melbourne** (75\*\*) had the lowest admission ratios. There were 37,800 admissions of residents from **Eastern Outer Melbourne**, 34,722 from **Eastern Middle Melbourne** and 32,577 from **Southern Inner Melbourne**. There were 28 per cent fewer admissions to private hospitals recorded for residents of **Geelong** than expected from the Australian rates, a total of 7,020 admissions.

The highest ratios in **Brisbane** were in **Brisbane City** (an SAR of 132\*\*), **Ipswich-Moreton** (124\*\*), **Redland** (111\*\*) and **Pine Rivers** (106\*\*). Ratios were lower than expected in the other SSDs, with the lowest in **Caboolture** (an SAR of 67\*\*) and **Beaudesert** (71\*\*). The largest numbers of admissions were of residents of **Brisbane City** (93,505 admissions), **Ipswich-Moreton** (11,473) and **Logan** (9,483). More admissions than expected were recorded in both **Gold Coast-Tweed Heads** (an SAR of 149\*\* and 46,110 admissions) and **Townsville-Thuringowa** (144\*\* and 13,759 admissions).

In **Adelaide**, only in **Northern** SSD (with an SAR of 95\*\*) were there fewer admissions to private hospitals than expected. The most highly elevated ratios were in **Eastern** (an SAR of 142\*\*) and **Southern** (127\*\*), and the largest numbers of admissions were of residents of **Southern** (35,972) and **Eastern** (29,059).

With the exception of **Central Metropolitan** (with an SAR of 101), there were fewer admissions to private hospitals than expected in each of **Perth's** SSDs. Of these, the highest SARs were recorded for residents in **South West Metropolitan** (98\*\*) and **North Metropolitan** (92\*\*), and the lowest in **East Metropolitan** (74\*\*). The largest numbers of admissions were of residents of **North Metropolitan** (29,188 admissions) and **South West Metropolitan** (21,528).

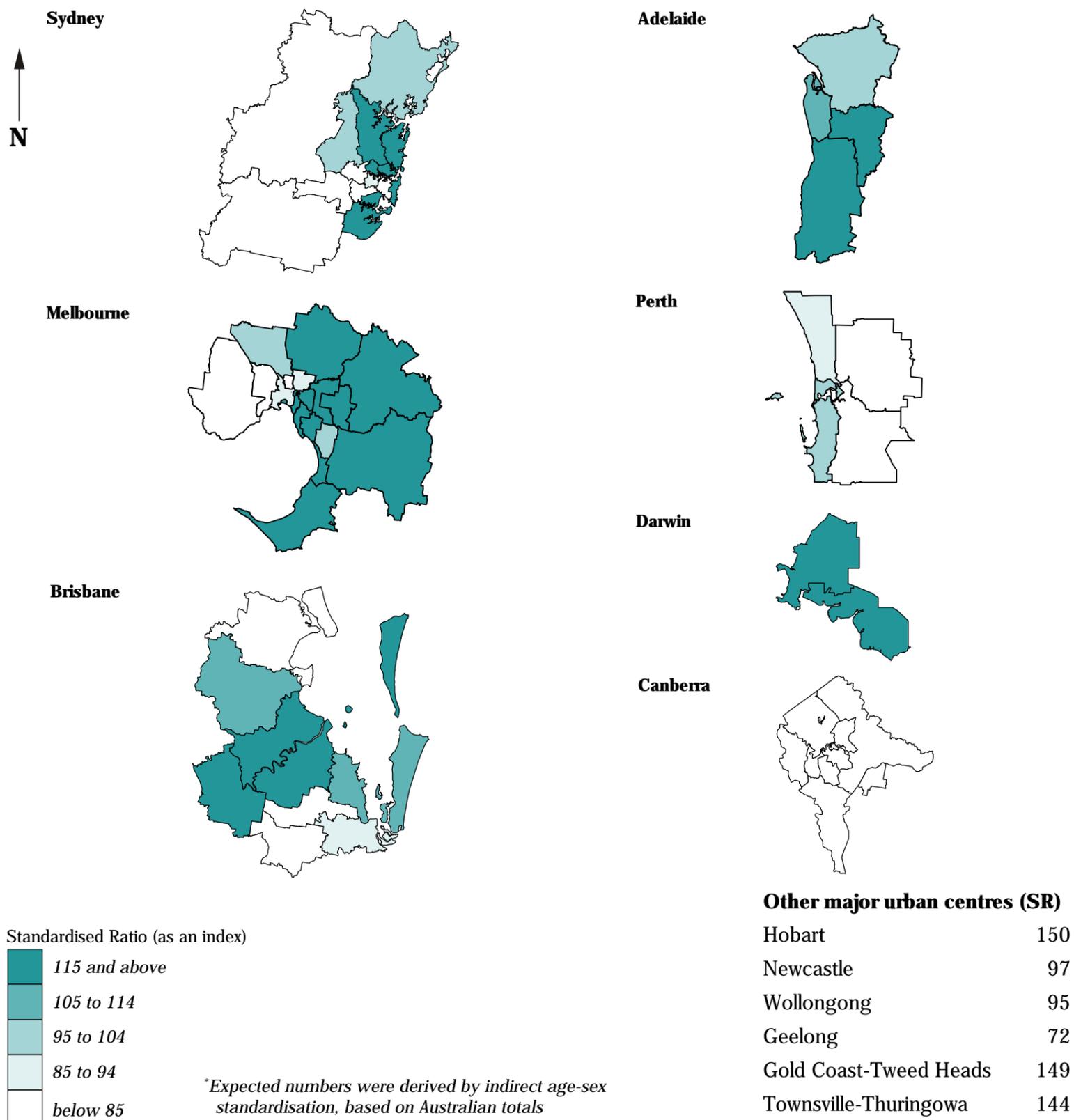
There were 25,274 admissions to private hospitals of residents of **Hobart** (an SAR of 150\*\*), 50 per cent more than were expected from the Australian rates.

In **Darwin**, there were elevated SARs for admissions to private hospitals in both **Palmerston-East Arm** (an SAR of 148\*\*; 1,156 admissions) and **Darwin City** (131\*\*; 6,172 admissions).

There were fewer admissions to private hospitals in each of **Canberra's** SSDs. The highest ratios were in **Belconnen** (with an SAR of 54\*\*) and **Woden Valley** (51\*\*) and the lowest in **Tuggeranong** (45\*\*) and **Central Canberra** (43\*\*). The largest numbers of admissions were of residents of **Belconnen** (3,434 admissions) and **Tuggeranong** (2,517).

# Map 6.5: Admissions to private hospitals, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions to private hospitals, 1995/96

## State/Territory comparison (Australia as the Standard)

The most highly elevated standardised admission ratios (SARs) for admissions to private hospitals of residents of the non-metropolitan areas of Australia were in Tasmania (118\*\*) and Queensland (113\*\*). Ratios in all of the other States and the Northern Territory were substantially lower than expected from the Australian rates (**Table 6.11**). The lowest were in the Northern Territory (39\*\*), South Australia and Western Australia (both with SARs of 55\*\*). Details of admissions to public acute hospitals (page 202, **Table 6.9**) and levels of provisions of private hospitals (Chapter 7) are also relevant.

At the *Whole of State/Territory* level, Tasmania had the highest SAR for admissions to private hospitals in 1995/96 (an SAR of 131\*\*), followed by Queensland (119\*\*) and Victoria (106\*\*).

**Table 6.11: Admissions to private<sup>1</sup> hospitals, State/Territory, 1995/96**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	98**	121**	116**	116**	89**	150**	133**	46**	108**
Other major urban centres <sup>2</sup>	96**	72**	147**	..	..	..	..	..	113**
Rest of State/Territory	73**	69**	113**	55**	55**	118**	39**	- <sup>3</sup>	81**
Whole of State/Territory	91**	106**	119**	100	80**	131**	84**	48**	100

<sup>1</sup>Includes acute and psychiatric hospitals and day surgery facilities, including same day admissions, other than for renal dialysis

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

In 1995/96, there were 6,861.2 admissions per 100,000 population of residents of the non-metropolitan areas of Australia. Females accounted for 53.4 per cent of these admissions.

## Rest of Australia

Elevated ratios were recorded in only three Statistical Subdivisions (SSDs) in New South Wales; these were **Tweed Heads** (with an SAR of 157\*\*), **Hastings** (153\*\*) and **Albury** (101). Of the other SSDs, the highest ratios were in **Illawarra SD Balance** (an SAR of 91\*\*), **Hunter SD Balance** (86\*\*) and **Central Murrumbidgee** (80\*\*). The lowest ratios were recorded for residents of **Queanbeyan** and **Murray-Darling** (both with an SAR of 26\*\*) and **Northern Tablelands** (28\*\*). Private hospital admissions were highest from **Hastings** (18,896 admissions), **Richmond-Tweed SD Balance** (10,516) and **Illawarra SD Balance** (9,800).

Only **Ballarat** (with an SAR of 127\*\*), **South Loddon-Campaspe** (114\*\*) and **West Mallee** (113\*\*) SSDs in Victoria had more private hospital admissions than expected from the Australian rates. The lowest ratios were recorded for residents in **Gippsland Lakes** (an SAR of 28\*\*), **Glenelg** (22\*\*) and **Mildura** (16\*\*). The largest numbers of admissions were of residents of **Ballarat** (9,589 admissions), **East Barwon** (7,171) and **Bendigo** (5,517).

In Queensland, ratios for private hospital admissions were elevated in nine SSDs, located mainly in coastal areas. The highest ratios were in **Rockhampton** (an SAR of 188\*\*), **Mackay** (169\*\*), **Darling Downs** (140\*\*), **Bundaberg** (135\*\*) and **Sunshine Coast** (124\*\*). The lowest ratios were in **North West** (an SAR of 45\*\*) and **Central West** (56\*\*). The largest numbers of admissions were for residents of **Darling Downs** (24,303 admissions), **Sunshine Coast** (18,019) and **Wide Bay-Burnett SD Balance** (13,237).

In South Australia, only **Onkaparinga** (with an SAR of 106\*\*), had more admissions to private hospitals than were expected from the Australian rates. The next highest ratios were in **Upper South East** (an SAR of 81\*\*), **Yorke** (80\*\*) and **Fleurieu** (77\*\*). The lowest ratios were in **Lower South East** and **Whyalla**, each with an SAR of 21\*\*. There were 2,582 admissions of residents of **Onkaparinga** and 2,511 from **Barossa**.

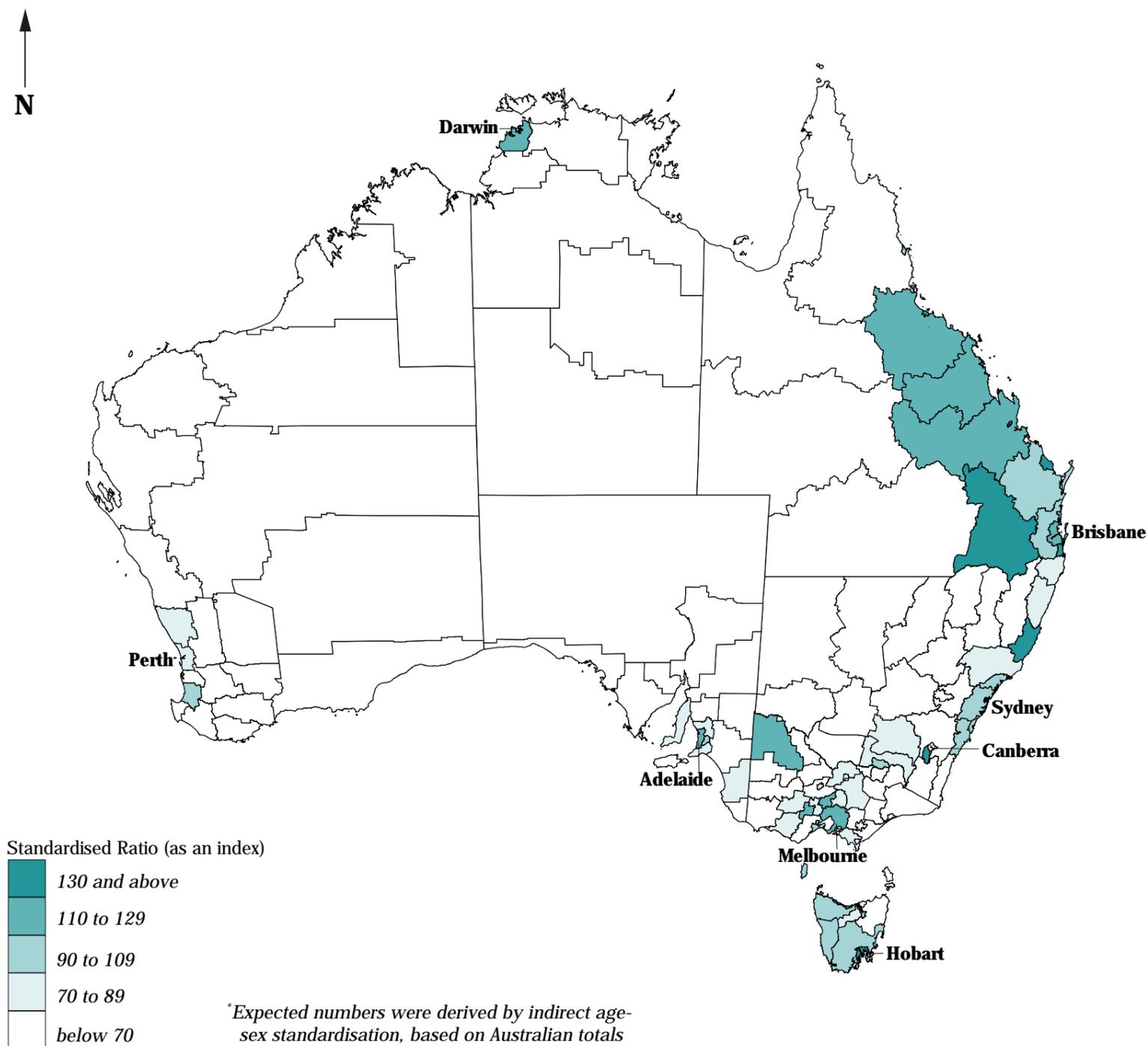
Lower than expected ratios were recorded in all SSDs in Western Australia. The highest ratios were in **Preston** (with an SAR of 96\*\*), **Moore** (72\*\*), **Greenough River** (68\*\*) and **Lakes** and **Campion** (both with an SAR of 60\*\*); and the lowest were in **Fitzroy** (12\*\*), **Ord** (16\*\*), **King** (20\*\*) and **Gascoyne** (28\*\*). There were 5,492 admissions in **Preston**, 2,762 from **Dale** and 2,402 from **Greenough River**.

In Tasmania, the SSDs of **Burnie-Devonport** (with an SAR of 171\*\*), **Southern** (105\*\*) and **Launceston** (101) had elevated SARs. The lowest ratios were in **North Eastern** (an SAR of 66\*\*) and **Central North** (81\*\*). There were 11,885 admissions to private hospitals of residents of **Burnie-Devonport** and 8,574 from **Launceston**.

**Darwin Rural Areas** was the only Northern Territory SSD outside of **Darwin** in which there were more admissions to private hospitals than were expected from the Australian rates (an SAR of 116\*\*). Extremely low ratios were recorded in the remaining SSDs, ranging from 7\*\* in **Bathurst-Melville** and 15\*\* in **Central NT** to 43\*\* in **Alligator** and 47\*\* in **Daly**. There were 1,147 admissions of residents of **Darwin Rural Areas**, and 345 from **Central NT**.

## Map 6.6: Admissions to private hospitals, Australia, 1995/96

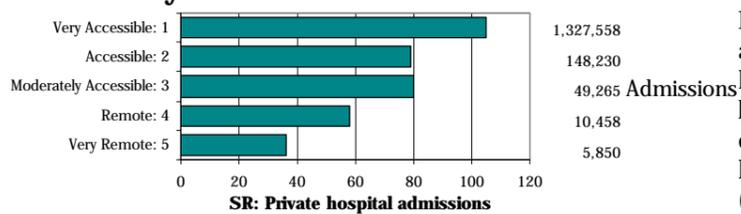
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Residents of the Very Accessible areas under the ARIA classification had an elevated standardised admission ratio for admissions to private hospitals of 105, reflecting the greater availability of these facilities in the largest urban areas. Ratios in the other categories were all lower, dropping to an SAR of 36 in the Very Remote ARIA category. Private hospital beds were only located in the three 'accessible' ARIA categories (see Chapter 7).

Source: Calculated on ARIA classification, DHAC

National Social Health Atlas Project, 1999

# Admissions of males, 1995/96

## Capital city comparison (Australia as the Standard)

The admissions in this chapter are of acute admissions to hospitals in Australia, including admissions of same day patients (other than for renal dialysis), whether to a hospital or to a same day surgical unit.

Males in **Hobart**, **Sydney**, **Adelaide** and **Darwin** had the highest standardised admission ratios (SAR) with one per cent more admissions than expected from the Australian rates. As for all admissions, the lowest ratios were recorded for residents of **Canberra** (68\*\*) and **Perth** (89\*\*).

The main difference evident in admission rates between the two periods shown in **Table 6.12** was the substantially lower differential (from the Australian rates) in the SAR recorded for **Sydney** in 1995/96. The higher SAR in this later period suggests an increase (relative to the Australian rates) in admission rates between the periods analysed. There was a small reduction (relative to the Australian rates) in admission rates for male residents of **Brisbane**, **Adelaide**, **Perth** and **Darwin**.

**Table 6.12: Admissions of males, capital cities**  
*Standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	101**	96**	98**	101*	89**	101	101	68**	97**
1989 <sup>3</sup>	80**	..	101**	104**	91**	..	103*	..	89**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients, other than for renal dialysis

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Males accounted for 44.9 per cent of all admissions of Australian residents (which include admissions to public and private acute hospitals and private psychiatric and same day surgery facilities, but excludes admissions of same day patients for renal dialysis and long stay nursing home type patients). For metropolitan residents the proportion was similar, at 43.0 per cent. There were 22,717,1 admissions per 100,000 population.

## Capital cities

Elevated ratios were recorded for male residents of **Inner Sydney** (an SAR of 123\*\*), **Inner Western Sydney** (112\*\*) and **Gosford-Wyong** (107\*\*); the lowest ratios were in **Hornsby-Kuring-gai** (88\*\*) and **Lower Northern Sydney** and **Outer Western Sydney** (both 92\*\*). There were 49,571 admissions of males resident in **St George-Sutherland**, 38,533 from **Canterbury-Bankstown** and 37,818 from **Blacktown-Baulkham Hills**. In **Wollongong**, there were 30,778 admissions of males (an SAR of 100), and in **Newcastle**, there were 51,453 admissions, ten per cent fewer than expected from the Australian rates (an SAR of 90\*\*).

In **Melbourne**, the highest ratios were in the Statistical Subdivisions (SSDs) of **Central Melbourne** (an SAR of 118\*\*) and **Southern Inner Melbourne** (114\*\*). The lowest ratios were recorded for **Eastern Middle Melbourne** (an SAR of 86\*\*) and **Northern Outer Melbourne** (87\*\*). There were 32,610 admissions of residents of **Eastern Outer Melbourne**, 29,042 from **Eastern Middle Melbourne** and 27,127 from **Western Outer Melbourne**. Male residents of **Geelong** had 19 per cent fewer admissions than expected (an SAR of 81\*\* and 10,835 admissions).

Elevated ratios were recorded in three **Brisbane** SSDs; in **Redcliffe** (with an SAR of 108\*\*), **Caboolture** (105\*\*) and **Ipswich-Moreton** (104\*\*). The lowest ratios were recorded for

residents of **Beaudesert** (71\*\*) and **Logan** (87\*\*). The largest numbers of admissions were for residents of **Brisbane City** (93,605 admissions), **Logan** (14,222) and **Ipswich-Moreton** (13,748). There were 42,813 admissions of male residents of **Gold Coast-Tweed Heads** (an SAR of 99\*) and 13,477 admissions from **Townsville-Thuringowa** (99).

In **Adelaide**, the ratio in **Northern** was marginally higher than expected (an SAR of 105\*\*), with lower than expected SARs in the other SSDs, the lowest being in **Eastern** (95\*\*). **Northern** also had the largest number of admissions of males (39,879 admissions), marginally more than **Southern** (38,068).

Each of the SSDs in **Perth** recorded fewer admissions than expected from the Australian rates; the highest ratios were in **South West Metropolitan** (92\*\*) and **Central Metropolitan** (89\*\*), while the lowest was in **South East Metropolitan** (85\*\*). There were 38,464 admissions of males resident in **North Metropolitan** and 27,859 from **South West Metropolitan**.

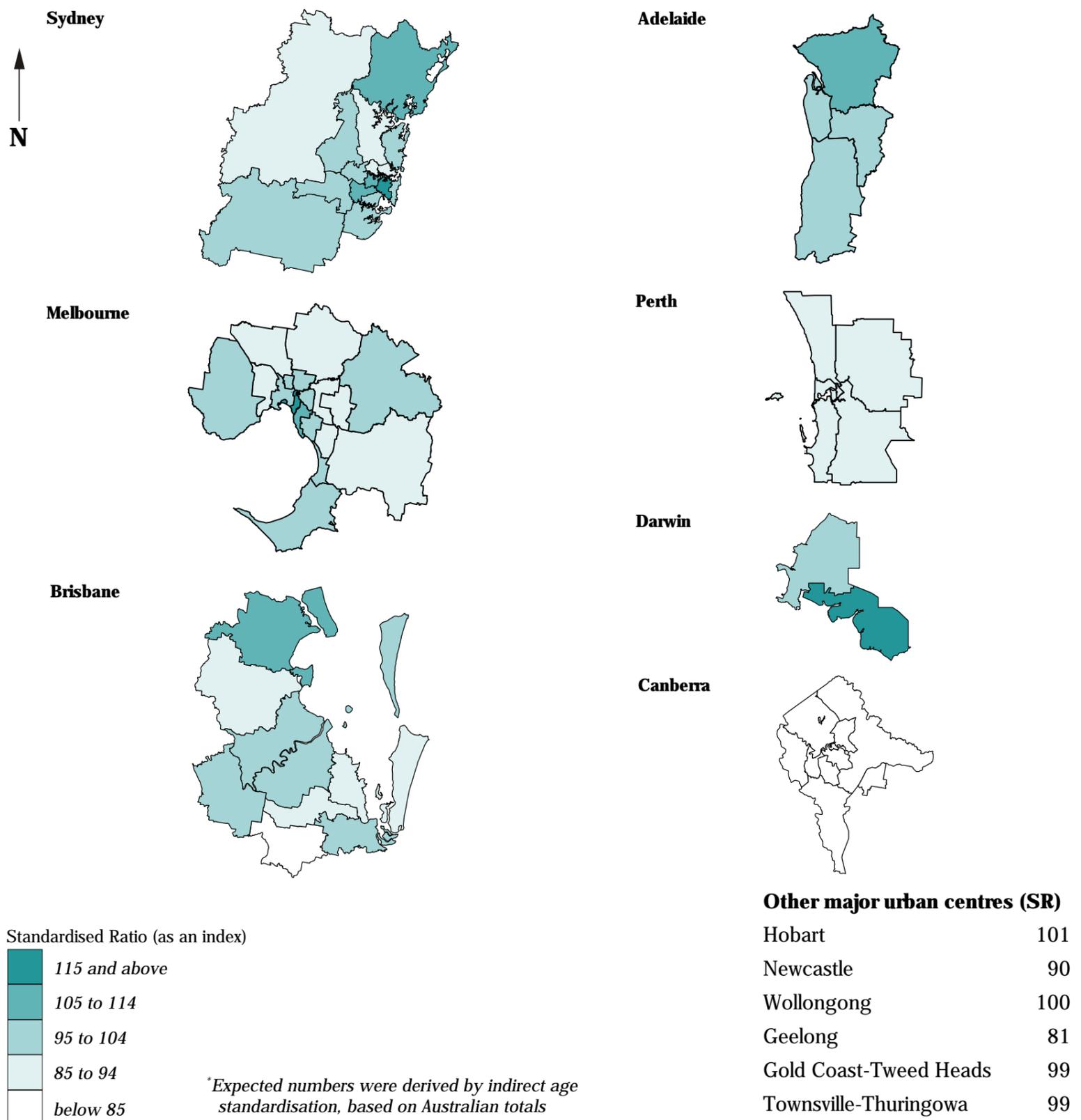
There were 24,630 admissions of male residents of **Hobart**, an SAR of 101.

In **Darwin**, there were more admissions than expected in **Palmerston-East Arm** (with an SAR of 118\*\*) and marginally fewer than expected in **Darwin City** (98). There were 6,616 admissions of male residents of **Darwin City**, more than five times the 1,340 from **Palmerston-East Arm**.

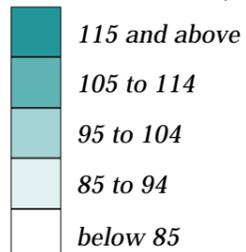
In **Canberra**, there were fewer admissions of males than expected from the Australian rates in each of the SSDs. The highest ratios were recorded in **Belconnen** (an SAR of 70\*\*) and **Central Canberra** and **Tuggeranong** (both 66\*\*). The lowest ratio was in **Outer Canberra** (an SAR of 63\*\*). The largest numbers of male admissions were of residents of **Belconnen** (5,997 admissions) and **Tuggeranong** (5,268).

# Map 6.7: Admissions of males, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Standardised Ratio (as an index)



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

Source: See Data sources, Appendix 1.3

### Other major urban centres (SR)

Hobart	101
Newcastle	90
Wollongong	100
Geelong	81
Gold Coast-Tweed Heads	99
Townsville-Thuringowa	99

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions of males, 1995/96

## State/Territory comparison (Australia as the Standard)

The admissions in this chapter are of all acute admissions to hospitals in Australia, including admissions of same day patients (other than for renal dialysis), whether to a hospital or to a same day surgical unit.

The most highly elevated standardised admission ratios (SARs) for male residents of the non-metropolitan areas were those in the Northern Territory (120\*\*), South Australia (116\*\*) and Queensland (113\*\*). Only in Tasmania were there fewer admissions than expected from the Australian rates (**Table 6.13**). Overall, the Northern Territory had the highest SAR in 1995/96 for this dataset (an SAR of 111\*\*), followed by South Australia (105\*\*) and Queensland (104\*\*).

In all of the States and Territories for which data are available for both periods, SARs were lower in the later period. The main differences are the substantially lower differential (from the Australian rates) in the SARs recorded for the Northern Territory, Western Australia and South Australia in 1995/96. The lower SARs in this later period suggest a reduction (relative to the Australian rates) in admission rates for males between the years analysed.

**Table 6.13: Admissions of males, State/Territory  
Standardised admission ratios**

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	101**	96**	98**	101*	89**	101	101	68**	97**
Other major urban centres <sup>2</sup>	93**	81**	99*	..	..	..	..	..	94**
Rest of State/Territory	106**	102**	113**	116**	108**	90**	120**	- <sup>3</sup>	107**
Whole of State/Territory	101**	98**	104**	105**	94**	95**	111**	67**	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	116**	..	123**	134**	142**	..	176**	..	124**

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients, other than for renal dialysis

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

In 1995/96, there were 25,879.3 admissions per 100,000 population of males resident in the non-metropolitan areas of Australia.

### Rest of Australia

A highly elevated ratio was recorded in the **Upper Darling** Statistical Subdivision (SSD) of New South Wales (an SAR of 207\*\* and the highest of any SSD) with elevated ratios also in **Macquarie-Barwon** (150\*\*) and **Far West** and **Lachlan** (both 125\*\*). The lowest SARs were recorded in the State's south-east, in **Queanbeyan** (81\*\*) and **Snowy** (85\*\*). The largest numbers of admissions of males were recorded in the north of the state, in **Clarence** (with 16,981 admissions), **Hastings** (18,000) and **Richmond-Tweed SD Balance** (20,788).

In Victoria, there were more admissions of males than expected from the Australian rates in **Hopkins** (with an SAR of 127\*\*), **South Goulburn** (126\*\*), **North Ovens-Murray** (121\*\*) and **North Goulburn** (120\*\*). The lowest ratio was in **East Barwon** (75\*\*) and the largest numbers of male admissions were of residents of **Ballarat** (10,392 admissions), **Hopkins** (9,336) and **East Barwon** (8,183).

The highest SARs in Queensland were recorded in **North West** (an SAR of 169\*\*), **Central West** (143\*\*), **Mackay** (139\*\*), **Far North SD Balance** (138\*\*) and **Cairns** (132\*\*), with elevated ratios in 13 of the 16 non-metropolitan SSDs. The lowest SAR was recorded for **Moreton SD Balance** (an SAR of 95\*\*). There were 26,677 admissions of male residents of **Darling Downs**, 22,756 from **Wide Bay-Burnett SD Balance** and 19,695 from **Sunshine Coast**.

In non-metropolitan South Australia, ratios were elevated by 30 per cent or more in **West Coast** (an SAR of 183\*\*), **Flinders Ranges** (148\*\*), **Pirie** (134\*\*) and **Whyalla** (130\*\*) with elevated ratios in a further 11 of the 17 SSDs. **Barossa** (with an SAR of 93\*\*) and **Onkaparinga** (95\*\*), both located adjacent to the metropolitan area, were the only SSDs with ratios of less than 100. The largest numbers of admissions were of male residents of **Lower South East** (5,428 admissions), **Riverland** (5,254) and **Murray Mallee** (4,986).

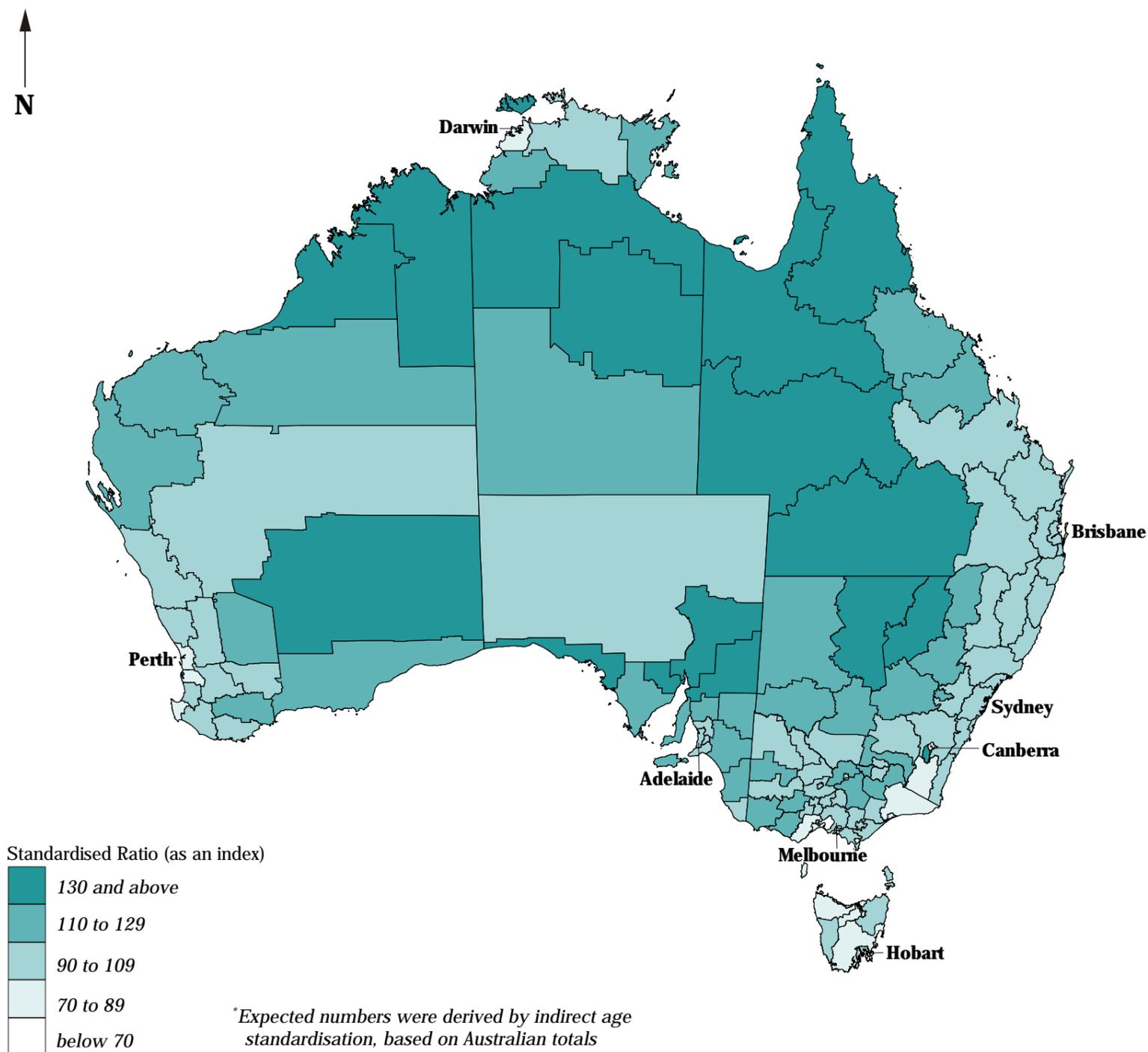
The highest ratios in Western Australia were in the SSDs of **Ord** (with an SAR of 203\*\*, the second highest SSD ratio), **Fitzroy** (177\*\*), **Lefroy** (132\*\*) and **Johnston** (128\*\*). Five subdivisions had SARs of less than 100, with the lowest ratios in **Dale** (85\*\*) and **Vasse** (88\*\*). The largest numbers of admissions of males were recorded in **Preston** (7,716 admissions), **Dale** (6,077) and **Greenough River** (5,504).

In Tasmania, only **Lyell** (with an SAR of 108\*) recorded an elevated SAR for admissions of males. The lowest ratio was in **North Western Rural** (an SAR of 75\*\*). The largest numbers of male admissions were of north coast residents, with 10,293 from **Launceston** and 9,208 from **Burnie-Devonport**.

In the Northern Territory (outside of **Darwin**) only **Darwin Rural Areas** had fewer admissions of males than were expected from the Australian rates (an SAR of 86\*\*). The highest SARs were in **Barkly** (178\*\*), **Bathurst-Melville** (162\*\*) and **Lower Top End NT** (131\*\*). The largest numbers of admissions were recorded in **Central NT** (3,988 admissions) and **Lower Top End NT** (2,003).

### Map 6.8: Admissions of males, Australia, 1995/96

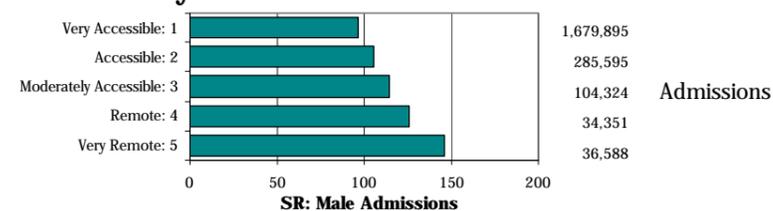
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

#### Accessibility/Remoteness Index of Australia



Standardised admission ratios (SARs) for males closely follow the pattern evident for total admissions, with ratios of 97, 106 and 115 in the three 'accessible' categories, increasing to SARs of 126 and 146 in the Remote and Very Remote categories, respectively.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

## Admissions of females, 1995/96

### Capital city comparison (Australia as the Standard)

The admissions in this chapter are of acute admissions to hospitals in Australia, including admissions of same day patients (other than for renal dialysis), whether to a hospital or to a same day surgical unit.

With the exception of lower ratios in **Canberra** and, to a lesser extent, **Perth**, there was little variation across the capital cities in standardised admission ratios (SARs) for females (**Table 6.14**).

As was the case for males, the main difference evident in admission rates between the two periods shown in **Table 6.12** was the substantially lower differential (from the Australian rates) in the SAR recorded for **Sydney** in 1995/96. The higher SAR in this later period suggests an increase (relative to the Australian rates) in admission rates between the periods analysed. A similar, although substantially smaller, increase occurred in **Brisbane** and **Darwin**, while there was a small reduction (relative to the Australian rates) in admission rates for residents of **Adelaide** and **Perth**.

**Table 6.14: Admissions of females, capital cities**  
*Standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	98**	98**	98**	101**	88**	102**	102	71**	97**
1989 <sup>3</sup>	80**	..	95**	102**	95**	..	97*	..	89**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients, other than for renal dialysis

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Females accounted for 55.7 per cent of all admissions of residents of the capital cities and other major urban centres and for 53.9 per cent of admissions of non-metropolitan residents. In the capital cities and other major urban centres, females had higher admission rates than males: 28,009.7 admissions per 100,000 population for females, compared with 22,717.1 admissions per 100,000 population for males.

### Capital cities

The highest standardised ratios for admission of females living in **Sydney** were in **Inner Western Sydney** (an SAR of 108\*\*), **Outer South Western Sydney** (105\*\*), **Gosford-Wyong** (103\*\*) and **Blacktown-Baulkham Hills** (102\*\*) Statistical Subdivisions (SSDs). The lowest ratios were recorded in **Hornsby-Ku-ring-gai** (88\*\*) and **Outer Western Sydney** (89\*\*). There were 62,358 admissions of female residents of **St George-Sutherland**, 48,187 from **Blacktown-Baulkham Hills** and 44,178 from **Canterbury-Bankstown**. There were fewer admissions of females than expected in both **Newcastle** (an SAR of 94\*\* and 65,104 admissions) and **Wollongong** (96\*\*; and 35,325).

In **Melbourne**, ratios were generally relatively low. The highest ratios were in **Western Fringe Melbourne** (an SAR of 114\*\*), **Southern Inner Melbourne** (106\*\*) and **Northern Fringe Melbourne** (105\*\*). The lowest ratios were in the higher socioeconomic status areas of **Eastern Middle Melbourne** (an SAR of 87\*\*) and **South Eastern Inner Melbourne** (92\*\*). The largest numbers of admissions were of female residents of **Eastern Outer Melbourne** (45,538 admissions), **Eastern Middle Melbourne** (36,116) and **Western Outer Melbourne** (35,564). There were 15 per cent fewer admissions of female residents of **Geelong** than expected from the Australian rates (an SAR of 85\*\* and 14,338 admissions).

**Ipswich-Moreton** (with an SAR of 111\*\*), **Albert** and **Caboorture** (both 104\*\*) and **Redcliffe** (103\*\*) were the only SSDs with elevated ratios in **Brisbane**; **Beaudesert** (80\*\*) had the lowest ratio. There were 119,094 admissions of females from the large **Brisbane City** SSD, with 19,961 admissions from **Logan** and 18,285 admissions from **Ipswich-Moreton**. Both **Townsville-Thuringowa** (with an SAR of 94\*\*; 15,923 admissions) and **Gold Coast-Tweed Heads** (97\*\*; 49,335) had fewer admissions than expected from the Australian rates.

In **Adelaide**, residents of **Northern** had six per cent more admissions than expected (an SAR of 106\*\*) and those from **Eastern** had eight per cent fewer than expected (92\*\*). The largest numbers of female admissions were of residents of **Northern** (49,622 admissions) and **Southern** (48,954).

The highest SAR in **Perth** was recorded for residents of **East Metropolitan** (with an SAR of 97\*\*), and the lowest in **Central Metropolitan** (77\*\*). The largest numbers of admissions of females were recorded in **North Metropolitan** (47,749 admissions) and **South East Metropolitan** (34,090 admissions).

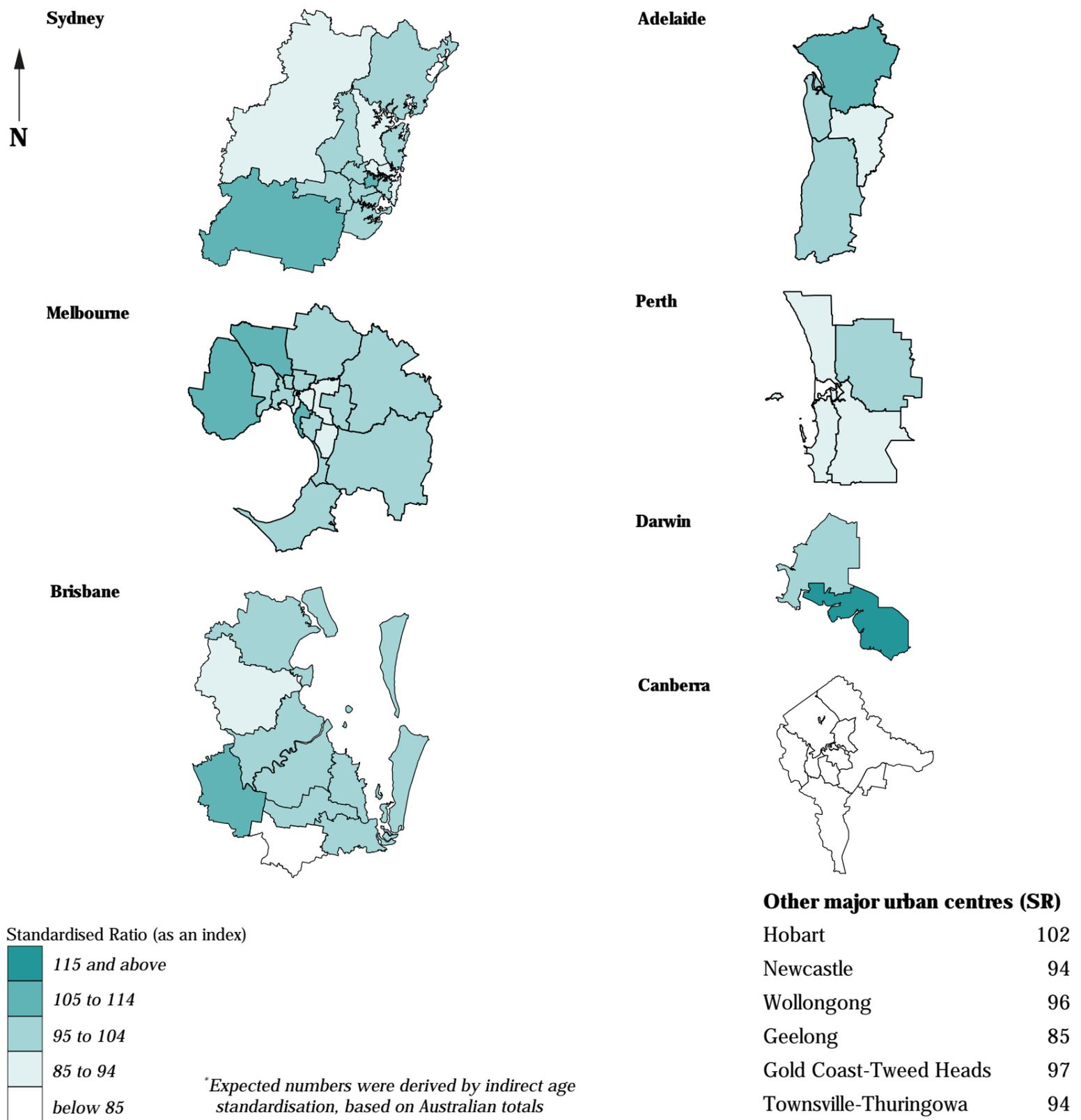
Female residents of **Hobart** recorded 31,038 admissions in 1995/96, two per cent more than were expected from the Australian rates (an SAR of 102\*\*).

There were fewer admissions of female residents of **Darwin** than were expected from the Australian rates in **Darwin City** (an SAR of 98; 8,130 admissions) and more than expected in **Palmerston-East Arm** (122\*\*; 1,807 admissions).

There was little variation in the very low SARs in **Canberra**, with the highest ratio in **Outer Canberra** (an SAR of 78\*\*) and the lowest in **Weston Creek** (67\*\*). The largest numbers of admissions were recorded for females resident in **Belconnen** (8,162 admissions) and **Tuggeranong** (7,625).

# Map 6.9: Admissions of females, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

## Admissions of females, 1995/96

### State/Territory comparison (Australia as the Standard)

The admissions in this chapter are of all acute admissions to hospitals in Australia, including admissions of same day patients (other than for renal dialysis), whether to a hospital or to a same day surgical unit.

The most highly elevated standardised admission ratios (SARs) for female residents of the non-metropolitan areas were those in the Northern Territory (126\*\*), South Australia (121\*\*) and Western Australia (116\*\*). Only in Tasmania were there fewer admissions than expected from the Australian rates (Table 6.15). At the *Whole of State/Territory* level, the Northern Territory had the highest SAR in 1995/96 for this dataset (an SAR of 114\*\*), followed by South Australia (106\*\*) and Queensland (102\*\*).

In all of the States and Territories for which data are available for both periods, SARs were lower in the later period. The main differences are the substantially lower differential (from the Australian rates) in the SARs recorded for the Northern Territory, Western Australia, South Australia and Queensland in 1995/96. The lower SARs in this later period suggest a reduction (relative to the Australian rates) in admission rates for females between the years analysed.

**Table 6.15: Admissions of females, State/Territory**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	98**	98**	98**	101**	88**	103**	102	71**	97**
Other major urban centres <sup>2</sup>	95**	85**	96**	..	..	..	..	..	94**
Rest of State/Territory	108**	107**	109**	121**	116**	94**	126**	- <sup>3</sup>	109**
Whole of State/Territory	100	100	102**	106**	95**	98**	114**	70**	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	120**	..	124**	138**	159**	..	169**	..	128**

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients, other than for renal dialysis

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

In 1995/96, there were 30,859.5 admissions per 100,000 population of females resident in the non-metropolitan areas of Australia.

### Rest of Australia

Standardised admission ratios for female residents were elevated in most Statistical Subdivisions (SSDs) in New South Wales. There were highly elevated ratios in **Upper Darling** (with an SAR of 220\*\*, the highest in Australia) and adjacent **Macquarie-Barwon** (161\*\*), with other elevated ratios in **Murray-Darling** (134\*\*), **Lachlan** and **North Central Plain**, both with 127\*\*) and **Lower Murrumbidgee** (123\*\*). Only five SSDs had fewer admissions than expected with the lowest ratios in **Queanbeyan** (with an SAR of 83\*\*) and **Northern Tablelands** (94\*\*). There were 23,788 admissions of females from **Richmond-Tweed SD Balance**, 20,949 from **Hastings** and 19,648 from **Clarence**.

In Victoria, ratios were elevated in all but seven SSDs, the highest being in **North Goulburn** (an SAR of 134\*\*), **West Central Highlands** and **South Goulburn** (both 128\*\*) and **Hopkins** (124\*\*). Lower than expected ratios were recorded in **East Barwon** (an SAR of 82\*\*) and **Gippsland Lakes** (79\*\*). The largest numbers of admissions were of females residents of **Ballarat** (13,241 admissions) and **Hopkins** (10,894).

In Queensland, the most highly elevated ratios for admissions of females were recorded in the remote SSDs of **North West** (an SAR of 157\*\*), **Central West** (135\*\*) and **Far North SD Balance** (133\*\*). Elevated ratios were also recorded in **Mackay** (127\*\*) and **South West** (117\*\*). **Sunshine Coast** had the lowest ratio

(92\*\*). The largest numbers of admissions of females were from **Darling Downs** (32,063 admissions) and **Wide Bay-Burnett SD Balance** (25,691).

Highly elevated ratios were recorded in the South Australian SSDs of **West Coast** (an SAR of 197\*\*), **Flinders Ranges** (157\*\*), **Whyalla** (146\*\*), **Kangaroo Island** (138\*\*), **Pirie** (136\*\*) and **Upper South East** (134\*\*). The largest numbers of admissions were of female residents of **Lower South East** (6,170 admissions) and **Riverland** (5,867).

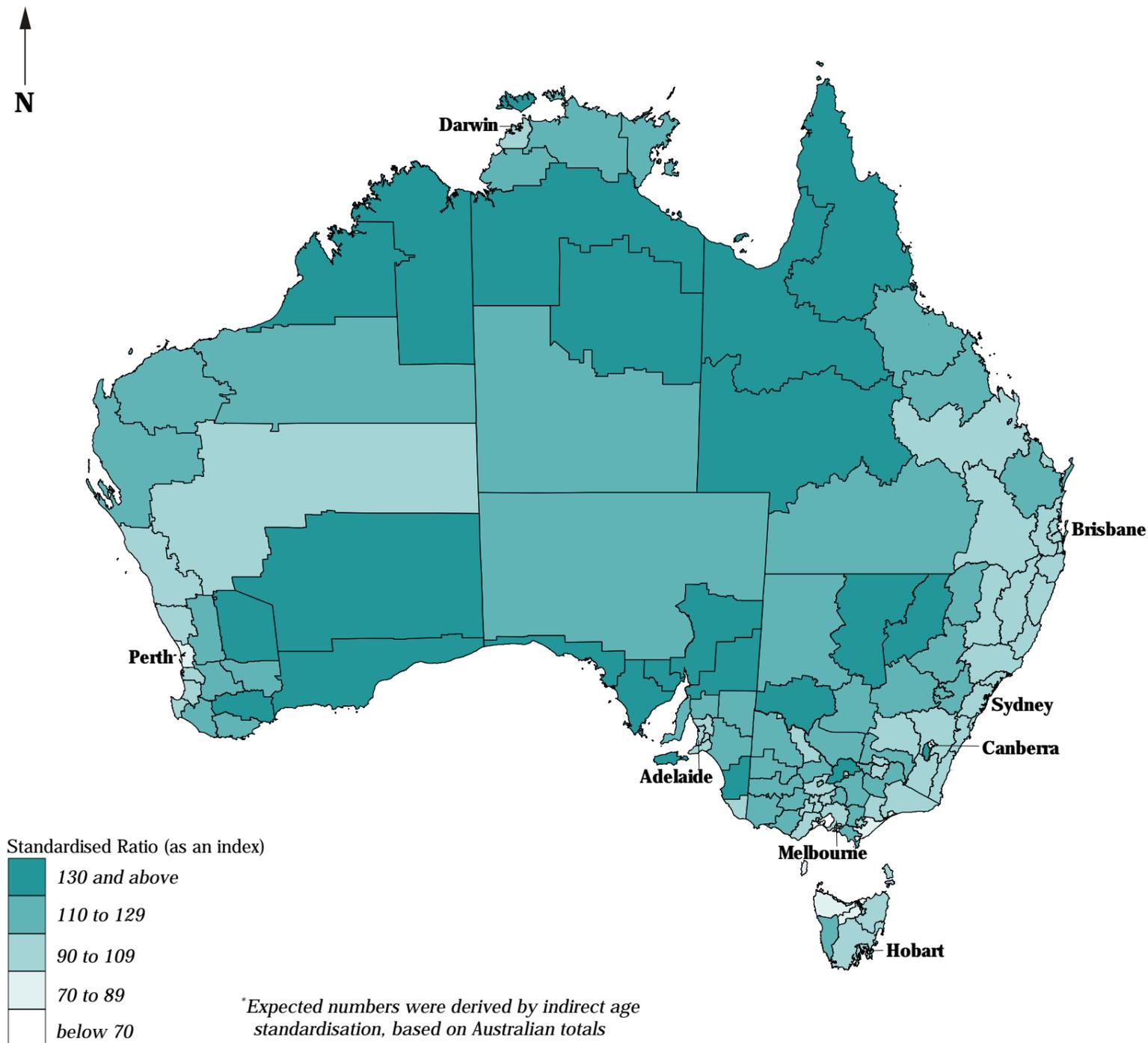
Highly elevated ratios were also recorded in Western Australia's north, in **Ord** (with an SAR of 218\*\*, the second highest in Australia) and adjacent **Fitzroy** (180\*\*). Elevated ratios were also recorded in **Campion** (141\*\*), **Lefroy** (133\*\*) and **Johnston** (131\*\*). Only two SSDs had ratios that were lower than expected from the Australian rates, with the lowest in **Dale** (an SAR of 90\*\*). There were 9,810 admissions of female residents of **Preston** and 7,010 from **Dale**.

In Tasmania, the only elevated ratios were in **Lyell** (an SAR of 118\*\*) and **North Eastern** (101), and the lowest was in **Central North** (84\*\*). There were 13,308 admissions of female residents of **Launceston** and 11,665 from **Burnie-Devonport**.

There were elevated ratios for admissions of females in the Northern Territory in **Barkly** (an SAR of 191\*\*), **Lower Top End NT** (141\*\*), **Bathurst-Melville** (138\*\*) and **East Arnhem** (128\*\*). The lowest ratio was recorded in **Darwin Rural Areas** (96). The largest numbers of admissions were of females resident in **Central NT** (5,249 admissions) and **Lower Top End NT** (2,579).

## Map 6.10: Admissions of females, Australia, 1995/96

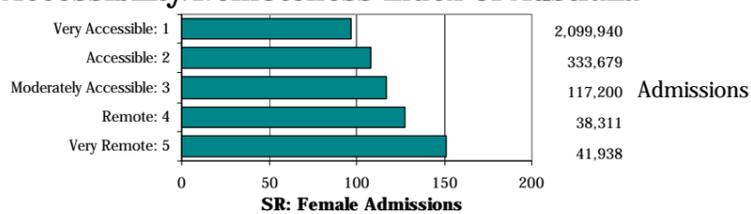
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for females also closely follow the pattern evident for total admissions, with ratios of 97, 108 and 117 in the three 'accessible' categories, increasing to SARs of 128 and 151 in the Remote and Very Remote categories, respectively. The number of admissions is higher in each category than those for males, and ratios in all but the Very Accessible category are also slightly higher.

Source: Calculated on ARIA classification, DHAC

National Social Health Atlas Project, 1999

## Same day admissions, 1995/96

### Capital city comparison (Australia as the Standard)

The same day admissions in this analysis include admissions of same day patients (other than for renal dialysis), whether to a public acute hospital, a private (acute or psychiatric) hospital or to a same day surgical unit. Patients admitted on a same day basis for renal dialysis have been excluded, due to their frequent repeat visits for treatment which distorts the patterns of hospitalisation (see page 191).

There is a wide variation in standardised admission ratios (SARs) between the capital cities, from elevated ratios of 115\*\* in **Melbourne**, 109\*\* in **Sydney** and 108\*\* in **Brisbane**, to a low of 62\*\* in **Canberra** and 65\*\* in **Darwin** (Table 6.16). This information was not collected for the first edition of the atlas (see page 193).

**Table 6.16: Same day admissions<sup>1</sup>, capital cities, 1995/96**  
*Age-sex standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
109**	115**	108**	97**	91**	96**	65**	62**	106**

<sup>1</sup>Includes same day admissions to public acute hospitals, private hospitals and day surgery facilities: excludes admissions for renal dialysis

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Same day admissions accounted for 38.1 per cent of all admissions in 1995/96, with similar percentages recorded for males (38.9 per cent) and females (37.5 per cent). Same day admissions represented a higher proportion of all admissions in the capital cities and the other major urban centres (41.4 per cent) than in the non-metropolitan areas (31.2 per cent).

### Capital cities

In **Sydney**, the most highly elevated ratios for same day admissions were recorded in **Inner Western Sydney** (an SAR of 137\*\*), **Inner Sydney** (120\*\*), **Eastern Suburbs** and **St George-Sutherland** (both with 118\*\*). There were fewer admissions than expected only in **Outer Western Sydney** (an SAR of 86\*\*) and **Fairfield Liverpool** (98\*\*). The largest numbers of admissions were recorded for residents of **St George-Sutherland** (49,845 admissions), **Blacktown-Baulkham Hills** (34,906) and **Canterbury-Bankstown** (33,931). There were fewer admissions than expected from the Australian rates in **Newcastle** (an SAR of 89\*\*; 42,817 same day admissions) and more than expected in **Wollongong** (111\*\*; 28,592 admissions).

Same day admissions were higher than expected in all Statistical Subdivisions (SSDs) in **Melbourne**, with the highest ratios occurring in **Southern Inner Melbourne** (an SAR of 140\*\*), **Central Melbourne** (129\*\*), **Mornington Peninsula Inner** (123\*\*) and **Southern Outer Melbourne** (121\*\*). The lowest ratios were in **Northern Outer Melbourne** (106\*\*) and **South Eastern Inner Melbourne** (104\*\*). The largest numbers of admissions were recorded for residents of **Eastern Outer Melbourne** (35,225 admissions), **Eastern Middle Melbourne** (31,240) and **Western Outer Melbourne** (28,585). In **Geelong**, there were 29 per cent fewer admissions than expected from the Australian rates (an SAR of 71\*\*; 8,039 same day admissions).

**Ipswich-Moreton** had the highest ratio for same day admissions in **Brisbane**, an SAR of 120\*\*. **Brisbane City** (with an SAR of 112\*\*), **Redland** (107\*\*) and **Redcliffe** (102) were the only other

SSDs with elevated ratios. The lowest ratio was in **Beaudesert** (an SAR of 77\*\*). There were 92,054 same day admissions of residents of **Brisbane City**, 14,131 from **Logan** and 13,610 from **Ipswich-Moreton**. Residents of both **Gold Coast-Tweed Heads** (with an SAR of 103\*\*; 36,753 admissions) and **Townsville-Thuringowa** (105\*\*; 12,255 admissions) had more same day admissions than expected from the Australian rates.

In **Adelaide**, there were more same day admissions of residents than expected only in **Western SSD** (an SAR of 102\*). Residents of **Eastern** had nine per cent fewer admissions than expected, an SAR of 91\*\*. There were 32,301 same day admissions of residents of **Southern** and 32,260 from **Northern**.

Same day admissions were lower than expected in each of the SSDs in **Perth**. The highest ratio was in **East Metropolitan** and **North Metropolitan** (both with an SAR of 95\*\*) and the lowest was in **South East Metropolitan** (86\*\*). The largest numbers of same day admissions were recorded for residents in **North Metropolitan** (35,905 admissions) and **South West Metropolitan** (23,538).

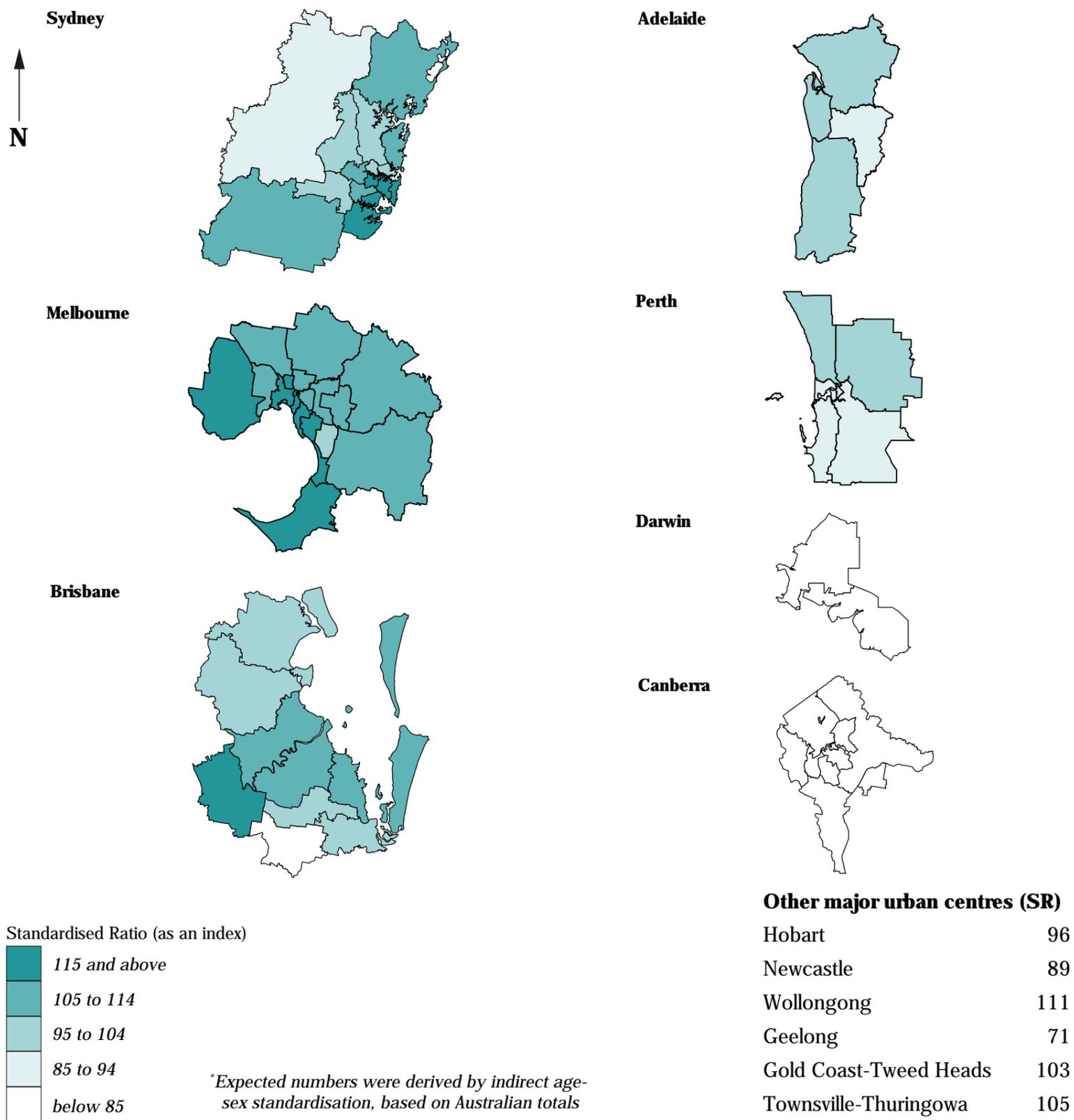
There were 18,879 same day admissions of residents of **Hobart**, four per cent fewer than expected from the Australian rates (an SAR of 96\*\*).

Residents of **Darwin City** had 37 per cent fewer same day admissions than were expected from the Australian rates (an SAR of 63\*\*; 3,777 admissions) while those in **Palmerston-East Arm** had 20 per cent fewer than expected (80\*\*; 813 admissions).

All of the SSDs in **Canberra** recorded fewer same day admissions than expected from the Australian rates. Ratios ranged between 48 per cent lower than expected in **Outer Canberra** (an SAR of 52\*\*) to 37 per cent lower than expected in **Tuggeranong** (63\*\*). The largest numbers of same day admissions were recorded for residents of **Belconnen** (4,893 admissions) and **Tuggeranong** (4,679).

# Map 6.11: Same day admissions, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

## Same day admissions, 1995/96

### State/Territory comparison (Australia as the Standard)

The same day admissions in this analysis include admissions of same day patients (other than for renal dialysis), whether to a public acute hospital, a private (acute or psychiatric) hospital or to a same day surgical unit. See the comments on the previous text page and on page 191 for reasons for the exclusion of same day admissions for renal dialysis.

In all cases, there are relatively more admissions of same day patients who were residents of the capital cities than of the non-metropolitan areas (**Table 6.17**). This pattern is a reflection of the location of these facilities which is predominantly in the capital cities, making them less available to residents of the non-metropolitan areas of Australia. There is less variation evident across the non-metropolitan areas than was evident for the capital cities, with standardised admission ratios (SARs) varying from a high of 97\*\* in Queensland to a low of 58\*\* in the Northern Territory. All of these SARs are lower than expected from the Australian rates.

**Table 6.17: Same day admissions<sup>1</sup>, State/Territory, 1995/96**  
**Age-sex standardised admission ratios**

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	109**	115**	108**	97**	91**	96**	65**	62**	106**
Other major urban centres <sup>2</sup>	97**	71**	103**	..	..	..	..	..	97**
Rest of State/Territory	84**	94**	97**	89**	79**	77**	58**	- <sup>3</sup>	89**
Whole of State/Territory	101**	108**	102**	95**	88**	85**	62**	61**	100

<sup>1</sup>Includes same day admissions to public acute hospitals, private hospitals and day surgery facilities: excludes admissions for renal dialysis

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

### Rest of Australia

In the non-metropolitan areas of New South Wales, only **Tweed Heads** (with an SAR of 121\*\*), **Upper Darling** (116\*\*) and **Albury** (107\*\*) had more same day admissions than were expected from the Australian rates. Lower than expected ratios were recorded for residents of **Murray-Darling** (an SAR of 46\*\*), **Central Murray** (55\*\*), **Northern Tablelands** (58\*\*) and **Snowy** (69\*\*). The largest numbers of same day admissions were of residents of **Richmond-Tweed SD Balance** (13,071 admissions), **Illawarra SD Balance** (12,254) and **Hastings** (12,089).

**West Gippsland** (with an SAR of 135\*\*) had the highest ratio in the non-metropolitan areas of Victoria. Elevated ratios were also recorded in **South Goulburn** (115\*\*), **North Ovens-Murray** (113\*\*) and **Mildura** (112\*\*). The lowest ratios were in the State's east, in **Mitchell-Snowy** (46\*\*) and **Gippsland Lakes** (34\*\*). There were 7,649 same day admissions of residents of **La Trobe Valley** and 7,567 from **Ballarat**.

In Queensland, the highest ratios for same day admissions were in **Mackay** (with an SAR of 140\*\*) and **Cairns** (135\*\*); other Statistical Subdivisions (SSDs) with elevated ratios included **Central West** (128\*\*) and **North West** (118\*\*). The lowest ratios were in **South West** (an SAR of 70\*\*), **Gladstone** (72\*\*) and **Fitzroy SD Balance** (76\*\*). The largest numbers of same day admissions were of residents of **Darling Downs** (17,629 admissions), **Sunshine Coast** (16,352) and **Cairns** (12,883).

There were three SSDs in South Australia with elevated ratios: **Whyalla** (with an SAR of 111\*\*) and **Upper South East** and **Flinders Ranges**, both with 101. The lowest ratios were in **Far North** (an SAR of 66\*\*), **Yorke** (74\*\*) and **Barossa** (77\*\*). There were 3,867 same day admissions of residents of **Lower South East**, 3,420 from **Riverland** and 3,186 from **Barossa**.

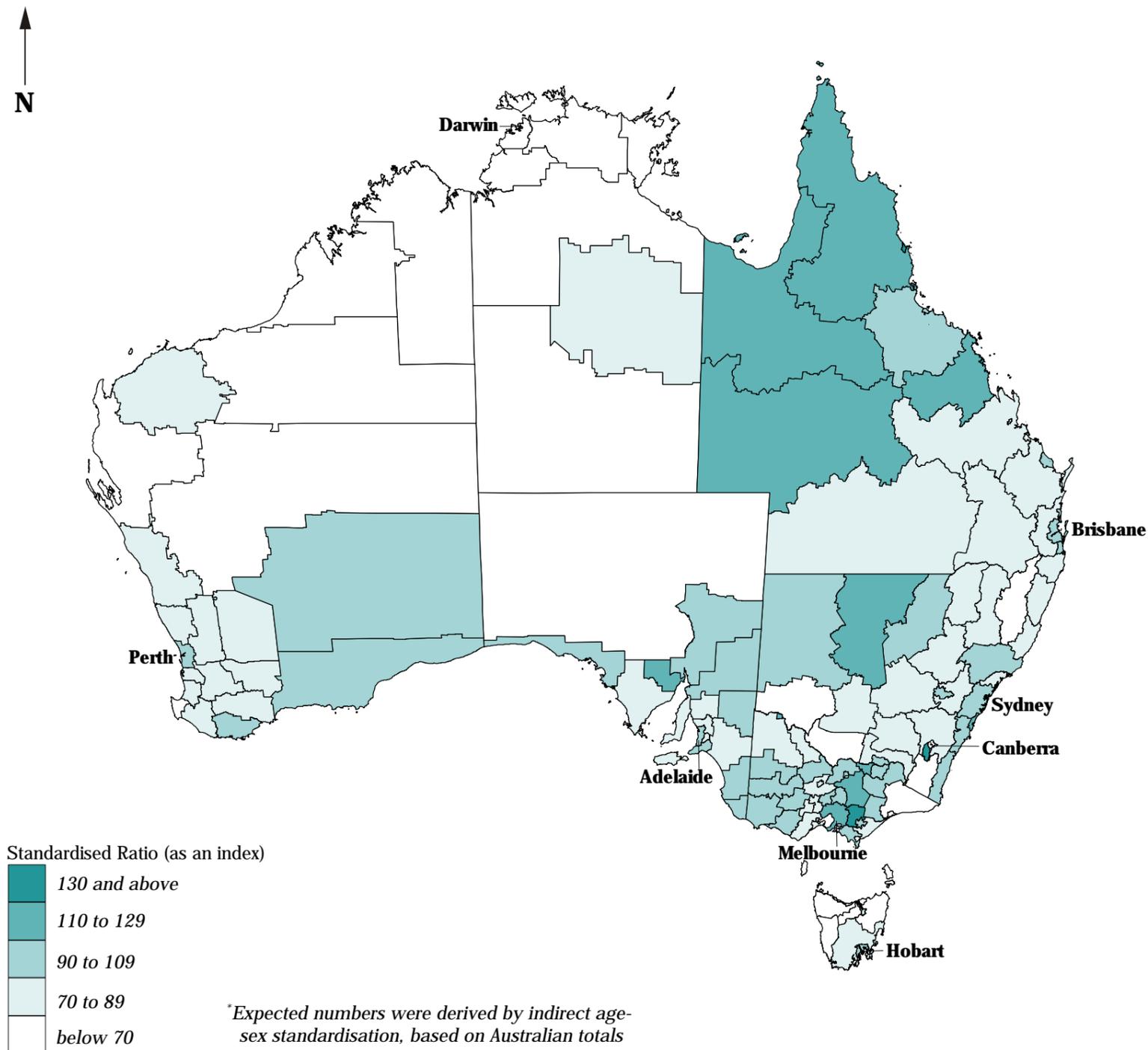
Standardised admission ratios for same day admissions were lower than expected from the Australian rates throughout Western Australia, with the highest ratios in **Lefroy** (with an SAR of 99), **King** (96) and **Johnston** (96). Ratios were considerably lower in **Carnegie** (with an SAR of 58\*\*) and **Ord** and **Gascoyne** (66\*\*). The largest numbers of same day admissions were recorded in **Preston** (5,445 admissions), **Dale** (4,155) and **King** (3,710).

In Tasmania, ratios for same day admissions were at low levels throughout the State, ranging from 59\*\* in **North Western Rural** (1,441 admissions) to 79\*\* in **Launceston** (7,828 admissions) and 86\*\* in **Burnie-Devonport** (6,960 admissions).

Very low ratios for same day admissions were recorded throughout the Northern Territory. They ranged from the highest in **Barkly** (with an SAR of 78\*\*), to the lowest in **Bathurst-Melville** (29\*\*). The largest numbers of same day admissions were of residents of **Central NT** (2,039 admissions), **Darwin Rural Areas** (737) and **Lower Top End NT** (689).

## Map 6.12: Same day admissions, Australia, 1995/96

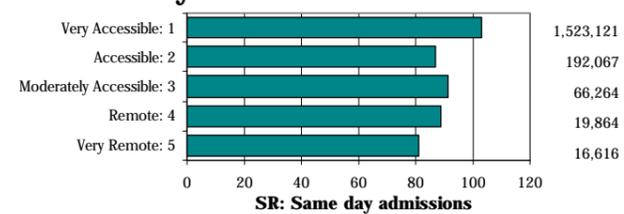
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for same day admissions drop off from an SAR of 103 in the Very Accessible category to an SAR of 87 in the Accessible category. There is a higher ratio of 91 in the Moderately Accessible category, and lower ratios in the remaining areas, with the lowest in the Very Remote category (an SAR of 81). Unlike the situation for total admissions, the number of same day admissions is lowest in the Very Remote areas.

Source: Calculated on ARIA classification, DHAC  
National Social Health Atlas Project, 1999

# Admissions for infectious and parasitic diseases, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for infectious and parasitic diseases (described below) varied widely between the capital cities, from a high of 116\*\* in **Sydney**, to a low of 66\*\* in **Canberra**. **Adelaide** (108\*\*) and **Darwin** (106) were the only other capital cities with elevated ratios (**Table 6.18**). Both **Sydney** and **Darwin** had substantially higher ratios in the later period shown in **Table 6.18**, suggesting an increase (relative to the Australian rates) in admissions for these diseases. The increase for **Sydney** was substantial.

**Table 6.18: Admissions with a principal diagnosis of infectious and parasitic diseases, capital cities**  
*Age-sex standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	116**	71**	84**	108**	78**	75**	106	66**	92**
1989 <sup>3</sup>	69**	..	85**	90**	77**	..	84*	..	76**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients.

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

In the early part of the century, infectious and parasitic diseases were a major cause of disease and death. Reductions in deaths from these causes were a "significant factor in reducing death rates between 1921 and the early 1960s ... particularly among infants and young children" (AIH 1990). They are still an important cause of admission, in particular for viral diseases and intestinal infections. Children aged 0 to 4 years had the highest rate for these admissions (22.2 admissions per thousand population for males and 20.6 for females), with the next highest rates being in the 75 years and over age group. In 1996/97, the category 'infectious and parasitic diseases' accounted for about twice as many admissions for Indigenous people as expected based on all-Australian rates (ABS/AIHW 1999).

High rates of admission for infectious and parasitic diseases also occur among those who are socioeconomically disadvantaged. Esterman et al (1990) found that admissions of people from lower socioeconomic status postcodes in **Adelaide** (socioeconomic status based on household income) were six per cent higher in the middle and 47 per cent higher in the lower income areas, for all infectious and parasitic diseases in aggregate, than in the more affluent areas. This is consistent with the higher notification rates found in the poorer areas for a wide range of communicable diseases.

Hospital admissions for infectious and parasitic diseases accounted for 1.9 per cent of all admissions in Australia (and 1.7 per cent of admissions of residents of the major urban centres).

## Capital cities

There was a highly elevated ratio for admissions for infectious diseases of residents of **Inner Sydney** (three times the level expected, an SAR of 300\*\*). Relatively high ratios were also recorded in **Eastern Suburbs** (an SAR of 143\*\*), **Gosford-Wyong** (114\*\*) and **Fairfield-Liverpool** (112\*\*). The lowest ratios were in the Statistical Subdivisions (SSDs) of **Hornsby-Kuring-gai** and **Central Western Sydney**, both with an SAR of 82\*\*. The largest numbers of admissions were in **Inner Sydney** (3,289 admissions), **St George-Sutherland** (1,951) and **Blacktown-Baulkham Hills** (1,864). In both **Newcastle** (with an SAR of 79\*\*; 1,720 admissions) and **Wollongong** (61\*\*; 729 admissions), there were fewer admissions for infectious diseases than expected from the Australian rates.

In **Melbourne**, only **Western Inner Melbourne** (with an SAR of 106) had more admissions for infectious diseases than expected. The lowest ratio was in **Eastern Middle Melbourne** (an SAR of 56\*\*). **Western Inner Melbourne** (1,036 admissions) and **Eastern Outer Melbourne** (893 admissions) had the largest numbers of admissions. There were 432 admissions of residents of **Geelong**, 17 per cent fewer than expected (an SAR of 83\*\*).

The highest standardised admission ratios for admissions for infectious diseases in **Brisbane** was recorded in **Redcliffe** (an SAR of 122\*\*), with low ratios in most other SSDs, and the lowest in **Redland** (61\*\*) and **Logan** (78\*\*). **Brisbane City** had the largest number of admissions (2,866), with 608 admissions of residents of **Logan** and 607 from **Ipswich-Moreton**. Both **Gold Coast-Tweed Heads** (an SAR of 94\*; 1,417 admissions) and **Townsville-Thuringowa** (90\*; 535 admissions) had fewer admissions for infectious diseases than expected from the Australian rates.

There were 26 per cent more admissions for infectious diseases than were expected from the Australian rates in the **Western SSD** of **Adelaide** (an SAR of 126\*\*). Only **Southern** (with an SAR of 98) had fewer admissions than expected. There were 1,700 admissions of residents of **Northern** and 1,411 from **Southern**.

None of the SSDs in **Perth** had elevated SARs for infectious diseases. The highest ratio was in **Central Metropolitan** (an SAR of 86\*\*) and the lowest ratios were in **North Metropolitan** and **South East Metropolitan**, both with 76\*\*. The largest numbers of admissions were in **North Metropolitan** (1,333 admissions) and **South East Metropolitan** (939).

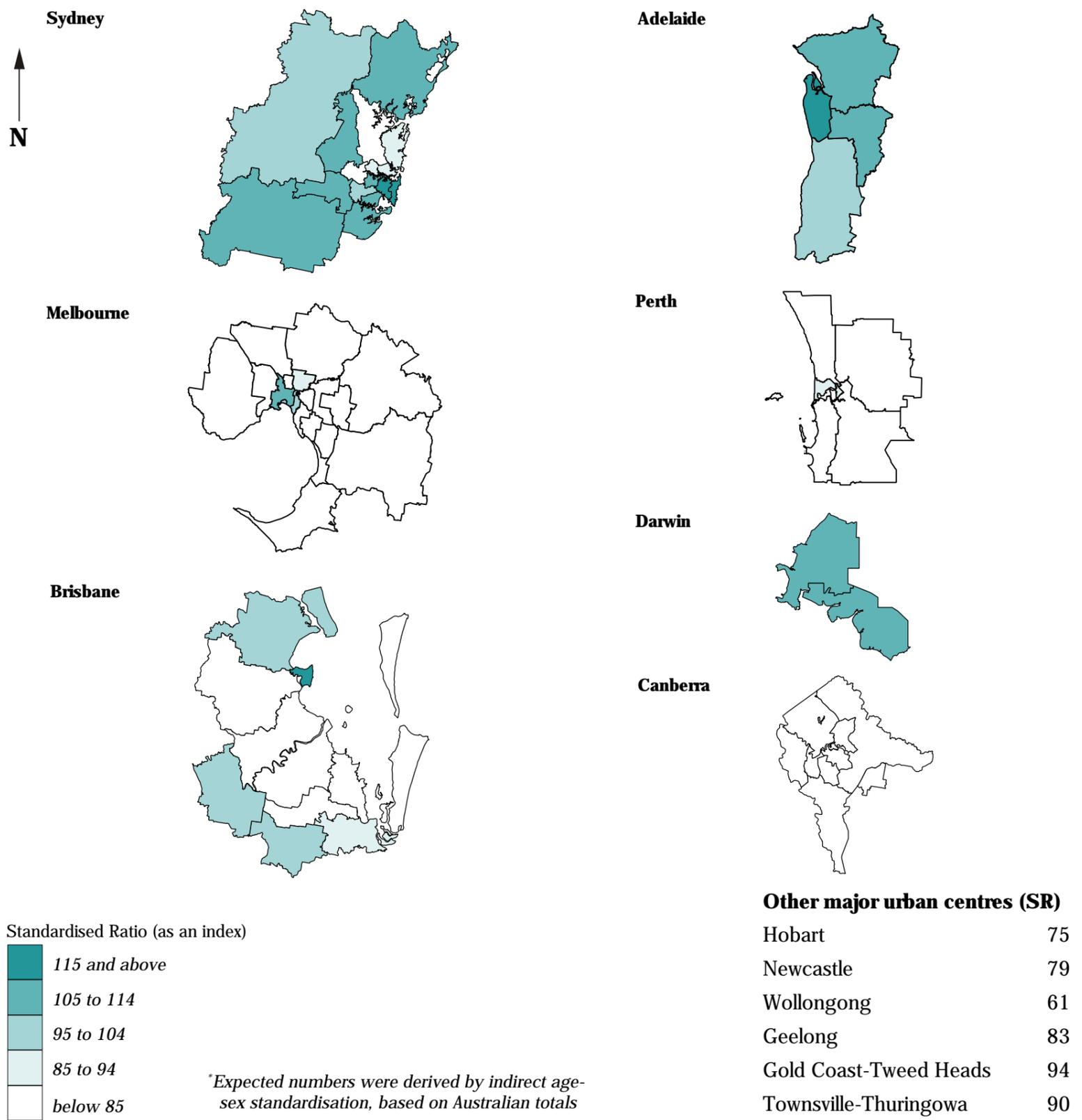
There were 636 admissions for infectious disease of residents of **Hobart**, an SAR of 75\*\*, well below the expected rate.

In **Darwin**, ratios for admission for infectious disease were elevated in both **Palmerston-East Arm** (an SAR of 111; 72 admissions) and **Darwin City** (105; 332 admissions).

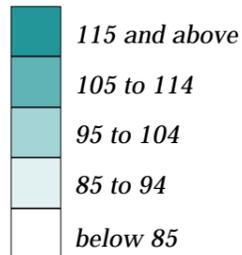
Admissions for infectious diseases of residents of each of **Canberra's** SSDs were lower than expected. The highest ratios were in **Central Canberra** (an SAR of 74\*\*) and **Outer Canberra** (72\*), and the lowest was in **Weston Creek** (55\*\*). There were 300 admissions of residents of **Tuggeranong** and 232 from **Belconnen**.

# Map 6.13: Admissions for infectious and parasitic diseases, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Standardised Ratio (as an index)



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

### Other major urban centres (SR)

Hobart	75
Newcastle	79
Wollongong	61
Geelong	83
Gold Coast-Tweed Heads	94
Townsville-Thuringowa	90

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for infectious and parasitic diseases, 1995/96

## State/Territory comparison (Australia as the Standard)

With the exception of Tasmania and Victoria, standardised admission ratios (SARs) for admissions for infectious and parasitic diseases (described on the previous text page) of residents of the non-metropolitan areas were all highly elevated (**Table 6.19**). The most highly elevated ratios were in the non-metropolitan areas of the Northern Territory (305\*\*), Western Australia (153\*\*), South Australia (134\*\*) and Queensland (126\*\*).

The ratios for the non-metropolitan areas for each of the States named above declined (and some declined substantially) between the periods shown in **Table 6.19** with the largest change being that for the Northern Territory. These lower ratios suggest a decline (relative to the Australian rates) in admissions for these diseases.

**Table 6.19: Admissions with a principal diagnosis of infectious and parasitic diseases, State/Territory**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	116**	71**	84**	108**	78**	75**	106	66**	92**
Other major urban centres <sup>2</sup>	73**	83**	93**	..	..	..	..	..	81**
Rest of State/Territory	118**	93**	126**	134**	153**	85**	305**	- <sup>3</sup>	121**
Whole of State/Territory	111**	77**	103**	115**	99	81**	219**	66**	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	147**	..	162**	136**	170**	..	547**	..	164**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

In the remote areas of New South Wales, SARs for infectious diseases were highly elevated, particularly those areas characterised by relatively large Aboriginal populations. The highest of these ratios were in the Statistical Subdivisions (SSDs) of **Upper Darling** (an SAR of 335\*\*) and **Macquarie-Barwon** (214\*\*), with other elevated ratios in **North Central Plain** (160\*\*), **Lachlan** (151\*\*) and **Upper Murray** (149\*\*). Elevated ratios were recorded in 14 other SSDs. The lowest ratios were in **Albury** (an SAR of 65\*\*) and **Queanbeyan** (76\*\*). There were 1,081 admissions of residents of **Richmond-Tweed SD Balance**, 756 from **Hastings** and 729 from **Clarence**.

The highest ratios in Victoria were recorded in **North Goulburn** (an SAR of 162\*\*), **South Ovens-Murray** (151\*\*), **Hopkins** (144\*\*), **Glenelg** (123\*\*) and **Northern Loddon-Campaspe** (122\*\*). The lowest ratios were in **Strzelecki** (an SAR of 60\*\*) and **Central Loddon-Campaspe** (64\*\*). There were 410 admissions of residents of **Hopkins**, 373 from **North Goulburn** and 341 from **Ballarat**.

In Queensland, there were highly elevated SARs for admissions for infectious diseases in the **North West** (an SAR of 270\*\*), **Central West** (212\*\*) and **South West** (209\*\*) SSDs. Elevated ratios were also recorded for residents of **Far North SD Balance** (an SAR of 173\*\*) and **Wide Bay-Burnett SD Balance** (168\*\*). **Mackay SD Balance** (78\*\*) and **Sunshine Coast** (96) both had fewer admissions from infectious diseases than expected. The largest numbers of admissions were of residents of **Wide Bay-Burnett SD Balance** (1,259 admissions) and **Darling Downs** (1,025).

In South Australia's **West Coast**, there were more than five times the number of admissions for infectious diseases than were expected from the Australian rates, an SAR of 565\*\* (168 admissions). Highly elevated ratios were also recorded in the **Flinders Ranges** (an SAR of 188\*\*), **Whyalla** (161\*\*) and **Upper South East** (145\*\*) SSDs. **Onkaparinga** (with an SAR of 95) and **Riverland** (89) were the only SSDs with fewer admissions than expected. There were 247 admissions of residents of **Lower South East** and 223 from **Murray Mallee**.

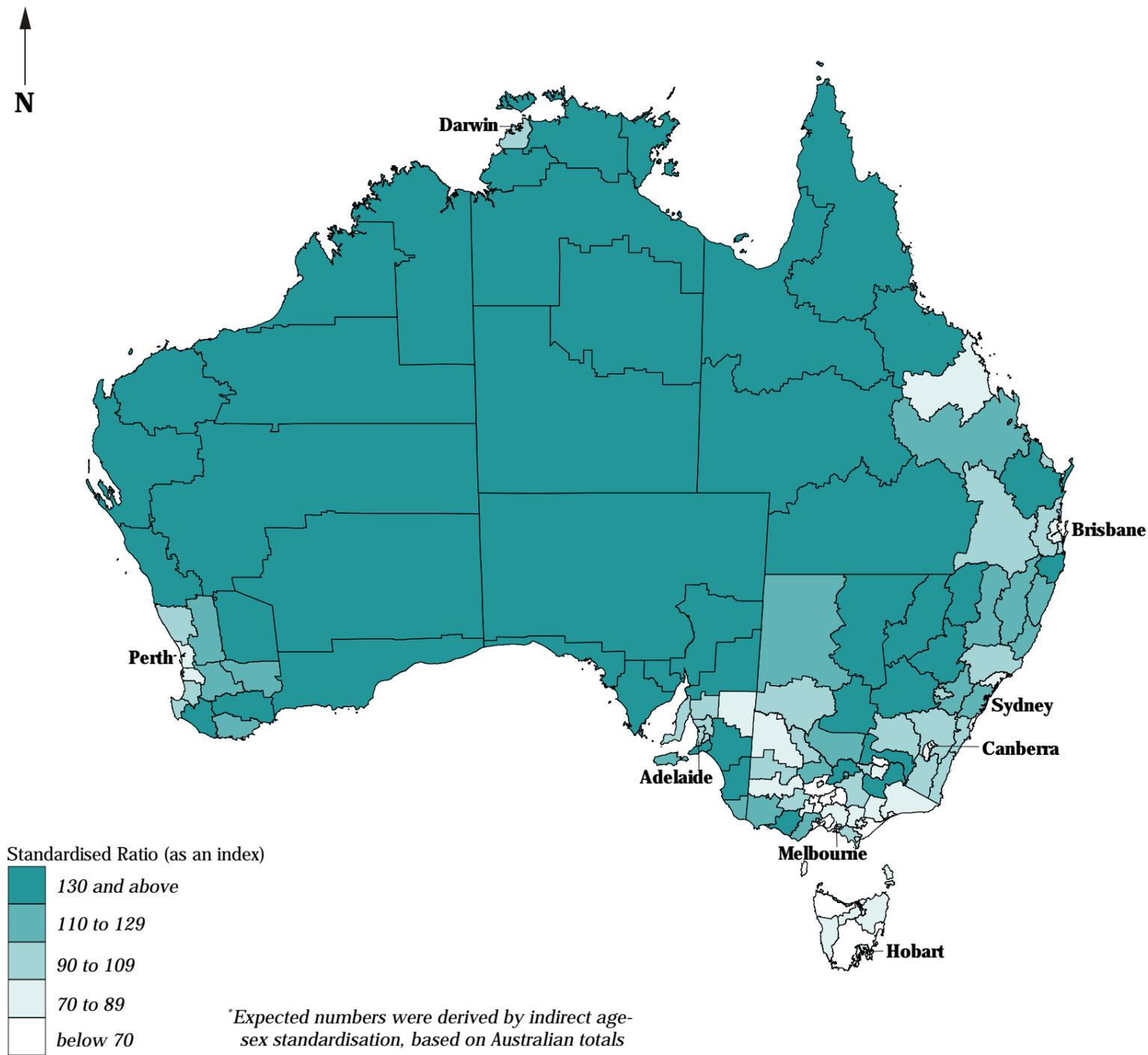
The SAR for infectious diseases in the **Fitzroy** SSD in Western Australia was almost four times higher than expected from the Australian rates (an SAR of 383\*\*). **Ord** (with an SAR of 334\*\*), **De Grey** (250\*\*) and **Pallinup** (239\*\*) also had highly elevated ratios. Only in **Dale** (with an SAR of 82\*\*) were there fewer admissions than expected from the Australian rates. The largest numbers of admissions were of residents of **Lefroy** (380 admissions) and **Preston** (344).

In Tasmania, only **Burnie-Devonport** had an elevated ratio for infectious diseases (an SAR of 112\*), with lower than expected ratios recorded for residents of **Central North** (an SAR of 70\*) and **North Western Rural** (68\*\*). There were 417 admissions of residents of **Burnie-Devonport** and 345 from **Launceston**.

The most highly elevated SAR recorded for infectious diseases in any non-metropolitan subdivision was in **Bathurst-Melville** (an SAR of 791\*\*), with very high ratios also in **Daly** (606\*\*) and **Barkly** (388\*\*). Only in **Darwin Rural Areas** were there fewer admissions than expected (with an SAR of 90). The largest numbers of admissions were of residents of **Central NT** (534 admissions) and **Lower Top End NT** (244).

### Map 6.14: Admissions for infectious and parasitic diseases, Australia, 1995/96

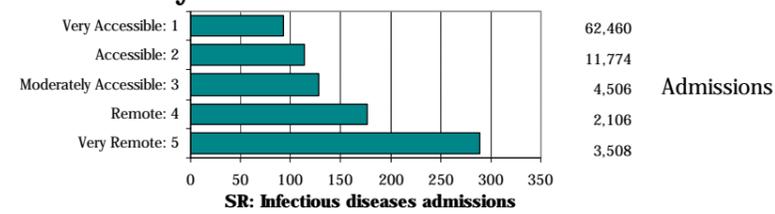
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

#### Accessibility/Remoteness Index of Australia



Standardised admission ratios for infectious diseases are below the level expected from the Australian rates in the Very Accessible category, then rise at an increasing rate to SARs of 177 in the Remote and 289 in the Very Remote categories, respectively. The number of admissions of residents of the Very Remote areas was larger than those from the Remote areas.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for cancer, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admissions ratios (SARs) for admissions for cancer (described below) varied between the capital cities, from a high of 121\*\* in **Brisbane**, to a low of 78\*\* in **Canberra**. **Hobart** (87\*\*), **Perth** (89\*\*) and **Sydney** (95\*\*) also had fewer than expected admissions for these diseases (**Table 6.20**).

There was relatively little change in the ratios between the periods shown in **Table 6.20**, with the largest change being an increase in the admission ratio for **Darwin**, suggesting an increase (relative to the Australian rates) in admissions for these diseases.

**Table 6.20: Admissions with a principal diagnosis of cancer, capital cities**  
*Age-sex standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	95**	103**	121**	105**	89**	87**	106	78**	101*
1989 <sup>3</sup>	90**	..	121**	104**	99	..	98	..	99**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Admissions to hospital for cancer (malignant neoplasms) accounted for 5.0 per cent of all admissions analysed; 5.1 per cent of residents of the capital cities and other major urban centres and 4.7 per cent in the non-metropolitan areas.

Esterman et al. (1990), reporting on hospital admissions for cancers, noted a 21 per cent higher hospital admission rate for males compared with females in South Australia in 1988. They commented on differences in admission rates and incidence of various cancers related to differences in socioeconomic status. They found that admission rates for malignant neoplasms were 14 per cent higher for the middle and 20 per cent higher for the lower than those for the upper income category (based on household incomes in postcodes). They also reported that South Australian Cancer Registry data showed that the poorer areas have a higher incidence of cancers of the following anatomical sites: lung, pancreas, larynx, liver, pleura, cervix, and stomach. It is likely that these cancers would have contributed to the higher admission rates.

## Capital cities

In **Sydney**, the highest SARs for admissions for cancer were recorded in the Statistical Subdivisions (SSDs) of **Inner Sydney** (an SAR of 118\*\*) and **Outer South Western Sydney** (115\*\*), with elevated ratios also in **Eastern Suburbs** (106\*\*) and **St George-Sutherland** (103\*\*). The lowest ratios were recorded in **Central Western Sydney** (79\*\*) and **Blacktown-Baulkham Hills** and **Fairfield-Liverpool**, both with an SAR of 85\*\*. There were 6,110 admissions of residents of **St George-Sutherland**, 4,063 from **Gosford-Wyong** and 3,843 from **Lower Northern Sydney**. There were fewer admissions for cancer than expected from the Australian rates for residents of both **Wollongong** (an SAR of 81\*\* and 2,788 admissions) and **Newcastle** (94\*\*; 6,275 admissions).

The highest ratios in **Melbourne** were in **Mornington Peninsula Outer** (an SAR of 139\*\*), **Western Fringe Melbourne** (130\*\*) and **Northern Inner Melbourne** (119\*\*). The lowest SAR was recorded in **South Eastern Inner Melbourne** (an SAR of 80\*\*), with low ratios also in **Eastern Outer Melbourne** (94\*\*) and **Northern Outer Melbourne** (95\*). Residents of **Eastern Middle**

**Melbourne** (3,894 admissions), **Eastern Outer Melbourne** (3,675 admissions) and **Southern Inner Melbourne** (3,273 admissions) had the largest numbers of admissions for cancer. There were 1,360 admissions recorded of residents of **Geelong**, an SAR of 87\*\*.

The highest ratios in **Brisbane** were in **Albert** (an SAR of 133\*\*) and **Brisbane City** (125\*\*). Only **Beaudesert** (with an SAR of 89) had fewer admissions than expected. The largest numbers of admissions were of residents of **Brisbane City** (13,998 admissions), **Logan** (1,516) and **Redland** (1,458). There were 5,752 admissions for cancer of residents of **Gold Coast-Tweed Heads** (an SAR of 109\*\*) and 1,247 admissions of residents of **Townsville-Thuringowa** (97).

In **Adelaide**, the SSDs of **Southern** (with an SAR of 114\*\*) and **Western** (104\*) had the highest ratios; the lowest ratio was in **Northern** (98). The largest numbers of admissions for cancer were of residents of **Southern** (5,237) and **Northern** (3,889).

Admissions for cancer were below expected levels in each SSD in **Perth**. The highest ratios were in **South West Metropolitan** (an SAR of 95\*\*) and **South East Metropolitan** (91\*\*). The lowest was in **Central Metropolitan** (an SAR of 84\*\*). There were 3,946 admissions for cancer of residents of **North Metropolitan** and 3,227 from **South West Metropolitan**.

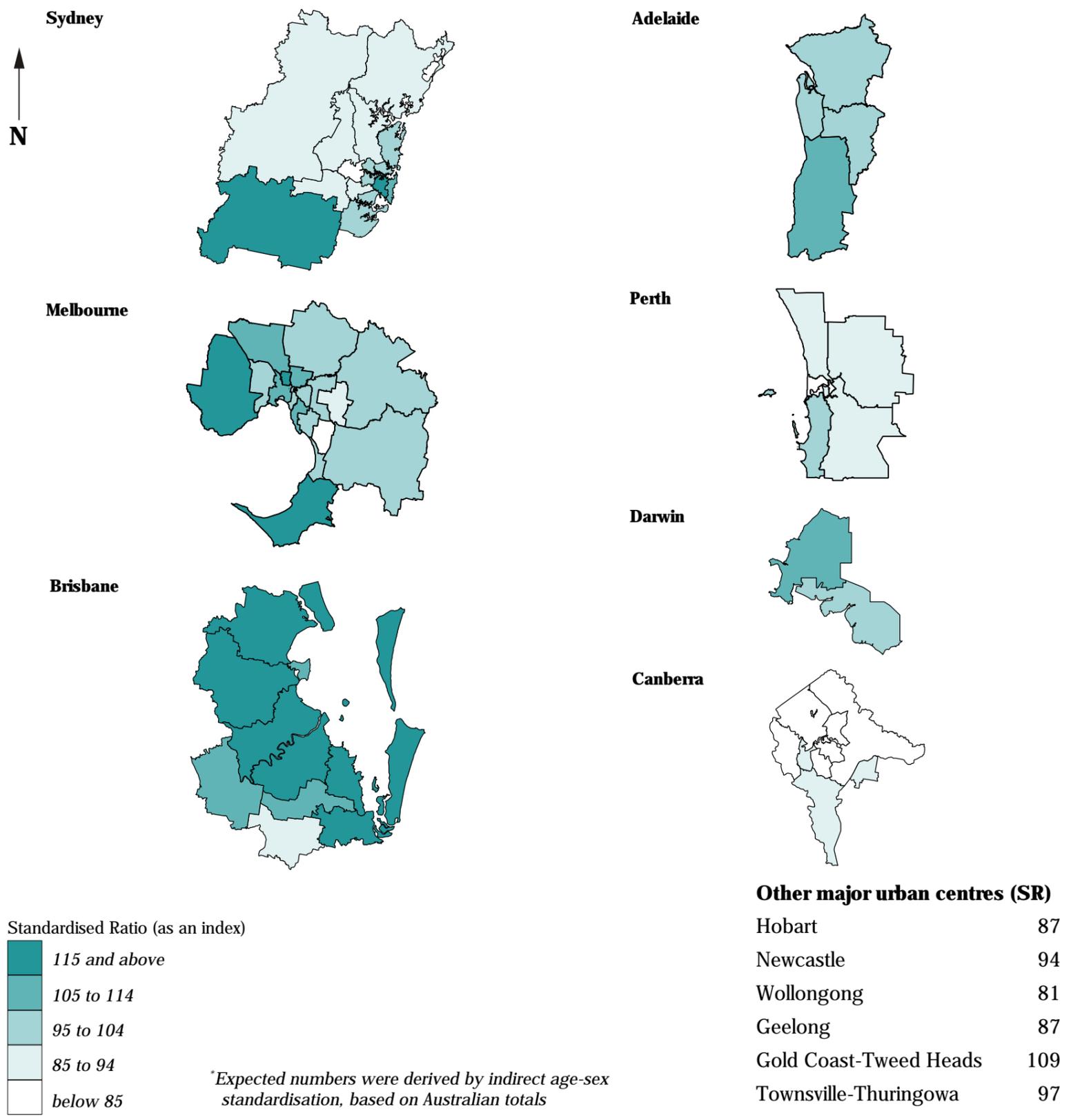
There were 2,241 admissions for cancer of residents of **Hobart**, an SAR of 87\*\*.

In **Darwin**, SARs for admissions for cancer were above expected levels in both **Darwin City** (an SAR of 107; 569 admissions) and **Palmerston-East Arm** (102; 83 admissions).

In **Canberra**, SARs for admissions for cancer ranged from 93 in **Tuggeranong** to 70\*\* in **Central Canberra**. Residents of **Central Canberra** had 603 admissions for cancer, with 582 from **Belconnen**.

# Map 6.15: Admissions for cancer, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

## Admissions for cancer, 1995/96

### State/Territory comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for cancer (described on the previous text page) of residents of the non-metropolitan areas were relatively uniform across the States and Territories (**Table 6.21**). The most highly elevated ratio was in Queensland (109\*\*), and the lowest in the Northern Territory (79\*\*) and Western Australia (84\*\*).

There was relatively little change in the ratios for the non-metropolitan areas between the periods shown in **Table 6.21**, with the largest changes being for New South Wales, Western Australia and the Northern Territory. These lower ratios suggest a decline (relative to the Australian rates) in admissions for these diseases.

**Table 6.21: Admissions with a principal diagnosis of cancer, State/Territory**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	95**	103**	121**	105**	89**	87**	106	78**	101*
Other major urban centres <sup>2</sup>	90**	87**	106**	..	..	..	..	..	95**
Rest of State/Territory	99	99	109**	104**	84**	90**	79**	- <sup>3</sup>	100
Whole of State/Territory	96**	102**	114**	104**	88**	89**	92**	77**	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	107**	..	107**	105**	91**	..	73**	..	..

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

### Rest of Australia

In New South Wales, the most highly elevated SARs for admissions for cancer were in **Far West** (an SAR of 140\*\*), **Tweed Heads** (119\*\*) and **Northern Slopes** (115\*\*). Relatively high levels were also reported in **Murray-Darling** (an SAR of 113) and **Macquarie-Barwon** (109). The lowest ratios were recorded in **Snowy** (with an SAR of 75\*\*) and **Central Macquarie** (80\*\*), where admissions were 25 per cent and 20 per cent respectively below the levels expected from the Australian rates. The largest numbers of admissions for cancer were recorded for residents of **Richmond-Tweed SD Balance** (with 2,375 admissions), **Hastings** (2,260) and **Clarence** (2,088).

Admissions for cancer were elevated by 20 per cent or more in four Victorian SSDs; in **South West Goulburn** (with an SAR of 134\*\*), **South Ovens-Murray** (127\*\*), **South Goulburn** (123\*\*) and **West Gippsland** (122\*\*). Contrasting low SARs were recorded in **Gippsland Lakes** and **Mitchell-Snowy** (both with an SAR of 72\*\*) and **West Barwon** (79\*\*). The largest numbers of admissions for cancer were of residents of **Ballarat** (1,268 admissions), **East Barwon** (1,135) and **Bendigo** (940).

Of all the Australian non-metropolitan SSDs, **Central West** in Queensland recorded the highest SAR for cancer, with 68 per cent more admissions than expected (an SAR of 168\*\*). Relatively high ratios were also recorded in **Rockhampton** (an SAR of 133\*\*) and **Mackay** (127\*\*). **South West** (an SAR of 81\*\*) had the lowest ratio, while **Cairns** and **Mackay SD Balance** were the only other SSDs with SARs below 100. The largest numbers of admissions for cancer were from **Darling Downs** (2,806 admissions) and **Sunshine Coast** (2,798).

In South Australia, the highest SARs were in **Pirie** (an SAR of 131\*\*) and **West Coast** (129\*\*), with ratios elevated by more than 20 per cent above the level expected. In contrast, low ratios were recorded in **Far North** (an SAR of 59\*\*) and **Kangaroo Island** (75). Residents in **Fleurieu** (597 admissions) and **Riverland** (562) recorded the largest numbers of admissions for cancer.

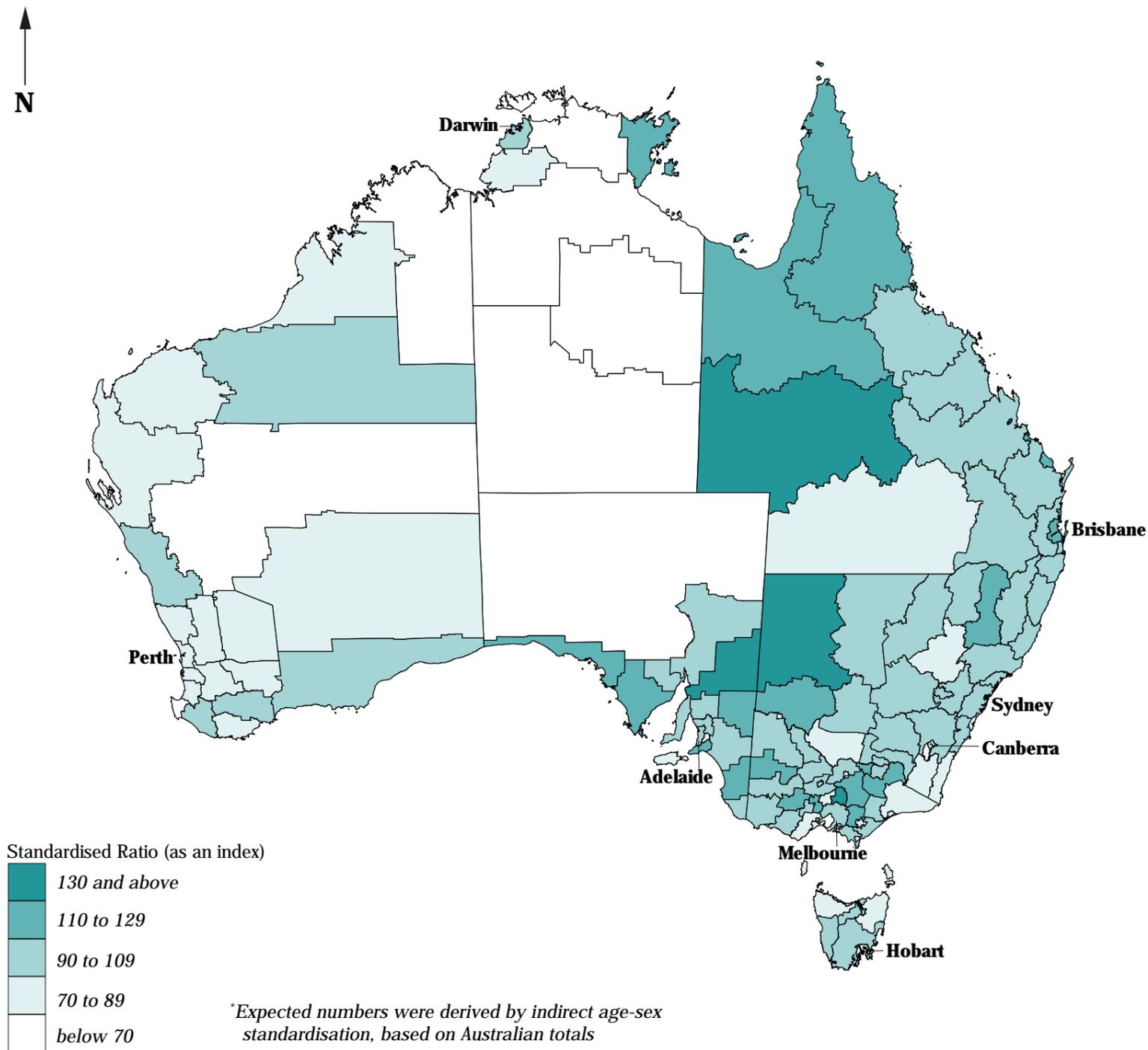
Generally, there were low rates of admissions for cancer in Western Australia. Only **Greenough River** (with an SAR of 101) had more admissions than expected from the Australian rates, with the expected number of admissions in **De Grey** (100). The lowest ratios were in **Ord** (with an SAR of 47\*\*) and **Vasse** (62\*\*), with 53 per cent and 48 per cent respectively fewer admissions than expected from the Australian rates. There were 718 admissions for cancer of residents of **Dale**, 669 from **Preston** and 510 from **Greenough River**.

In four of the seven Tasmanian SSDs, SARs for cancer were lower than expected. The highest ratio was recorded in **Southern** (with an SAR of 114\*\*), and the lowest were in **North Western Rural** (71\*\*) and **Burnie-Devonport** (81\*\*). The largest numbers of admissions for cancer were of residents in **Launceston** (1,291 admissions) and **Burnie-Devonport** (923).

In the Northern Territory, only **East Arnhem** (with an SAR of 121) and **Darwin Rural Areas** (108) had ratios above the levels expected from the Australian rates. The lowest ratios were in **Alligator** (52\*\*) and **Bathurst-Melville** (37\*\*). There were 160 admissions for cancer of residents of **Central NT** and 124 from those living in **Darwin Rural Areas**.

### Map 6.16: Admissions for cancer, Australia, 1995/96

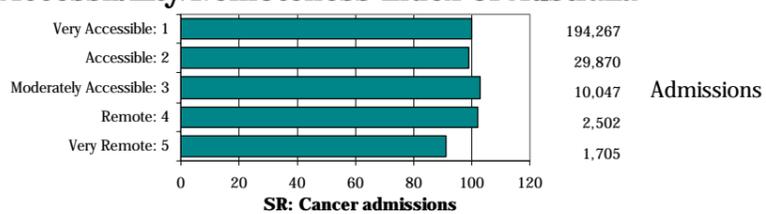
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

#### Accessibility/Remoteness Index of Australia



Standardised admission ratios for cancer were close to the level expected from the Australian rates across the first four ARIA categories, before declining to an SAR of 91 in the Very Remote category, with the smallest number of admissions.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for lung cancer, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for lung cancer (described below) varied between the capital cities, from a high of 121\*\* in **Brisbane** and **Adelaide**, to a very low 54\*\* in **Canberra**. **Sydney** (88\*\*) also had a relatively low standardised admission ratio (Table 6.22).

Between the two periods shown in Table 6.22, the ratios for **Brisbane** and **Darwin** fell, suggesting a decline (relative to the Australian rates) in admissions for these diseases. The increases evident for the ratios in **Perth** and **Sydney** suggest an increase (relative to the Australian rates) in admissions for lung cancer, although both ratios remain below the level expected from the Australian rates.

**Table 6.22: Admissions with a principal diagnosis of lung cancer, capital cities**  
*Age-sex standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	88**	99	121**	121**	89**	95	100	54**	98
1989 <sup>3</sup>	82**	..	154**	119**	77**	..	162**	..	100

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Hospital admissions for lung cancer, which includes cancers of the trachea, bronchus and lung, accounted for 6.5 per cent of all admissions for cancer in 1995/96. However, lung cancer accounted for only 0.3 per cent of all admissions analysed.

As noted in the commentary to the map for all cancers (page 226), incidence rates for some cancers are higher among people from poorer areas. Esterman et al. (1990) estimated the differential for lung cancer in the poorest areas compared with the most affluent areas to be approximately fifty per cent, that is the highest of all the cancers studied. In both SA and the NT, a higher than expected incidence of lung cancer has been observed among Indigenous people (ABS/AIHW 1999).

## Capital cities

In **Sydney**, there were fifty four per cent more admissions for lung cancer than expected from the Australian rates in **Inner Sydney** (an SAR of 154\*\*). The next highest ratios were in **Fairfield-Liverpool** (an SAR of 115\*) and **Outer South Western Sydney** (115). There were substantially fewer admissions than expected in **Hornsby-Ku-ring-gai** (with an SAR of 54\*\*), **St George-Sutherland** and **Outer Western Sydney** (both 71\*\*). The largest numbers of admissions for lung cancer were of residents of **Inner Sydney** (309) and **St George-Sutherland** (276). In **Newcastle**, there were 268 admissions for lung cancer, 40 per cent fewer than expected (an SAR of 60\*\*), and in **Wollongong**, there were 219 admissions, five per cent fewer than expected (an SAR of 95).

The highest ratios in **Melbourne** were recorded in **Western Fringe Melbourne** (an SAR of 186\*\*), **Northern Inner Melbourne** (145\*\*), **Western Outer Melbourne** (125\*\*) and **Mornington Peninsula Outer** (123\*\*). The lowest ratios were in **Eastern Fringe Melbourne** (an SAR of 73\*\*) and **Central Melbourne** (76\*). There were 248 admissions for lung cancer of residents from **Western Outer Melbourne** and 242 from **Eastern Middle Melbourne**. In **Geelong**, there were 120 admissions for lung cancer admissions, 16 per cent more than expected from the Australian rates in 1995/96 (an SAR of 116).

In **Brisbane**, the most highly elevated SAR was in **Albert** (an SAR of 205\*\*). Elevated ratios were also recorded in **Caboolture** (181\*\*) and **Logan** (155\*\*). Only **Ipswich-Moreton** (96) and **Beaudesert** (93) had SARs of less than 100. There were 799 admissions for lung cancer of residents of **Brisbane City**, 137 from **Caboolture** and 121 from **Logan**. **Gold Coast-Tweed Heads** (with an SAR of 91) had 329 admissions and **Townsville-Thuringowa** (98) had 78 admissions.

In **Adelaide**, the most highly elevated ratios were recorded for residents in the **Northern** (an SAR of 149\*\*) and **Southern** (125\*\*) SSDs, and the lowest in **Eastern** (99). There were 382 admissions for lung cancer of residents of **Northern** and 374 from **Southern**.

In **Perth**, only **South East Metropolitan** SSD had an elevated ratio (an SAR of 106). The lowest SAR was in **Central Metropolitan** (78\*\*) and the largest numbers of admissions for lung cancer were of residents of **North Metropolitan** (264 admissions) and **South East Metropolitan** (215).

There were 161 admissions for lung cancer of residents of **Hobart** in 1995/96, five per cent fewer admissions than expected from the Australian rates (an SAR of 95).

For **Darwin** residents, there were more admissions than expected in **Palmerston-East Arm** (an SAR of 112; five admissions) and marginally fewer than expected in **Darwin City** (99; 30 admissions).

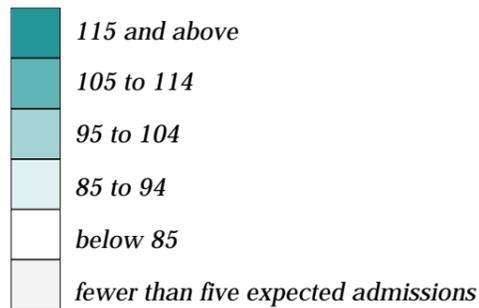
None of the SARs for lung cancer at the SSD level in **Canberra** was elevated. The highest ratios were in **Outer Canberra** (an SAR of 69) and **Belconnen** (52\*\*), and the lowest was in **Weston Creek** (16\*\*). The largest numbers of admissions for lung cancer were of residents of **Central Canberra** (with 26 admissions) and **Belconnen** (24).

# Map 6.17: Admissions for lung cancer, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Standardised Ratio (as an index)



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

### Other major urban centres (SR)

Hobart	95
Newcastle	60
Wollongong	95
Geelong	116
Gold Coast-Tweed Heads	91
Townsville-Thuringowa	98

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for lung cancer, 1995/96

## State/Territory comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for lung cancer (described on the previous text page) of residents of the non-metropolitan areas were relatively uniform across the States and Territories, with the exception of higher ratios in South Australia, Queensland, Tasmania and the Northern Territory (**Table 6.23**).

There was relatively little change in the ratios for the non-metropolitan areas between the periods shown in **Table 6.23**.

**Table 6.23: Admissions with a principal diagnosis of lung cancer, State/Territory**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96</b> <sup>1</sup>									
Capital city	88**	99	121**	121**	89**	95	100	54**	98
Other major urban centres <sup>2</sup>	72**	116	92	..	..	..	..	..	83**
Rest of State/Territory	99	105	117**	135**	91	114*	116	- <sup>3</sup>	108**
Whole of State/Territory	89**	102	114**	125**	90**	106	108	42**	100
<b>1989</b> <sup>4</sup>									
Rest of State/Territory	94**	..	121**	126**	87*	..	119	..	106**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

Highly elevated SARs for admissions for lung cancer in New South Wales were recorded for residents from **Queanbeyan** (an SAR of 185\*\*), **Macquarie-Barwon** (170\*\*) and **North Central Plain** (167\*\*). Relatively high SARs were also recorded in **Tweed Heads** (142\*\*), **Northern Slopes** (an SAR of 143\*\*), **Upper Darling** (138), and **Lachlan** (133\*\*). The lowest ratios were recorded in **Central Macquarie** (78), **Central Murrumbidgee** (77) and **Lower South Coast** (72\*). The largest numbers of admissions for lung cancer were of residents of **Hastings** (169 admissions), **Richmond-Tweed SD Balance** (148) and **Clarence** (124).

In Victoria, SARs for lung cancer were elevated by more than twice the level expected in **East Central Highlands** (an SAR of 208\*\*), with highly elevated ratios also in **East Mallee** (192\*\*), **South Ovens-Murray** (176\*\*), **West Mallee** (171\*) and **Central Loddon-Campaspe** (159\*\*). In contrast, low ratios were recorded in **South Loddon-Campaspe** (an SAR of 34\*\*), **Stzlecki** (44\*) and **Wodonga** (64\*). There were 89 admissions for lung cancer of residents of **Ballarat** and 75 from **Central Loddon-Campaspe**.

In the **North West** SSD in Queensland, SARs for admissions for lung cancer were also elevated by more than twice the level expected (an SAR of 224\*\*), while significantly high ratios were recorded in **Mackay** (155\*\*) and **Sunshine Coast** (148\*\*). Elevated ratios were also recorded in **Central West** (an SAR of 136) and **Moreton SD Balance** (134\*\*). The lowest ratio was in **Rockhampton** (82). The largest numbers of admissions for lung cancer were recorded for residents of **Sunshine Coast** (261 admissions) and **Wide Bay-Burnett SD Balance** (190).

Standardised admission ratios for lung cancer were elevated in 13 of the 16 Statistical Subdivisions (SSDs) in South Australia. The most highly elevated ratios were in **Kangaroo Island** (an SAR of 224\*), **Whyalla** (212\*\*), **Barossa** (150\*\*), **Pirie** (155\*\*), **Yorke** (173\*\*) and **Far North** (194\*). None of the SARs for SSDs with fewer admissions than expected was statistically significant. The lowest ratio was in **Flinders Ranges** (an SAR of 68). There were 61 admissions for lung cancer of residents of **Yorke** and 54 from each of **Barossa** and **Lower South East**.

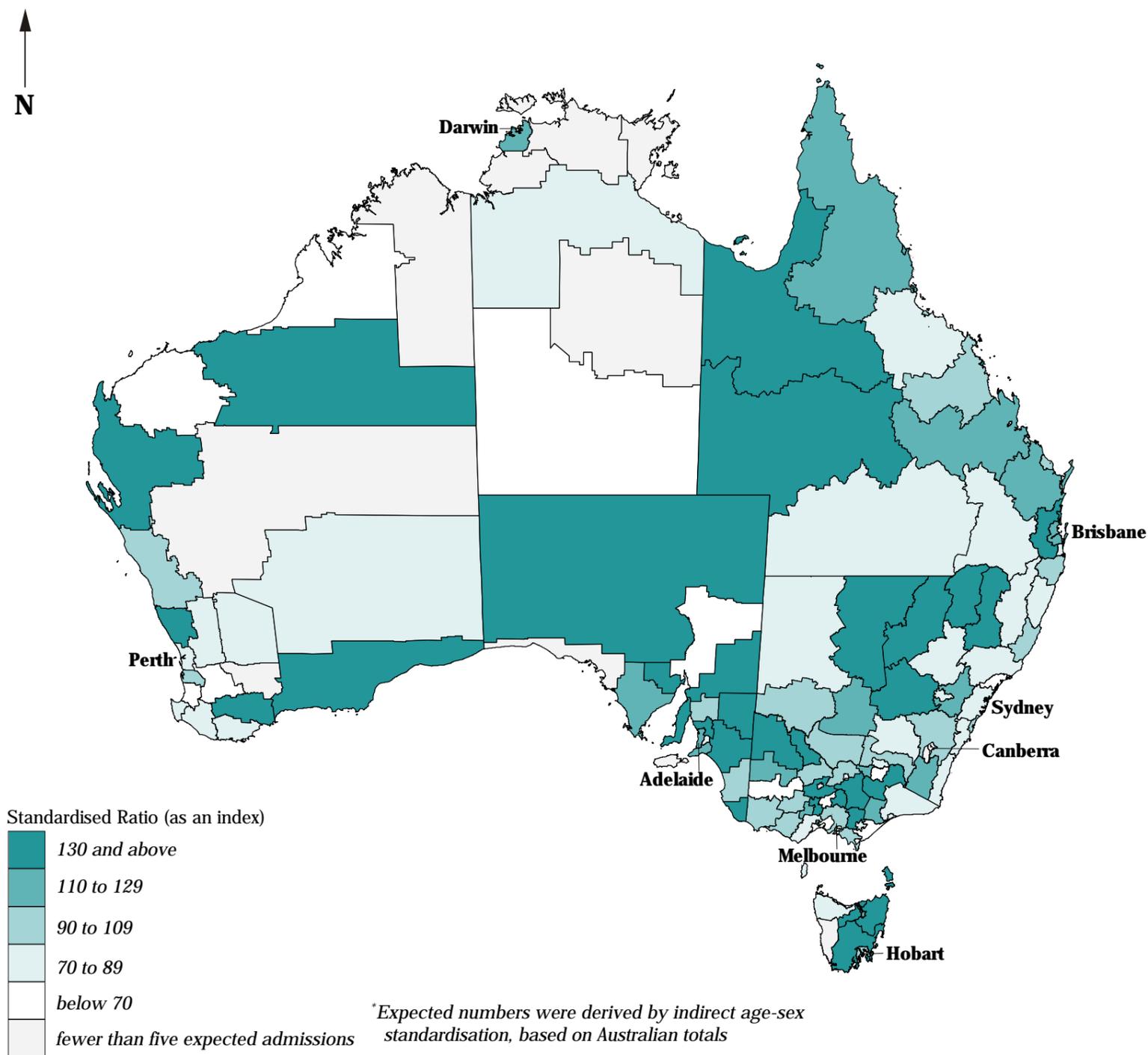
Of the seven SSDs in Western Australia with elevated SARs for admissions for lung cancer, only **Pallinup** (an SAR of 246\*\*) and **De Grey** (190\*) had statistically significant ratios. The lowest ratio was in **Fitzroy** (an SAR of 18\*); although statistically significant, this result was based on one admission (when the Australian rates indicated seven admissions). There were 61 lung cancer admissions of residents of **Dale** and 36 from **Preston**.

In Tasmania, the highest SARs for admissions for lung cancer were recorded in **Lyell** (an SAR of 239\*\*), **Central North** (187\*\*) and **North Eastern** (163\*\*). The lowest ratio was in **Burnie-Devonport** (an SAR of 70\*\*). The largest numbers of admissions for lung cancer were of residents of **Launceston** (108 admissions) and **Burnie-Devonport** (53).

Admissions for lung cancer were elevated by more than three times the expected level in **Alligator** (an SAR of 353\*\*) and **Daly** (333\*\*), and by more than twice the expected level in **East Arnhem** (224\*). The lowest ratio, based on one admission, was in **Barkly** (an SAR of 45). Numbers of admissions were generally very low, with just eight admissions for lung cancer recorded for each of **Darwin Rural Areas** and **Central NT**, and seven from **East Arnhem**.

### Map 6.18: Admissions for lung cancer, Australia, 1995/96

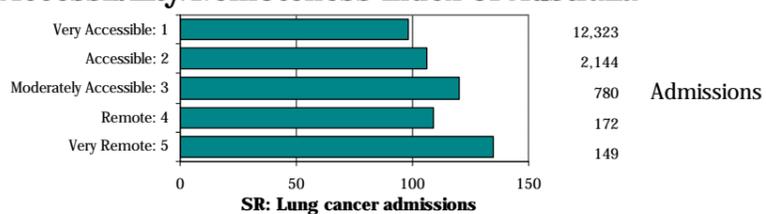
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

#### Accessibility/Remoteness Index of Australia



Standardised admission ratios for lung cancer increase steadily, from a ratio of 98 in the Very Accessible ARIA category to a ratio of 135 in the Very Remote areas: the exception was the lower ratio (of 109) in the Remote areas.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions of females aged 40 years and over for breast cancer, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions of females aged 40 years and over from breast cancer were relatively uniform across the capital cities, with the exception of higher ratios in **Darwin** and **Melbourne** and lower ratios in **Hobart** and **Perth** (Table 6.24).

The SARs in **Sydney** have remained consistent for both periods shown in Table 6.24 and have declined in **Brisbane**, **Adelaide**, **Perth** and **Darwin** (where, despite a substantial decline, the ratio remains well above the level expected). The lower ratios in the later period suggest a decline (relative to the Australian rates) in admissions for these diseases.

**Table 6.24: Admissions of females aged 40 years and over<sup>1</sup> with a principal diagnosis of breast cancer, capital cities**

	Age-sex standardised admission ratios								
	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
1995/96 <sup>3</sup>	97	125**	93*	94*	81**	71**	129	90	102
1989 <sup>4</sup>	96	..	108*	102	87**	..	182**	..	98

<sup>1</sup>Data for '1989' is of females of all ages

<sup>2</sup>Includes Queanbeyan (C)

<sup>3</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>4</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Breast cancer is the most common cancer notified for females in Australia. Incidence rates for some cancers are higher among people from the most affluent areas (Esterman et al. 1990).

In 1995/96, there were 11,662 admissions for breast cancer of females aged 40 years or over and resident in the capital cities and other major urban centres (181.7 per 100,000 female population). This was 6.2 per cent of all admissions for cancer.

The data mapped are for females aged 40 years and older, as very few females at younger ages are admitted to hospital for this disease.

## Capital cities

In **Sydney**, there were elevated SARs in **Eastern Suburbs** (an SAR of 135\*\*), **Lower Northern Sydney** (114\*) and **Inner Western Sydney** (118\*) Statistical Subdivisions (SSDs). The lowest ratio was recorded for female residents aged 40 years and over from **Fairfield-Liverpool** (an SAR of 60\*\*), with relatively low levels also recorded in **Outer Western Sydney** (74\*\*) and **Central Western Sydney** (79\*\*). There were 417 admissions of female residents of **St George-Sutherland**, 286 from **Lower Northern Sydney** and 274 from **Eastern Suburbs**. SARs in **Newcastle** (with an SAR of 85\*\* and 348 admissions) and **Wollongong** (95; 201 admissions) were lower than expected from the Australian rates.

Eight SSDs in **Melbourne** had SARs for admissions for breast cancer elevated by more than 20 per cent. The highest ratios were in **Mornington Peninsula Outer** (an SAR of 185\*\*), **South Eastern Outer Melbourne** (165\*\*), **Western Inner Melbourne** (162\*\*) and **Northern Inner Melbourne** (153\*\*). Only **Central Melbourne** (with an SAR of 98) and **Southern Outer Melbourne** (97) had ratios lower than expected. The largest numbers of female admissions were in **Western Outer Melbourne** (290 admissions), **Western Inner Melbourne** (278), and **Eastern Outer Melbourne** and **Eastern Middle Melbourne** (both with 276). In **Geelong**, there were 113 admissions, 18 per cent more than the numbers expected (an SAR of 118).

There were more admissions than expected in **Redland** (with an SAR of 130\*\*) and **Albert** (124) SSDs in **Brisbane**. The lowest ratios were in **Beaudesert** (an SAR of 65) and **Ipswich-Moreton** (83). The largest numbers of female admissions were of residents of **Brisbane City** (615 admissions), **Redland** (103) and **Logan** (90). There were 305 admissions from **Gold Coast-Tweed Heads** (with an SAR of 96) and 74 from **Townsville-Thuringowa** (92).

Only the **Eastern** SSD in **Adelaide** had more admissions than expected from the Australian rates (an SAR of 110). The lowest ratios were in **Western** (an SAR of 83\*) and **Northern** (85\*) and the largest numbers of female admissions for breast cancer were of residents of **Southern** (280 admissions) and **Eastern** (231).

In **Perth**, ratios were lower than expected from the Australian rates in each of the SSDs. The highest ratios were in **South West Metropolitan** (an SAR of 94) and **East Metropolitan** (82\*), while the lowest ratio was in **North Metropolitan** (73\*\*). Female residents of **North Metropolitan** (225 admissions) and **South West Metropolitan** (201) had the largest numbers of admissions for breast cancer.

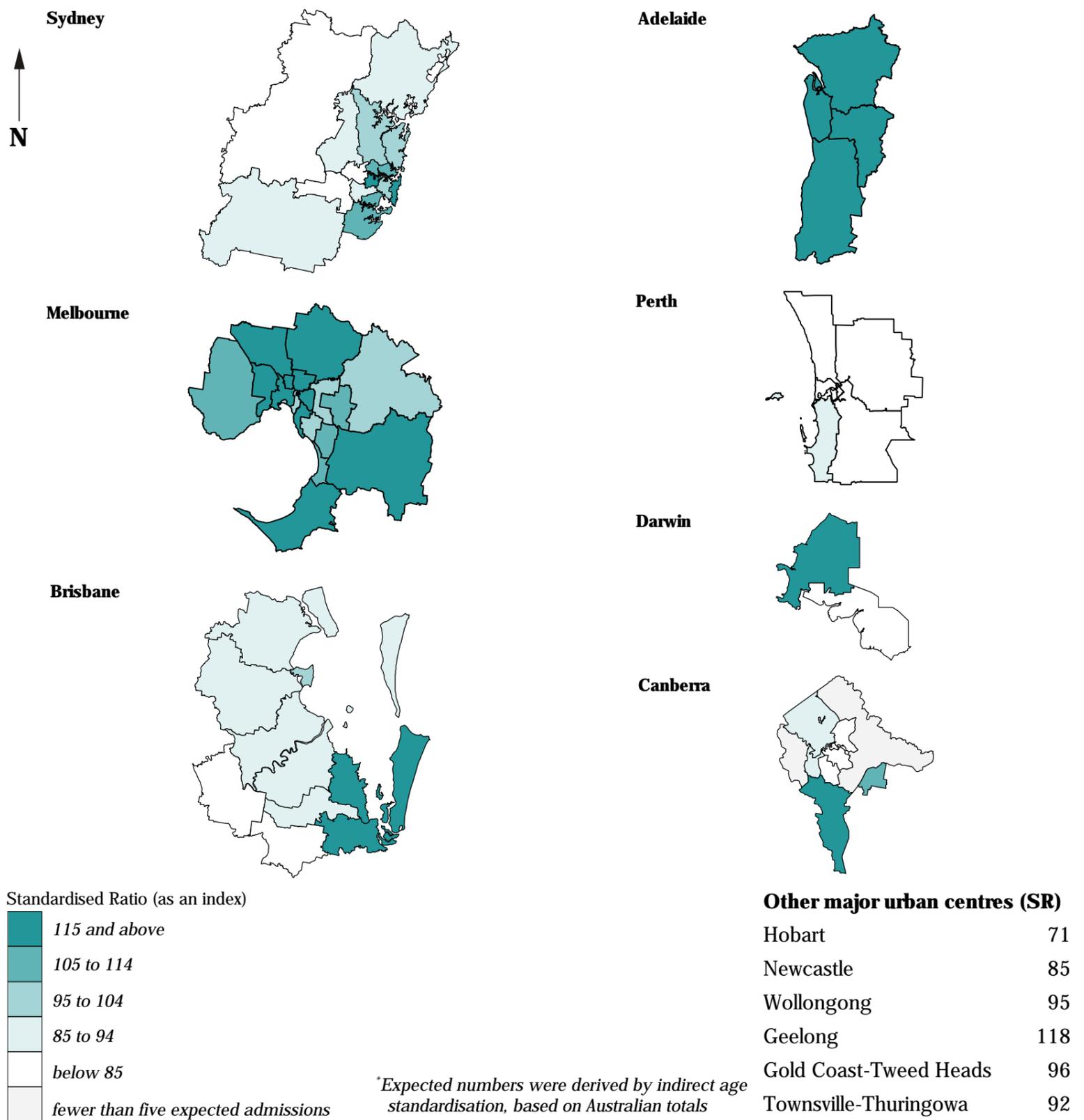
There were 119 admissions of female residents of **Hobart** aged 40 years and over for breast cancer, 29 per cent fewer than expected (an SAR of 71\*\*).

In **Darwin**, there were more admissions of females for breast cancer than expected in **Darwin City** (an SAR of 136\* and 51 admissions) and fewer than expected in **Palmerston-East Arm** (78; four admissions).

The only elevated SAR in **Canberra** for admissions of females for breast cancer was in **Tuggeranong** (an SAR of 119). The lowest ratio was in **Outer Canberra** (an SAR of 61). There were 54 admissions of female residents of **Belconnen** and 45 from **Tuggeranong**.

# Map 6.19: Admissions of females aged 40 years and over for breast cancer, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions of females aged 40 years and over for breast cancer, 1995/96

## State/Territory comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for breast cancer of female residents of the non-metropolitan areas, who were aged 40 years and over, were most notably higher than expected in South Australia (122\*\*) and lower than expected in a number of jurisdictions, including Western Australia (72\*\*) and the Northern Territory (81). SARs in the other States were near average. In general, the differentials in the ratios between the two periods shown suggest lower rates of admission in the later period.

**Table 6.25: Admissions of females aged 40 years and over<sup>1</sup> with a principal diagnosis of breast cancer, State/Territory**  
**Age-sex standardised admission ratios**

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>2</sup></b>									
Capital city	97	125**	93*	94	81**	71**	129	90	102*
Other major urban centres <sup>3</sup>	89**	118	95	..	..	..	..	..	93*
Rest of State/Territory	101	101	94	122**	72**	87	81	- <sup>4</sup>	97
Whole of State/Territory	97*	118**	94**	101	79**	81**	106	89	100
<b>1989<sup>5</sup></b>									
Rest of State/Territory	115**	..	114**	100	80**	..	65	..	109**

<sup>1</sup>Data for '1989' is of females of all ages

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>4</sup>Data unreliable: included with ACT total

<sup>5</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

There were 4,335 admissions for breast cancer in the non-metropolitan areas of Australia (174.0 per 100,000 female population), 5.9 per cent of all admissions for cancer.

## Rest of Australia

In New South Wales, the most highly elevated ratios were in **Murray-Darling** (an SAR of 190\*) **Macquarie-Barwon** (132) and **Northern Tablelands** (122), with between 22 per cent and 90 per cent more admissions than were expected from the Australian rates. The lowest were in **Upper Darling** (an SAR of 44) and **Lower Murrumbidgee** (54\*\*). No other non-metropolitan Statistical Subdivision (SSD) had a ratio of statistical significance. The largest numbers of admissions of females aged 40 years and over for breast cancer were from the north coast SSDs of **Clarence** (125 admissions), **Richmond-Tweed SD Balance** (134) and **Hastings** (144).

The highest ratio in Victoria was recorded for female residents aged 40 years and over in **South Gippsland** (an SAR of 178\*\*), with relatively high ratios recorded in **North Wimmera** (159\*) and **West Central Highlands** (145\*). The lowest SARs were in **North Ovens-Murray** (47\*\*) and **Shepparton-Mooroopna** (48\*\*), with 53 per cent and 52 per cent fewer admissions than expected from the Australian rates. The largest numbers of admissions of females for breast cancer were of residents of **Ballarat** (91 admissions) and **South Gippsland** (80).

In **Central West** (with an SAR of 269\*\*), there were more than two and a half times the number of admissions expected, while relatively high ratios were recorded in **Mackay** (119) and **Bundaberg** (109). The lowest ratio was in **North West** (an SAR of 57), while in each of **Mackay SD Balance** (69) and **Cairns** (69\*), there were 31 per cent fewer admissions than expected. The largest numbers of admissions of females for breast cancer were of residents of **Darling Downs** (171 admissions), **Wide Bay- Burnett SD Balance** (144) and **Sunshine Coast** (138).

The most highly elevated ratios in South Australia were recorded for females resident in **Fleurieu** and **Yorke**, each with an SAR of 150\*\*, and in **Barossa** (169\*\*). High ratios were also recorded in **Lower South East** (131) and **Lincoln** (133). Apart from **Kangaroo Island** and **Far North**, where no admissions were recorded, the lowest ratio was in **Flinders Ranges** (an SAR of 49\*). The largest numbers of admissions of females for breast cancer were of residents of **Barossa** (57 admissions) and **Fleurieu** (46).

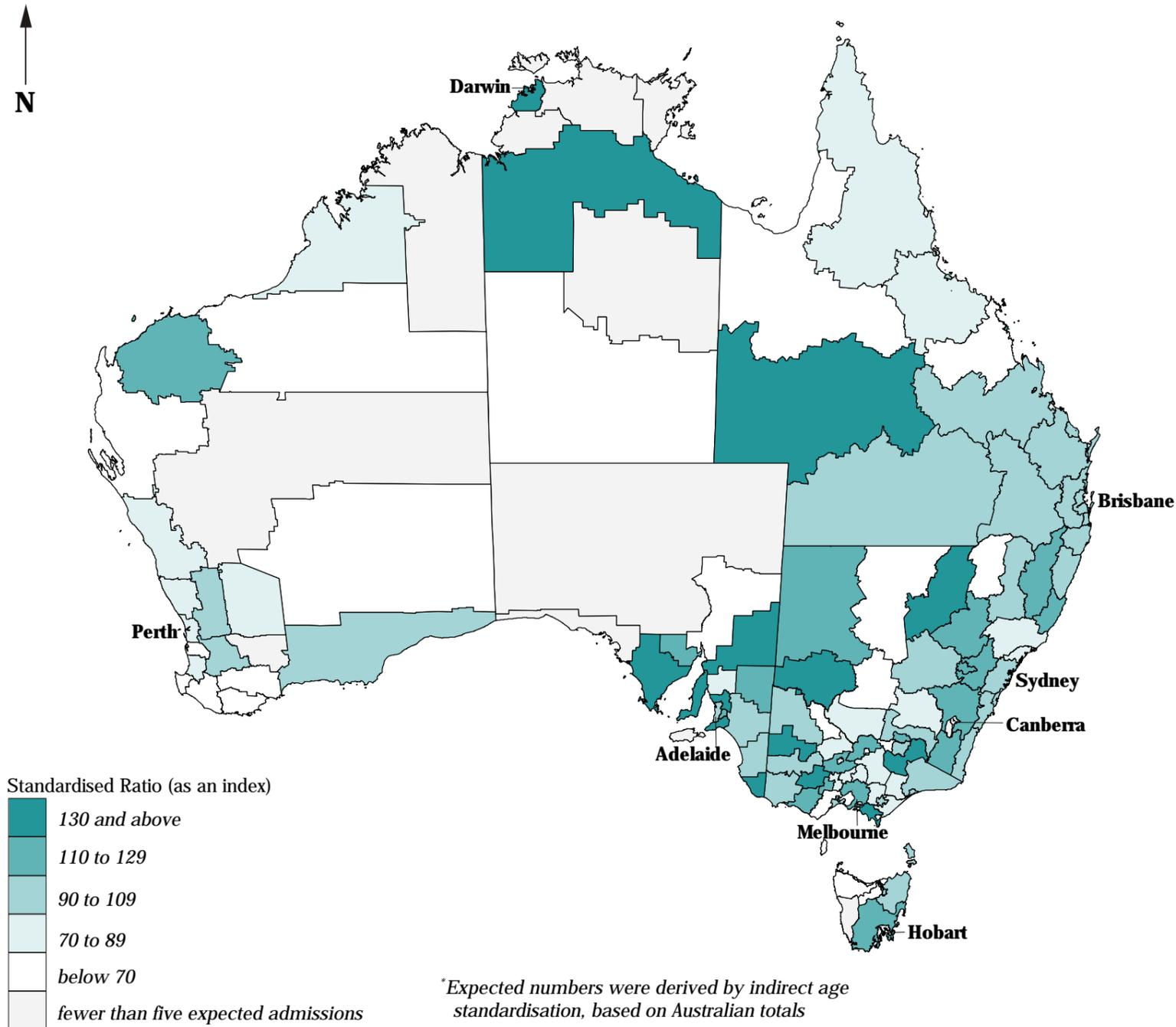
In Western Australia, elevated ratios were recorded in **Ord** (an SAR of 225\*), **Fortescue** (113), **Hotham** (106) and **Avon** (102). In contrast, admissions in **Pallinup** (an SAR of 23), **Lakes** (31) and **Vasse** (38\*\*) were more than 50 per cent lower than expected. There were generally low numbers of admissions for breast cancer throughout the State, with the largest numbers being of female residents of **Preston** (47 admissions) and **Dale** and **Greenough River** both with 24 admissions.

Admissions of females aged 40 years and over for breast cancer in Tasmania were higher than expected in **Southern** (with an SAR of 116) and **Launceston** (109), while low levels were recorded from **Lyell** (an SAR of 28) and **Central North** and **North Western Rural**, both with 56. There were 91 admissions of females for breast cancer of residents of **Launceston** and 47 from **Burnie-Devonport**.

The highest ratios in the Northern Territory outside of **Darwin** were in **Barkly**, **Lower Top End NT** and **Darwin Rural Areas**, each with an SAR of 131. The lowest ratio was in **Daly** (an SAR of 13). The numbers of admissions of females for breast cancer were generally low throughout the Territory, with ten admissions of residents of **Darwin Rural Areas** and eight from **Lower Top End NT**.

## Map 6.20: Admissions of females aged 40 years and over for breast cancer, Australia, 1995/96

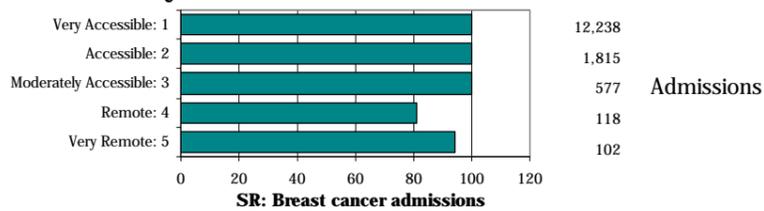
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



There was no variation from the level expected from the Australian rates between the three 'accessible' ARIA categories in standardised admission ratios (SARs) for cancer of the female breast. Lower than expected ratios (both based on relatively small numbers) were recorded in the Remote (an SAR of 81) and Very Remote (94) categories.

Source: Calculated on ARIA classification, DHAC  
National Social Health Atlas Project, 1999

# Admissions for psychosis, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for psychosis (described below) varied widely between the capital cities (Table 6.26). **Brisbane** and **Adelaide** (each with an SAR of 139\*\*) had highly elevated SARs, with a ratio of less than half of this level in **Canberra** (64\*\*). The SARs in **Melbourne** and **Darwin** (both 83\*\*) were also much lower than the *All capitals* rate of 110\*\*.

**Table 6.26: Admissions<sup>1</sup> with a principal diagnosis of psychosis, capital cities, 1995/96**  
*Age-sex standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
114**	83**	139**	139**	119**	112**	83**	64**	110**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Mental illness is a major cause of disability, particularly among the high risk groups of people who are unemployed, alcoholic, homeless, and others suffering a major life loss such as divorce, or death of a close friend or family member.

Mental disorder is classified as being psychosis, neurotic, personality or other mental disorders, or mental retardation. The variable mapped opposite is of people diagnosed with psychosis. Psychosis is a major mental disorder in which a person's ability to think, respond emotionally, remember, communicate, interpret reality and behave appropriately is impaired and insight is usually absent. It includes people exhibiting a range of behaviours, from violent behaviour to hallucination, to those who are withdrawn and immobile, schizophrenia is included in this category.

In this, and the following map, admissions analysed include inpatients with the appropriate disease code as a principal diagnosis in public acute hospitals and private acute and psychiatric hospitals, regardless of whether they were in a specialist psychiatric unit within these hospitals.

There were 67,606 admissions for psychosis of residents of the capital cities and other major urban centres in 1995/96, 495.6 admissions per 100,000 population for males and a higher 567.5 admissions per 100,000 population for females. These admissions accounted for 1.9 per cent of all admissions.

## Capital cities

In **Sydney**, the Statistical Subdivisions (SSDs) of **Inner Western Sydney** (with an SAR of 275\*\*), **Inner Sydney** (168\*\*) and **Central Western Sydney** (155\*\*) had SARs for admissions for psychosis elevated by more than 50 per cent above the levels expected. Elevated ratios were also recorded in **Lower Northern Sydney** (an SAR of 127\*\*), **Canterbury-Bankstown** (122\*\*) and **Eastern Suburbs** (119\*\*). The lowest ratio was in **Outer South Western Sydney** (49\*\*). The largest numbers of admissions were of residents of **Inner Western Sydney** (2,298 admissions), **Inner Sydney** (2,240) and **Central Western Sydney** (2,085). Both **Newcastle** (with an SAR of 92\*\* and 2,154 admissions) and **Wollongong** (83\*\*; 1,016) had fewer admissions than were expected from the Australian rates.

Elevated ratios for admissions for psychosis were recorded in only three SSDs in **Melbourne**: **Central Melbourne** (an SAR of 140\*\*), **Southern Inner Melbourne** (129\*\*) and **Eastern Outer of Western Fringe Melbourne** (24\*\*) and **Western Outer Melbourne** (101). The lowest ratios were recorded for residents

of **Melbourne** SSD (38\*\*). There were 1,561 admissions of residents from **Eastern Outer Melbourne**, 1,328 from **Southern Inner Melbourne** and 1,086 from **Western Inner Melbourne**. In **Geelong**, there were 575 admissions for psychosis, three per cent more than expected from the Australian rates (an SAR of 103).

In **Brisbane**, highly elevated ratios were recorded in **Redcliffe** (an SAR of 212\*\*) and **Brisbane City** (160\*\*), with elevated ratios also in **Ipswich-Moreton** (132\*\*) and **Pine Rivers** (123\*\*). The lowest ratios were in **Beaudesert** (an SAR of 50\*\*) and **Albert** (78\*\*). The largest number of admissions was of residents of **Brisbane City** (6,662 admissions), while there were 728 from **Ipswich-Moreton** and 577 from **Redcliffe**. In **Townsville-Thuringowa** there were 666 admissions, 15 per cent more admissions than expected (an SAR of 115\*\*), while in **Gold Coast-Tweed Heads** there were 1,234 admissions, 29 per cent fewer than expected (71\*\*).

Each of the SSDs in **Adelaide** had elevated SARs for admissions for psychosis. The highest ratio was in **Northern** (with an SAR of 157\*\*) and the lowest was in **Southern** (113\*\*). These SSDs also had the largest numbers of admissions, with 2,450 admissions of residents of **Northern** and 1,836 from **Southern**.

In **Perth**, elevated SARs of statistical significance for psychosis were recorded in **Central Metropolitan** (an SAR of 182\*\*), **East Metropolitan** (136\*\*) and **South East Metropolitan** (118\*\*). The lowest ratio was in **South West Metropolitan** (95). The largest numbers of admissions were of residents of **North Metropolitan** (1,813 admissions) and **South East Metropolitan** (1,502).

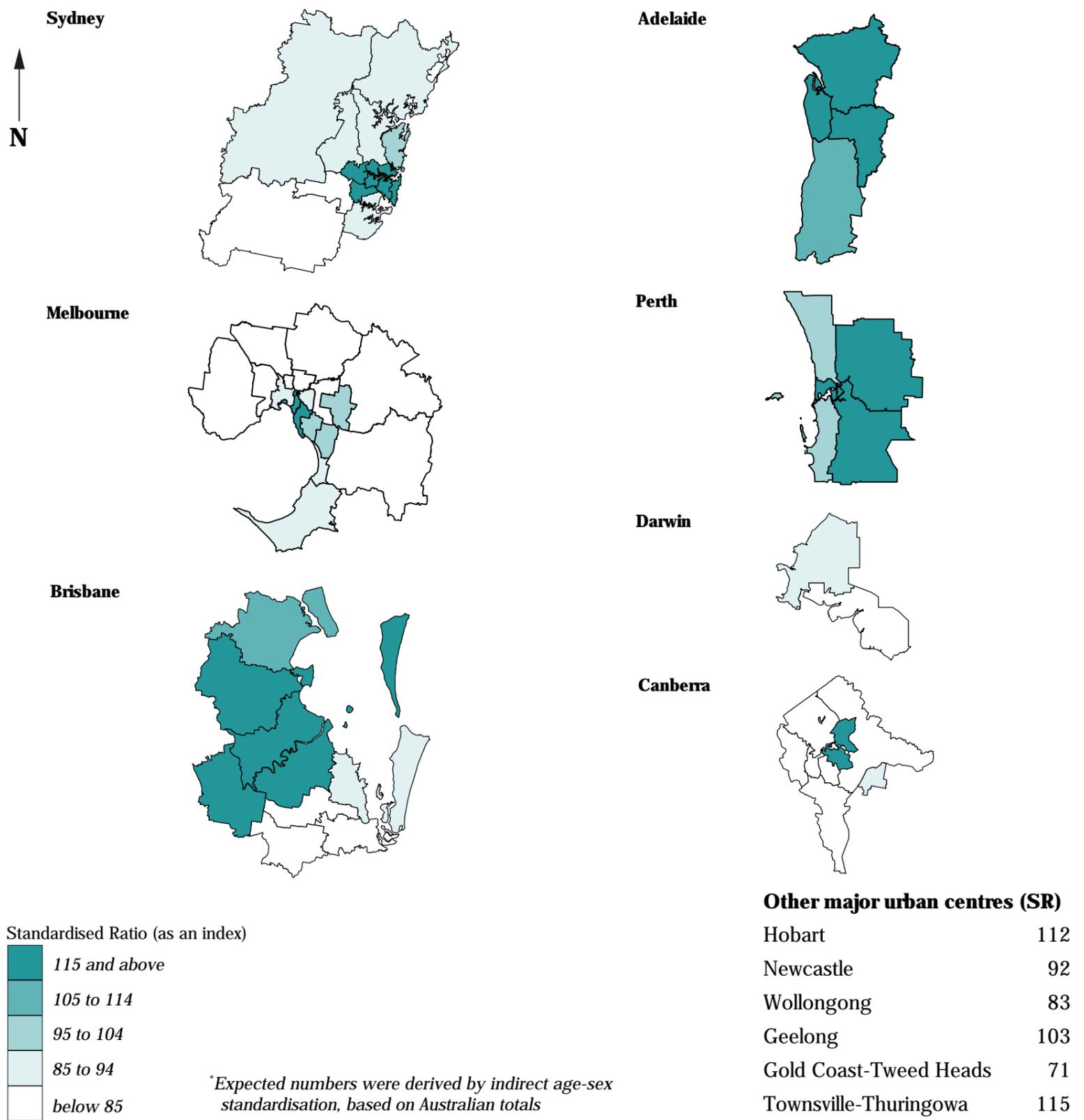
There were 1,083 admissions for psychosis of residents of **Hobart**, four per cent more than expected (an SAR of 112\*\*).

There were 260 admissions for psychosis from the **Darwin City** SSD (an SAR of 91) and 18 from **Palmerston-East Arm** (39\*\*).

Only **Central Canberra** SSD (with an SAR of 117\*\*) had more admissions than expected in **Canberra**. The lowest ratios were in **Tuggeranong** (an SAR of 35\*\*) and **Outer Canberra** (30\*\*). There were 364 admissions of residents of **Central Canberra** and 184 from **Belconnen**.

# Map 6.21: Admissions for psychosis, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for psychosis, 1995/96

## State/Territory comparison (Australia as the Standard)

In all cases, there were relatively more admissions for psychosis of people who were residents of the capital cities than of the non-metropolitan areas, with the widest variations being in Tasmania, Queensland and Western Australia (Table 6.27). The SAR of 118\*\* in the non-metropolitan areas of South Australia was 40 per cent higher than the next highest SAR (in New South Wales).

**Table 6.27: Admissions<sup>1</sup> with a principal diagnosis of psychosis, State/Territory, 1995/96**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	114**	83**	139**	139**	119**	112**	83**	64**	110**
Other major urban centres <sup>2</sup>	89**	103	82**	..	..	..	..	..	88**
Rest of State/Territory	83**	70**	81**	118**	80**	69**	74**	- <sup>3</sup>	81**
Whole of State/Territory	103**	80**	108**	133**	109**	87**	79**	64**	100

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

In 1995/96, there were 21,046 admissions for psychosis of residents of Statistical Subdivisions (SSDs) in the non-metropolitan areas of Australia. In contrast to the situation in the major urban centres, admission rates for males (372.0 admissions per 100,000 population) and females (399.2 admissions per 100,000 population) were similar.

### Rest of Australia

In the non-metropolitan areas of New South Wales, elevated ratios were recorded in **Far West** (an SAR of 150\*\*), **Upper Darling** (141\*\*), **Murray-Darling** (126), **Albury** (112) and **Tweed Heads** (103). The lowest ratios were recorded in **Snowy** (an SAR of 53\*\*), **Bathurst-Orange** (65\*\*) and **Central Murrumbidgee** (69\*\*). The largest number of admissions for psychosis were of residents of **Richmond-Tweed SD Balance** (701 admissions), **Hastings** (623) and **Clarence** (476).

Six SSDs in Victoria had elevated standardised admission ratios, with the highest in **Mildura** (an SAR of 235\*\*), **West Mallee** (195\*\*) and **South Goulburn** and **West Barwon** (both 111). In other non-metropolitan SSDs, ratios were at least 16 per cent lower than expected. The lowest ratio was in **South Loddon-Campaspe** (an SAR of 23\*\*), with low ratios also recorded in **East Central Highlands** (27\*\*) and **Ballarat** (29\*\*). The largest number of admissions for psychosis were in **East Barwon** (477 admissions), **Mildura** (464) and **South Goulburn** (202).

In Queensland, the only elevated ratios were in **North West** (an SAR of 117\*), **Far North SD Balance** (113\*\*) and **Sunshine Coast** (105). The remaining SSDs had ratios of at least ten per cent lower than expected from the Australian rates, with the lowest in **Fitzroy SD Balance** (with an SAR of 54\*\*) and **Mackay SD Balance** (57\*\*). There were 834 admissions for psychosis of residents of **Sunshine Coast**, 740 from **Darling Downs** and 521 from **Wide Bay-Burnett SD Balance**.

Highly elevated ratios were recorded in **Kangaroo Island** (an SAR of 270\*\*), **West Coast** (176\*\*) and **Fleurieu** (151\*\*) in South Australia. The lowest ratios were in **Lower North** (with an SAR of 88) and **Onkaparinga** (86). There were 227 admissions for psychosis of residents of **Fleurieu**, 233 from **Riverland** and 217 from **Murray Mallee**.

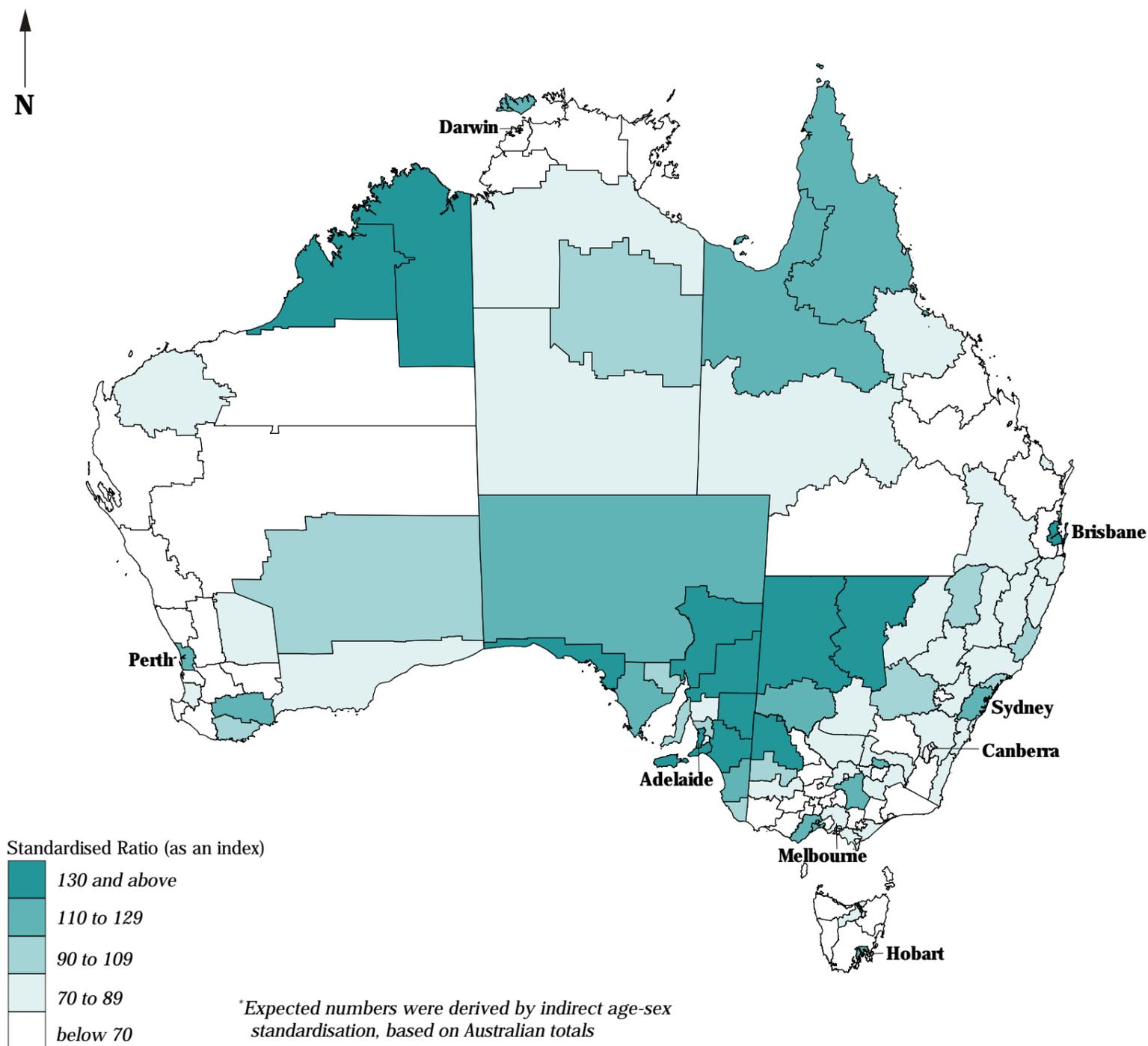
In the adjacent SSDs of **Ord** (with an SAR of 222\*\*) and **Fitzroy** (205\*\*) in Western Australia's north-west, SARs for admissions for psychosis were more than twice the level expected; **Pallinup** had the only other elevated ratio (119). The lowest ratios were recorded for residents in **Carnegie** (an SAR of 11\*\*), **Moore** (41\*\*) and **De Grey** (45\*\*). The largest numbers of admissions for psychosis were for residents of **Preston** (283 admissions), **Dale** (180) and **King** (176).

There were no elevated SARs recorded in rural Tasmania. The highest ratios were in **Central North** (81\*\*) and **Launceston** and **Burnie-Devonport** (both with 74\*\*). The lowest ratio was in **Lyell** (35\*\*). There were 360 admissions of residents of **Launceston** and 287 from **Burnie-Devonport**.

Outside Darwin, only **Bathurst-Melville** (with an SAR of 121) and **Barkly** (107) in the Northern Territory had SARs of greater than 100. The lowest ratios were recorded for residents of **Alligator** (an SAR of 26\*\*) and **Daly** (44\*). The largest numbers of admissions for psychosis were in **Central NT** (123) and **Lower Top End NT** (48).

## Map 6.22: Admissions for psychosis, Australia, 1995/96

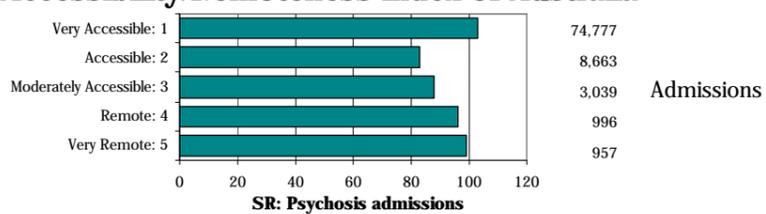
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for psychosis dropped from an SAR of 103 in the Very Accessible category to a low of 83 in the Accessible category, before increasing to 96 and 99 in the Remote and Very Remote categories, respectively. Again, the numbers of admissions in the most remote areas are relatively low.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for neurotic, personality or other mental disorders, 1995/96

## Capital city comparison (Australia as the Standard)

As was the case for admissions for psychosis, standardised admission ratios (SARs) for admissions for neurotic, personality or other mental disorders (described below) varied widely between the capital cities (Table 6.28). The pattern of variation was, however, somewhat different, in particular the ratios in **Adelaide** and **Canberra** were substantially lower, whereas SARs in the other capital cities were substantially higher. **Sydney** (with an SAR of 140\*\*), **Hobart** (135\*\*), **Brisbane** (122\*\*) and **Perth** (103\*) all had elevated SARs, with a ratio of around one third this level in **Canberra** (44\*\*).

**Table 6.28: Admissions<sup>1</sup> with a principal diagnosis of neurotic, personality or other mental disorders, capital cities, 1995/96**  
*Age-sex standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
140**	61**	122**	86**	103*	135**	59**	44**	103**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

The introduction to the previous variable (psychosis) refers to the coverage of the data and other background information of relevance. The variable under discussion here includes admissions of people diagnosed as having a neurotic, personality or other mental disorder. They are distinguished from those with psychosis (see page 238) by the fact that a neurosis arises as a result of stresses and anxieties in the person's environment. The most common are anxiety states, reactive depression and obsessive-compulsive disorders.

Females had a higher overall rate of admission for neurotic, personality or other mental disorders than did males (470.9 admissions per 100,000 population compared with 460.3) and higher rates at almost all ages, in particular from 10 through to 14 years of age. Admissions to hospital for neurotic, personality or other mental disorders accounted for 1.8 per cent of all admissions in Australia (84,610 admissions, 465.7 per 100,000 population).

There were 60,215 admissions for neurotic, personality and other mental disorders of residents of the capital cities and other major urban centres in 1995/96 (473.7 per 100,000 population).

## Capital cities

In **Sydney**, highly elevated SARs for admissions for neurotic, personality or other mental disorders were recorded in **Inner Western Sydney** (an SAR of 213\*\*), **Inner Sydney** (204\*\*), **Central Western Sydney** (193\*\*), **Blacktown-Baulkham Hills** (178\*\*), **Canterbury-Bankstown** (162\*\*) and **Outer Western Sydney** (160\*\*). In contrast, ratios below the level expected were reported in **Outer South Western Sydney** (an SAR of 65\*\*) and **Fairfield-Liverpool** (85\*\*). There were 2,952 admissions of residents of **Blacktown-Baulkham Hills**, 2,583 from **Inner Sydney** and 2,450 from **Central Western Sydney**. Both **Newcastle** (an SAR of 84\*\* and 1,823 admissions) and **Wollongong** (75\*\*; 878 admissions) had fewer admissions than expected.

In **Melbourne**, only **Central Melbourne** had an elevated ratio (an SAR of 104). Of the remaining SSDs, the highest ratios were in **Western Inner Melbourne** (an SAR of 83\*\*) and **Eastern Inner Melbourne** (78\*\*), while the lowest ratios were in **Western Fringe Melbourne** (31\*\*) and **Western Outer Melbourne** (32\*\*). The

largest numbers of admissions for these diagnoses were of residents of **Eastern Outer Melbourne** (944 admissions), **Western Inner Melbourne** (871) and **Eastern Middle Melbourne** (732). There were 308 admissions of residents of **Geelong**, 40 per cent fewer than expected (an SAR of 60\*\*).

**Brisbane City** (an SAR of 150\*\*), **Redcliffe** (125\*\*) and **Ipswich-Moreton** (116\*\*) had elevated ratios for admissions for neurotic, personality or other mental disorders. The lowest ratios were recorded in **Beaudesert** (an SAR of 42\*\*) and **Albert** (64\*\*). There were 5,728 admissions of people from **Brisbane City**, 656 from **Ipswich-Moreton** and 608 from **Logan**. Residents of **Townsville-Thuringowa** had more admissions than expected from the Australian rates (an SAR of 130\*\* and 761 admissions) and those in **Gold Coast-Tweed Heads** had fewer than expected (66\*\*; 1,040).

Lower than expected ratios were recorded in each of the four SSDs in **Adelaide**, ranging from an SAR of 95 in **Eastern** and 92\*\* in **Northern**, to 77\*\* in **Southern**. There were 1,437 admissions for these diagnoses of residents of **Northern** and 1,152 from **Southern**.

The highest SARs in **Perth** were in **Central Metropolitan** (an SAR of 170\*\*) and **North Metropolitan** (102) and the lowest was recorded for admissions of residents of **East Metropolitan** (83\*\*). The largest numbers of admissions for these diagnoses were of residents of **North Metropolitan** (1,862 admissions) and **Central Metropolitan** (1,175).

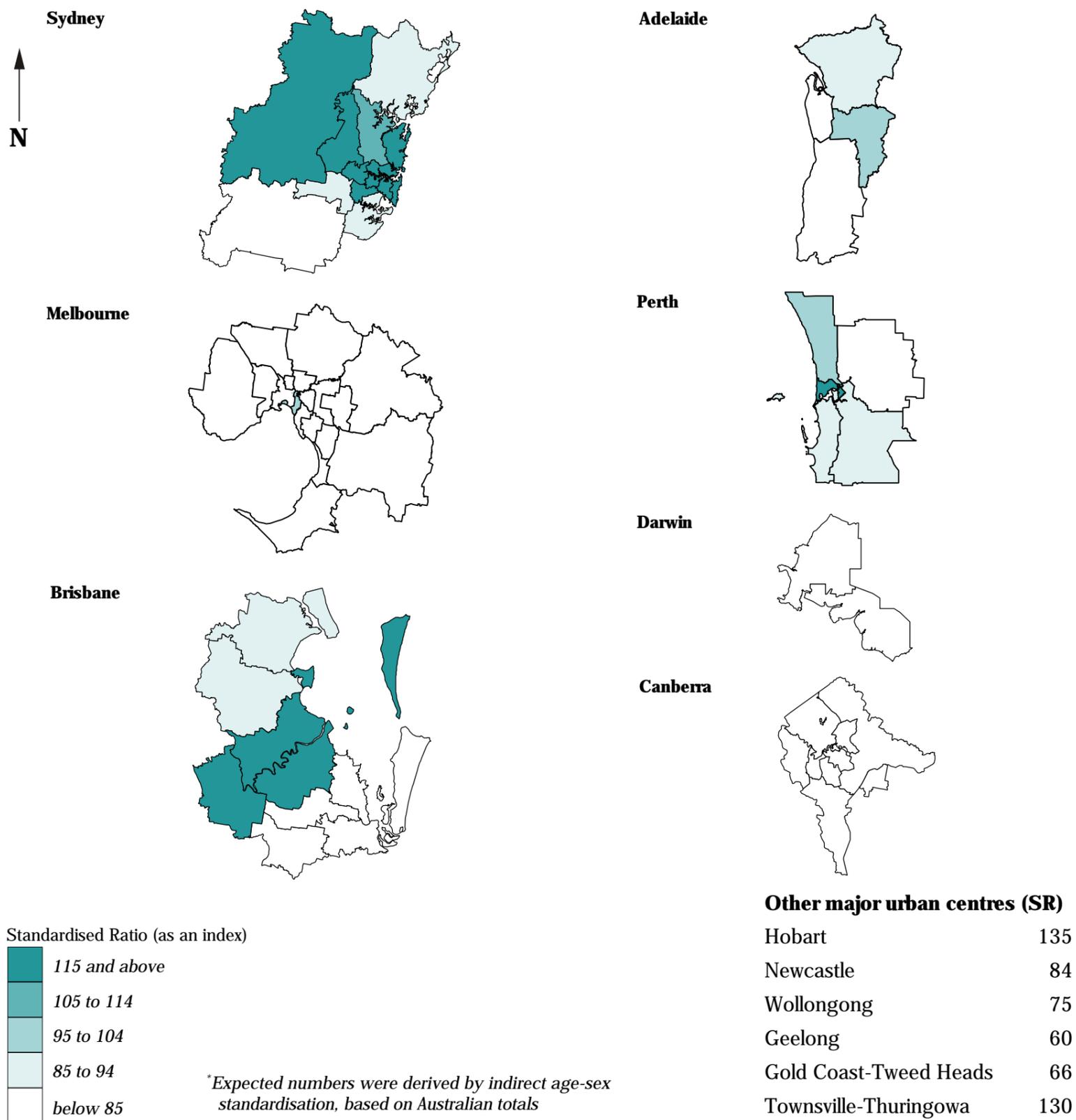
During 1995/96, residents of **Hobart** had 1,230 admissions for neurotic, personality or other mental disorders, 35 per cent more than were expected from the Australian rates (an SAR of 135\*\*).

In **Darwin**, there were fewer admissions than expected from the Australian rates in **Palmerston-East Arm** (an SAR of 45\*\* and 24 admissions) and in **Darwin City** (62\*\*; 196 admissions).

The highest SARs for neurotic, personality or other mental disorders in **Canberra** were recorded for residents of **Outer Canberra** (an SAR of 78) and **Weston Creek** (56\*\*), while the lowest ratio was in **Tuggeranong** (31\*\*). The largest numbers of admissions were of residents of **Belconnen** (144 admissions) and **Central Canberra** (139).

## Map 6.23: Admissions for neurotic, personality or other mental disorder, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for neurotic, personality or other mental disorders, 1995/96

## State/Territory comparison (Australia as the Standard)

There was no consistent pattern for admissions for neurotic, personality or other mental disorders (described below) in the standardised admission ratios (SARs) between residents of the capital cities and of the non-metropolitan areas (Table 6.29). In New South Wales, Queensland and Tasmania capital city ratios were higher, with the reverse applying in South Australia, Western Australia, Victoria and the Northern Territory.

**Table 6.29: Admissions<sup>1</sup> with a principal diagnosis of neurotic, personality or other mental disorders, State/Territory, 1995/96**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	140**	61**	122**	86**	103*	135**	59**	44**	103**
Other major urban centres <sup>2</sup>	81**	60**	84**	..	..	..	..	..	80**
Rest of State/Territory	104**	70**	107**	130**	112**	79**	67**	- <sup>3</sup>	98**
Whole of State/Territory	124**	63**	111**	98	105**	102	64**	42**	100

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

There were 24,395 admissions for neurotic, personality or other mental disorders of residents of the non-metropolitan areas in 1995/96, 446.8 admissions per 100,000 population.

## Rest of Australia

Highly elevated ratios (elevated by between two to more than three times) were recorded in the Statistical Subdivisions (SSDs) of **Upper Darling** (an SAR of 326\*\*), **Macquarie-Barwon** (293\*\*) and **Far West** (210\*\*) in New South Wales. Ratios elevated by more than 50 per cent were also recorded in **North Central Plain** (an SAR of 188\*\*), **Murray-Darling** (171\*\*) and **Lachlan** (166\*\*). The lowest ratios were in **Albury** (an SAR of 49\*\*) and **Lower Murrumbidgee** (65\*\*). The largest numbers of admissions were of residents of **Richmond-Tweed SD Balance** (665 admissions), **Clarence** (594) and **Central Macquarie** (515).

In Victoria, five SSDs had elevated ratios, the highest of which were in **South West Goulburn** (an SAR of 121\*), **Glenelg** (108) and **South Gippsland** (105). Of the remaining SSDs, the lowest ratios for admissions for neurotic, personality or other mental disorders were recorded in **Ballarat** (an SAR of 36\*\*), **Bendigo** (37\*\*) and **East Central Highlands** (40\*\*). There were 257 admissions of residents of **Hopkins**, 226 from **North Goulburn** and 214 from **South Gippsland**.

The most highly elevated SARs for admissions for neurotic, personality or other mental disorders in Queensland were recorded in **South West** (an SAR of 160\*\*), **North West** (151\*\*), **Far North SD Balance** (126\*\*) and **Wide Bay-Burnett SD Balance** (122\*\*). The lowest ratio was in **Cairns** (an SAR of 65\*\*), with 35 per cent fewer admissions than were expected from the Australian rates, while **Moreton SD Balance** (79\*\*) and **Gladstone** (82\*) and also had fewer admissions than expected. The largest numbers of admissions for these diagnoses were of residents of **Darling Downs** (1,124 admissions), **Wide Bay-Burnett SD Balance** (897) and **Sunshine Coast** (723).

There were four SSDs in the non-metropolitan areas of South Australia with ratios elevated by more than 50 per cent above the level expected from the Australian rates. They were **Riverland** (with an SAR of 234\*\*), **Flinders Ranges** (184\*\*), **Murray Mallee** (173\*\*) and **Lower North** (165\*\*). The lowest ratios were in **Barossa** (71\*\*) and **Upper South East** (86). There were 368 admissions for a neurotic, personality or other mental disorder of residents of **Riverland** SSD, 259 from **Murray Mallee** and 228 from **Lower South East**.

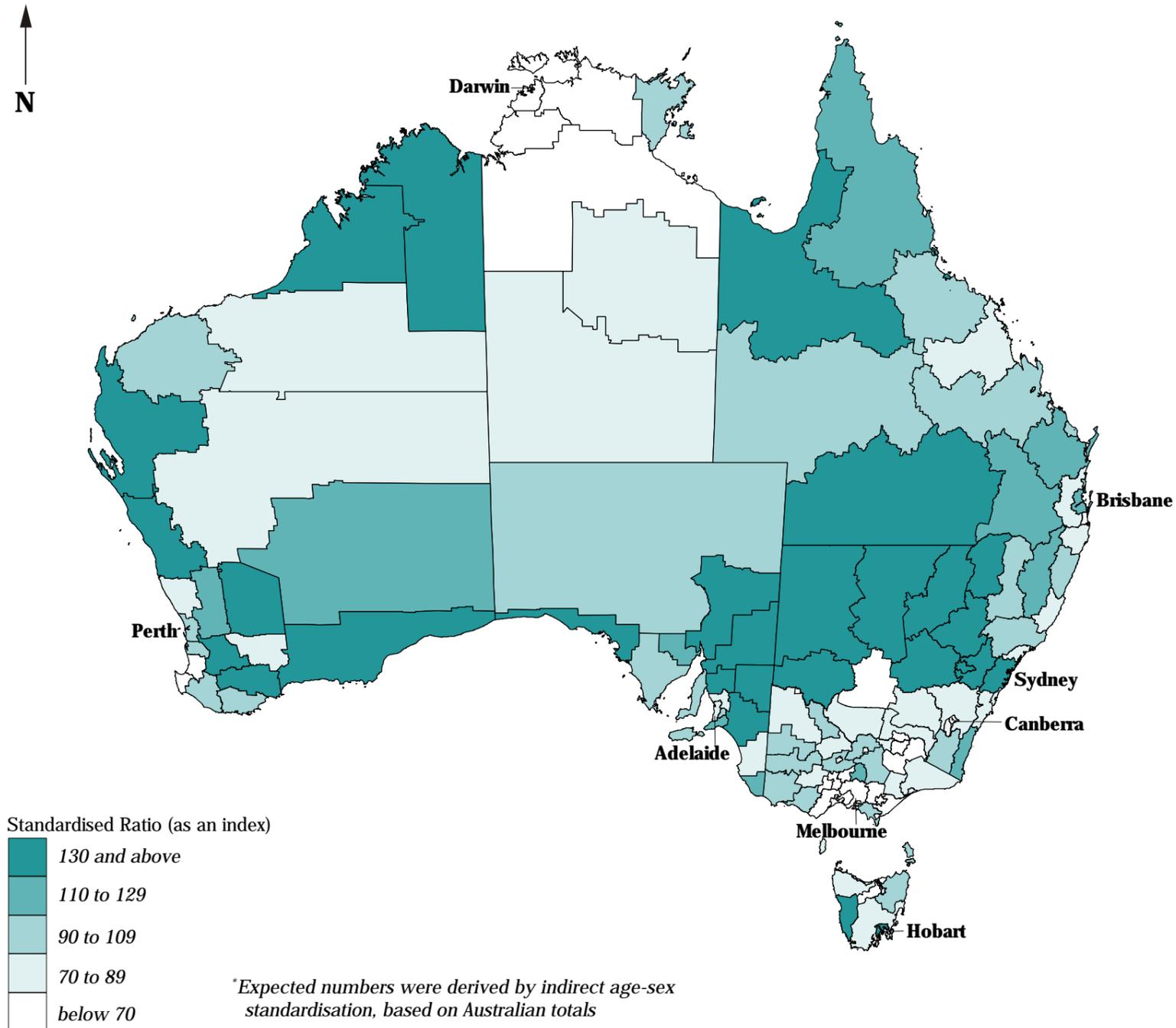
The most highly elevated ratios in Western Australia were in **Johnston** (with an SAR of 183\*\*), **Ord** (182\*\*), **Pallinup** (169\*\*), **Fitzroy** (162\*\*) and **Gascoyne** (156\*\*). In contrast low admission ratios were recorded in **Vasse** (an SAR of 66\*\*), **Preston** (69\*\*) and **Lakes** (70). There were 290 admissions for these diagnoses of residents of **Greenough River**, 221 from **Preston** and 220 from **Dale**.

In Tasmania, **Lyell** (with an SAR of 130), **Southern** (110) and **North Eastern** (101) SSDs had elevated ratios of admissions for a neurotic, personality or other mental disorder. The lowest ratios were in **North Western Rural** (an SAR of 70\*\*) and **Central North** (62\*\*). There were 348 admissions of residents of **Launceston** and 287 from **Burnie-Devonport**.

All of the SSDs in the Northern Territory outside of **Darwin** had fewer admissions than expected during 1995/96. The highest of these ratios were in **East Arnhem** (an SAR of 92) and **Barkly** (81), and the lowest were in **Alligator** (an SAR of 9\*\*) and **Daly** (38\*). There were 114 admissions for these diagnoses of residents of **Central NT** and 49 from **East Arnhem**.

## Map 6.24: Admissions for neurotic, personality or other mental disorder, Australia, 1995/96

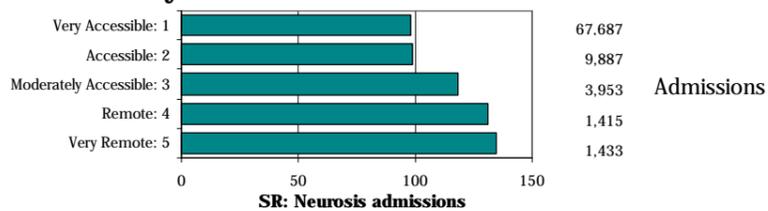
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for neurotic, personality or other mental disorders were close to the level expected from the Australian rates in the Very Accessible (with an SAR of 98) and Accessible (99) ARIA categories before increasing to highs of 119, 131 and 135 in the Moderately Accessible, Remote and Very Remote categories, respectively.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for circulatory system diseases, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for diseases of the circulatory system (described below) varied little between the capital cities, with the exception of relatively low ratios in **Canberra** (80\*\*) and **Perth** (84\*\*) (Table 6.30). Both **Brisbane** and **Perth** had lower ratios in the later period shown in Table 6.28, suggesting a decline (relative to the Australian rates) in admissions for these diseases. The SARs in **Sydney** and **Darwin** increased, suggesting an increase (relative to the Australian rates) in admissions over this period.

**Table 6.30: Admissions with a principal diagnosis of circulatory system diseases, capital cities**  
*Age-sex standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	99**	94**	92**	102**	84**	97*	104	80**	95**
1989 <sup>3</sup>	88**	..	104**	102**	91**	..	60**	..	93**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at five per cent; \*\* significance at one per cent

Admissions for circulatory system diseases accounted for 8.6 per cent of all admissions in Australia (410,802 admissions). They include admissions for ischaemic heart disease, other forms of heart disease and cerebrovascular disease.

Admission rates from these causes are affected by age and sex, socioeconomic status, race and country of birth. Esterman et al. (1990) report that in **Adelaide**, there was a pronounced upward gradient in admission rates for all circulatory system diseases with lowering income status. Residents of the poorest areas had a rate 34 per cent higher than for the wealthiest areas. The corresponding elevation was 47 per cent for ischaemic heart disease, 15 per cent for stroke and 143 per cent for hypertension.

There were 271,282 admissions for circulatory system diseases of residents of the major urban centres in 1995/96 (2,134.3 admissions per 100,000 population).

## Capital cities

In **Sydney**, SARs for admissions for circulatory system diseases were elevated by more than ten per cent in **Outer South Western Sydney** (an SAR of 119\*\*), **Blacktown-Baulkham Hills** (117\*\*) and **Gosford-Wyong** (116\*\*). The lowest ratios were in the high socioeconomic status SSDs of **Hornsby-Kuring-gai** (an SAR of 78\*\*), **Lower Northern Sydney** (82\*\*) and **Northern Beaches** (87\*\*). There were 9,614 admissions of residents of **St George-Sutherland**, 8,648 from **Gosford-Wyong** and 7,753 from **Canterbury-Bankstown**. There were more admissions than expected from the Australian rates in **Wollongong** (an SAR of 105\*\* and 6,187 admissions) and fewer than expected in **Newcastle** (94\*\*; 10,782 admissions).

The most highly elevated ratio in **Melbourne** was in **Western Fringe Melbourne** (an SAR of 131\*\*), with other elevated ratios in **Western Outer Melbourne** (108\*\*) and **Northern Fringe Melbourne** (106\*\*). Of the 12 SSDs with low ratios, the lowest were in **Eastern Middle Melbourne** (an SAR of 81\*\*), **Southern Outer Melbourne** (84\*\*) and **Eastern Inner Melbourne** (85\*\*). The largest numbers of admissions were of residents of **Eastern Outer Melbourne** (6,621 admissions), **Eastern Middle Melbourne** (5,611) and **Western Outer Melbourne** (5,505). In

**Geelong**, there were 2,457 admissions, nine per cent fewer than expected (an SAR of 91\*\*).

Standardised admission ratios for admissions for circulatory system diseases were elevated by 20 per cent or more in **Albert** (an SAR of 122\*\*) and **Caboolture** (120\*\*) in **Brisbane**. **Ipswich-Moreton** (with an SAR of 105\*) was the only other SSD with an elevated ratio. The lowest ratios were in **Beaudesert** (an SAR of 69\*\*) and **Pine Rivers** (80\*\*). There were 16,931 admissions of residents of **Brisbane City**, 2,293 from **Caboolture** and 2,245 from **Logan**. In both **Gold Coast-Tweed Heads** (with an SAR of 99 and 8,997 admissions) and **Townsville-Thuringowa** (98; 2,161 admissions) there were fewer admissions than expected.

Three of the four SSDs in **Adelaide** had more admissions for circulatory system diseases than expected; the highest of these was in **Northern** (an SAR of 108\*\*) and the lowest was in **Eastern** (88\*\*). The largest numbers of admissions were of residents of **Southern** (8,331 admissions) and **Northern** (7,239).

Standardised admission ratios for each SSD in **Perth** were lower than expected. The ratios covered a range from an SAR of 91\*\* in **South West Metropolitan** to 75\*\* in **Central Metropolitan**. The largest numbers of admissions for circulatory system diseases were of residents of **North Metropolitan** (6,403 admissions) and **South West Metropolitan** (5,301).

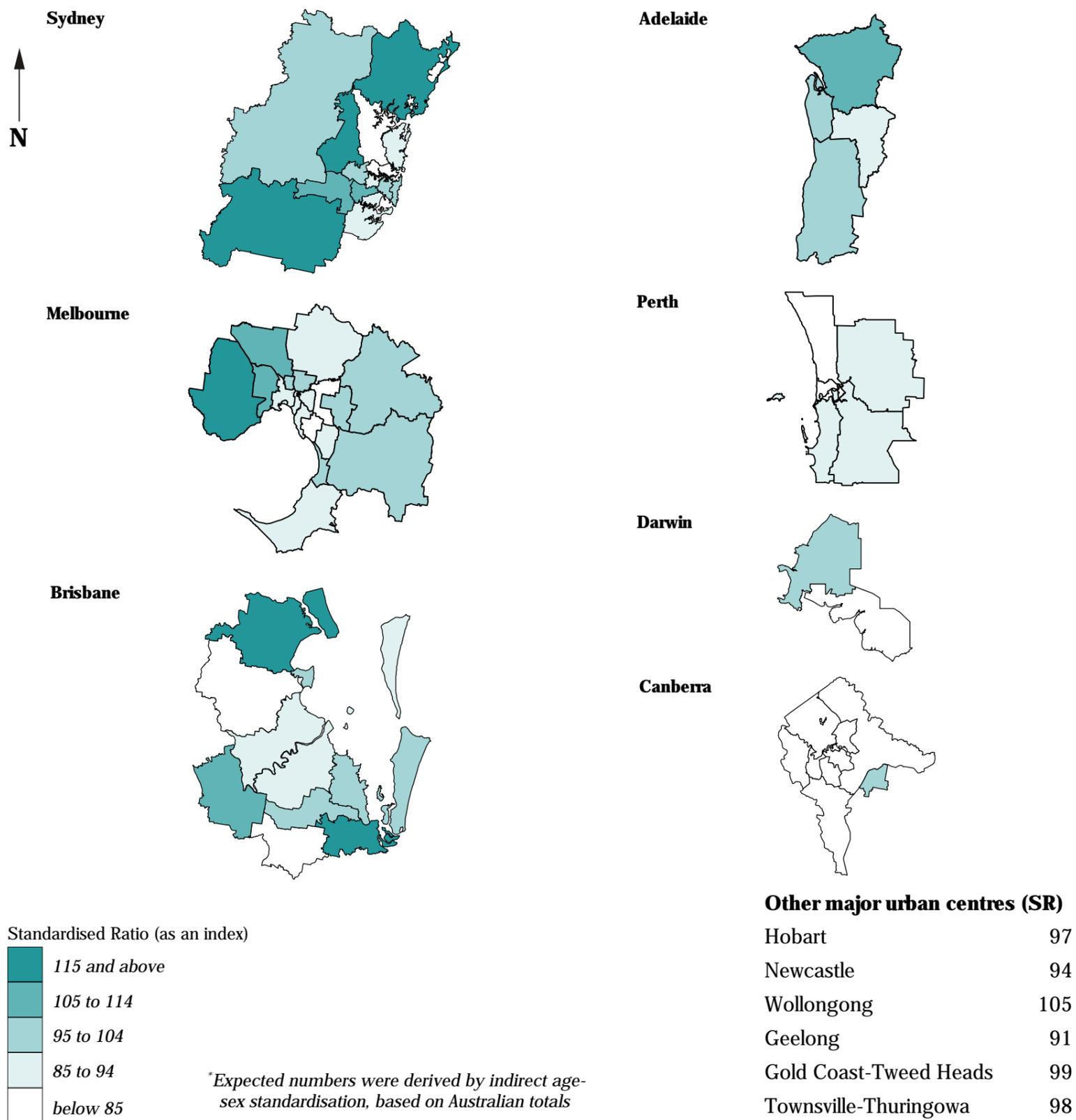
There were 4,445 admissions for circulatory system diseases in **Hobart**, three per cent fewer than expected (an SAR of 97\*).

Residents of both **Darwin City** (an SAR of 96 and 834 admissions) and **Palmerston-East Arm** (81\*: 106) had fewer admissions than expected.

In **Canberra**, ratios were lower than expected in each of the SSDs, with the highest ratios in **Tuggeranong** (82\*\*), **Belconnen** (81\*\*) and **Outer Canberra** (81). The lowest ratio was in **Weston Creek** (74\*\*). There were 1,113 admissions for circulatory system diseases of residents of **Central Canberra** and 1,071 from **Belconnen**.

# Map 6.25: Admissions for circulatory system diseases, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for circulatory system diseases, 1995/96

## State/Territory comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for diseases of the circulatory system (described on the previous text page) of residents of the non-metropolitan areas were, with the exception of Tasmania (with an SAR of 95\*\*), relatively uniform across the States and Territories (**Table 6.31**). The most highly elevated ratios were in New South Wales (116\*\*), South Australia (115\*\*) and Victoria (113\*\*).

There was relatively little change in the ratios for the non-metropolitan areas between the periods shown in **Table 6.31** with the greatest change being the decrease shown for Western Australia.

**Table 6.31: Admissions with a principal diagnosis of circulatory system diseases, State/Territory**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96</b> <sup>1</sup>									
Capital city	99**	94**	92**	102**	84**	97*	94	80**	95**
Other major urban centres <sup>2</sup>	97**	91**	99	..	..	..	..	..	97**
Rest of State/Territory	116**	113**	106**	115**	103**	95**	108**	- <sup>3</sup>	111**
Whole of State/Territory	104**	100	98**	105**	89**	96**	101	78**	100
<b>1989</b> <sup>4</sup>									
Rest of State/Territory	118**	..	110**	117**	113**	..	102	..	115**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources, Appendix 1.3*

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

There were 139,520 admissions for circulatory system diseases of residents of the non-metropolitan areas in 1995/96, 2,555.5 admissions per 100,000 population.

## Rest of Australia

In New South Wales, elevated ratios were recorded in all but two Statistical Subdivisions (SSDs). The most highly elevated of these were in **Upper Darling** (an SAR of 197\*\*), **Macquarie-Barwon** (174\*\*), **Lachlan** (145\*\*) and **Murray-Darling** (137\*\*). The lowest ratios were in **Northern Tablelands** and **Snowy** (both with an SAR of 98), with two per cent fewer admissions than expected. The largest numbers of admissions were from the north coast SSDs of **Richmond-Tweed SD Balance** (4,279 admissions), **Hastings** (4,232) and **Clarence** (4,112).

Four fifths (24) of the Victorian SSDs had elevated ratios for admissions for circulatory system diseases. Of these, the highest ratios were recorded for residents in **Hopkins** (an SAR of 150\*\*), **North Ovens-Murray** (141\*\*), **North Goulburn** (138\*\*) and **South Ovens-Murray** (135\*\*). The lowest ratios were in **East Barwon** (an SAR of 83\*\*) and **Mildura** (85\*\*). **Ballarat** had the largest numbers of admissions (2,521 admissions), with 2,201 from **Hopkins** and 1,884 from **East Barwon**.

In Queensland, SARs for admissions for circulatory system diseases were elevated by more than 25 per cent above the levels expected in **North West** (an SAR of 170\*\*), **Central West** (134\*\*) and **Mackay** (129\*\*). The lowest ratio was recorded for residents in **Sunshine Coast** (an SAR of 85\*\*). The largest numbers of admissions were of residents of **Darling Downs** (5,150 admissions), **Wide Bay-Burnett SD Balance** (4,441) and **Sunshine Coast** (3,683).

SARs for admissions for circulatory system diseases were elevated by more than 50 per cent in the **West Coast** (an SAR of 171\*\*) and **Flinders Ranges** (159\*\*) SSDs in South Australia. Elevated ratios were also recorded in **Whyalla** (133\*\*) and **Far North** (125\*\*). Only **Onkaparinga** (with an SAR of 85\*\*) had fewer admissions than expected. The largest numbers of admissions were of residents of **Lower South East** (1,065 admissions) and **Yorke** (1,023).

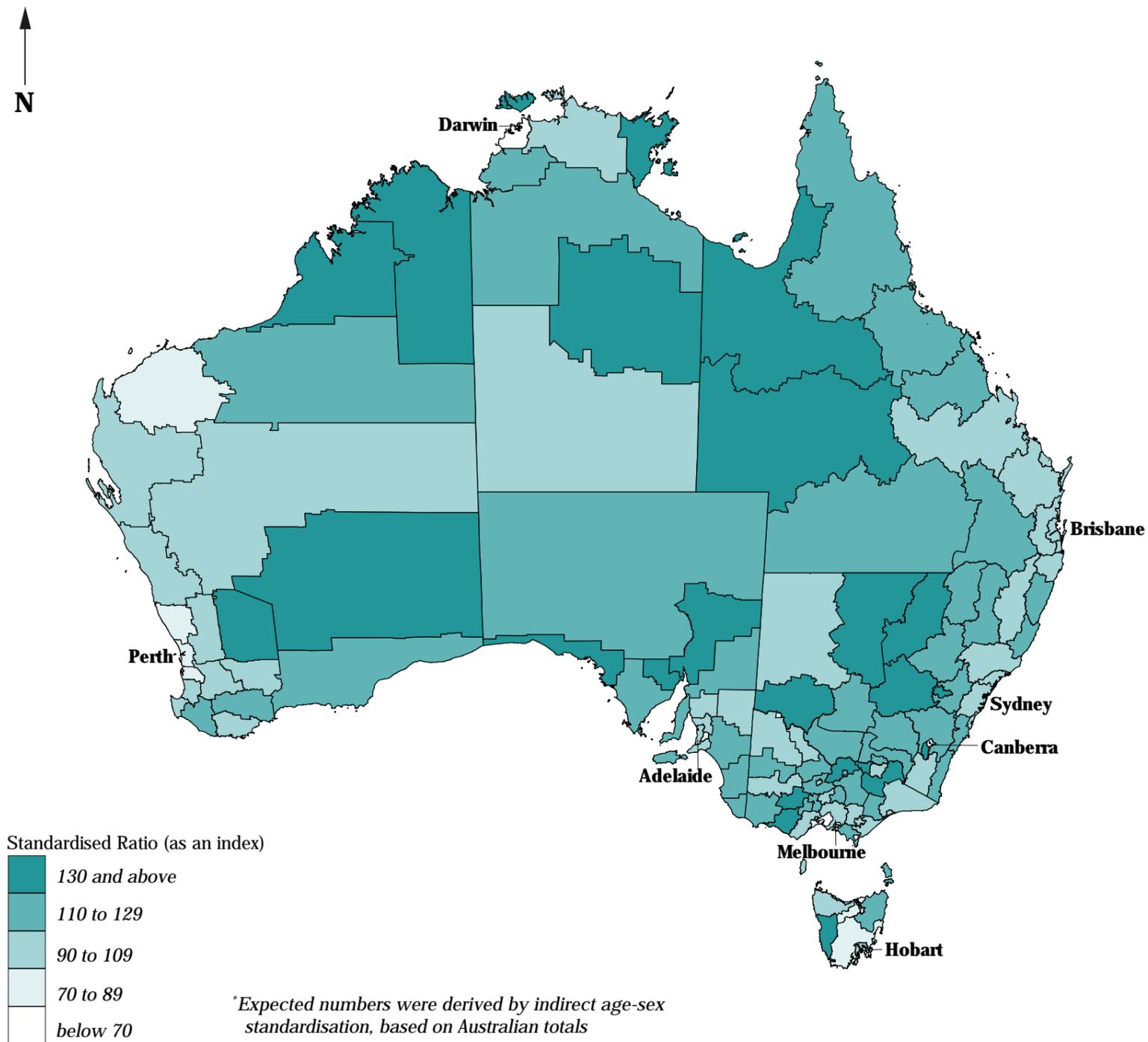
The highest SARs in Western Australia were in the adjacent SSDs of **Ord** (an SAR of 158\*\*) and **Fitzroy** (157\*\*). Elevated ratios were also recorded in **Campion** (an SAR of 132\*\*) and **Lefroy** (130\*\*). The lowest ratios were in **Moore** (78\*\*) and **Dale** (85\*\*). **Preston** and **Dale** had the largest number of admissions, with 1,561 and 1,218 admissions, respectively.

In Tasmania, there were 30 per cent more admissions for circulatory system diseases than expected in **Lyell** (an SAR of 130\*\*) and 17 per cent more in **North Eastern** (117\*\*). Four SSDs had fewer admissions than expected, with the lowest ratios in **Central North** (an SAR of 75\*\*) and **Southern** (82\*\*). There were 2,118 admissions of residents of **Burnie-Devonport** and 1,959 from **Launceston**.

There were highly elevated SARs in **Barkly** (with almost twice the number of admissions for circulatory system diseases expected from the Australian rates, an SAR of 199\*\*), **Bathurst-Melville** (149) and **East Arnhem** (140\*\*) in the Northern Territory. Lower than expected ratios were recorded in **Darwin Rural Areas** (an SAR of 61\*\*) and **Alligator** (92). The largest numbers of admissions were of residents of **Central NT** (405 admissions) and **Lower Top End NT** (181).

# Map 6.26: Admissions for circulatory system diseases, Australia, 1995/96

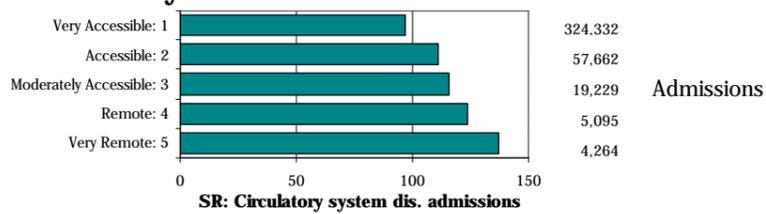
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Standardised admission ratios for circulatory system diseases are below the level expected from the Australian rates in the Very Accessible ARIA category, with an SAR of 97. The other ARIA categories all have elevated ratios, rising from SARs of 111 and 116 in the Accessible and Moderately Accessible categories to SARs of 124 and 137 in the Very Remote and Remote categories, respectively.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for ischaemic heart disease, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for ischaemic heart disease (described below) varied over a relatively narrow range, from the highest ratio in **Hobart** (105<sup>\*</sup>) to the lowest in **Perth** (86<sup>\*\*</sup>) (Table 6.32).

**Brisbane**, **Adelaide** and **Perth** each had lower ratios in the later period shown in Table 6.32, suggesting a decline (relative to the Australian rates) in admissions for this disease. The SARs in **Sydney** and **Darwin** increased, suggesting an increase (relative to the Australian rates) in admissions for ischaemic heart disease over this period.

**Table 6.32: Admissions with a principal diagnosis of ischaemic heart disease, capital cities**

	Age-sex standardised admission ratios								
	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	103 <sup>**</sup>	93 <sup>**</sup>	93 <sup>**</sup>	98 <sup>*</sup>	86 <sup>**</sup>	105 <sup>*</sup>	87 <sup>*</sup>	91 <sup>**</sup>	96 <sup>**</sup>
1989 <sup>3</sup>	95 <sup>**</sup>	..	105 <sup>**</sup>	106 <sup>**</sup>	90 <sup>**</sup>	..	44 <sup>**</sup>	..	98 <sup>**</sup>

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Ischaemic heart disease results from poor blood supply to the heart and leads to heart attacks and angina. Hospital admissions for ischaemic heart disease accounted for 3.2 per cent of all admissions in Australia and 37.0 per cent of admissions for all circulatory system diseases.

As for all circulatory system diseases, higher admission rates occur among those who are socioeconomically disadvantaged.

Of the 102,110 admissions of residents of the capital cities and other major urban centres in 1995/96, nearly two thirds (65.3 per cent) were males. There were 803.4 admissions per 100,000 population.

## Capital cities

Standardised admission ratios for admissions for ischaemic heart disease were elevated by more than 20 per cent above the level expected from the Australian rates in **Outer South Western Sydney** (with an SAR of 134<sup>\*\*</sup>), **Blacktown-Baulkham Hills** (127<sup>\*\*</sup>), **Gosford-Wyong** (125<sup>\*\*</sup>) and **Fairfield-Liverpool** (121<sup>\*\*</sup>). The lowest rates were recorded in **Lower North Sydney** and **Hornsby-Ku-ring-gai**, both with an SAR of 75<sup>\*\*</sup>. There were more than 3,000 admissions of residents in each of **St George-Sutherland** (3,709 admissions), **Gosford-Wyong** (3,493) and **Canterbury-Bankstown** (3,053). The SARs in **Newcastle** (an SAR of 103<sup>\*</sup> and 4,427 admissions) and **Wollongong** (134<sup>\*\*</sup>; 2,969 admissions) were both elevated.

In **Melbourne**, there were 35 per cent more admissions for ischaemic heart disease than expected from the Australian rates in **Western Fringe Melbourne** (an SAR of 135<sup>\*\*</sup>), with elevated ratios also in **Northern Eastern Fringe Melbourne** (113<sup>\*\*</sup>) and **Fringe Melbourne** (111<sup>\*\*</sup>). The lowest ratios were in **Eastern Inner Melbourne** (an SAR of 75<sup>\*\*</sup>) and **Central Melbourne** (80<sup>\*\*</sup>). The largest numbers of admissions for ischaemic heart disease were of residents of **Eastern Outer Melbourne** (2,687), **Eastern Middle Melbourne** (2,151) and **Western Outer Melbourne** (2,105). There were 951 admissions of residents of **Geelong** (an SAR of 95), five per cent fewer than expected.

Very high ratios were recorded in **Albert** (with an SAR of 144<sup>\*\*</sup>) and **Caboolture** (128<sup>\*\*</sup>) in **Brisbane**, and relatively low ratios were recorded in **Pine Rivers** (an SAR of 68<sup>\*\*</sup>) and **Beaudesert** (69<sup>\*\*</sup>). The largest numbers of admissions for ischaemic heart disease were of residents of **Brisbane City** (6,027 admissions), **Logan** (924) and **Caboolture** (918). **Gold Coast-Tweed Heads** (with an SAR of 102 and 3,496 admissions) had more admissions than expected, while in **Townsville-Thuringowa** (97; 774 admissions), there were three per cent fewer admissions than expected.

In **Northern** Statistical Subdivision (SSD) (with an SAR of 114<sup>\*\*</sup>), in **Adelaide**, admissions for ischaemic heart disease were 14 per cent higher than expected, while in **Eastern**, there were 26 per cent fewer admissions than expected (74<sup>\*\*</sup>). The largest numbers of admissions were recorded for residents of **Southern** and **Northern**, with 3,066 and 2,854 admissions, respectively.

There were fewer admissions for ischaemic heart disease than were expected in all but **South West Metropolitan** SSD (with an SAR of 100) in **Perth**. Of the remaining SSDs, the highest ratio was recorded in **South East Metropolitan** (an SAR of 90<sup>\*\*</sup>) and the lowest in **Central Metropolitan** (72<sup>\*\*</sup>). There were more than 2,000 admissions from each of **North Metropolitan** (2,382 admissions) and **South West Metropolitan** (2,168).

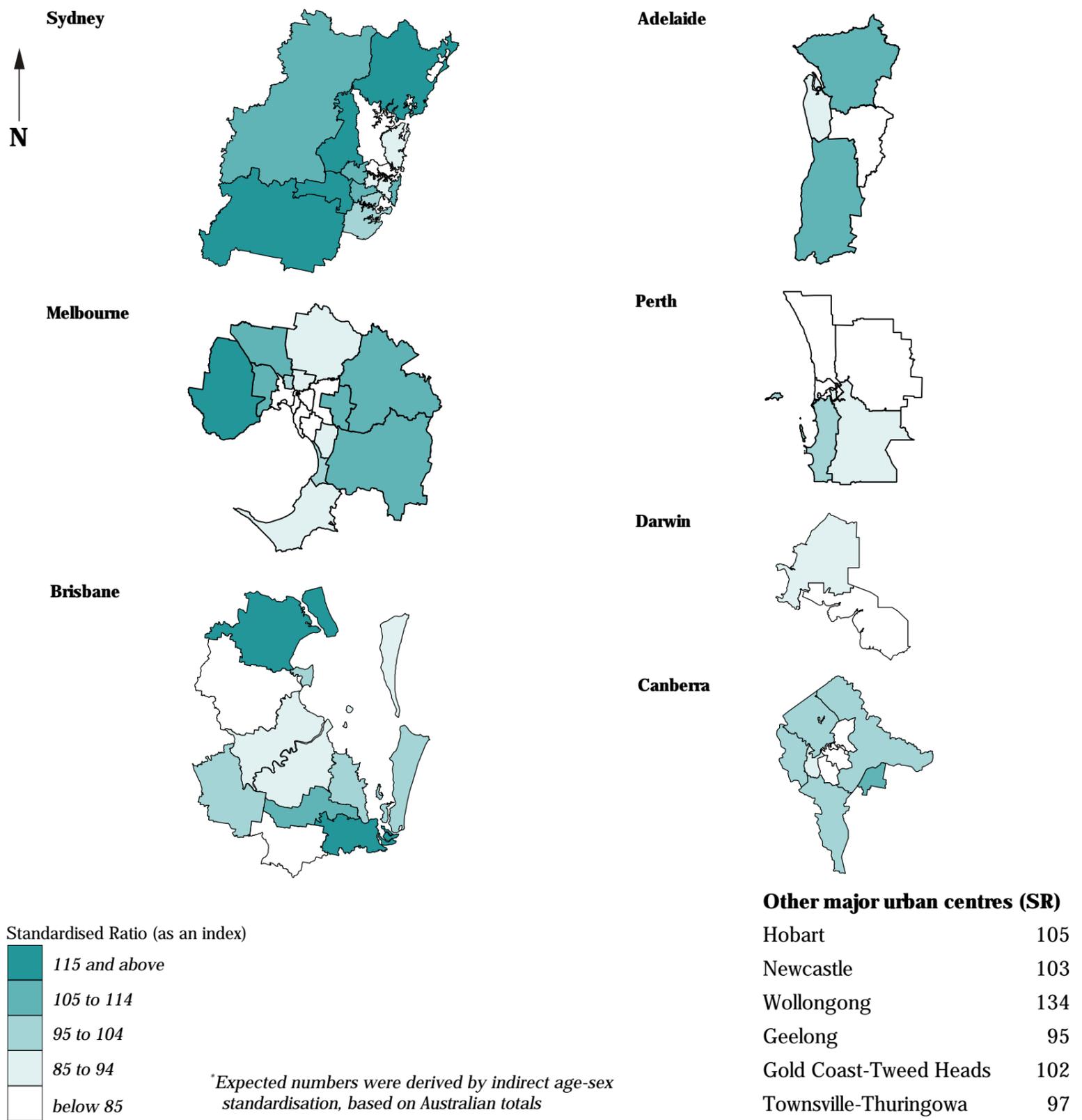
In 1995/96, there were 1,771 admissions of residents of **Hobart** for ischaemic heart disease, just above the level expected from the Australian rates (an SAR of 105<sup>\*</sup>).

The SARs in **Darwin** were below the expected level with an SAR of 89 in **Darwin City** (289 admissions) and an SAR of 70<sup>\*</sup> in **Palmerston-East Arm** (32 admissions).

In **Canberra**, there were fewer admissions for ischaemic heart disease than were expected in all but **Tuggeranong** (an SAR of 100) SSD. Of the remaining SSDs, the highest ratio was recorded in **Belconnen** (an SAR of 96) and the lowest ratios were recorded in **Woden Valley** (79<sup>\*\*</sup>) and **Central Canberra** (82<sup>\*\*</sup>). Residents of **Belconnen** (467 admissions) and **Central Canberra** (451) had the largest number of admissions.

# Map 6.27: Admissions for ischaemic heart disease, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for ischaemic heart disease, 1995/96

## State/Territory comparison (Australia as the Standard)

As was the case for circulatory system diseases, standardised admission ratios (SARs) for admissions for ischaemic heart disease (described on the previous text page) were, with the exception of Tasmania (with an SAR of 95<sup>\*</sup>) and Northern Territory (87<sup>\*</sup>), higher for residents of the non-metropolitan areas than in the capital cities (**Table 6.33**). The most highly elevated ratios were in New South Wales (112<sup>\*\*</sup>) and Victoria (111<sup>\*\*</sup>).

There was relatively little change in the ratios for the non-metropolitan areas between the periods shown in **Table 6.33**, with the exception of the Northern Territory. The higher ratios in the later period shown suggests an increase (relative to the Australian rates) in admissions over this period. It should be noted, however, that the Western Australian and Northern Territory ratios remained below the Australian rate.

**Table 6.33: Admissions with a principal diagnosis of ischaemic heart disease, State/Territory**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	103 <sup>**</sup>	93 <sup>**</sup>	93 <sup>**</sup>	98 <sup>*</sup>	86 <sup>**</sup>	105 <sup>*</sup>	87 <sup>*</sup>	91 <sup>**</sup>	96 <sup>**</sup>
Other major urban centres <sup>2</sup>	114 <sup>**</sup>	95	101	..	..	..	..	..	108 <sup>**</sup>
Rest of State/Territory	112 <sup>**</sup>	111 <sup>**</sup>	99	108 <sup>**</sup>	90 <sup>**</sup>	95 <sup>*</sup>	87 <sup>*</sup>	- <sup>3</sup>	106 <sup>**</sup>
Whole of State/Territory	107 <sup>**</sup>	98 <sup>**</sup>	96 <sup>**</sup>	101	87 <sup>**</sup>	99	87 <sup>**</sup>	89 <sup>**</sup>	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	111 <sup>**</sup>	..	95 <sup>**</sup>	100	86 <sup>**</sup>	..	53 <sup>**</sup>	..	101 <sup>*</sup>

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

There were 49,876 admissions for ischaemic heart disease of residents of the non-metropolitan areas in 1995/96, 913.6 admissions per 100,000 population.

## Rest of Australia

In New South Wales, highly elevated ratios were recorded for admissions for ischaemic heart disease in **Macquarie-Barwon** (an SAR of 152<sup>\*\*</sup>), **Upper Darling** (151<sup>\*\*</sup>), **Lachlan** and **Murray-Darling** (both 138<sup>\*\*</sup>), and **Bathurst-Orange** (136<sup>\*\*</sup>). The lowest ratios were in **Snowy** (an SAR of 84<sup>\*</sup>) and **Lower Murrumbidgee** (85<sup>\*\*</sup>). The largest numbers of admissions were recorded for residents of **Hastings** (1,729 admissions) and **Clarence** (1,560), on the State's north coast, and from **Illawarra SD Balance** (1,558) to the south of **Sydney**.

The most highly elevated ratios in Victoria was in **North Ovens-Murray**, where there were 62 per cent more admissions for ischaemic heart disease than were expected from the Australian rates (an SAR of 162<sup>\*\*</sup>). Other elevated ratios were recorded in **Hopkins** (an SAR of 150<sup>\*\*</sup>), **West Central Highlands** (145<sup>\*\*</sup>), **Macalister-Avon** (131<sup>\*\*</sup>) and **North Goulburn** (130<sup>\*\*</sup>). There were ten Statistical Subdivisions (SSDs) with SARs of less than 100, with the lowest in **East Barwon** (84<sup>\*\*</sup>) and **North Wimmera** (87<sup>\*</sup>). In **Ballarat**, there were 914 admissions, with 818 from **Hopkins** and 710 from **East Barwon**.

In the **North West** (an SAR of 160<sup>\*\*</sup>) and **Mackay** (132<sup>\*\*</sup>) SSDs in Queensland, ratios were elevated by more than 30 per cent, with lower ratios prevailing in **Far North SD Balance** (112<sup>\*\*</sup>) and **Central West** (113). The lowest ratios were recorded closer to **Brisbane**, in **Sunshine Coast** (an SAR of 81<sup>\*\*</sup>) and **Moreton SD Balance** (86<sup>\*\*</sup>). The largest numbers of admissions were of

residents of **Darling Downs** (1,628 admissions), **Wide Bay-Burnett SD Balance** (1,592) and **Sunshine Coast** (1,328).

Standardised admission ratios for ischaemic heart disease in South Australia elevated by 25 per cent or more were recorded in **West Coast** (with an SAR of 133<sup>\*\*</sup>), **Lincoln** (131<sup>\*\*</sup>) and **Whyalla, Yorke** and **Murray Mallee** (each with 126<sup>\*\*</sup>). The lowest ratios were in **Kangaroo Island** (an SAR of 61<sup>\*</sup>) and **Onkaparinga** (66<sup>\*\*</sup>). There were 425 admissions of residents of **Lower South East**, 409 from **Yorke** and 389 from **Murray Mallee**.

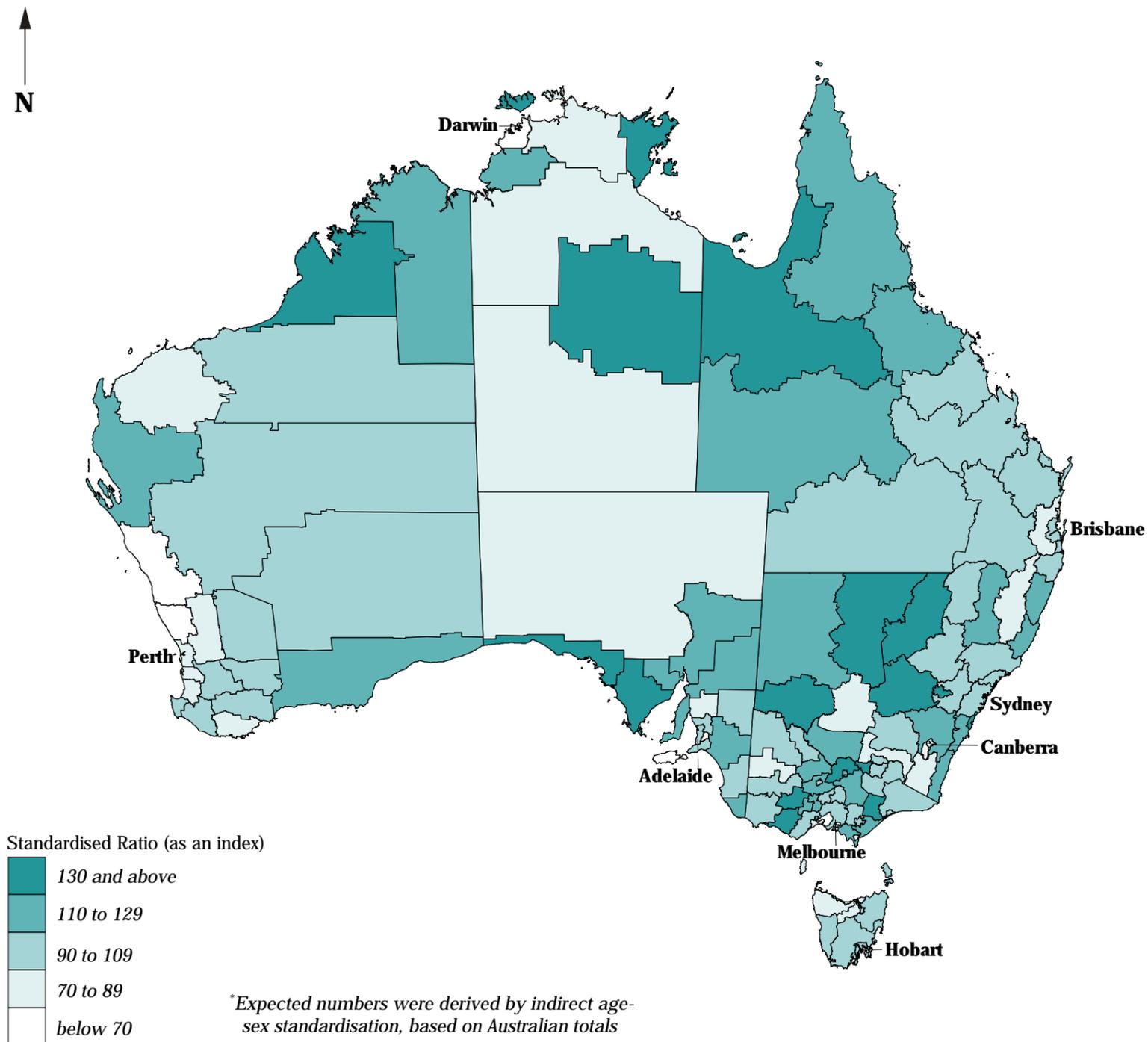
The most highly elevated ratio in Western Australia was recorded in **Fitzroy** (an SAR of 154<sup>\*\*</sup>), with an SAR of 113 in both **Johnston** and **Ord**. The lowest ratios were recorded in **Greenough River** (an SAR of 66<sup>\*\*</sup>), **Moore** (68<sup>\*\*</sup>) and **Fortescue** (72<sup>\*</sup>). There were 485 admissions of residents of **Dale**, 476 from **Preston** and 287 from **King**.

In Tasmania, elevated ratios were recorded in **North Eastern** (109) and **Burnie-Devonport** (103). The lowest ratios were recorded in **Central North** (77<sup>\*</sup>) and **North Western Rural** (78<sup>\*\*</sup>). The largest numbers of admissions for ischaemic heart disease were of residents of north coast SSDs, with 771 from **Launceston** and 753 from **Burnie-Devonport**.

In the Northern Territory, the highest ratios were in **Bathurst-Melville** (with an SAR of 173), **Barkly** (169<sup>\*\*</sup>) and **East Arnhem** (139<sup>\*</sup>). The lowest ratios were recorded for residents of **Darwin Rural Areas** (an SAR of 47<sup>\*\*</sup>) and **Lower Top End NT** (75). **Central NT**, with 108 admissions, had more than twice the 52 admissions of next ranked **East Arnhem**.

# Map 6.28: Admissions for ischaemic heart disease, Australia, 1995/96

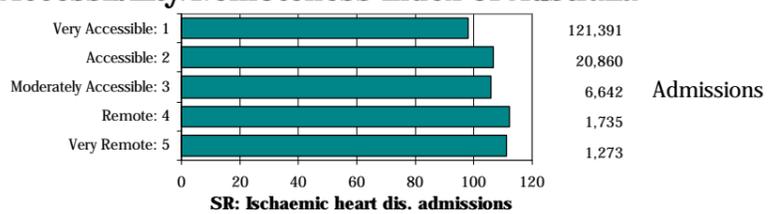
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Standardised admission ratios for ischaemic heart disease increase in a step wise fashion, from the lowest ratio in the Very Accessible areas (an SAR of 98), to elevated ratios of 107 and 106 in the Accessible and Moderately Accessible categories, and to ratios of 112 and 111 in the Very Remote and Remote categories.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for respiratory system diseases, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for respiratory system diseases (described below) varied widely between the capital cities (Table 6.34). The only elevated ratios were in **Adelaide** (an SAR of 114\*\*) and **Darwin** (102) and the lowest ratio was in **Canberra** (67\*\*).

The SAR for **Darwin** almost doubled, increasing from 53\*\* in 1987 to 102 in 1995/96, suggesting an increase (relative to the Australian rates) in admissions over this period.

**Table 6.34: Admissions with a principal diagnosis of respiratory system diseases, capital cities**

	Age-sex standardised admission ratios								
	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	91**	87**	92**	114**	83**	77**	102	67**	91**
1989 <sup>3</sup>	69**	..	93**	108**	82**	..	53**	..	81**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Respiratory system diseases include the diseases of pneumonia, influenza, bronchitis, emphysema and asthma. This category includes people with chronic obstructive pulmonary disease – a persistent obstruction of bronchial air flow, manifesting as asthma, chronic bronchitis, and chronic emphysema – as well as acute respiratory infections. Admissions from these diseases represented 6.4 per cent of all admissions in Australia: 5.9 per cent of residents of the capital cities and other major urban centres and 7.5 per cent in non-metropolitan areas.

For 1996/97, age-standardised admission ratios for Indigenous women for diseases of the respiratory system were 2.3 times higher, and for Indigenous men, twice the admission ratios for non-Indigenous people (ABS/AIHW 1999).

There were 188,813 admissions for respiratory system diseases of residents of the capital cities and other major urban centres in 1995/96, 1,485.5 admissions per 100,000 population.

## Capital cities

**Inner Sydney** (with an SAR of 107\*\*) and **Gosford-Wyong** (101) were the only Statistical Subdivisions (SSDs) in **Sydney** with elevated ratios for admissions for respiratory system diseases. The lowest ratios were in **Hornsby-Kuring-gai** (an SAR of 73\*\*), **St George-Sutherland** (81\*\*) and **Lower Northern Sydney** (82\*\*). More than 5,000 admissions were recorded in each of **Blacktown-Baulkham Hills** (5,623 admissions), **St George-Sutherland** (5,621) and **Gosford-Wyong** (5,018). Both **Newcastle** (an SAR of 81\*\* and 6,575 admissions) and **Wollongong** (84\*\*; 3,627 admissions) had fewer admissions than expected from the Australian rates.

In **Melbourne**, SARs were lower than expected in all but the **Western Inner Melbourne** and **Northern Inner Melbourne** SSDs; both of these SSDs had ratios of 100. The next highest ratios were recorded in **Western Fringe Melbourne** (an SAR of 99) and **Western Outer Melbourne** (98) and the lowest were in **Eastern Middle Melbourne** (70\*\*) and **Eastern Inner Melbourne** and **Mornington Peninsula Outer** (both with 73\*\*). There were 4,252 admissions of residents of **Eastern Outer Melbourne**, 4,077 from **Western Outer Melbourne** and 3,575 from **Western Inner Melbourne**. Residents of **Geelong** had

1,628 admissions for respiratory system diseases, 15 per cent fewer than expected from the Australian rates (an SAR of 85\*\*).

In **Brisbane**, the most highly elevated ratios were in **Ipswich-Moreton** (an SAR of 113\*\*), **Caboolture**, (107\*\*) and **Redcliffe** (107\*). The lowest ratios were in **Beaudesert** (66\*\*) and **Redland** (82\*\*). As usual, the largest numbers of admissions were of residents of the large **Brisbane City** SSD (11,550 admissions), with relatively high numbers from **Logan** (2,314) and **Ipswich-Moreton** (2,275). Both **Gold Coast-Tweed Heads** (an SAR of 87\*\* and 5,084 admissions) and **Townsville-Thuringowa** (83\*\*; 1,645 admissions) had fewer admissions than expected for respiratory system diseases.

In **Adelaide**, SARs for admissions for respiratory system diseases were elevated in each of the four SSDs. The highest ratios were in **Northern** (an SAR of 130\*\*) and **Western** (115\*\*), with the lowest ratio in **Eastern** (101). There were 7,125 admissions of residents of **Northern** and a further 5,676 from **Southern**.

All of the SSDs in **Perth** had ratios significantly lower than expected. The highest SAR was in **South West Metropolitan** (an SAR of 92\*\*), and the lowest ratios were recorded for residents in **Central Metropolitan** (69\*\*) and **North Metropolitan** (79\*\*). The largest numbers of admissions were of residents of **North Metropolitan** (4,895 admissions) and **South West Metropolitan** (4,030).

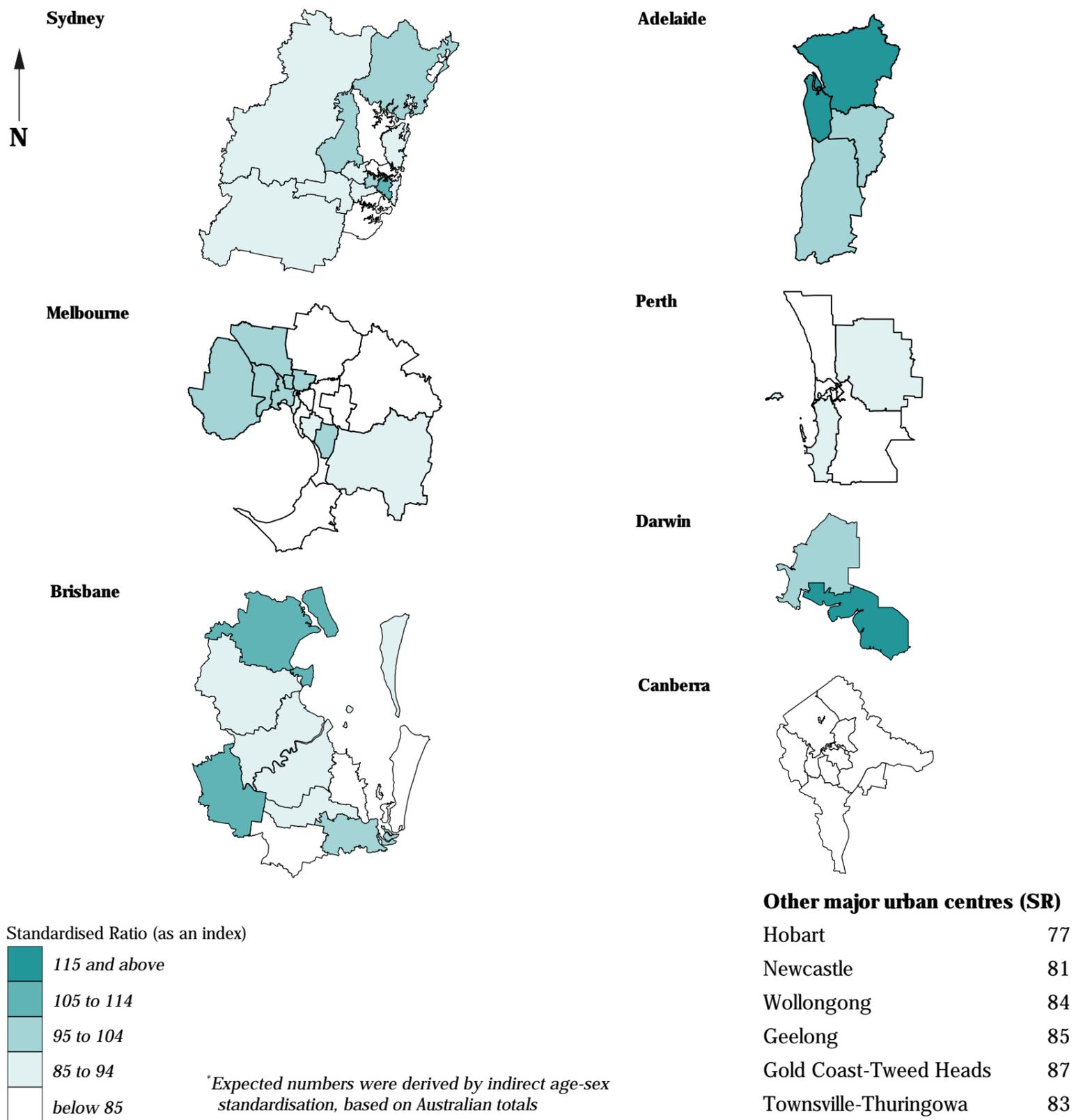
There were 2,546 admissions for respiratory system diseases of residents of **Hobart**, 23 per cent fewer than expected from the Australian rates (an SAR of 77\*\*).

In **Darwin**, there were 19 per cent more admissions for respiratory system diseases than expected in **Palmerston-East Arm** (with an SAR of 119\*\* and 234 admissions), but marginally fewer than expected in **Darwin City** (99; 961 admissions).

In **Canberra**, there were significantly fewer admissions than expected in all SSDs. **Tuggeranong** (with an SAR of 68\*\*) and **Belconnen** (66\*\*) had the highest ratios, while the lowest were in **Outer Canberra** (56\*\*) and **Central Canberra** and **Woden Valley**, (both with 64\*\*). The largest numbers of admissions were of residents of **Tuggeranong** (923 admissions) and **Belconnen** (813).

# Map 6.29: Admissions for respiratory system diseases, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for respiratory system diseases, 1995/96

## State/Territory comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for respiratory system diseases (described on the previous text page) were higher, and often substantially higher, for residents of the non-metropolitan areas than of the capital cities (Table 6.35). The most highly elevated ratios were in the Northern Territory (an SAR of 180\*\*), South Australia (156\*\*) and Western Australia (147\*\*). Only in Tasmania was the ratio below the Australian rate.

The SARs for the non-metropolitan areas in each of the four States, for which data were analysed for both periods, declined between the two periods (Table 6.35). The lower ratios in the later period suggest a decline (relative to the Australian rates) in admissions of non-metropolitan residents over this period. However, the ratios recorded for the Northern Territory increased (relative to the Australian rates) between the two periods, rising from 164\*\* in 1987 to 180\*\* in 1995/96.

**Table 6.35: Admissions with a principal diagnosis of respiratory system diseases, State/Territory**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	91**	87**	92**	114**	83**	77**	102	67**	91**
Other major urban centres <sup>2</sup>	82**	85**	86**	..	..	..	..	..	84**
Rest of State/Territory	123**	116**	115**	156**	147**	80**	180**	- <sup>3</sup>	123**
Whole of State/Territory	99**	95**	101	125**	101	79**	146**	66**	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	135**	..	130**	169**	176**	..	164**	..	143**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

There were 116,291 admissions for respiratory system diseases of residents of the non-metropolitan areas in 1995/96, 2,130.0 admissions per 100,000 population.

## Rest of Australia

In New South Wales, all but four non-metropolitan Statistical Subdivisions (SSDs) had elevated standardised admission ratios for admissions for respiratory system diseases. Highly elevated ratios were recorded in **Upper Darling** (an SAR of 349\*\*), **Macquarie-Barwon** (237\*\*), **Murray-Darling** and **Central Murray** (both with 183\*\*), **North Central Plain** (177\*\*) and **Lachlan** (158\*\*). The lowest ratio was recorded for residents in **Queanbeyan** (83\*\*). The largest numbers of admissions were from north coast residents in **Richmond-Tweed SD Balance** (3,438 admissions), **Clarence** (2,644) and **Hastings** (2,510).

Elevated SARs for admissions for respiratory system diseases in Victoria were recorded in the SSDs of **North Goulburn** (an SAR of 163\*\*), **South Goulburn** (161\*\*), **North Wimmera** (152\*\*), **East Mallee** (149\*\*) and **Northern Loddon-Campaspe** (146\*\*). The lowest ratios were in **East Barwon** (an SAR of 70\*\*) and **South Loddon-Campaspe** (85\*\*). There were 1,503 admissions of residents of **Bendigo**, 1,496 from **Ballarat** and 1,415 from **North Goulburn**.

In **North West** SSD in Queensland, there were more than twice the number of admissions for respiratory system diseases than were expected from the Australian rates (an SAR of 227\*\*). Other highly elevated ratios were recorded in **South West** (an SAR of 192\*\*), **Far North SD Balance** (159\*\*) and **Central West** (143\*\*). In contrast, only **Moreton SD Balance** (86\*\*) and **Sunshine Coast** (79\*\*) SSDs had fewer admissions than expected. More

than 3,000 admissions were recorded for residents of **Wide Bay-Burnett SD Balance** (3,470 admissions) and **Darling Downs** (3,980).

In South Australia, ratios elevated by two to two and a half times the level expected for admissions for respiratory system diseases were recorded in **West Coast** (an SAR of 252\*\*), **Flinders Ranges** (234\*\*), **Pirie** (201\*\*) and **Whyalla** (200\*\*). The lowest ratio was in **Kangaroo Island** (an SAR of 104). The largest numbers of admissions were of residents of **Pirie** (978 admissions), **Lower South East** (945) and **Murray Mallee** (891).

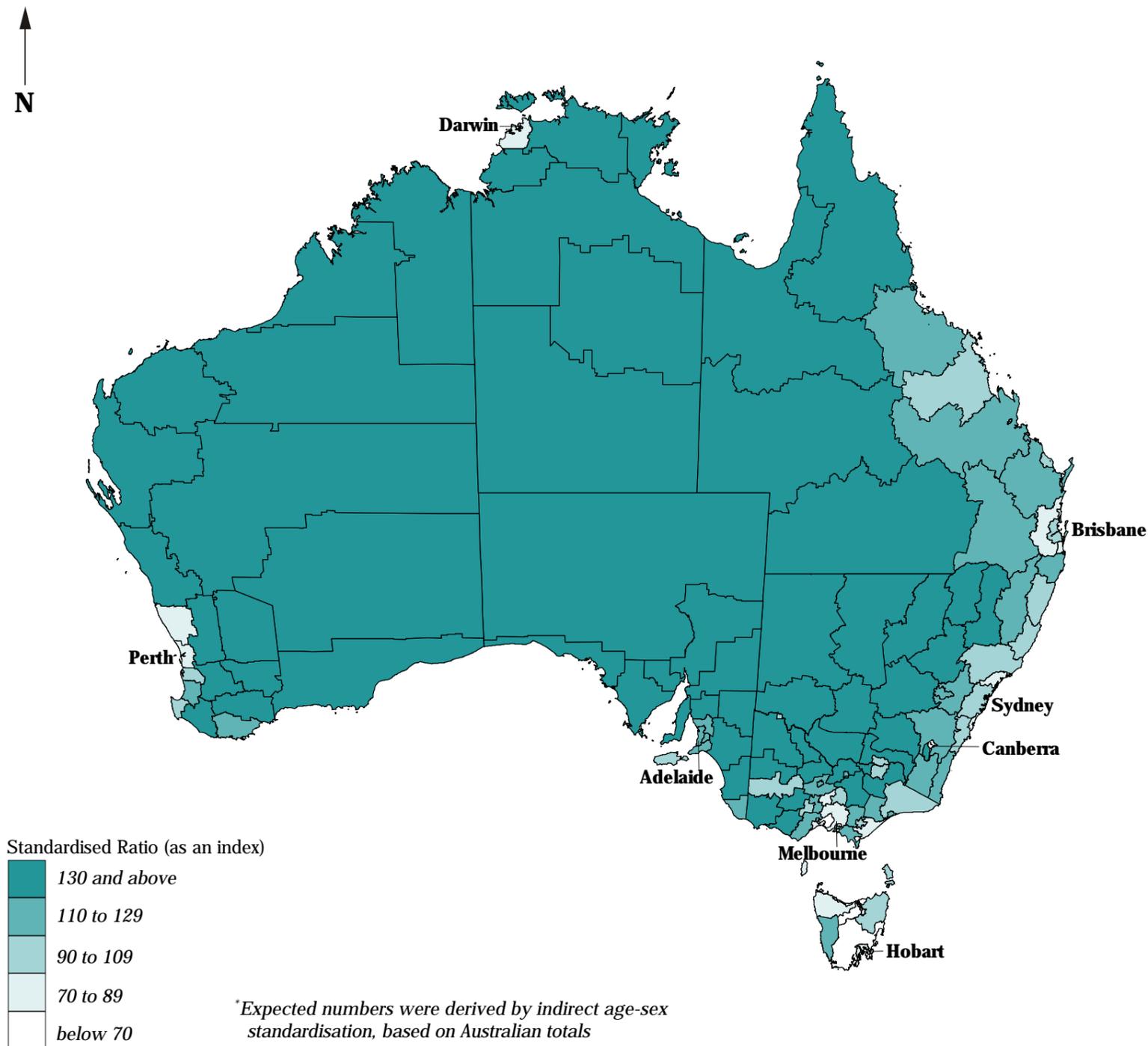
Extremely high SARs were recorded in **Ord** (an SAR of 317\*\*), **Fitzroy** (296\*\*), **Campion** (207\*\*), **Johnston** (191\*\*) and **Pallinup** (178\*\*) in Western Australia. The lowest ratio was in **Moore** (80\*\*) and the largest numbers of admissions were of residents of the SSDs of **Preston** (1,420 admissions), **Greenough River** (1,201) and **Lefroy** (1,022).

In Tasmania, only **Lyell** SSD had an elevated SAR for admissions for respiratory system diseases (an SAR of 119). Of the remaining SSDs, the highest ratio was in **North Eastern** (an SAR of 98), and the lowest ratio was in **Central North** (65\*\*). There were 1,324 admissions of residents of **Launceston** and 1,208 from **Burnie-Devonport**.

Extremely highly elevated SARs for admissions for respiratory system diseases were recorded in **Barkly** (an SAR of 257\*\*), **Bathurst-Melville** (252\*\*), **Daly** (207\*\*) and **Central NT** (202\*\*) in the Northern Territory. Only in **Darwin Rural Areas** were there fewer admissions than expected (an SAR of 77\*\*). The largest numbers of admissions were of residents of **Central NT** (1,103 admissions) and **Lower Top End NT** (488).

# Map 6.30: Admissions for respiratory system diseases, Australia, 1995/96

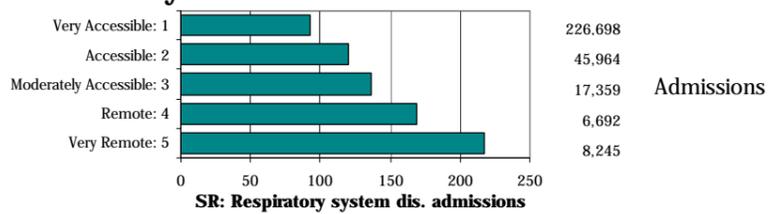
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Standardised admission ratios for respiratory system diseases show a strong relationship with remoteness. The ratios more than double, from an SAR of 92 in the Very Accessible areas to an SAR of 217 in the Very Remote areas. The largest increases are between ARIA category 1 and category 2 (30.4 per cent) and between categories 4 and 5 (28.4 per cent).

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions of children aged 0 to 4 years for respiratory system diseases, 1995/96

## Capital city comparison (Australia as the Standard)

As was the case for people of all ages, standardised admission ratios (SARs) for admissions of children aged from 0 to 4 years from respiratory system diseases (described below) varied widely between the capital cities (Table 6.36). The most highly elevated ratio was in **Adelaide** (118\*\*) and the lowest in **Melbourne** (68\*\*).

The increase in the SAR for **Darwin**, from 38\*\* in 1987 to 88\* in 1995/96, suggests an increase (relative to the Australian rates) in admissions over this period; however, the ratio remains below the *All capitals* rate. Similar, albeit smaller, increases were recorded for children in **Sydney**, **Perth** and **Brisbane**, whereas the ratio for **Adelaide** declined, from a high 123\*\* to 118\*\*.

**Table 6.36: Admissions of 0 to 4 year olds with a principal diagnosis of respiratory system diseases, capital cities**  
Age-sex standardised admission ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	95**	68**	99	118**	91**	71**	88*	80**	89**
1989 <sup>3</sup>	67**	..	90**	123**	79**	..	38**	..	80**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Data is for 0 to 14 year olds and excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Diseases of the respiratory system are a major cause of admission to hospital for children. As children also comprise a relatively large proportion (22.2 per cent) of admissions of all ages with respiratory system diseases, they were mapped separately. The major causes included in this group of diseases are chronic obstructive lung disease (which includes cystic fibrosis, chronic bronchitis, emphysema and asthma), acute respiratory infections and chronic diseases of tonsils and adenoids. There were 42,052 admissions (4,805.0 admissions pr 100,000 population) for respiratory system diseases of residents of the capital cities and other major urban centres aged from 0 to 4 years in 1995/96.

## Capital cities

With the exception of **Blacktown-Baulkham Hills** (with an SAR of 114\*\*), ratios for admissions of children aged from 0 to 4 years for respiratory system diseases in **Sydney** were either close to, or below, expected levels. The other elevated ratios were in **Gosford-Wyong** (an SAR of 106\*) and **Outer Western Sydney** (105), with ratios in **Inner Western Sydney** (76\*\*), **Eastern Suburbs** (76\*\*), **St George-Sutherland** (78\*\*) and **Hornsby-Kuring-gai** (80\*\*) all 20 per cent or more below the level expected from the Australian rates. There were 1,799 admissions of young children resident in **Blacktown-Baulkham Hills**, 1,449 from **Outer Western Sydney** and 1,401 from **Fairfield-Liverpool**. Standardised admission ratios were lower than expected from the Australian rates in both **Newcastle** (an SAR of 83\*\* and 1,456 admissions) and **Wollongong** (78\*\*; 786 admissions).

There were no Statistical Subdivisions (SSDs) in **Melbourne** with elevated SARs. The highest ratios were in **Northern Inner Melbourne** (an SAR of 82\*\*), **Western Outer Melbourne** and **Northern Fringe Melbourne** (both with 81\*), **South Eastern Inner Melbourne** (76\*\*) and **South Eastern Outer Melbourne** (75\*\*). The lowest ratios were recorded for residents in **Mornington Peninsula Outer** (an SAR of 40\*\*) and **Central Melbourne** (55\*\*). There were 924 admissions of children living in **South Eastern Outer Melbourne**, 828 from **Western Outer Melbourne** and 739 from **Eastern Outer Melbourne**. There

were 392 admissions for respiratory system diseases of young children resident in **Geelong** (with an SAR of 92).

In **Brisbane**, there were elevated ratios in **Ipswich-Moreton** (an SAR of 117\*\*) and **Caboolture** (113\*\*), and lower than expected ratios in **Redland** (77\*\*) and **Beaudesert** (78\*). The largest number of admissions (2,481 admissions) was of young children residents in the large **Brisbane City SSD**, with 779 admissions from **Logan** and 694 from **Ipswich-Moreton**. There were fewer admissions than expected in both **Gold Coast-Tweed Heads** (an SAR of 85\*\* and 965 admissions) and **Townsville-Thuringowa** (85\*\*; 456 admissions).

In **Adelaide**, there were highly elevated ratios in **Western** (an SAR of 129\*\*) and **Northern** (138\*\*); the lowest was in **Southern** (an SAR of 96). The largest numbers of admissions of children with respiratory system diseases were from **Northern** (1,913 admissions) and **Southern** (1,055).

Only **South West Metropolitan SSD** in **Perth** recorded more admissions of children for respiratory diseases than expected (an SAR of 114\*\*). Of the remaining SSDs, the highest ratio was in **South East Metropolitan** (an SAR of 90\*\*), with the lowest ratio in **Central Metropolitan** and **East Metropolitan** (both 79\*\*). More than 1,000 admissions were recorded in **North Metropolitan** (1,219) and **South West Metropolitan** (1,158).

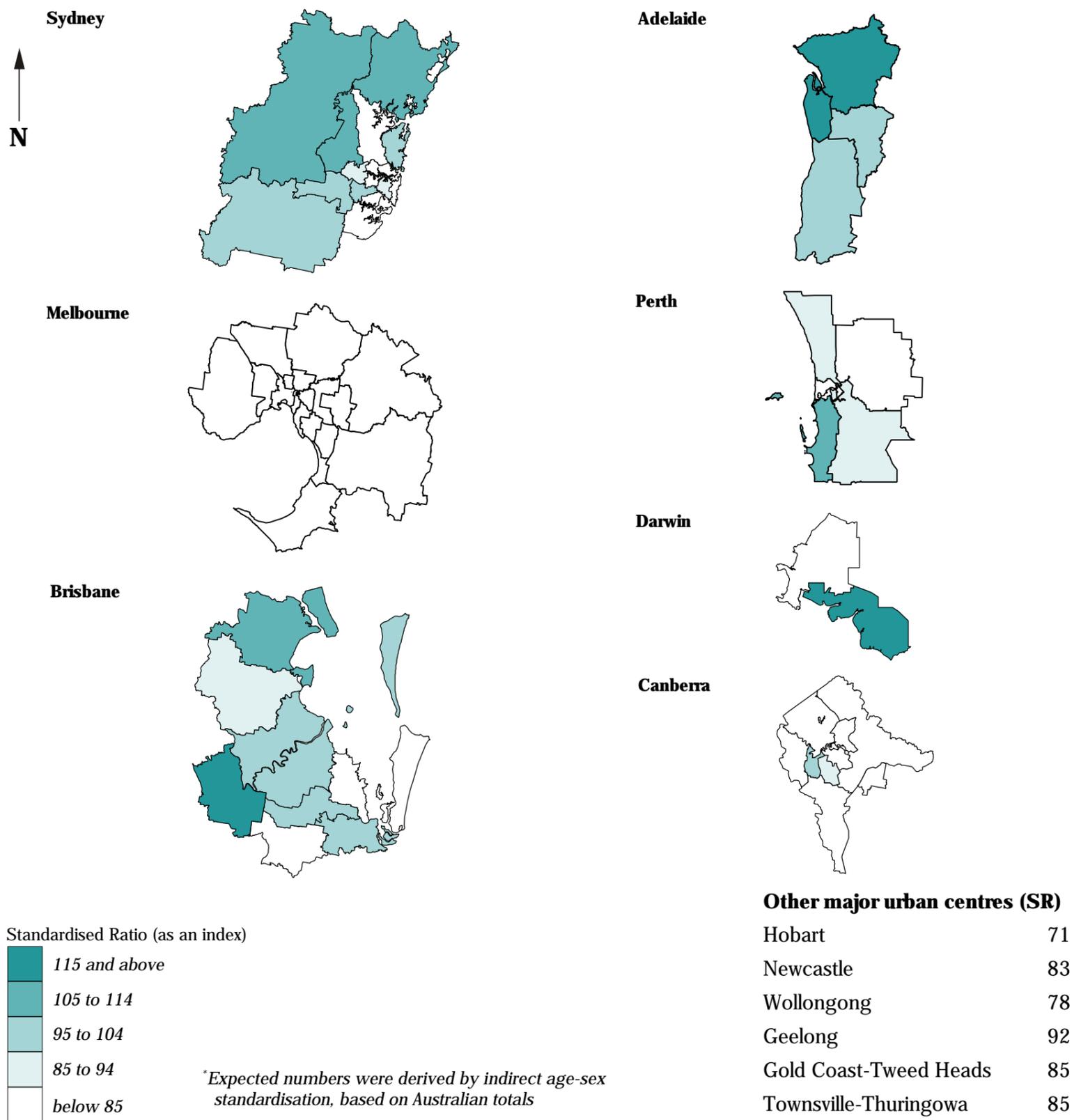
Children aged from 0 to 4 years and resident in **Hobart** had 507 admissions for respiratory diseases, considerably fewer than expected from the Australian rates (an SAR of 71\*\*).

In **Darwin**, the SAR in **Palmerston-East Arm** was elevated (an SAR of 133\*\*; with 100 admissions of young children) and lower than expected in **Darwin City** (77\*\*; 236 admissions).

In **Canberra**, only **Weston Creek** (with an SAR of 103) had more admissions than expected. Of the remaining SSDs, the highest ratio was in **Woden Valley** (86) and the lowest in **Outer Canberra** (53\*\*). There were 417 admissions for respiratory diseases of children aged 0 to 4 years from **Tuggeranong** and 243 from **Belconnen**.

# Map 6.31: Admissions of children aged 0 to 4 years for respiratory system diseases, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions of children aged 0 to 4 years for respiratory system diseases, 1995/96

## State/Territory comparison (Australia as the Standard)

With the exception of Tasmania, standardised admission ratios (SARs) for respiratory system diseases were higher, in most cases substantially so, for residents of the non-metropolitan areas than in the capital cities (**Table 6.37**). The most highly elevated ratios were in the Northern Territory (212\*\*), Western Australia (165\*\*), South Australia (146\*\*) and New South Wales (132\*\*). The SARs for the non-metropolitan areas in each of the four States for which data were analysed for both periods, declined between the two periods, with the largest declines in South Australia and Western Australia (**Table 6.37**). The lower ratios in the later period suggest a decline (relative to the Australian rates) in admissions of non-metropolitan residents over this period. SARs in the Northern Territory, however, increased over this period, from 163\*\* in 1987 to 212\*\* in 1995/96.

**Table 6.37: Admissions of 0 to 4 year olds with a principal diagnosis of respiratory system diseases, State/Territory Age-sex standardised admission ratios**

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	95**	68**	99	118**	91**	71**	88*	80**	89**
Other major urban centres <sup>2</sup>	81**	92	85**	..	..	..	..	..	83**
Rest of State/Territory	132**	103*	116**	146**	165**	68**	212**	- <sup>3</sup>	125**
Whole of State/Territory	104**	78**	105**	126**	114**	69**	162**	81**	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	138**	..	121**	180**	177**	..	163**	..	142**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Data is for 0 to 14 year olds and excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Children aged from 0 to 4 years accounted for 28,578 admissions (6,806.3 per 100,000 population), 24.6 per cent of all admissions of non-metropolitan residents for respiratory system diseases in 1995/96.

## Rest of Australia

Very highly elevated SARs were recorded in **Upper Darling** (with an SAR of 405\*\*), **Murray-Darling** (290\*\*) and **Macquarie-Barwon** (261\*\*) Statistical Subdivisions (SSDs) in New South Wales. Highly elevated ratios were also recorded in **Far West** (an SAR of 194\*\*), **North Central Plain** (181\*\*), **Lower Murrumbidgee** (180\*\*), and **Central Murray** and **Central Macquarie** (both with 178\*\*). The lowest ratio was in **Queanbeyan** (an SAR of 69\*\*). The largest numbers of admissions were of young children resident in **Richmond-Tweed SD Balance** (788 admissions), **Central Macquarie** (719) and **Central Murrumbidgee** (632).

In Victoria, the most highly elevated SARs for admissions of children aged from 0 to 4 years for respiratory system diseases were in **North Ovens-Murray** (with an SAR of 177\*\*), **North Goulburn** (171\*\*) and **Gippsland Lakes** (162\*\*). Elevated ratios were also recorded for young children in **Shepparton-Mooroopna** (149\*) and **Glenelg** (145\*\*). The lowest ratio was in **South West Goulburn** (an SAR of 44\*\*). The largest numbers of admissions were of children from **North Goulburn** (338 admissions), **Ballarat** (323) and **Hopkins** (313).

The highest SARs in Queensland were in **North West** (with an SAR of 249\*\*), **South West** (188\*\*) and **Far North SD Balance** (144\*\*). Elevated ratios were also recorded in **Rockhampton** (142\*\*), **Wide Bay-Burnett SD Balance** (141\*\*) and **Gladstone** (128\*\*). The lowest ratios were recorded for children in

**Sunshine Coast** (with an SAR of 77\*\*), **Central West** (77) and **Mackay SD Balance** (70\*\*). There were 953 admissions of young children from **Darling Downs**, 876 from **Wide Bay-Burnett SD Balance** and 687 from **Far North SD Balance**.

In South Australia, ratios substantially above those expected were recorded in **Flinders Ranges** (with an SAR of 217\*\*), **Upper South East** (198\*\*), **Pirrie** (191\*\*) and **West Coast** (194\*\*). The lowest ratio was in **Riverland SSD** (an SAR of 100). The largest numbers of admissions were of children aged from 0 to 4 years from **Lower South East** (239 admissions) and **Pirrie** (210).

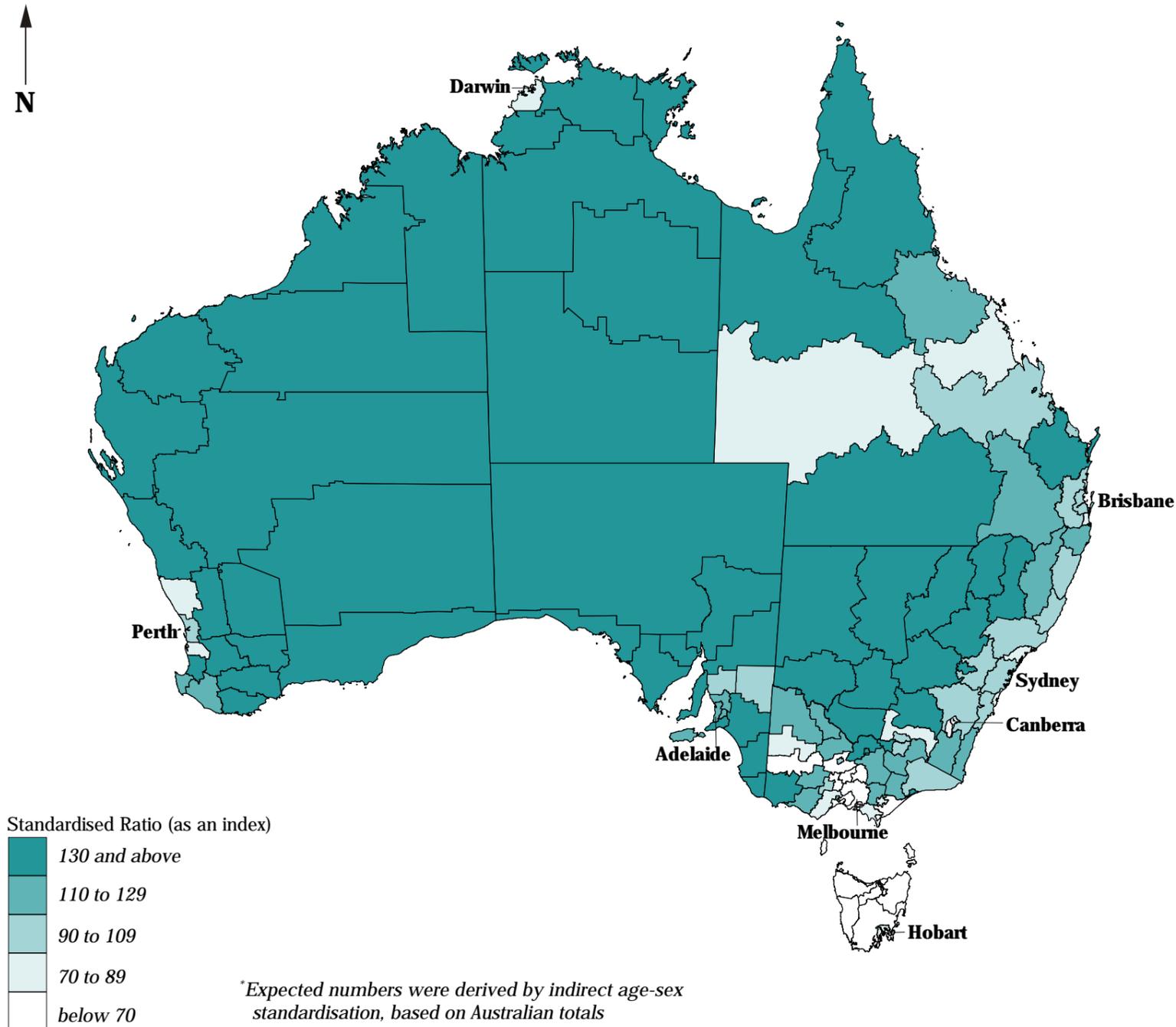
Standardised admission ratios for admissions of children aged from 0 to 4 years for respiratory system diseases were elevated by more than three times in **Ord** (with an SAR of 321\*\*) and **Fitzroy** (301\*\*) in Western Australia. Very high admission ratios were also recorded in **Johnston** (230\*\*) and **Pallinup** (221\*\*). Only in **Moore** (an SAR of 84) and **Dale** (86) were there fewer admissions than expected from the Australian rates. The largest numbers of admissions were of children from **Greenough River** (406 admissions), **Preston** (392) and **Lefroy** (335).

In Tasmania, the highest ratios were in **Burnie-Devonport** (with an SAR of 79\*\*) and **Lyell** (67\*), while the lowest was in **Central North** (62\*\*). There were 252 admissions of young children from **Burnie-Devonport** and 249 from **Launceston**.

In the Northern Territory, only **Darwin Rural Areas** (with an SAR of 70) had fewer admissions than expected of children aged from 0 to 4 years with respiratory system diseases. Highly elevated ratios were recorded in most of the other SSDs, the highest in **Bathurst-Melville** (an SAR of 373\*\*), **Barkly** (326\*\*) and **Daly** (293\*\*). The largest numbers of admissions were from **Central NT** (484 admissions) and **Lower Top End NT** (181).

## Map 6.32: Admissions of children aged 0 to 4 years for respiratory system diseases, Australia, 1995/96

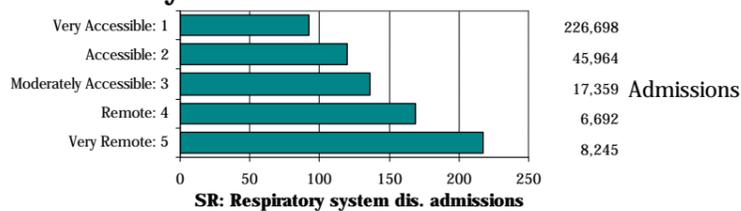
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for respiratory system diseases among children aged from 0 to 4 years a very strong relationship with remoteness. The ratios increase by around one third between all but ARIA categories 2 and 3, ranging from an SAR of 90 in the Very Accessible category to an SAR of 231 in the Very Remote category (2.3 times more admissions than were expected from the Australian rates).

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for bronchitis, emphysema or asthma, 1995/96

## Capital city comparison (Australia as the Standard)

As was the case for admissions for all respiratory system diseases, standardised admission ratios (SARs) for admissions for bronchitis, emphysema or asthma (described below) varied widely between the capital cities (Table 6.38). Only **Adelaide** (123\*\*) and **Brisbane** (105\*\*) had elevated ratios. The lowest SARs were recorded for residents of **Canberra** (60\*\*), **Hobart** and **Melbourne** (both 70\*\*).

The SAR for **Darwin** increased from 44\*\* in 1987 to 80\*\* in 1995/96 and for **Sydney** from 67\* to 99, suggesting an increase (relative to the Australian rates) in admissions over this period. A similar, albeit smaller, increase was recorded for **Perth**.

**Table 6.38: Admissions with a principal diagnosis of bronchitis, emphysema or asthma, capital cities**  
*Age-sex standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	99	70**	105**	123**	90**	70**	80**	60**	91**
1989 <sup>3</sup>	67**	..	103*	103*	81**	..	44**	..	81**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Bronchitis, emphysema and asthma are grouped together as chronic obstructive pulmonary diseases in the International Classification of Diseases (ICD-9), which is used to code causes of admissions. However, although they are of a similar nature, they are distinct conditions, affecting different age groups in the population. Admissions for asthma and bronchitis occur at all ages, more frequently among children and older people, whereas those from emphysema (contributing the smallest numbers to this group) are almost exclusively of older people, more frequently males. For example, almost one third (30.5 per cent) of admissions for cystic fibrosis, bronchitis, emphysema or asthma in 1995/96 were of children aged from 0 to 4 years. Males had substantially higher admission rates in the age groups under 15 years, and marginally higher rates from 70 years (but substantially higher among those aged 85 years and over), while females had slightly higher rates in the other age groups.

Other reasons for grouping these conditions are because the allocation of diagnoses between asthma and bronchitis (particularly in children) is not always consistent and also to ensure that there were sufficient cases for analysis.

Admissions for bronchitis, emphysema or asthma comprised 24.8 per cent of all admissions for all respiratory system diseases of residents of the capital cities and other major urban centres (46,850 admissions, 368.6 per 100,000 population), compared with 25.0 per cent of those in the non-metropolitan areas of Australia (29,125 admissions, 533.5 per 100,000 population).

## Capital cities

In **Sydney**, the highest SARs for admissions for bronchitis, emphysema or asthma were in **Inner Sydney** and **Gosford-Wyong** Statistical Subdivisions (SSDs) (each with an SAR of 130\*\*). Relatively high ratios were also recorded in **Blacktown-Baulkham Hills** (an SAR of 120\*\*) and **Canterbury-Bankstown** (111\*\*). The lowest ratios were in **Hornsby-Ku-ring-gai** (74\*\*) and **Lower Northern Sydney** (82\*\*). There were 1,729 admissions of residents of **Blacktown-Baulkham Hills** and 1,598 from **Gosford-Wyong**. There were fewer admissions than expected in both **Newcastle** (an SAR of 79\*\*; 1,582 admissions) and **Wollongong** (71\*\*; 762 admissions).

All of the SSDs in **Melbourne** had ratios below the level expected from the Australian rates. The highest ratios were in **South Eastern Inner Melbourne** (an SAR of 90\*), **Western Fringe Melbourne** (84\*\*) and **South Eastern Outer Melbourne** (81\*\*). **Southern Outer Melbourne** and **Eastern Middle Melbourne** recorded the lowest ratio (both with an SAR of 56\*\*). The largest numbers of admissions were of residents of **Eastern Outer Melbourne** (874 admissions) and **Western Outer Melbourne** (841). In **Geelong**, there were 355 admissions, 26 per cent fewer than expected (an SAR of 74\*\*).

The highest SARs in **Brisbane** for admissions for bronchitis, emphysema or asthma were in **Caboolture** (an SAR of 126\*\*) and **Redcliffe** (138\*\*), while the lowest ratio was in **Beaudesert** (62\*\*). Apart from **Brisbane City**, with 3,341 admissions, there were 665 admissions from **Logan** and 549 from **Ipswich-Moreton**. In **Gold Coast-Tweed Heads** (with an SAR of 87\*\*) there were 1,249 admissions, and 238 in **Townsville-Thuringowa** (48\*\*).

Each of **Adelaide's** SSDs had elevated SARs for these diagnoses. The highest ratio was in **Northern** (an SAR of 151\*\*) and the lowest was in **Eastern** (102). There were 2,081 admissions of residents of **Northern** and 1,459 from **Southern**.

By contrast, each of the SSDs in **Perth** had low ratios for admissions for bronchitis, emphysema or asthma. The highest ratio was in **South West Metropolitan** (an SAR of 94), and the lowest was in **Central Metropolitan** (82\*\*). There were 1,404 admissions of residents in **North Metropolitan** and 1,030 from **South West Metropolitan**.

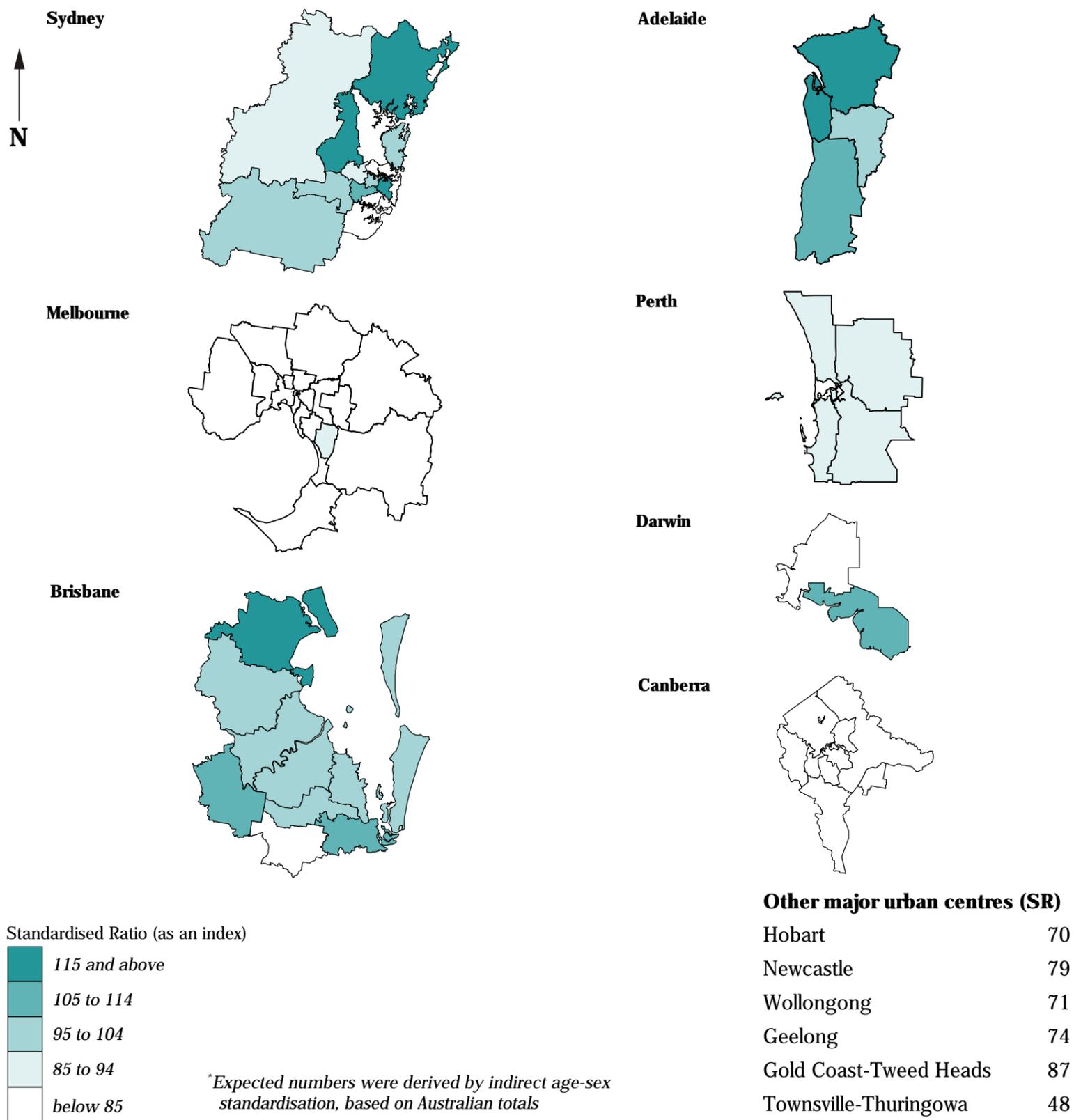
Residents of **Hobart** had 571 admissions for bronchitis, emphysema or asthma, 30 per cent fewer than expected from the Australian rates (a low SAR of 70\*\*).

There were more admissions than expected for bronchitis, emphysema or asthma in **Palmerston-East Arm** (an SAR of 112; 58 admissions) and fewer in **Darwin City** (74\*\*; 184).

All of **Canberra's** SSDs had fewer admissions than expected. The highest ratios were in **Belconnen** and **Tuggeranong** (both with an SAR of 62\*\*) and the lowest ratio was in **Outer Canberra** (32\*\*). The largest numbers of admissions were of residents from **Tuggeranong** (221 admissions) and **Belconnen** (193).

# Map 6.33: Admissions for bronchitis, emphysema or asthma, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



**Other major urban centres (SR)**

Hobart	70
Newcastle	79
Wollongong	71
Geelong	74
Gold Coast-Tweed Heads	87
Townsville-Thuringowa	48

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for bronchitis, emphysema or asthma, 1995/96

## State/Territory comparison (Australia as the Standard)

With the exception of Tasmania, standardised admission ratios (SARs) for admissions for bronchitis, emphysema or asthma (described on the previous text page) were higher (and often substantially so) for residents of the non-metropolitan areas than in the capital cities (**Table 6.39**). The most highly elevated ratios were in South Australia (182\*\*) and Western Australia (167\*\*).

The SARs for the non-metropolitan areas of Queensland and New South Wales declined between the two periods shown in **Table 6.39**. The lower ratios in the later period suggest a decline (relative to the Australian rates) in admissions of non-metropolitan residents over this period. The higher ratios in the later period shown for Western Australia and the Northern Territory suggest an increase (relative to the Australian rates) in admissions over this period.

**Table 6.39: Admissions with a principal diagnosis of bronchitis, emphysema or asthma, State/Territory**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	99	70**	105**	123**	90**	70**	80**	60**	91**
Other major urban centres <sup>2</sup>	76**	74**	77**	..	..	..	..	..	76**
Rest of State/Territory	121**	117**	111**	182**	167**	62**	98	- <sup>3</sup>	123**
Whole of State/Territory	102**	83**	104**	139**	112**	65**	90	60**	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	130**	..	145**	181**	157**	..	83**	..	142**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

In New South Wales, SARs for admissions for bronchitis, emphysema or asthma were highly elevated in **Upper Darling** (with an SAR of 346\*\*), **Macquarie-Barwon** (241\*\*), **North Central Plain** (194\*\*), **Murray-Darling** (189\*\*) and **Central Murray** (182\*\*). Only five Statistical Subdivisions (SSDs) recorded ratios of less than 100; the lowest of these were in **Queanbeyan** (with an SAR of 57\*\*), **Southern Tablelands** (86\*) and **Tweed Heads** (86). The largest numbers of admissions were in the State's northern coastal areas of **Richmond-Tweed SD Balance** (912 admissions), **Clarence** (684) and **Hastings** (645).

The most highly elevated ratios in Victoria were in **South Goulburn** (an SAR of 198\*\*), **West Mallee** (191\*\*), **North Goulburn** (190\*\*), **West Central Highlands** (186\*\*), **South Ovens-Murray** (172\*\*) and **North Wimmera** (170\*\*). The lowest ratios were in **East Barwon** (an SAR of 64\*\*) and **South Loddon-Campaspe** (67\*\*). The largest numbers of admissions were of residents of **North Goulburn** (414 admissions) and **Ballarat** (395).

In Queensland, SARs for admissions for bronchitis, emphysema or asthma were more than twice the level expected in **South West** (an SAR of 215\*\*), with highly elevated ratios also in **North West** (180\*\*) and **Central West** (179\*\*). Elevated ratios were also recorded in **Far North SD Balance** (146\*\*) and **Wide Bay-Burnett SD Balance** (131\*\*). The lowest ratios were in **Sunshine Coast** (an SAR of 74\*\*) and **Gladstone** (78\*\*). There were 1,067 admissions of residents of **Darling Downs**, and 935 from **Wide Bay-Burnett SD Balance**.

All of the SSDs in South Australia had elevated ratios, the most highly elevated being in **Pirie** (an SAR of 309\*\*), **Flinders Ranges** (255\*\*), **Whyalla** (250\*\*) and **Lower North** (204\*\*). The lowest ratio for admissions for bronchitis, emphysema or asthma was recorded in **Kangaroo Island** SSD (an SAR of 103). The largest numbers of admission were of residents of **Pirie** (374 admissions), **Lower South East** (267) and **Whyalla** (262).

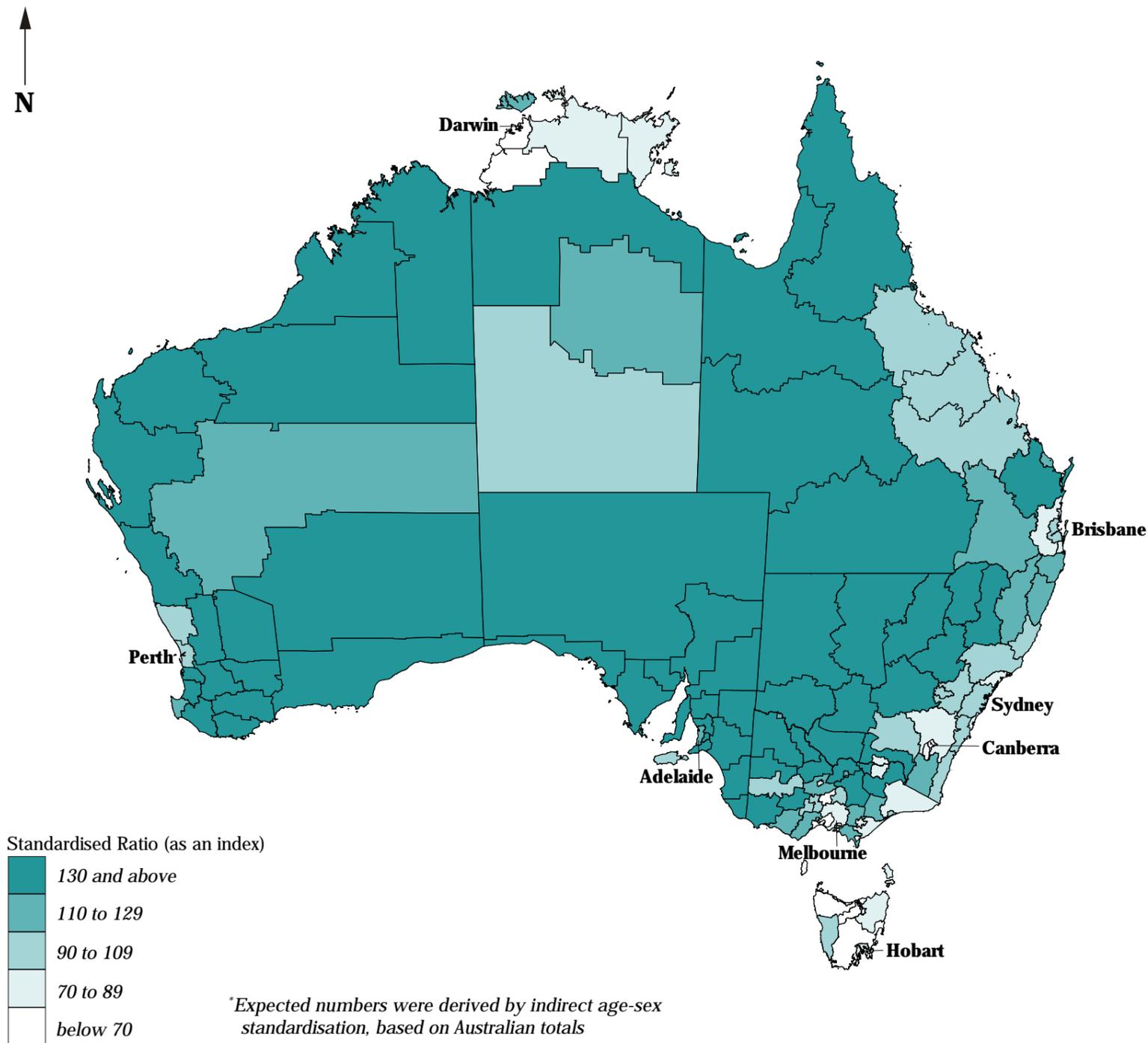
In Western Australia, all of the SSDs also had elevated ratios, the most highly elevated being in **Ord** (an SAR of 300\*\*), **Campion** (289\*\*), **Fitzroy** (280\*\*) and **Fortescue** (233\*\*). The lowest ratios were recorded in **Moore** (an SAR of 108) and **Vasse** (116). There were 395 admissions of residents of **Preston** and 358 from **Greenough River**.

Admissions for bronchitis, emphysema or asthma were either at, or below, the expected levels in all the SSDs in Tasmania. The highest ratios were in **Lyell** (an SAR of 100) and **North Eastern** (86), while the lowest was in **Southern** (33\*\*). The largest numbers of admissions were of residents of **Launceston** (259 admissions) and **Burnie-Devonport** (230).

In the Northern Territory, the highest SARs for admissions for bronchitis, emphysema or asthma were of residents in **Lower Top End NT** (with an SAR of 141\*\*), **Bathurst-Melville** (114) and **Barkly** (113). The lowest ratio was in **Daly** (an SAR of 53\*). The largest numbers of admissions were recorded for residents of **Central NT** (148 admissions) and from **Lower Top End NT** (93).

### Map 6.34: Admissions for bronchitis, emphysema or asthma, Australia, 1995/96

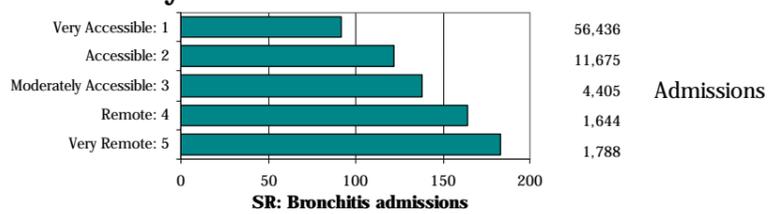
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

#### Accessibility/Remoteness Index of Australia



Standardised admission ratios (SARs) for bronchitis, emphysema or asthma show a similarly strong relationship with remoteness to that noted above for all admissions for respiratory system diseases. The gradients are also similar, with the ratios almost doubling from an SAR of 92 in the Very Accessible category to an SAR of 183 in the Very Remote category.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions from accidents, poisonings and violence, 1995/96

## Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions from the external causes of accidents, poisonings and violence (described below) varied between the capital cities, from a high of 112\*\* in **Hobart** to a low of 60\*\* in **Canberra** (Table 6.40).

Both **Adelaide** and **Perth** had substantially lower ratios in the later period shown in Table 6.40, suggesting a decline (relative to the Australian rates) in admissions from these combined causes. The SARs in **Sydney**, **Brisbane** and **Darwin** increased, suggesting an increase (relative to the Australian rates) in admissions over this period.

**Table 6.40: Admissions with an external cause of accidents, poisonings and violence, capital cities**  
*Age-sex standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1995/96 <sup>2</sup>	92**	84**	95**	94**	86**	112**	111**	60**	90**
1989 <sup>3</sup>	78**	..	85**	114**	101	..	101	..	88**

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>3</sup>Excludes same day admissions: for Sydney the period is 1989/90 and for Darwin it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Accidents, poisonings and violence are a major cause of hospitalisation, accounting for 7.6 per cent of all admissions for residents of the capital cities and other major urban centres (246,338 admissions), and 9.4 per cent of admissions of residents of the non-metropolitan areas of Australia (145,586 admissions). Admissions arising from accidents, poisonings and violence are classified according to the external cause, that is, according to the circumstances of the accident or violence that produced the injury, as well as by the nature of the injury.

Accidents accounted for 91.8 per cent of admissions from these external causes, and were largely accidental falls (23.3 per cent of all admissions from these external causes) and motor vehicle traffic accidents (6.5 per cent). Admission rates for males were substantially higher for motor vehicle traffic accidents and injury purposely inflicted by other person; and for females admission rates were higher for accidental falls and attempted suicide or self-inflicted injury.

In 1996/97, intentional injury (ie. injury inflicted purposely by others) accounted for more hospital admissions for Indigenous people than transport accidents and accidental falls combined. There were almost seven times more hospital admissions for intentional injury than expected among Indigenous men and about twenty times more than expected for Indigenous women (based on all-Australian rates).

## Capital cities

Only three Statistical Subdivisions (SSDs) in **Sydney** had elevated standardised admission ratios; they were **Gosford-Wyong** (with an SAR of 117\*\*), **Northern Beaches** (103) and **Outer South Western Sydney** (102). The lowest ratios were in **Central Western Sydney** and **Eastern Suburbs**, both with an SAR of 83\*\*, and **Canterbury-Bankstown** (84\*\*). There were 8,023 admissions of residents of **St George-Sutherland** and 7,080 from **Blacktown-Baulkham Hills**. SARs in both **Newcastle** (87\*\*; 8,899 admissions) and **Wollongong** (92\*\*; 5,062 admissions) were lower than expected.

Low ratios were recorded for most SSDs in **Melbourne**, with only **Central Melbourne** (with an SAR of 106\*\*) and **Mornington Peninsula Outer** (101) recording elevated ratios for admissions from accidents, poisonings and violence. The lowest ratios were

recorded in **Eastern Middle Melbourne** (68\*\*) and **Northern Outer Melbourne** (70\*\*). The largest numbers of admissions were of residents of **Eastern Outer Melbourne** (5,292 admissions), **Western Inner Melbourne** (4,556) and **Eastern Middle Melbourne** (4,115). There were 2,139 admissions of residents of **Geelong**, 13 per cent fewer than expected from the Australian rates (an SAR of 87\*\*).

In **Brisbane**, elevated SARs were recorded for admissions from accidents, poisonings and violence in **Redcliffe** (an SAR of 125\*\*) and **Ipswich-Moreton** and **Caboolture** (both with 119\*\*). Low ratios were recorded in **Beaudesert** and **Pine Rivers**, both with an SAR of 84\*\*. Apart from **Brisbane City**, with 15,410 admissions, there were 3,087 admissions of residents of **Ipswich-Moreton** and 3,072 from **Logan**. There were more admissions than expected for residents of **Gold Coast-Tweed Heads** (an SAR of 101 and 7,418 admissions) and fewer than expected from **Townsville-Thuringowa** (80\*\*; 2,141 admissions).

In **Adelaide**, the highest ratio was in **Northern** (105\*\*) and the lowest was in **Southern** (89\*\*). The largest number of admissions was recorded for residents of **Northern** (7,388 admissions).

There were fewer admissions from accidents, poisonings and violence than expected from the Australian rates in each of **Perth's** SSDs. The highest ratios were recorded in **East Metropolitan** (93\*\*) and **Central Metropolitan** (92\*\*), and the lowest was in **North Metropolitan** (81\*\*). The largest numbers of admissions were of residents of **North Metropolitan** (6,689 admissions) and **South East Metropolitan** (4,909).

Residents of **Hobart** had 4,729 admissions from accidents, poisonings and violence, twelve per cent more than expected from the Australian rates (an SAR of 112\*\*).

Both **Palmerston-East Arm** (with an SAR of 132\*\* and 306 admissions) and **Darwin City** (108\*\*; 1,423 admissions) had more admissions than expected from the Australian rates.

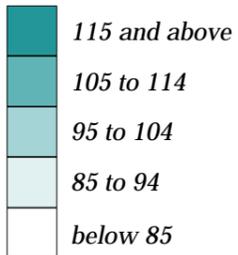
Each SSD in **Canberra** had low rates of admission. The highest ratios were in **Weston Creek** (an SAR of 63\*\*) and **Central Canberra** (69\*\*), and the lowest was in **Outer Canberra** (50\*\*). There were 1,024 admissions from **Belconnen**, and 934 from **Tuggeranong**.

# Map 6.35: Admissions from accidents, poisonings and violence, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected \*



Standardised Ratio (as an index)



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

### Other major urban centres (SR)

Hobart	112
Newcastle	87
Wollongong	92
Geelong	87
Gold Coast-Tweed Heads	101
Townsville-Thuringowa	80

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions from accidents, poisonings and violence, 1995/96

## State/Territory comparison (Australia as the Standard)

With the exception of Tasmania, standardised admission ratios (SARs) for admissions from the external causes of accidents, poisonings and violence (described on the previous text page) were higher, and often substantially higher, for residents of the non-metropolitan areas than of the capital cities (**Table 6.41**). The most highly elevated ratios were in the Northern Territory (166\*\*), Queensland (147\*\*), Western Australia (146\*\*) and South Australia (138\*\*).

The SARs for the non-metropolitan areas of the Northern Territory and Western Australia declined between the two periods shown in **Table 6.41**, with the largest decline in the Northern Territory. The lower ratios in the later period suggest a decline (relative to the Australian rates) in admissions of non-metropolitan residents over this period. The higher ratio in the later period shown for Queensland suggests an increase (relative to the Australian rates) in admissions over this period.

**Table 6.41: Admissions with an external cause of accidents, poisonings and violence, State/Territory**  
*Age-sex standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1995/96<sup>1</sup></b>									
Capital city	92**	84**	95**	94**	86**	112**	111**	60**	90**
Other major urban centres <sup>2</sup>	89**	87**	96**	..	..	..	..	..	91**
Rest of State/Territory	114**	106**	147**	138**	146**	86**	166**	- <sup>3</sup>	124**
Whole of State/Territory	98**	90**	117**	106**	102**	97**	141**	60**	100
<b>1989<sup>4</sup></b>									
Rest of State/Territory	112**	..	128**	139**	171**	..	204**	..	129**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

<sup>4</sup>Excludes same day admissions: for New South Wales the period is 1989/90 and for Northern Territory it is 1987

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

The relatively higher rates of hospitalisation of non-metropolitan residents in general and from these causes are discussed on page 193. In addition, the higher rates of hospitalisation of Indigenous people from these causes (see page 187) may be an influence in the high standardised ratios recorded for some of the more remote areas.

## Rest of Australia

In New South Wales, the most highly elevated ratios for admissions from accidents, poisonings and violence were recorded in **Upper Darling** (with 640 admissions, 2.7 times more than expected from the Australian rates, an SAR of 270\*\*); **North Central Plain** and **Macquarie-Barwon**, both with an SAR of 169\*\*; and **Far West** (138\*\*). Only **Queanbeyan** (with an SAR of 69\*\*) and **Tweed Heads** (95) recorded fewer admissions than expected. There were 4,016 admissions of residents of **Richmond-Tweed SD Balance**, 3,134 from **Clarence** and 3,003 from **Hastings**.

Almost two thirds (63.3 per cent) of the Statistical Subdivisions (SSDs) in Victoria had elevated ratios for admissions from accidents, poisonings and violence. The highest ratios were in **West Gippsland** (an SAR of 142\*\*), **Hopkins** (140\*\*) and **North Goulburn** (126\*\*). In both **East Barwon** and **Stzlecki** (both with an SAR of 80\*\*), there were 20 per cent fewer admissions than expected from the Australian rates. The largest numbers of admissions were of residents of **Ballarat** (2,023 admissions), **Hopkins** (1,829) and **East Barwon** (1,523).

In Queensland, there were more than twice the expected number of admissions in **North West** (with an SAR of 302\*\*), **Central West** (252\*\*), **Mackay** (251\*\*), **Far North Balance** (223\*\*) and

**Mackay SD Balance** (211\*\*). Higher than expected SARs were also recorded in the remaining SSDs, with the exception of **Bundaberg** (with an SAR of 93\*). The largest numbers of admissions were of residents of **Darling Downs** (5,768 admissions), **Wide Bay-Burnett SD Balance** (4,766) and **Far North SD Balance** (4,723).

In South Australia, highly elevated ratios were recorded for admissions from accidents, poisonings and violence in **West Coast** (an SAR of 222\*\*), **Kangaroo Island** (213\*\*), **Flinders Ranges** (188\*\*) and **Upper South East** (168\*\*) SSDs. The lowest ratio was in **Fleurieu** (100). There were 1,143 admissions of residents of **Lower South East** and 1,091 from **Murray Mallee**.

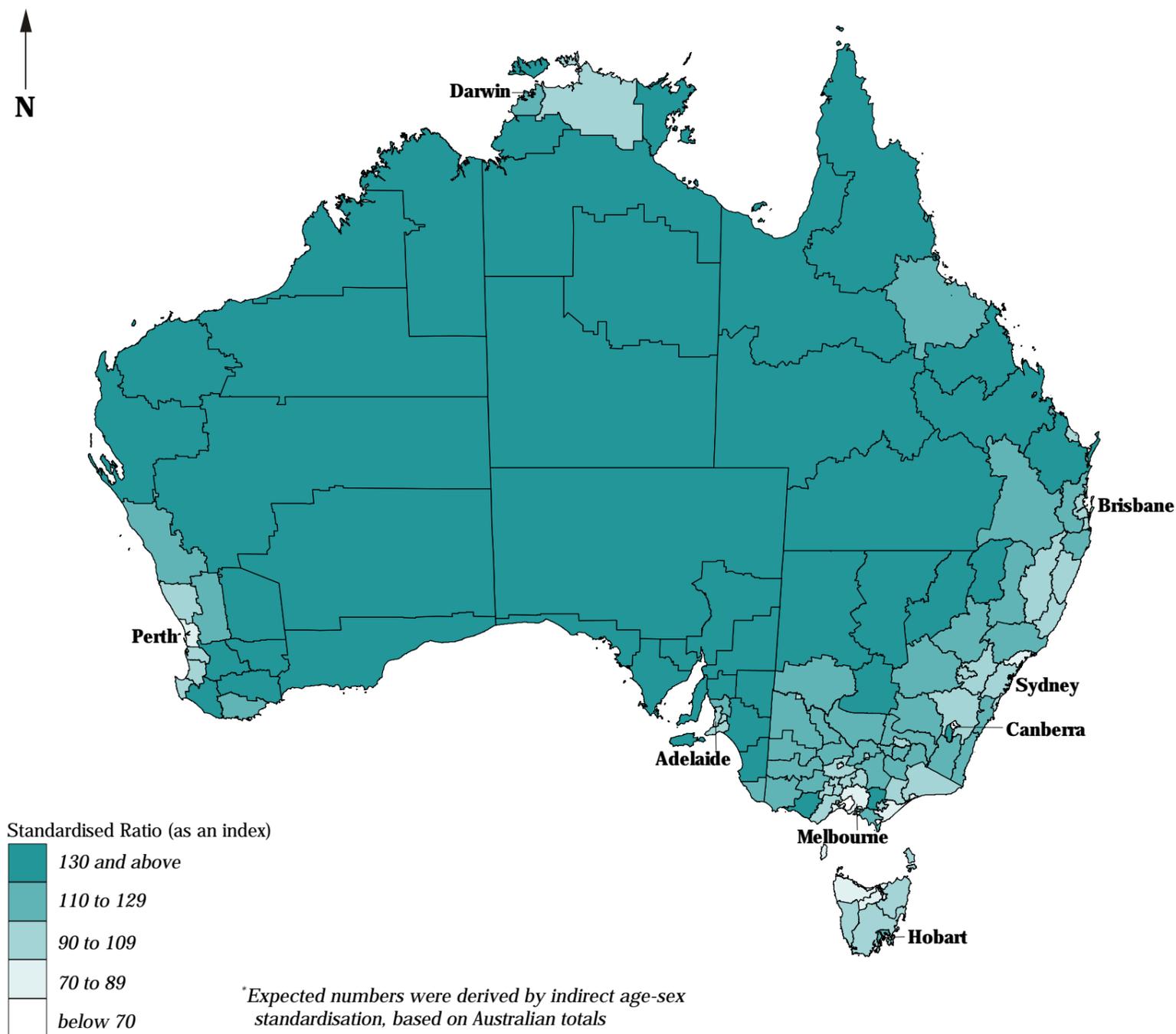
In Western Australia, there were highly elevated ratios in **Ord** (an SAR of 379\*\*) and **Fitzroy** (302\*\*). Elevated ratios were also recorded in **Lefroy** (196\*\*), **Campion** (189\*\*) and **Fortescue** (188\*\*). **Dale** (with an SAR of 93\*) was the only SSD with a ratio below 100. The largest numbers of admissions were of residents of **Lefroy** (1,577 admissions) and **Preston** (1,576).

The only elevated ratio was recorded in **Lyell** (107), with the lowest in **Central North** (77\*\*) and **Launceston** (81\*\*). There were 1,749 admissions of residents of **Launceston** and 1,482 from **Burnie-Devonport**.

In the Northern Territory, highly elevated SARs were recorded in **Barkly** (314\*\*), **Lower Top End NT** (241\*\*) and **Bathurst-Melville** (221\*\*). The lowest ratio was in **Alligator** (106). The largest numbers of admissions from accidents, poisonings and violence were of residents of **Central NT** (985 admissions), **Lower Top End NT** (754) and **Barkly** (373).

## Map 6.36: Admissions from accidents, poisonings and violence, Australia, 1995/96

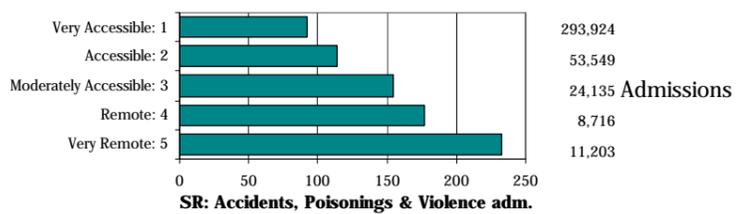
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions from the external causes of accidents, poisonings and violence increase across the ARIA categories in a step wise fashion. Ratios increase from an SAR of 92 in the Very Accessible areas to 114 in the Accessible areas. There is a larger increase to SARs of 154 and 177 in the Moderately Accessible and Remote categories and a further increase to an SAR of 233 in the Remote category.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

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# Principal procedures for admitted patients

## Introduction

There are variations in the rate at which particular procedures<sup>5</sup> are undertaken, both between the States and Territories and at a regional level within the States and Territories. Variations at a small area level can point to differences in health status, in access to and availability of services, and in clinical opinion and practice. They may also, in some instances, raise concerns as to possible over servicing.

## Data mapped

Details are presented in the following pages of a number of procedures, of which a number are periodically reported on at the State and Territory level as 'sentinel' procedures. Sentinel procedures are common, mostly elective, and considered to be discretionary: that is, there are often conservative or non-surgical alternatives (AIHW 1997). **Table 6.42** lists a number of sentinel procedures for which data have been published over some years. All but three of these procedures (coronary artery bypass graft, angioplasty and cholecystectomy) are mapped in the following pages. The variable for myringotomy is not one of the nationally published sentinel procedures but has been included in this analysis because it varies widely spatially, and often with a spatial pattern that is the inverse of that for tonsillectomies.

<sup>5</sup>A procedure is an intervention that is surgical in nature, carries a procedural risk, carries an anaesthetic risk, requires specialised training, or requires special facilities or equipment only available in an acute setting (National Health Data Committee 1997).

Descriptions of the procedures for which details are mapped are included in the text accompanying the maps.

In most cases, the procedure is the principal procedure, the most significant procedure for treatment of the principal diagnosis. The exception is the variable for lens insertion, for which all recorded procedures were examined, as the extraction of the old lens is often the principal procedure.

The standardised admission ratios for these sentinel procedures are shown in **Table 6.42**. They show that standardised admission ratios were elevated above the ratio for the whole of Australia for the procedures in the table more frequently in Victoria (seven of the procedures) and South Australia (six of the procedures) than in the other States or Territories. Victoria had the highest overall ratio for admissions for two procedures (angioplasty and endoscopy) and South Australia had the highest ratio for four procedures (Caesarean section, cholecystectomy, myringotomy and tonsillectomy). These two States shared the highest ratio for admissions for hip replacement procedures.

Further, South Australia had ratios elevated by 10 per cent or more (above the national rate) for six of the procedures (and three of these were elevated by more than 20 per cent). Victoria and Tasmania each had three procedures for which ratios were elevated by 10 per cent or more above the national rate (although for Tasmania, the elevated ratio for angioplasty was almost totally offset by the low rate for coronary artery bypass graft).

**Table 6.42: Admission rates for selected sentinel procedures, public and private hospitals, 1996/1997**

Sentinel procedure	Standardised admission rates <sup>1</sup>								
	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
Appendicectomy	1.39	1.53	1.38	1.34	1.50	1.55	0.85	1.17	1.43
Coronary artery bypass graft	1.03	0.90	0.90	0.88	0.53	0.78	0.53	0.79	0.91
Angioplasty	0.67	0.90	0.47	0.87	0.77	0.81	0.54	0.47	0.73
Caesarean section	2.65	2.72	3.05	3.19	2.70	3.03	2.42	2.54	2.79
Cholecystectomy	2.24	2.19	2.22	2.42	1.78	2.09	1.39	2.09	2.18
Endoscopy	25.15	25.27	25.14	19.99	20.60	22.17	13.64	13.38	24.00
Hip replacement	0.94	1.09	0.87	1.09	1.02	1.36	0.38	1.21	1.00
Hysterectomy	1.76	1.82	1.81	2.26	1.84	2.31	1.17	1.94	1.84
Lens insertion	5.10	4.91	6.23	3.84	4.94	3.79	4.30	2.45	5.05
Myringotomy	1.84	2.74	2.21	3.83	2.11	1.89	0.84	1.91	2.30
Tonsillectomy	1.60	2.16	1.87	2.49	1.81	1.32	0.48	1.65	1.86

<sup>1</sup>Admission rates have been produced by direct standardisation

indicates difference is significant at the five per cent (\*) and one per cent (\*\*) levels

Source: Australian Hospital Statistics, AIHW, June 1998

## Earlier studies

Renwick and Sadkowsky (1991) reported on age sex standardised ratios for a number of surgical procedures using data from 1986. Those procedures for which comparable data are also available for 1996/97 are shown in **Table 6.43**.

Standardised admission ratios in New South Wales were lower (relative to the Australian rates) for all of the procedures in 1996/97 than they were in 1986, with similar reductions occurring in Western Australia, the Northern Territory and the

Australian Capital Territory (in each case with all but one procedure with lower rates).

In Victoria, ratios for all procedures were higher (relative to the Australian rates) in 1996/97 than in 1986. Both Queensland and South Australia had higher ratios in 1996/97 for three of the procedures and lower ratios for four procedures (relative to the Australian rates) than in 1986.

**Table 6.43: Standardised admission ratios for selected sentinel procedures, public and private hospitals  
Expressed as an index (Australia as 100)**

Sentinel procedure	Standardised admission ratios <sup>1</sup>								Total
	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	
<b>1996/97</b>									
Appendicectomy	97.2	107.0	96.5	93.7	104.9	108.4	59.4	81.8	100.0
Caesarean section	95.0	97.5	109.3	114.3	96.8	108.6	86.7	91.0	100.0
Cholecystectomy	102.8	100.5	101.8	111.0	81.7	95.9	63.8	95.9	100.0
Hip replacement	94.0	109.0	87.0	109.0	102.0	136.0	38.0	121.0	100.0
Hysterectomy	95.7	98.9	98.4	122.8	100.0	125.5	63.6	105.4	100.0
Lens insertion	101.0	97.2	123.4	76.0	97.8	75.0	85.1	48.5	100.0
Tonsillectomy	86.0	116.1	100.5	133.9	97.3	71.0	25.8	88.7	100.0
<b>1986</b>									
Appendicectomy	108.2	94.8	95.6	83.8	110.0	n.a.	75.4	98.9	100.0
Caesarean section	97.5	92.5	110.8	102.1	95.4	n.a.	144.5	143.2	100.0
Cholecystectomy	104.6	87.2	103.6	120.2	91.8	n.a.	92.7	110.7	100.0
Hip replacement	94.4	95.6	87.9	129.1	121.7	n.a.	256.1	108.0	100.0
Hysterectomy	99.8	87.9	107.8	100.1	116.9	n.a.	129.6	115.0	100.0
Lens insertion	111.8	74.4	116.0	87.2	109.6	n.a.	68.0	158.3	100.0
Tonsillectomy	98.7	87.7	90.3	159.0	107.4	n.a.	59.5	108.6	100.0

<sup>1</sup>Admission ratios are age- and sex-standardised to the Australian population

Source: 1986 data from Renwick, M. & Sadkowsky, K. *Variations in surgery rates*, Australian Institute of Health & Welfare: 1996/97 data based on Table 8.1, *Australian Hospital Statistics*, Australian Institute of Health & Welfare, June 1998

## Context

### Australia

There were 2,485,792 admissions to public acute and private hospitals (including day surgery facilities) in Australia at which at least one surgical procedure was performed. These 2.5 million admissions represented 52.1 per cent of all admissions studied in this project (which includes all acute admissions, other than for renal dialysis). Nearly two thirds (62.6 per cent) of the admissions involving a procedure were of residents of the capital cities (which comprise 62.8 per cent of Australia's population),

A further 6.6 per cent were of residents of the other major urban centres and 30.6 per cent were of residents of the non-metropolitan areas. Females accounted for 57.5 per cent of admissions, varying from 58.5 per cent of admissions of residents of the capital cities to 55.9 of non-metropolitan residents. Less than half (45.3 per cent) of these principal procedures were performed on a same day basis, with males having slightly more procedures on a same day basis (46.3 per cent of all male principal procedures, compared with 44.6 per cent for females).

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# Admissions for a surgical procedure, 1995/96

## Capital city comparison (Australia as the Standard)

There were 1,636,292 admissions of residents of the capital cities (and an additional 186,672 admissions of residents of other major urban centres) to public acute and private hospitals (including day surgery facilities) at which at least one surgical procedure was performed. Although the *All capitals* average was at the level expected from the Australian rates, standardised admission ratios (SARs) for the individual capitals varied from eight per cent more admissions (than expected from the Australian rates) for a surgical procedure in **Darwin**, to 30 per cent fewer admissions in **Canberra**.

**Table 6.44: Admissions<sup>1</sup> for surgical procedures, capital cities, 1995/96**  
*Standardised separation ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
99**	101**	101**	107**	95**	107**	108**	70**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Just over a half (54.3 per cent) of admissions to acute hospitals of residents of Australia in 1995/96 involved a surgical procedure. Females accounted for 57.3 per cent of such admissions, and males 42.7 per cent. For females, admission rates were highest in the 25 to 34 year age groups and again from age 60, while for males, rates were most common among those aged from their late fifties, increasing with each age group (**Figure 6.8**, page 192).

## Capital cities

The highest standardised admission ratio in **Sydney** for admissions for a surgical procedure was recorded for residents of **Outer South Western Sydney** (an SAR of 111\*\*). Relatively high ratios were also recorded in **Eastern Suburbs** (107\*\*) and **Northern Beaches** (106\*\*) Statistical Subdivisions (SSDs). The lowest ratios were in **Outer Western Sydney** (an SAR of 86\*\*) and **Hornsby-Ku-ring-gai** (91\*\*). There were 63,583 admissions of residents of **St George-Sutherland** and 45,177 from **Blacktown-Baulkham Hills**. There were more admissions than expected from the Australian rates in both **Newcastle** (an SAR of 103\*\*; 70,762 admissions) and **Wollongong** (104\*\*; 38,019 admissions).

In **Melbourne**, elevated SARs for admissions for a surgical procedure were recorded in **Western Fringe Melbourne** (an SAR of 122\*\*), **Southern Inner Melbourne** (112\*\*) and **Mornington Peninsula Outer** (110\*\*). The lowest ratios were in **South Eastern Inner Melbourne** (an SAR of 91\*\*) and **Eastern Middle Melbourne** (94\*\*). The largest numbers of admissions were of residents of **Eastern Outer Melbourne** (45,921 admissions) and **Eastern Middle Melbourne** (39,205). There were 14,725 admissions of residents of **Geelong**, ten per cent fewer than expected (an SAR of 90\*\*).

The highest SARs in **Brisbane** were in **Redcliffe** (an SAR of 108\*\*), **Albert** and **Caboolture** (both with 104\*\*). The lowest ratio was in **Beaudesert**, an SAR of 78\*\*. The largest numbers of admissions were of residents of **Brisbane City** (120,245 admissions), **Logan** (19,298) and **Ipswich** (16,209). Both **Gold Coast-Tweed Heads** (an SAR of 101\*; 51,715 admissions) and **Townsville-Thuringowa** (112\*\*; 18,666 admissions) had more admissions than expected for a surgical procedure.

Residents of each of **Adelaide's** four SSDs recorded elevated ratios for admissions for a surgical procedure. The highest was in **Southern** (an SAR of 112\*\*), and the lowest was in **Eastern** (100). Residents of **Southern** and **Northern** had the largest numbers of admissions, with 52,772 and 49,432 respectively.

There were fewer admissions for a surgical procedure than expected in each SSD in **Perth**. SARs of 99 and 98\*\* were recorded for **South West Metropolitan** and **East Metropolitan**, respectively, with the lowest ratio in **Central Metropolitan** (87\*\*). The largest numbers of admissions were of residents of **North Metropolitan** (52,049 admissions) and **South West Metropolitan** (36,587).

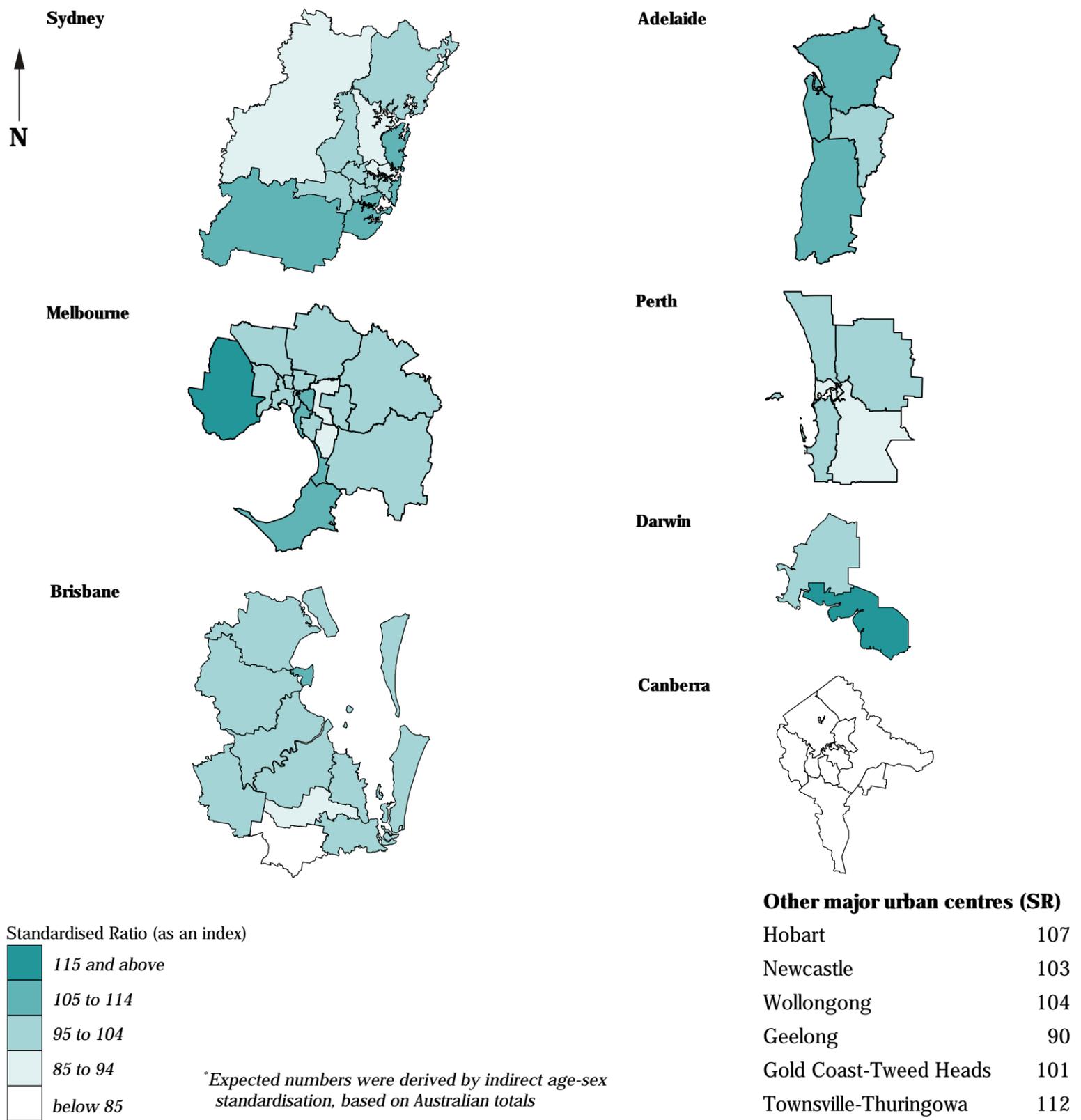
There were 30,125 admissions for a surgical procedure of residents of **Hobart**, seven per cent more than expected from the Australian rates (an SAR of 107\*\*).

Elevated SARs for admissions for surgical procedures were recorded in both **Palmerston-East Arm** (an SAR of 132\*\*; 1,876 admissions) and **Darwin City** (104\*\*; 8,757 admissions).

In **Canberra**, there were fewer admissions for a surgical procedure than expected from the Australian rates for all SSDs. The highest ratios were in **Tuggeranong** and **Outer Canberra**, both with an SAR of 73\*\*, while the lowest was in **Central Canberra** (66\*\*). The largest numbers of admissions were of residents of **Belconnen** (7,977 admissions) and **Tuggeranong** (7,503).

# Map 6.37: Admissions for a surgical procedure, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for a surgical procedure, 1995/96

## State/Territory comparison (Australia as the Standard)

There were 770,971 admissions of residents of the non-metropolitan areas to public acute and private hospitals (including day surgery facilities) at which at least one surgical procedure was performed. With the exception of Victoria and Western Australia, the standardised admission ratios (SARs) in the *Rest of State/Territory* areas are lower than those recorded for the capital cities. The Northern Territory, Tasmania and South Australia had largest differentials in ratios between the *Capital City* and *Rest of State/Territory* areas.

**Table 6.45: Admissions<sup>1</sup> for surgical procedures, State/Territory, 1995/96**  
**Standardised admission ratios**

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	99**	101**	101**	107**	95**	107**	108**	70**	100
Other major urban centres <sup>2</sup>	103**	90**	102**	..	..	..	..	..	102**
Rest of State/Territory	99**	104**	98**	104**	96**	95**	95**	- <sup>3</sup>	100*
Whole of State/Territory	100	102**	100	106**	96**	100	101	70**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

Standardised admission ratios for admissions for surgical procedures were elevated by 15 per cent or more above the levels expected from the Australian rates in **Bathurst-Orange** (with an SAR of 119\*\*), **Tweed Heads** (117\*\*) and **Albury** (115\*\*), with relatively high ratios in **Illawarra SD Balance**, **Hastings** and **Lower Murrumbidgee** (each with an SAR of 107\*\*). The lowest ratios were recorded in **Queanbeyan** (an SAR of 74\*\*) and **Northern Tablelands** (78\*\*). The largest numbers of admissions were of residents of **Richmond-Tweed SD Balance** (22,447 admissions), **Hastings** (21,509) and **Illawarra SD Balance** (19,012).

In Victoria, the highest ratios were in the Statistical Subdivisions (SSDs) of **Hopkins** (an SAR of 122\*\*), **West Gippsland** (124\*\*) and **Glenelg, North Goulburn, Wodonga** and **North Ovens-Murray** (each with 114\*\*). The lowest ratios were recorded for residents in the State's east in **Gippsland Lakes** (an SAR of 71\*\*) and **Mitchell-Snowy** (82\*\*). There were 12,555 admissions for a surgical procedure of residents of **Ballarat**, 11,533 from **East Barwon** and 11,176 from **La Trobe Valley**.

The highest SARs for admissions for a surgical procedure in the non-metropolitan areas of Queensland were in **Mackay** (an SAR of 130\*\*), **North West** (120\*\*) and **Central West** (117\*\*); and the lowest were in **Moreton SD Balance**, **Wide Bay-Burnett SD Balance** and **Fitzroy SD Balance** (each with 88\*\*). There were more than 20,000 admissions of residents of **Darling Downs** (29,390 admissions), **Sunshine Coast** (22,292) and **Wide Bay-Burnett SD Balance** (20,907).

In South Australia, ratios elevated by 15 per cent or more were recorded in each of **Flinders Ranges** (an SAR of 128\*\*), **Whyalla** (124\*\*), **West Coast** (119\*\*) and **Upper South East** (115\*\*). The lowest ratios were in **Barossa** (an SAR of 86\*\*) and **Far North** and **Lower North** (both with 91\*\*). There were 6,101 admissions for a surgical procedure of residents of **Lower South East**, 5,627 from **Riverland** and 5,076 from **Barossa**.

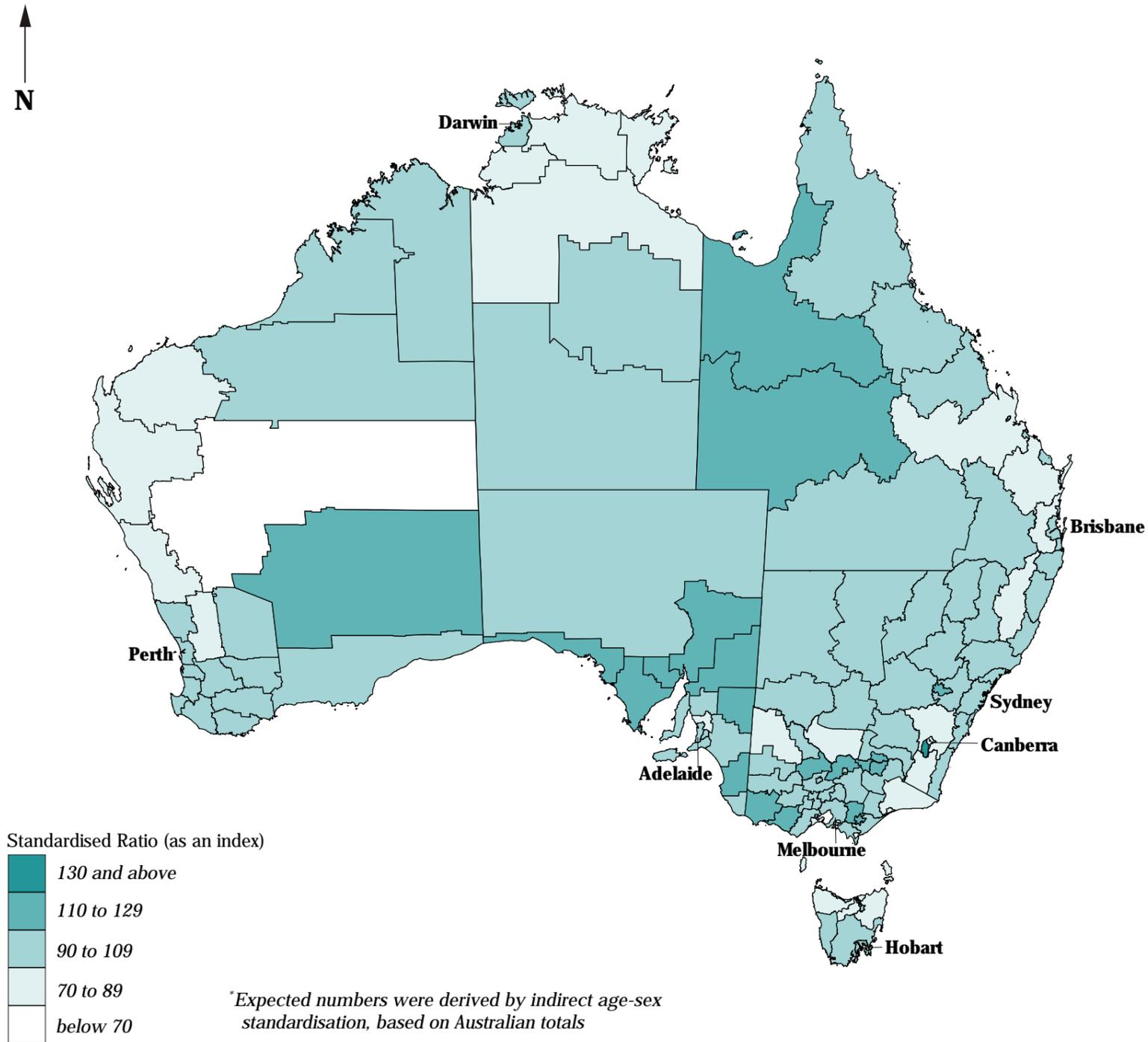
The highest ratio in Western Australia for admissions for a surgical procedure was in **Lefroy** (with an SAR of 116\*\*), considerably higher than those in next ranked **Ord** (104) and **King** (103\*). Generally, however, low ratios were recorded in most non-metropolitan SSDs, with the lowest in **Carnegie** (an SAR of 58\*\*) and **Gascoyne** (80\*\*). The largest numbers of admissions were of residents of two SSDs near **Perth**, **Preston** (9,226 admissions) and **Dale** (7,301).

There were marginally more admissions than expected in **Burnie-Devonport** and **Southern** SSDs in Tasmania (each with an SAR of 101). The lowest ratio was in **North Western Rural and Western** (an SAR of 73\*\*). The northern SSDs of **Launceston** (13,729 admissions) and **Burnie-Devonport** (11,625) had the largest numbers of admissions for a surgical procedure.

In the Northern Territory, there were SARs of 103 in **Central NT**, and 100 in each of **Darwin Rural Areas**, **Bathurst-Melville** and **Barkly**. The lowest ratio was in **Daly** (an SAR of 82\*\*). There were 4,307 admissions of residents of **Central NT** for a surgical procedure and 1,747 from **Darwin Rural Areas**.

# Map 6.38: Admissions for a surgical procedure, Australia, 1995/96

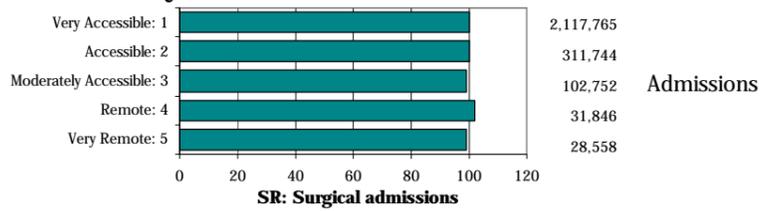
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions involving a surgical procedure were close to the level expected from the Australian rates across all of the ARIA categories, with a marginally higher ratio of 102 in the Remote category and marginally lower ratio in the Moderately Accessible and Very Remote categories (both with an SAR of 99).

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Same day admissions for surgical procedures, 1995/96

## Capital city comparison (Australia as the Standard)

There were 776,311 same day admissions of residents of the capital cities and 90,521 admissions of residents of the other major urban centres to public acute and private hospitals (including day surgery facilities) at which at least one surgical procedure was performed. These admissions represent 47.5 per cent of all admissions involving a surgical procedure.

The standardised admission ratios (SARs) ranged from 64\*\* in **Canberra** and 72\*\* in **Darwin** to 111\*\* in **Melbourne** and 104\*\* in **Sydney**. When compared with ratios for all admissions for surgical procedures (Table 6.44), standardised admission ratios (SARs) for same day admissions involving a surgical procedure (Table 6.46) are higher in **Sydney** and lower in **Hobart**, relative to the Australian rates. The lower rate in **Hobart** is likely to reflect the historically slower rate of take-up of same day procedures in Tasmania, a trend that is being rapidly reversed.

**Table 6.46: Same day admissions<sup>1</sup> for surgical procedures, capital cities, 1995/96**  
*Standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
104**	111**	102**	101**	93**	87**	72**	64**	102**

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Just under half (46.3 per cent) of all admissions of residents of Australia in 1995/96 involving a surgical procedure were same day admissions. Females accounted for over half (56.5 per cent) of same day admissions. Admission rates were higher for females than for males in the age groups from 15 to 19 years through to 50 to 59 years (Figure 6.9, page 192). For males, the largest differentials over the rates for females were in the 0 to 14 year age groups and from age 60 years.

## Capital cities

Same day admissions of residents of **Sydney** involving a surgical procedure were elevated by 20 per cent or more in **Eastern Suburbs** (an SAR of 127\*\*) and **Outer South Western Sydney** (124\*\*), with lower ratios in **Northern Beaches** (115\*\*), and **St George-Sutherland** (114\*\*). The lowest ratios were recorded in **Outer Western Sydney** (with an SAR of 85\*\*) and **Blacktown-Baulkham Hills** and **Lower Northern Sydney** (both with an SAR of 95\*\*). During 1995/96, there were 49,845 same day admissions involving a surgical procedure for residents of **St George-Sutherland**, 34,906 from **Blacktown-Baulkham Hills** and 33,931 from **Canterbury-Bankstown**. There were more of these admissions than expected for residents of **Wollongong** (an SAR of 112\*\* and 19,131 admissions), and fewer than expected in **Newcastle** (109\*\*; 34,490 admissions).

In **Melbourne**, there were elevated SARs for same day admissions involving a surgical procedure in all but two SSDs. The highest ratios were in **Southern Inner Melbourne** (an SAR of 127\*\*), **Western Fringe Melbourne** (125\*\*), **Mornington Peninsula Outer** (123\*\*), **Eastern Inner Melbourne** (118\*\*), **Mornington Peninsula Inner** (117\*\*), **Eastern Fringe Melbourne** (116\*\*) and **Southern Outer Melbourne** (115\*\*). The lowest ratios were recorded in **South Eastern Inner Melbourne** (an SAR of 97\*\*) and **Northern Inner Melbourne** (99). The largest numbers of admissions were of residents of **Eastern Outer Melbourne** (23,645 admissions), **Eastern Middle Melbourne** (20,807) and **Western Outer Melbourne** (18,282). There were 5,957 same day admissions involving a surgical procedure of residents of **Geelong**, 21 per cent fewer than expected (an SAR of 79\*\*).

The only elevated ratios recorded in **Brisbane** were in **Redcliffe City** (an SAR of 111\*\*) and **Brisbane City** (107\*\*). The lowest ratios were in **Beaudesert** (an SAR of 74\*\*) and **Caboolture** (90\*\*). There were 58,287 admissions of residents of **Brisbane City**, 9,021 from **Logan** and 6,956 from **Ipswich-Moreton**. There were more same day admissions involving a surgical procedure than expected in both **Gold Coast-Tweed Heads** (an SAR of 107\*\*; 25,120 admissions) and **Townsville-Thuringowa** (121\*\*; 9,381 admissions).

In **Adelaide**, the highest ratio was in **Southern** (an SAR of 111\*\*) and the lowest ratio was in **Northern** (93\*\*). The largest numbers of these admissions were of residents of **Southern** (24,010 admissions) and **Northern** (20,221).

There were more same day admissions involving a surgical procedure in each of the five SSDs in **Perth**. The highest ratio was in **South West Metropolitan** (with an SAR of 97\*\*) and **North Metropolitan** (96\*\*) and the lowest was in **Central Metropolitan** (83\*\*). There were 24,014 admissions of residents of **North Metropolitan** and 16,602 from **South West Metropolitan**.

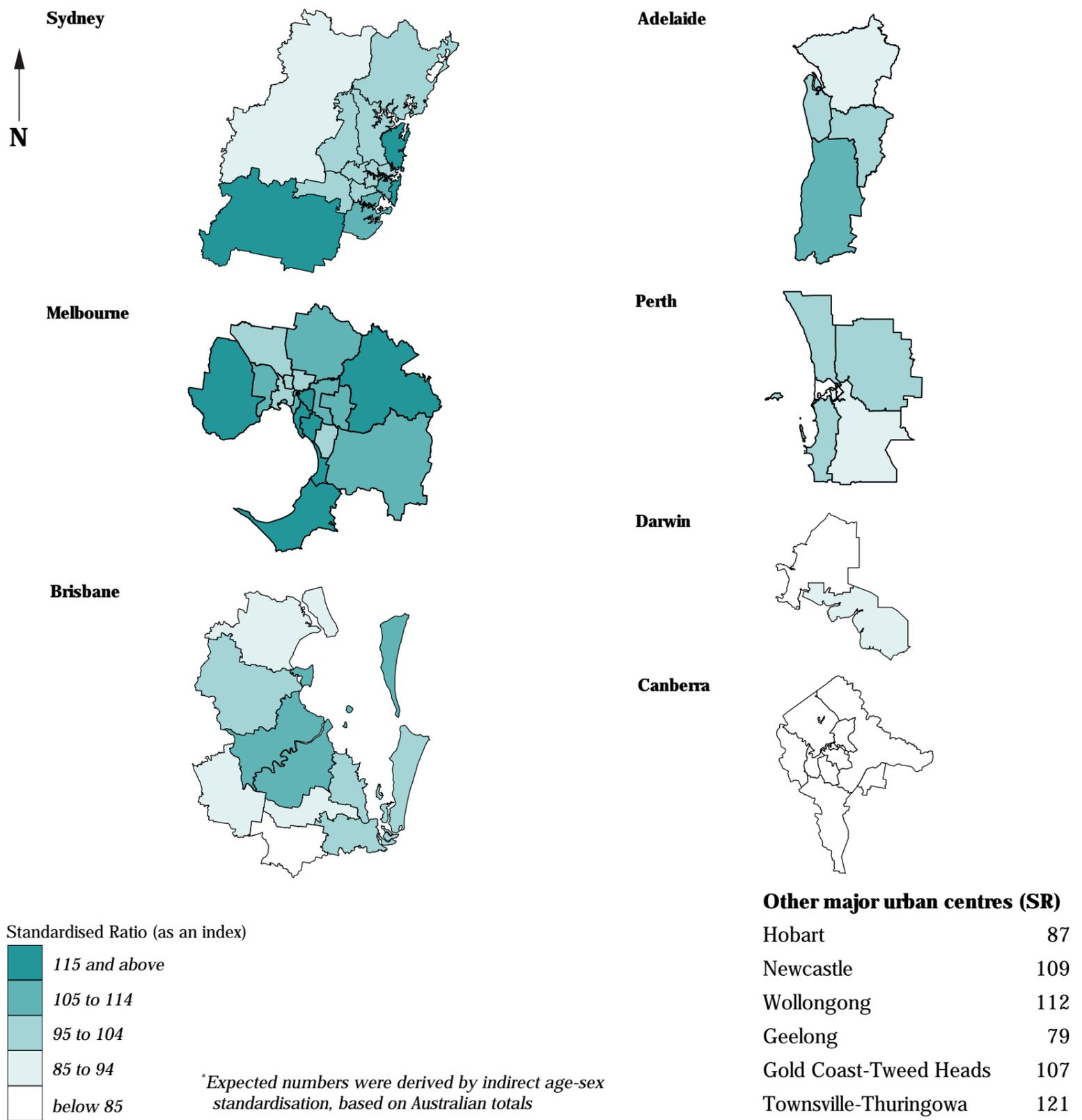
Residents of **Hobart** had 11,343 same day admissions involving a surgical procedure, four per cent fewer than expected from the Australian rates (an SAR of 87\*\*).

In both of the SSDs in **Darwin**, there were fewer same day admissions involving a surgical procedure than expected, with an SAR of 94 in **Palmerston-East Arm** and 68\*\* in **Darwin City**. There were substantially more admissions of residents of **Darwin City** (2,705) than from **Palmerston-East Arm** (635).

There were fewer same day admissions involving a surgical procedure in each of the SSDs in **Canberra**. The highest ratios were recorded for residents of **Belconnen** (an SAR of 67\*\*) and **Tuggeranong** (65\*\*). The lowest ratio was in **Central Canberra** (an SAR of 58\*\*). There were 3,519 admissions of residents of **Belconnen** and 3,174 from **Tuggeranong**.

# Map 6.39: Same day admissions for a surgical procedure, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Same day admissions for a surgical procedure, 1995/96

## State/Territory comparison (Australia as the Standard)

There were 334,448 same day admissions of residents of the non-metropolitan areas to public acute and private hospitals (including day surgery facilities) at which at least one surgical procedure was performed. These admissions represent 43.4 per cent of all admissions involving a surgical procedure.

Standardised admission ratios (SARs) in the *Rest of State/Territory* category in **Table 6.47** are lower than those in the capital cities for all States and the Northern Territory. The SAR for the non-metropolitan areas was highest in Victoria (105\*\*), and that in the Northern Territory (62\*\*) was the lowest.

**Table 6.47: Same day admissions<sup>1</sup> for surgical procedures, State/Territory, 1995/96**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	104**	111**	102**	101**	93**	87**	72**	64**	102**
Other major urban centres <sup>2</sup>	110**	79**	109**	..	..	..	..	..	107**
Rest of State/Territory	96**	105**	88**	90**	84**	81**	62**	- <sup>3</sup>	93**
Whole of State/Territory	102**	108**	97**	98**	90**	84**	67**	63**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

In New South Wales, the highest ratios were recorded in **Tweed Heads** (an SAR of 126\*\*), **Bathurst-Orange** (123\*\*), **Albury** (121\*\*) and **Illawarra SD Balance** (109\*\*). Residents of **Hastings**, **Central Tablelands** and **Lower Murrumbidgee** all had six per cent more same day admissions involving a surgical procedure than were expected from the Australian rates (an SAR of 106\*\*). The lowest ratios were in **Murray-Darling** (23\*\*) and **Central Murray** (54\*\*). Residents of **Richmond-Tweed SD Balance** had 10,386 same day admissions involving a surgical procedure, with 9,857 from **Hastings** and 8,944 from **Illawarra SD Balance**.

Elevated SARs for same day admissions of residents of Victoria involving a surgical procedure were recorded in **West Gippsland** (an SAR of 150\*\*), **Wodonga** (131\*\*), **Hopkins** (129\*\*), **Latrobe Valley** (126\*\*) and **South Ovens-Murray** (121\*\*). The lowest ratios were in **Gippsland Lakes** (an SAR of 32\*\*) and **Mitchell-Snowy** (49\*\*). The largest numbers of admissions were of residents of **La Trobe Valley** (5,923 admissions) and **Ballarat** (5,235).

In Queensland, elevated SARs were recorded for residents of **Mackay** (an SAR of 142\*\*, the highest in the non-metropolitan SSDs), **Central West** (115\*\*) and **Northern Balance** (105\*\*). The lowest ratios were in **South West** (an SAR of 58\*\*) and **Gladstone** (67\*\*). Residents from **Darling Downs** had 11,007 admissions, with 10,417 from **Sunshine Coast** and 8,087 from **Wide Bay-Burnett SD Balance**.

The SARs for same day admissions involving a surgical procedure were relatively low in South Australia, with elevated ratios in only four SSDs: **Whyalla** (with an SAR of 117\*\*), **Riverland** (105\*), **Lower South East** (103) and **Upper South East** (101). The lowest ratios were recorded for residents of **Far North** (an SAR of 60\*\*) and **Kangaroo Island** and **West Coast** (both with 66\*\*). There were 2,905 admissions of residents of **Lower South East** and 2,419 from **Riverland**.

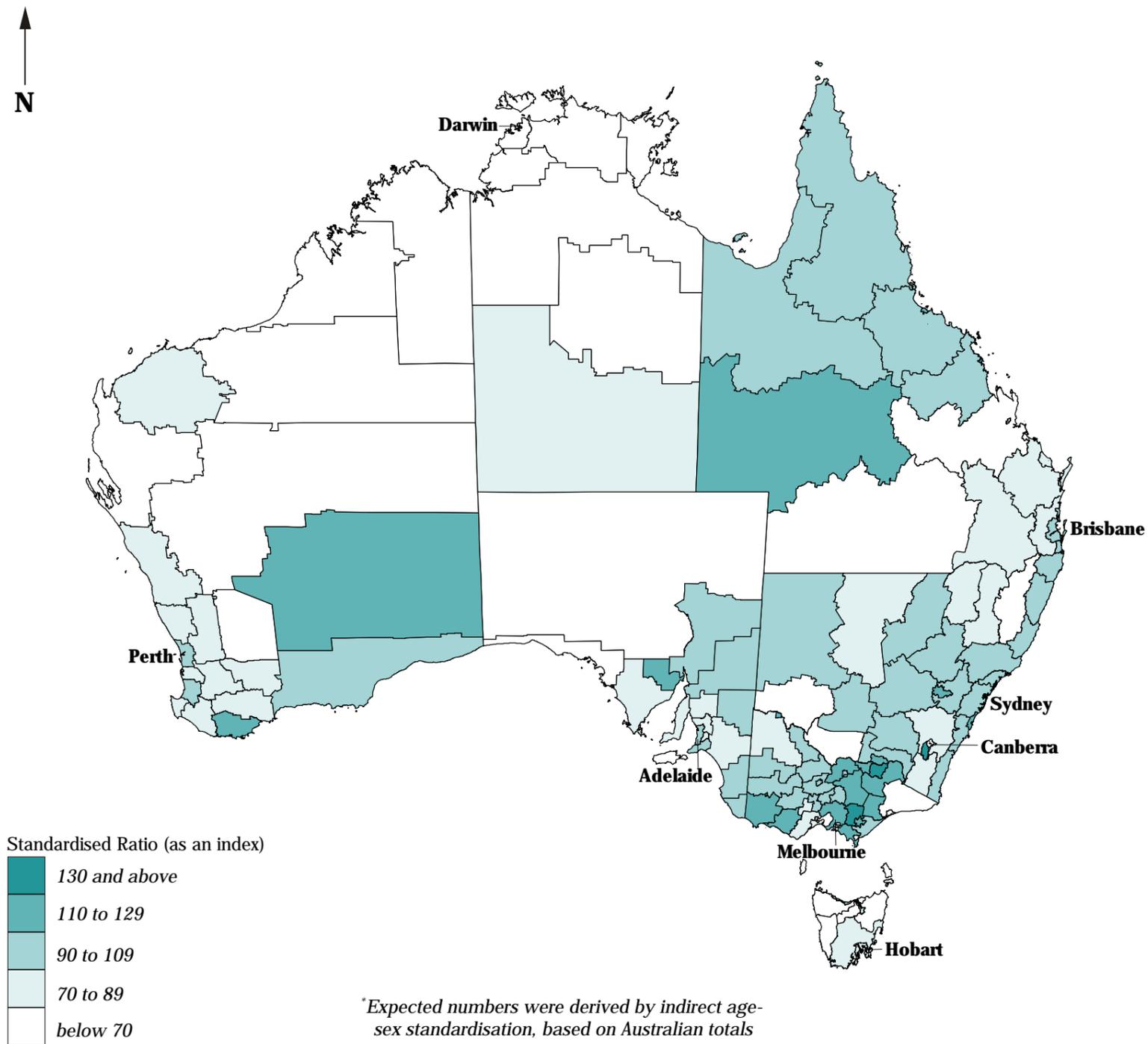
In Western Australia, there were fewer same day admissions involving a surgical procedure than expected from the Australian rates in all but two SSDs. The highest ratios were recorded in **King** (an SAR of 114\*\*) and **Lefroy** (133\*\*), with the lowest in **Carnegie** (38\*\*) and **Ord** (39\*\*). The largest numbers of admissions were of residents of **Preston** (4,049 admissions), **Dale** (2,988) and **King** (2,900).

In Tasmania, there were also fewer same day admissions involving a surgical procedure than expected from the Australia rates in all SSDs. The highest ratio was in **Burnie-Devonport** (an SAR of 93\*\*), and the lowest was in **North Eastern** and **North Western Rural** (both with an SAR of 59\*\*). There were 5,683 admissions of residents of **Launceston**, and 4,936 from **Burnie-Devonport**.

The highest SAR in the Northern Territory for same day admissions involving a surgical procedure was in **Central NT** (an SAR of 80\*\*), with 20 per cent fewer admissions than were expected from the Australian rates. There were 62 per cent fewer admissions than expected in **Bathurst-Melville** (an SAR of 38\*\*) and 56 per cent fewer in **Alligator** and **Daly** (both with an SAR of 44\*\*). The largest numbers of admissions were of residents of **Central NT** (1,577 admissions) and **Darwin Rural Areas** (571).

# Map 6.40: Same day admissions for a surgical procedure, Australia, 1995/96

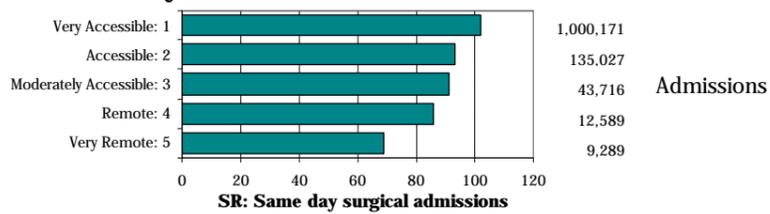
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Standardised admission ratios for same day admissions involving a surgical procedure show a markedly different pattern, with lower ratios associated with increasing remoteness, reflecting the lack of these services outside of the most accessible areas. Ratios decline from a high of 102 in the Very Accessible category to a low of 69 in the Very Remote category.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for a tonsillectomy and/or adenoidectomy, 1995/96

## Capital city comparison (Australia as the Standard)

There were 19,896 procedures for tonsillectomy and/or adenoidectomy (described below) performed as a principal procedure on residents of the capital cities (and an additional 2,305 on residents of other major urban centres). Standardised admission ratios (SARs) for these procedures varied widely between the capital cities (Table 6.48), from a low of 65\*\* in **Canberra** to a high of 136\*\* (more than double the ratio in **Canberra**) in **Adelaide**.

**Table 6.48: Admissions<sup>1</sup> with a principal procedure of tonsillectomy and/or adenoidectomy, capital cities, 1995/96**  
*Standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
89**	109**	101	136**	95*	71**	71**	65**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Tonsillectomies involve the removal of a patient's tonsils where, for example, there has been repeated infection of the tonsils over an extended period.

A majority of admissions for these procedures of residents of Australia were of people under 30 years. The largest number and rate of admissions for a tonsillectomy and/or adenoidectomy was for the 5 to 9 year age group, with 779.3 admissions per one hundred thousand females and 750.1 admissions per one hundred thousand males. Up until the age of 34 years, females had the highest admission rates for all except for the 0 to 4 year age group (with 457.0 admissions per 100,000 females compared with 642.9 admissions per 100,000 males) and with substantially higher rates than for males in the age groups from 15 to 24 years. Overall, 55.1 per cent of admissions were females.

## Capital cities

In **Sydney**, the highest standardised admission ratios were recorded for residents in **Northern Beaches** (with an SAR of 119\*\*), **Outer South Western Sydney** (114\*\*) and **Fairfield-Liverpool** (113\*\*). No other Statistical Subdivision (SSD) recorded more admissions for tonsillectomies and/or adenoidectomies than expected than expected from the Australian rates. The lowest ratios were recorded in **Inner Sydney** and **Inner Western Sydney**, both with an SAR of 67\*\*. There were 655 admissions of residents of **Fairfield-Liverpool**, 587 from **Outer Western Sydney** and 567 from **Blacktown-Baulkham Hills**. In **Newcastle**, there were 721 admissions, 12 per cent fewer than expected (an SAR of 88\*\*). In contrast, there were more admissions than expected in **Wollongong** (548 admissions, an SAR of 122\*\*).

Standardised admissions ratios were elevated by more than 20 per cent in **Western Fringe Melbourne** (an SAR of 141\*\*), **South Eastern Inner Melbourne** and **South Eastern Outer Melbourne** (both with 124\*\*), and in **Eastern Outer Melbourne** (121\*\*). Ratios were elevated by more than ten per cent in four other SSDs. The lowest ratios were in **Mornington Peninsula Outer** (an SAR of 77\*\*) and **Eastern Inner Melbourne** (92). The largest numbers of admissions were of residents of **Eastern Outer Melbourne** (684 admissions), **South Eastern Outer Melbourne** (586) and **Western Outer Melbourne** (521). There

were 287 admissions of residents of **Geelong**, 47 per cent more than expected (an SAR of 147\*\*).

There were 47 per cent more admissions for tonsillectomies and/or adenoidectomies than expected in **Albert** (an SAR of 147\*\*) in **Brisbane**, with elevated ratios also in **Ipswich-Moreton** (120\*\*) and **Redcliffe** (110). The lowest ratios were recorded in **Beaudesert** (an SAR of 74) and **Caboolture** (82\*). There were 1,251 admissions of residents of **Brisbane City**, 359 from **Logan** and 302 from **Ipswich-Moreton**. There were more than the expected number of admissions in both **Gold Coast-Tweed Heads** (an SAR of 101 and 530 admissions) and **Townsville-Thuringowa** (116\*; 283 admissions).

The SARs for admissions for tonsillectomies and/or adenoidectomies were elevated for residents of each of the SSDs in **Adelaide**. The highest ratio in **Adelaide** (and the highest capital city ratio in Australia) was recorded for residents of **Northern** (with an SAR of 164\*\*); the lowest was in **Southern** (113\*\*). The largest numbers of admissions were also of residents of **Northern** (1,027 admissions) and **Southern** (604) SSDs.

The highest SAR in **Perth** was in **South West Metropolitan** (an SAR of 108) and the lowest in **Central Metropolitan** (68\*\*). There were 717 admissions of residents of **North Metropolitan** and 508 from **South West Metropolitan**.

Residents of **Hobart** had 242 admissions for tonsillectomies and/or adenoidectomies during 1995/96, 29 per cent fewer than expected from the Australian rates (an SAR of 71\*\*).

The **Darwin** SSDs of **Palmerston-East Arm** (with an SAR of 83 and 24 admissions) and **Darwin City** (68\*\*; 89 admissions) both had fewer admissions for tonsillectomies and/or adenoidectomies in 1995/96 than expected.

There were also fewer than the expected number of admissions in each of the SSDs in **Canberra**, with the highest ratio in **Weston Creek** (an SAR of 81) and the lowest in **Central Canberra** (51\*\*). The largest numbers of admissions were recorded for residents of **Tuggeranong** (136 admissions) and **Belconnen** (114).

# Map 6.41: Admissions for a tonsillectomy and/or adenoidectomy, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for a tonsillectomy and/or adenoidectomy, 1995/96

## State/Territory comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for the procedures of tonsillectomy and/or adenoidectomy (described on the previous text page) varied widely between the States and Territories, including across the non-metropolitan areas of Australia (Table 6.49). The range was from a low of 35\*\* for the non-metropolitan areas of Northern Territory to a high of 141\*\* in the non-metropolitan areas of South Australia. There were 10,042 of these procedures performed as a principal procedure on residents of the non-metropolitan areas.

**Table 6.49: Admissions<sup>1</sup> with a principal procedure of tonsillectomy and/or adenoidectomy, State/Territory, 1995/96**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	89**	109**	101	136**	95*	71**	71**	65**	100
Other major urban centres <sup>2</sup>	100	147**	106	..	..	..	..	..	106**
Rest of State/Territory	101	115**	84**	141**	92*	67**	35**	- <sup>3</sup>	99
Whole of State/Territory	94**	112**	94**	137**	94**	68**	50**	66**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

Standardised admission ratios for admissions for tonsillectomies and/or adenoidectomies were elevated by more than 20 per cent in **Lower Murrumbidgee** (an SAR of 155\*\*), **Central Murrumbidgee** (150\*\*), **Macquarie-Barwon** (127) and **Tweed Heads** (121) in New South Wales. Relatively high ratios were also recorded in **Far West** (an SAR of 119), **Lachlan** (117) and **Hastings** (113). The lowest ratios were recorded for residents in **Murray-Darling** (an SAR of 37\*\*) and **Hunter SD Balance** (57\*\*). There were 318 admissions of residents of **Central Murrumbidgee**, 261 from **Clarence** and 251 from **Hastings**.

In Victoria, ratios were elevated by more than 20 per cent in half of the Statistical Subdivisions (SSDs): the most highly elevated ratios were in **South Wimmera** (with an SAR of 160\*\*), **Northern Loddon-Campaspe** (153\*\*), **Bendigo** (149\*\*), **Macalister-Avon** (141\*\*), **North Goulburn** (138\*\*), **North Wimmera** (138\*\*) and **Wodonga** (136\*\*). The lowest ratios were in **Mildura** (an SAR of 68\*\*) and **South Ovens-Murray** (69). The largest numbers of admissions for tonsillectomies and/or adenoidectomies were of residents of **Bendigo** (198 admissions), **East Barwon** (181) and **Ballarat** (163).

In Queensland, only four SSDs had elevated SARs; they were **Rockhampton** (with an SAR of 138\*\*), **Mackay** (103), **Fitzroy SD Balance** (102) and **Gladstone** (101). The lowest ratios were in **Far North SD Balance** (an SAR of 54\*\*) and **Bundaberg** (65\*\*). There were 348 admissions of residents of **Darling Downs**, 230 from **Moreton SD Balance** and 214 from **Wide Bay-Burnett SD Balance**.

All but three of the 16 SSDs in South Australia had elevated SARs for admissions for tonsillectomies and/or adenoidectomies. The most highly elevated ratios were recorded for **Flinders Ranges** (with an SAR of 201\*\*) and the highest of any non-metropolitan SSD), **Lincoln** (178\*\*), **Lower South East** (170\*\*), **Onkaparinga** (160\*\*) and **Murray Mallee** (152\*\*). The lowest ratio was in **Kangaroo Island** SSD (an SAR of 70). The largest numbers of admissions were recorded for residents of **Lower South East** (136 admissions), **Onkaparinga** (94) and **Murray Mallee** (91).

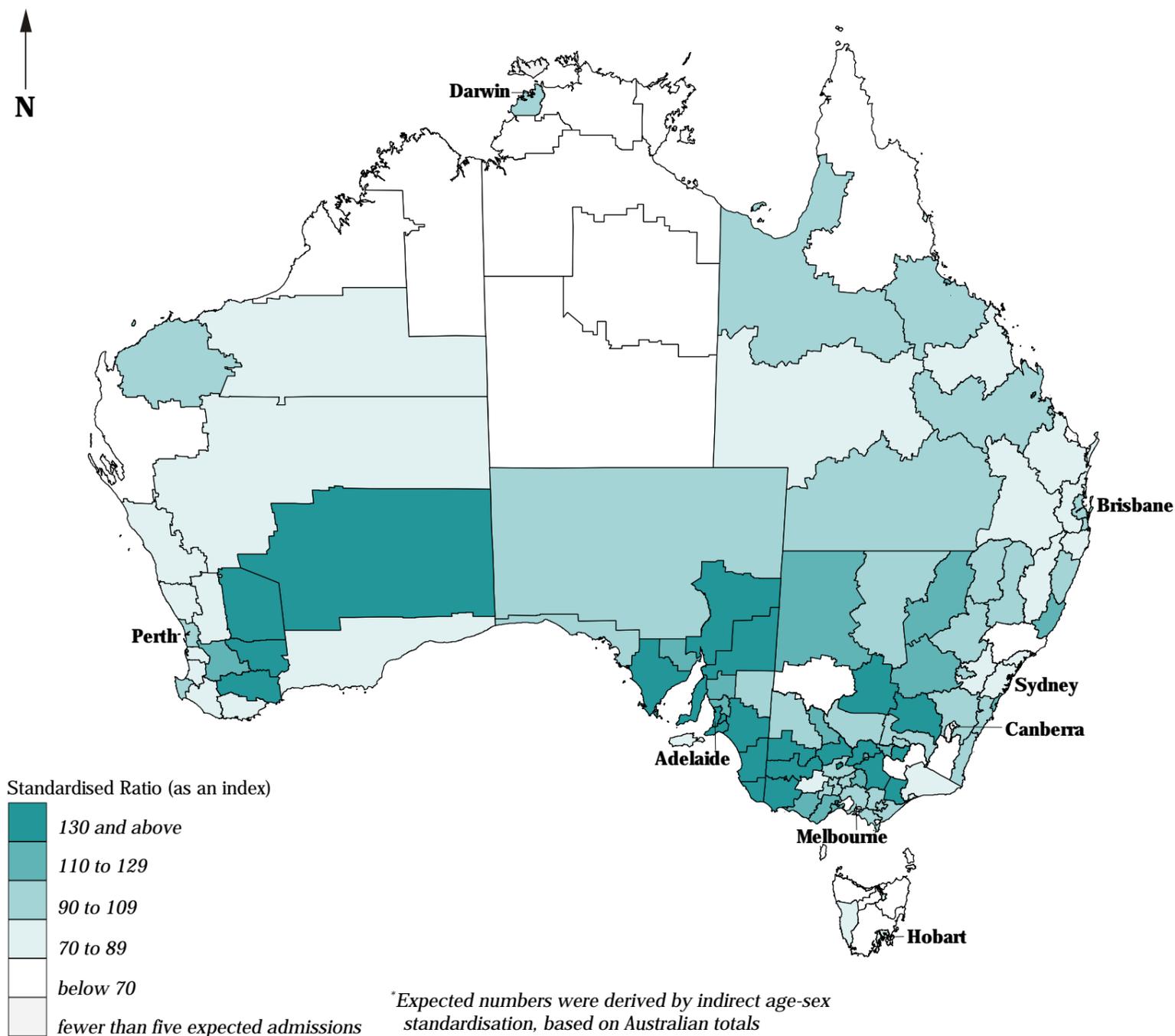
In Western Australia, there were more admissions than expected in each of **Pallinup** (with an SAR of 190\*\* and the second highest of any non-metropolitan SSD), **Lakes** (177\*\*), **Campion** (159\*\*), **Lefroy** (152\*\*) and **Hotham** (129). The lowest ratios were in **Ord** (an SAR of 10\*\*) and **Fitzroy** (37\*\*). There were more than 100 admissions for tonsillectomies and/or adenoidectomies in only **Lefroy** (127 admissions) and **Preston** (105).

Admissions for tonsillectomies and/or adenoidectomies in Tasmania were at least 25 per cent below expected levels in every non-metropolitan SSD. The highest ratios were in **Launceston** (with an SAR of 75\*\*) and **Burnie-Devonport** (72\*\*), while the lowest was in **Central North** (37\*\*). Residents from **Launceston** and **Burnie-Devonport** recorded 133 and 102 admissions respectively.

In the Northern Territory, there were fewer admissions than expected for tonsillectomies and/or adenoidectomies during 1995/96 in each of the SSDs. The highest ratios were recorded for residents in **Darwin Rural Areas** (with an SAR of 91) and **Lower Top End NT** (47\*\*), with the lowest in **Barkly** (13\*\*). There were 25 admissions of residents of **Darwin Rural Areas**, 18 from **Lower Top End NT**, and none from **Bathurst-Melville**.

## Map 6.42: Admissions for a tonsillectomy and/or adenoidectomy, Australia, 1995/96

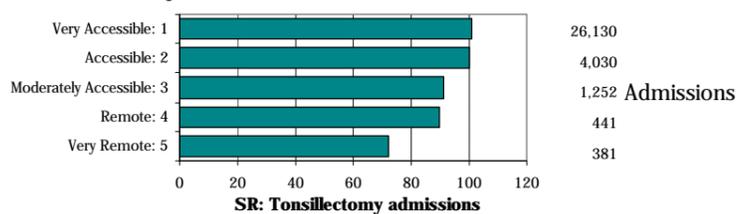
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions involving a tonsillectomy and/or adenoidectomy also decrease with increasing remoteness. There are three levels in the distribution, with the highest ratios in the Very Accessible and Accessible ARIA categories (SARs of 101 and 100, respectively), through lower ratios of 91 and 90 in the Moderately Accessible and Remote categories, to the lowest ratio (an SAR of 72) in the Very Remote category.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions of children aged 0 to 9 years for a myringotomy, 1995/96

## Capital city comparison (Australia as the Standard)

There were 17,457 admissions for a myringotomy procedure (described below) performed as a principal procedure on children aged from 0 to 9 years and resident in the capital cities (and an additional 1,443 on young residents of the other major urban centres). Over half (60.9 per cent) of these admissions for residents of capital cities were boys. Standardised admission ratios (SARs) for this procedure varied markedly between the capital cities (Table 6.50), from a low of 59\*\* in **Canberra** to a highly elevated 205\*\* in **Adelaide** (more than 50 per cent above the next highest ratio).

**Table 6.50: Admissions<sup>1</sup> of children aged 0 to 9 years with a principal procedure of myringotomy, capital cities, 1995/96**  
*Standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
78**	125**	103	205**	130**	119**	84	59**	112**

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

A myringotomy (incision into the eardrum, or tympanic membrane) is usually performed to relieve pressure and allow for drainage of fluid in the middle ear. Ventilation is maintained by putting a small tube (or grommet) into the incision.

As the majority (86.0 per cent) of admissions of Australian residents for this procedure were of children under 10 years of age, the SSD data has been standardised to the totals for those ages.

Children aged from 0 to 4 years accounted for just over half (54.6 per cent) of the admissions for this procedure, with most of the remainder (31.4 per cent) in the 5 to 9 year age group. Males accounted for over half (58.7 per cent) of all admissions for myringotomies and slightly more (62.0 per cent) in the 0 to 4 year age group.

## Capital cities

In **Sydney**, the standardised admission ratio for myringotomy procedures was elevated by almost 50 per cent above the expected level in **Northern Beaches** (an SAR of 147\*\*), considerably above that in next ranked **Eastern Suburbs** (109) and **Inner Western Sydney** (106). The lowest ratios for this procedure were recorded for 0 to 9 year olds in **Central Western Sydney** (an SAR of 48\*\*) and **Fairfield-Liverpool** (51\*\*). The largest numbers of admissions were of children in **St George-Sutherland** (411 admissions) and **Blacktown-Baulkham Hills** (403). In both **Newcastle** (an SAR of 62\*\*; 403 admissions) and **Wollongong** (85\*\*; 313 admissions) there were fewer admissions than expected from the Australian rates.

The highest SARs in **Melbourne** for myringotomy procedures were recorded for children in the high socioeconomic status Statistical Subdivisions (SSDs) of **Southern Inner Melbourne** (an SAR of 190\*\* and almost twice the number expected), **Southern Outer Melbourne** (170\*\*), **Eastern Outer Melbourne** (157\*\*) and **Eastern Fringe Melbourne** (151\*\*). The lowest ratios were recorded in **Northern Inner Melbourne** (an SAR of 79) **Western Outer Melbourne** (81\*\*). There were 706 admissions of children aged from 0 to 9 years from **Eastern Outer Melbourne**, 588 from **South Eastern Outer Melbourne** and 381 from **Northern Outer Melbourne**. In **Geelong**, there

were 205 admissions, 33 per cent more than expected (an SAR of 133\*\*).

In **Brisbane**, the highest ratios for admissions for a myringotomy procedure were recorded for children in **Ipswich-Moretton** (with an SAR of 138\*\*), **Pine Rivers** (121\*\*), **Brisbane City** (110\*\*) and **Redland** (104). All other SSDs had fewer admissions than expected. The lowest ratio was in **Caboolture** (an SAR of 64\*\*). There were 1,027 admissions of children living in **Brisbane City**, 293 from **Ipswich-Moretton** and 230 from **Logan**. There were fewer admissions than expected in both **Gold Coast-Tweed Heads** (an SAR of 87\*\* and 360 admissions) and **Townsville-Thuringowa** (99; 189 admissions).

There were highly elevated SARs for admissions for a myringotomy procedure of 0 to 9 year old children in each of **Adelaide's** SSDs; the highest ratios were in **Eastern** (an SAR of 234\*\*), **Southern** (207\*\*) and **Northern** (206\*\*) – the three highest capital city SSD ratios in Australia – and the lowest was in **Western** (171\*\* - the fifth highest). There were 1,042 admissions of children from **Northern** and 854 from **Southern**.

In **Perth**, there were substantially more admissions of 0 to 9 year olds for a myringotomy procedure than expected in **North Metropolitan** (an SAR of 154\*\*) and **South West Metropolitan** (136\*\*). **Central Metropolitan** (with an SAR of 99) was the only SSD with fewer admissions than expected. The largest numbers of admissions were of residents of **North Metropolitan** (808 admissions) and **South West Metropolitan** (513).

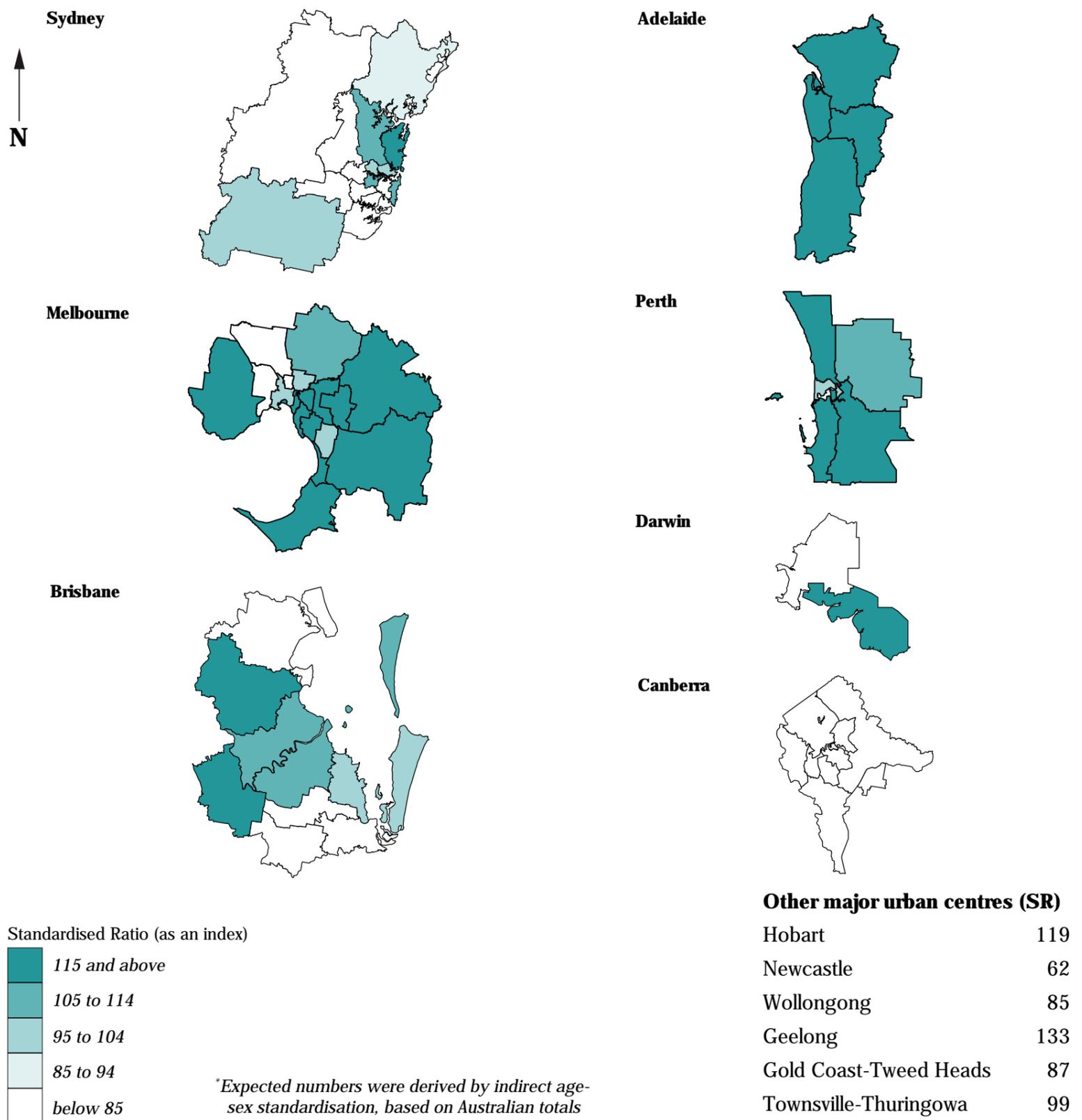
There were 317 admissions of children aged from 0 to 9 years living in **Hobart** for a myringotomy, 19 per cent more than expected (an SAR of 119\*\*).

In **Darwin**, there were 38 per cent more admissions in **Palmerston-East Arm** than expected (an SAR of 138\* and 38 admissions) and 30 per cent fewer than expected in **Darwin City** (an SAR of 70\* ; 75 admissions).

There were substantially fewer admissions than expected in each SSD in **Canberra**. The ratios ranged from SARs of 70\*\* in **Belconnen** and 64\*\* in **Central Canberra** to an SAR of 44\*\* in **Weston Creek**. There were 105 admissions of 0 to 9 year old children in **Tuggeranong** and 79 from **Belconnen**.

# Map 6.43: Admissions of children aged 0 to 9 years for a myringotomy, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions of children aged 0 to 9 years for a myringotomy, 1995/96

## State/Territory comparison (Australia as the Standard)

There were 6,989 procedures for myringotomy (described on the previous text page) performed as a principal procedure on children aged from 0 to 9 years and resident in the non-metropolitan areas of Australia. As was the case for the capital cities, standardised admission ratios (SARs) for these procedures varied markedly across the non-metropolitan areas (Table 6.51), from lows of 44\*\* in the Northern Territory and 59\*\* in Queensland, to a highly elevated 163\*\* in South Australia.

**Table 6.51: Admissions<sup>1</sup> of children aged 0 to 9 years with a principal procedure of myringotomy, State/Territory, 1995/96**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	78**	125**	103	205**	130**	119**	84	59**	112**
Other major urban centres <sup>2</sup>	70**	133**	91*	..	..	..	..	..	85**
Rest of State/Territory	64**	116**	59**	163**	82**	68**	44**	- <sup>3</sup>	82**
Whole of State/Territory	73**	123**	82**	192**	114**	88**	60**	61**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See Data sources, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

In New South Wales, only two of the Statistical Subdivisions (SSDs) in the non-metropolitan areas recorded an SAR of greater than 100; they were **Illawarra SD Balance** (with an SAR of 118\*) and **Murray-Darling** (104). The lowest ratios were recorded for 0 to 9 year old children in **Lower Murrumbidgee** (an SAR of 27\*\*) and **Clarence** and **Queanbeyan** (both with 36\*\*). The largest numbers of admissions for a myringotomy procedure were of children from **Illawarra SD Balance** (214 admissions), **Central Macquarie** (142) and **Richmond Tweed SD Balance** (118).

The most highly elevated ratio in Victoria was recorded in **Bendigo** (an SAR of 177\*\*), with 77 per cent more admissions of children aged 0 to 9 years a myringotomy than expected. Elevated ratios were also recorded in **South Wimmera** (an SAR of 154\*\*) and **North Loddon-Campaspe** and **North Goulburn** (both with 141\*\*). The lowest ratio was in **West Barwon** (an SAR of 59\*\*). There were 181 admissions of children resident in **Bendigo**, 172 from **Ballarat** and 167 from **East Barwon**.

All of the SSDs in Queensland had fewer admissions than expected of children aged of 0 to 9 years for a myringotomy procedure. The highest ratios were in **Rockhampton** (an SAR of 98) and **Cairns** (90). SARs were more than 50 per cent lower than expected in six SSDs, with the lowest ratios in **Central West** (an SAR of 22\*\*) and **Bundaberg** (24\*\*). There were more than 100 admissions in the three SSDs of **Darling Downs** (230 admissions), **Cairns** (143) and **Moreton SD Balance** (138).

In South Australia, only **Pirie** had fewer admissions of children for a myringotomy procedure than were expected (an SAR of 89). Of the elevated SARs, the most highly elevated were in **West Coast** (an SAR of 285\*\* and the highest ratio at the SSD level in Australia; with 30 admissions, when between 10 and 11 were expected for a population of this size and composition), **Whyalla** (223\*\*), **Riverland** (198\*\*) and **Lincoln** (193\*\*). There were 100 admissions of children living in **Riverland** and **Lower South East**, and 93 from **Barossa**.

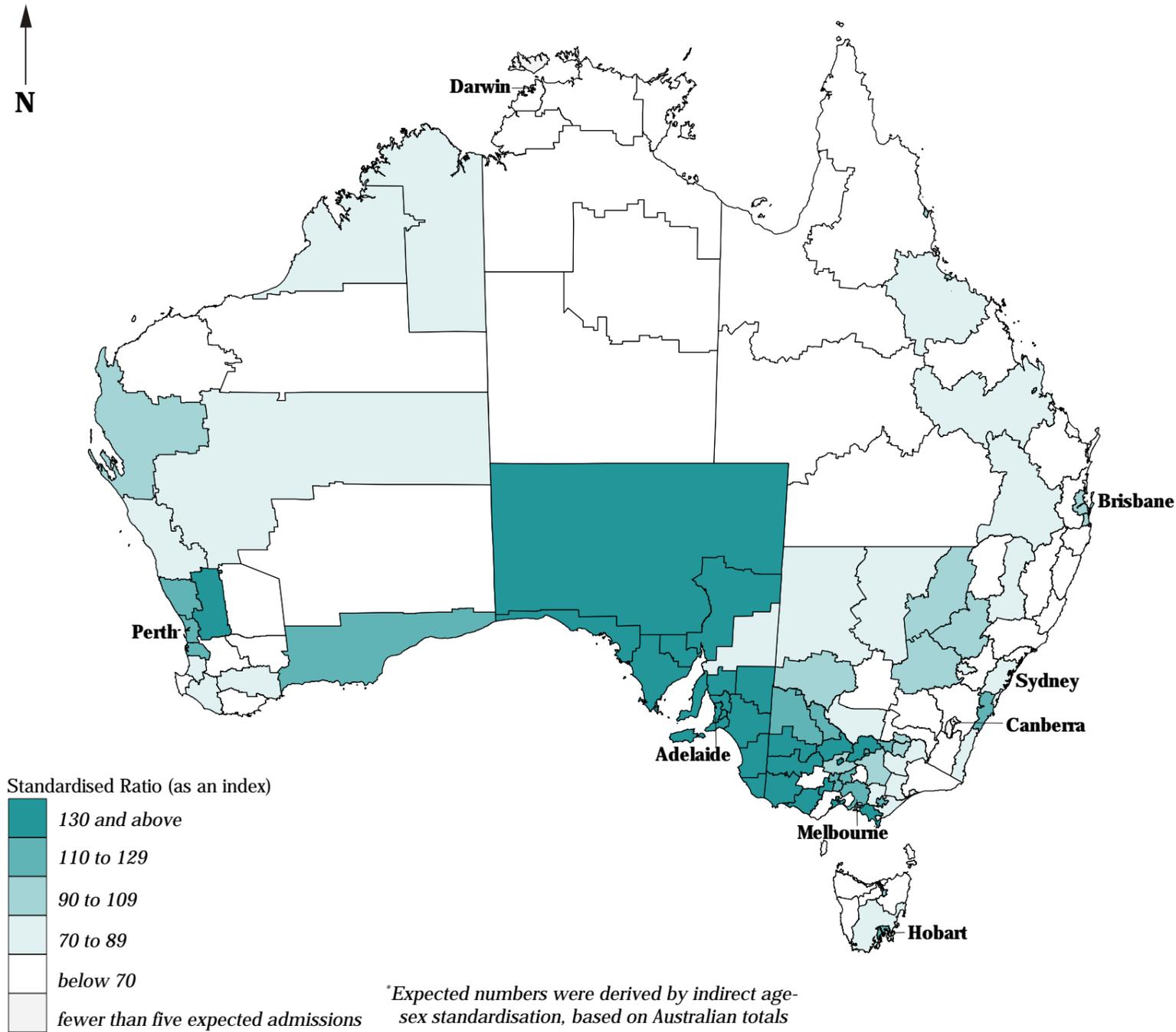
In Western Australia, SARs for admissions of 0 to 9 year old children for a myringotomy procedure were elevated in **Avon** (with an SAR of 136\*), **Johnston** (120), **Dale** (118) and **Moore** (112). The lowest ratios were recorded in **Campion** (an SAR of 45\*\*) and **Lefroy** (54\*\*). Numbers of admissions were generally low throughout the State, with the largest numbers from **Preston** (91 admissions), **Dale** (89) and **Greenough River** (66).

Standardised admission ratios below the levels expected from the Australian rates were recorded in each of the non-metropolitan SSDs in Tasmania. The highest ratios were recorded in **Launceston** (an SAR of 99) and **Southern** (70\*), and the lowest ratio was in **North Western Rural** (32\*\*). In 1995/96 the largest number of admissions were of children living in **Launceston** (139 admissions).

In the Northern Territory, only **Bathurst-Melville** SSD had an elevated ratio for admissions of children for a myringotomy procedure, an SAR of 267\*\* (10 admissions, when only four were indicated for a population of this size and composition); this was the second highest non-metropolitan ratio at the SSD level in Australia. Of the other SSDs, the highest ratios were in **Darwin Rural Areas** (an SAR of 56\*) and **Lower Top End NT** (51\*\*), and the lowest was in **Barkly** (24\*\*). The largest number of admissions was of 0 to 9 year old children from **Central NT**, with 23 admissions.

# Map 6.44: Admissions of children aged 0 to 9 years for a myringotomy, Australia, 1995/96

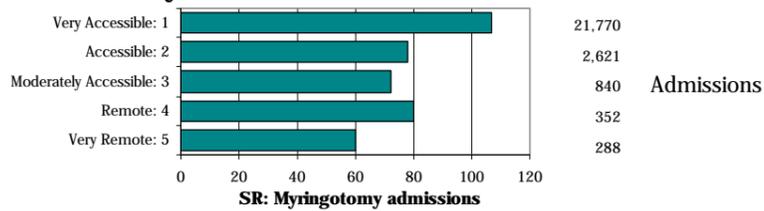
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Elevated standardised admission ratios for admissions involving a myringotomy decrease notably with increasing remoteness. The highest ratio was recorded for residents of the Very Accessible ARIA category, an SR of 107. Ratios dropped off across the remaining categories to the lowest SAR (60) in the Very Remote category, with a higher SAR of 80 in the Remote areas.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions of females aged 15 to 44 years for a Caesarean section, 1995/96

## Capital city comparison (Australia as the Standard)

There were 29,965 Caesarean sections (described below) performed as a principal procedure on 15 to 44 year old female residents of the capital cities and an additional 3,070 on females resident in the other major urban centres. Most capital cities had near average standardised admission ratios (SARs) for this variable, with **Brisbane** (with the highest SAR of 118\*\*), **Darwin** (115\*) and **Adelaide** (107\*\*) recording more procedures than were expected from the Australian rates.

**Table 6.52: Admissions<sup>1</sup> of females aged 15 to 44 years with a principal procedure of Caesarean section, capital cities, 1995/96**  
*Standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
92**	92**	118**	107**	92**	100	115*	90**	97**

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Caesarean sections are performed to intervene in the birth process where the medical practitioner attending the birth perceives that the life of the mother or child is at risk without such an intervention. As Caesarean sections are generally performed on women aged from 15 to 44 years, this age range has been used in standardising the data.

## Capital cities

There were more admissions of 15 to 44 year old female residents of **Sydney** for a Caesarean section than expected in **Gosford-Wyong** (an SAR of 133\*\*), **St George-Sutherland** (111\*\*), **Northern Beaches** (106) and **Blacktown-Baulkham Hills** (102). The other Statistical Subdivisions (SSDs) had lower than expected ratios, the lowest being in **Eastern Suburbs** (an SAR of 63\*\*) and **Inner Sydney** (67\*\*). There were 1,148 admissions of females of this age resident in **St George-Sutherland**, 948 from **Blacktown-Baulkham Hills** and 801 from **Fairfield-Liverpool**. In **Newcastle**, there were 1,141 admissions (an SAR of 100), and in **Wollongong**, there were 554 admissions (an SAR of 87\*\*).

In **Melbourne**, the most highly elevated SAR was recorded for women in **Western Fringe Melbourne** (an SAR of 147\*\*), with lower ratios in **Eastern Fringe Melbourne** (106), **Northern Outer Melbourne** (105) and **Northern Fringe Melbourne** (103). The lowest ratios were in **Central Melbourne** (an SAR of 56\*\*) and **Eastern Middle Melbourne** (76\*\*). The largest numbers of admissions for a Caesarean section were of 15 to 44 year old females in **Eastern Outer Melbourne** (814 admissions), **Western Outer Melbourne** (683) and **South Eastern Outer Melbourne** (649). There were 225 admissions of women in this age group in **Geelong**, 22 per cent fewer than expected (an SAR of 78\*\*).

In **Brisbane**, ratios for admissions for a Caesarean section were elevated in all but one SSD. The highest ratios were recorded in **Pine Rivers** (an SAR of 149\*\*), **Redland** (127\*\*) and **Albert** (124\*). Only **Redcliffe** (84) had a ratio below the level expected from the Australian rates. The largest numbers of admissions were of females resident in **Brisbane City** (2,481 admissions), **Logan** (515) and **Pine Rivers** (425). There were more admissions than expected in **Gold Coast-Tweed Heads** (an SAR

of 110\*\*; 886 admissions) and fewer than expected in **Townsville-Thuringowa** (97; 346 admissions).

There were elevated ratios for admissions for a Caesarean section in **Northern SSD** in **Adelaide** (an SAR of 126\*\*, 26 per cent more admissions than expected from the Australian rates) and **Southern** (118\*\*). The lowest ratio was recorded for females in **Western** (an SAR of 77\*\*). There were 1,139 admissions of 15 to 44 year old women from **Northern** and another 912 from **Southern**.

The highest SARs for admissions for a Caesarean section recorded at the SSD level in **Perth** were in **South East Metropolitan** (with an SAR of 114\*\*) and **South West Metropolitan** (108\*). The lowest ratio was in **Central Metropolitan** (an SAR of 61\*\*). There were 839 admissions of 15 to 44 year old females from **North Metropolitan** and another 806 from **South East Metropolitan**.

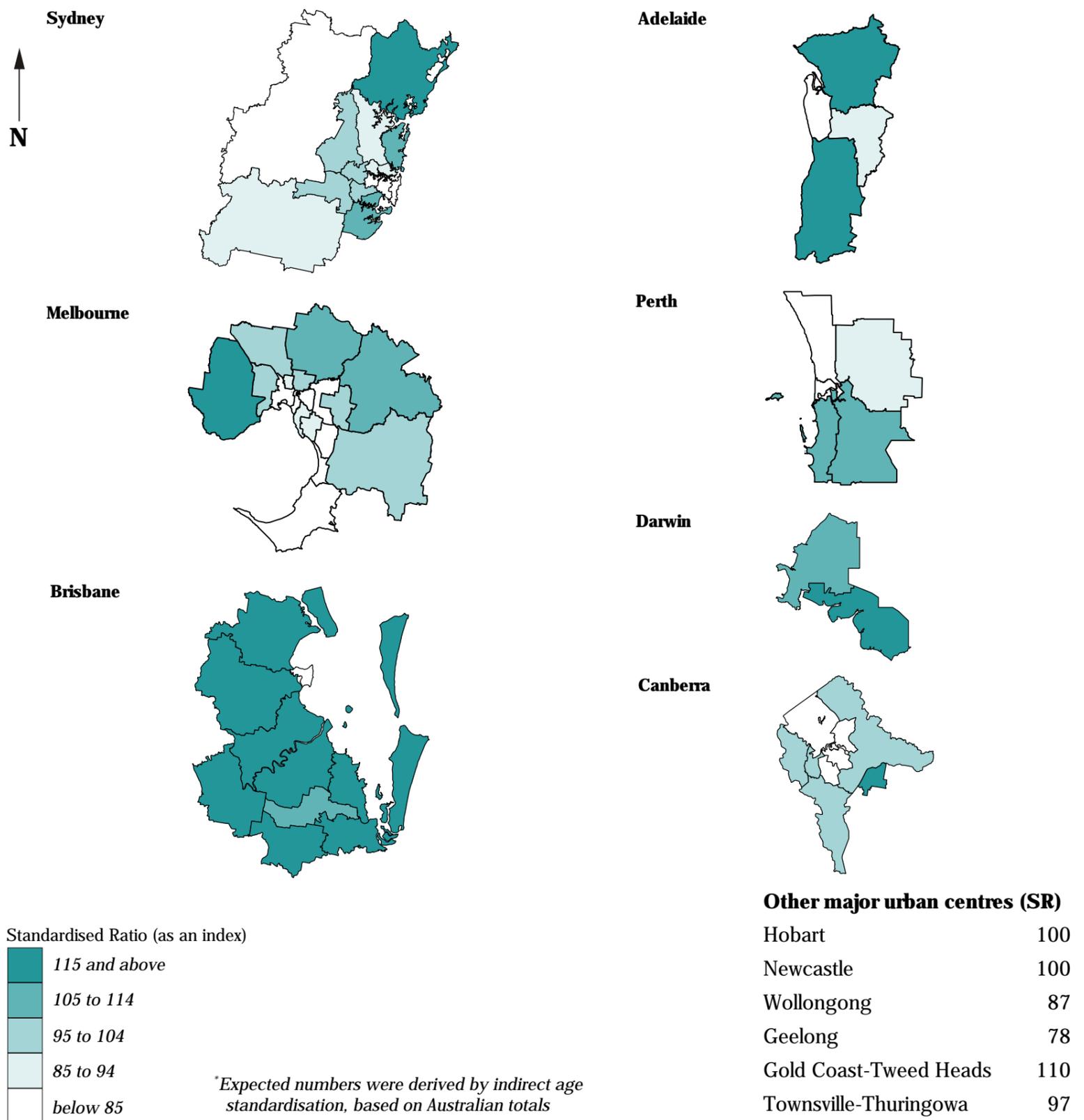
There were 487 admissions for a Caesarean section of female residents of **Hobart** in 1995/96; this was the number of admissions expected from the Australian rates for a population with this number of 15 to 44 year old females (an SAR of 100).

There were more admissions for a Caesarean section than were expected for females resident in both **Palmerston-East Arm** (an SAR of 169\*\*; 67 admissions) and **Darwin City** (105; 219 admissions).

In **Canberra**, just one of the ratios for admissions for a Caesarean section was above 100; an SAR of 102 was recorded in **Outer Canberra**. **Tuggeranong** had an SAR of 100 and there were marginally fewer admissions than expected of females of **Weston Creek** (99). The lowest ratio was recorded for females aged from 15 to 44 years and resident in **Central Canberra** (an SAR of 66\*\*). There were 291 admissions of females resident in **Tuggeranong** and 185 from **Belconnen**.

# Map 6.45: Admissions of females aged 15 to 44 years for a Caesarean section, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions of females aged 15 to 44 years for a Caesarean section, 1995/96

## State/Territory comparison (Australia as the Standard)

There were 13,966 Caesarean sections (described on the previous text page) performed as a principal procedure on female residents of the non-metropolitan areas of Australia. There were elevated standardised admission ratios (SARs) for this variable in most of the non-metropolitan areas other than in Western Australia (with an SAR of 99), with the most highly elevated ratios in the Northern Territory (142\*\*) and South Australia (123\*\*).

**Table 6.53: Admissions<sup>1</sup> of females aged 15 to 44 years with a principal procedure of Caesarean section, State/Territory, 1995/96**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	92**	92**	118**	107**	92**	100	115*	90**	97**
Other major urban centres <sup>2</sup>	95*	78**	106	..	..	..	..	..	97
Rest of State/Territory	105**	107**	109**	123**	99	104	142**	- <sup>3</sup>	108**
Whole of State/Territory	96**	95**	112**	111**	94**	102	130**	87**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

The majority of Statistical Subdivisions (SSDs) in the non-metropolitan areas of New South Wales had more admissions for a Caesarean section than were expected from the Australian rates. The most highly elevated ratios were in **Lower Murrumbidgee** (an SAR of 146\*\*), **Lachlan** (142\*\*), **Murray-Darling** (137), **North Central Plain** (134\*\*) and **Central Tablelands** (130\*\*). The lowest ratios were recorded in **Northern Tablelands** (an SAR of 70\*\*), **Richmond-Tweed SD Balance** (84\*\*) and **Illawarra SD Balance** (84\*). The largest numbers of admissions of females aged from 15 to 44 years for a Caesarean section were of residents of **Clarence** (361 admissions) and **Richmond-Tweed SD Balance** (315).

Elevated SARs for admissions for a Caesarean section in Victoria were recorded for **North Wimmera** (an SAR of 140\*\*), **Shepparton-Mooroopna** (139\*\*), **South Wimmera** (138\*\*), **South Loddon-Campaspe** (135\*\*), **La Trobe Valley** (131\*\*) and **North Goulburn** (130\*\*). The lowest ratios were in **Bendigo** (an SAR of 78\*\*) and **Wodonga** (79\*). The largest numbers of admissions for women aged from 15 to 44 years were of residents of **La Trobe Valley** (240 admissions), **Ballarat** (213) and **East Barwon** (170).

Standardised admission ratios in Queensland were elevated by more than 20 per cent in **Far North SD Balance** (an SAR of 139\*\*), **Gladstone** (132\*\*), **Darling Downs** (124\*\*), **Cairns** (123\*\*) and **Central West** (123). The lowest standardised admission ratio for admissions for a Caesarean section was in **Sunshine Coast** (an SAR of 68\*). The largest numbers of admissions were of residents of **Darling Downs** (614 admissions), **Wide Bay-Burnett SD Balance** (417) and **Cairns** (382).

There were almost twice the expected number of admissions of females aged from 15 to 44 years for a Caesarean section in **West Coast** (with an SAR of 198\*\* and 30 admissions; the second highest ratio in any non-metropolitan SSD in Australia) SSD in South Australia, with highly elevated ratios also in the **Flinders Ranges** (172\*\*) and **Pirie** (155\*\*) SSDs. Only **Whyalla**

(with an SAR of 98) and **Kangaroo Island** (71) reported fewer admissions than expected from the Australian rates. The largest numbers of admissions were recorded for females resident in **Lower South East** (128 admissions), **Barossa** (119) and **Murray Mallee** (97) SSDs.

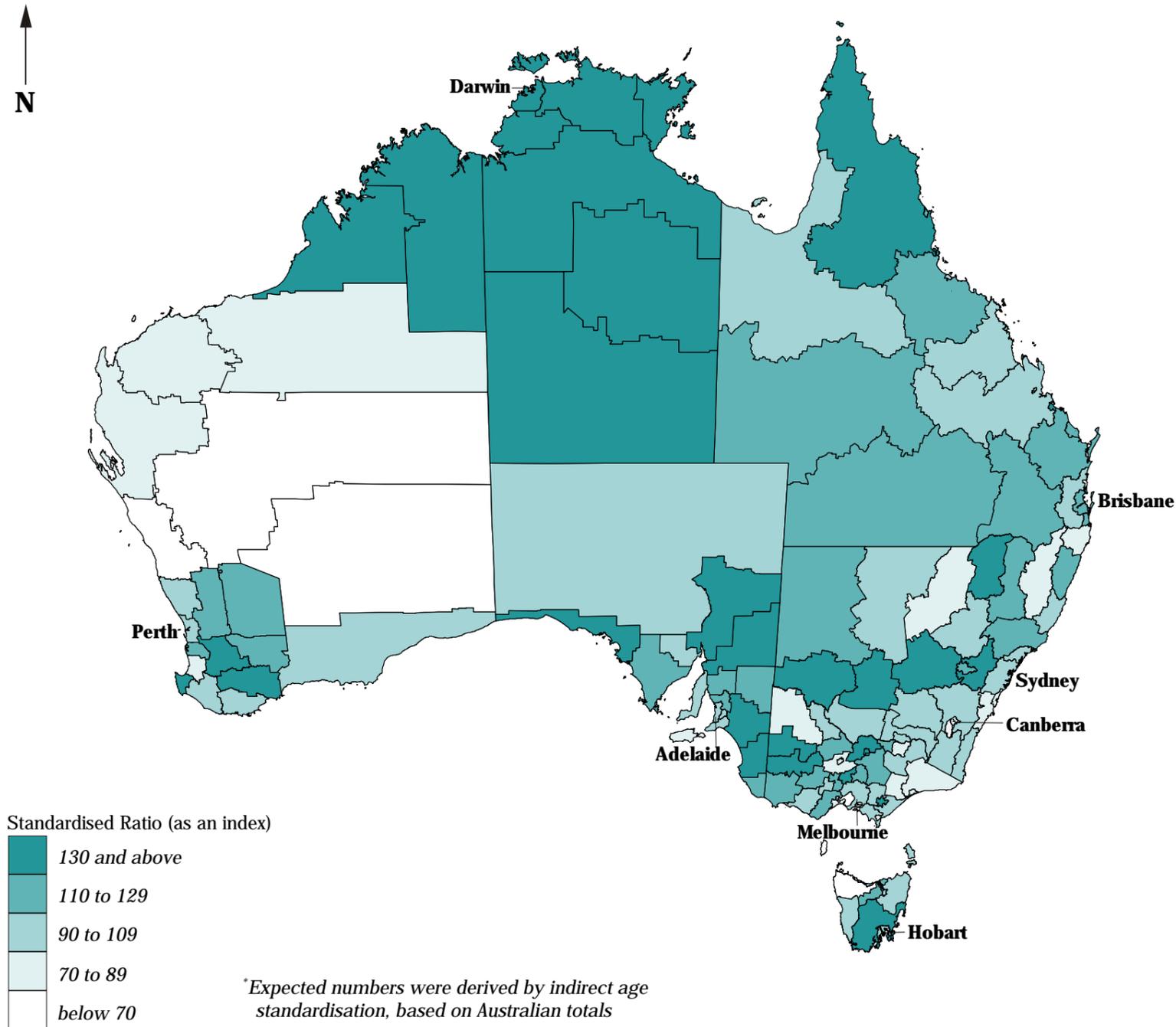
Highly elevated ratios for admissions for Caesarean section were recorded for females aged from 15 to 44 years in **Pallinup** (an SAR of 185\*\*), **Fitzroy** (130\*), **Ord** (130), **Hotham** (131) and **Vasse** (138\*\*) in Western Australia. Elevated ratios were also recorded in **Dale** (an SAR of 124\*). The lowest ratio was in **Carnegie** (an SAR of 38\*\*). Only the near **Perth** SSDs of **Preston** (148 admissions) and **Dale** (147) reported more than 100 admissions during 1995/96.

In Tasmania, the highest ratio was in **Southern** (an SAR of 142\*\*) and the lowest was in **North Western Rural** (66\*\*). These were the only non-metropolitan SSDs with ratios of statistical significance. There were 247 admissions for a Caesarean section of women aged from 15 to 44 years and resident in **Launceston** and 192 from **Burnie-Devonport**.

The most highly elevated ratios in the Northern Territory were in **Bathurst-Melville** (an SAR of 233\*\* and 13 admissions; this was the highest ratio for any non-metropolitan SSD in Australia) and **Alligator** (155\*; 30 admissions). There were elevated ratios in all of the other SSDs, with the lowest ratio occurring in **Daly** (an SAR of 131). The largest number of admissions were from **Central NT** (151 admissions; an SAR of 133\*\*) and **Lower Top End NT** (67 admissions; an SAR of 136\*).

## Map 6.46: Admissions of females aged 15 to 44 years for a Caesarean section, Australia, 1995/96

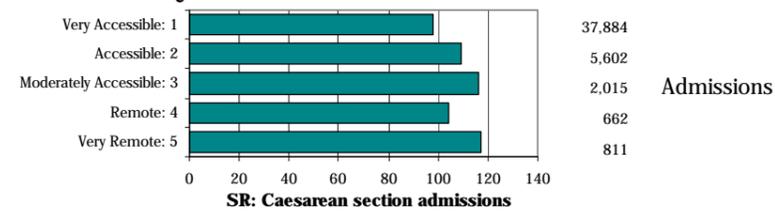
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

### Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions of females aged from 15 to 44 years involving a Caesarean section ranged from an SAR of 98 in the Very Accessible ARIA category to elevated SARs of 116 and 117 in the Moderately Accessible and Very Remote categories, respectively. A lower ratio (104) was recorded for residents of areas in the Remote category.

Source: Calculated on ARIA classification, DHAC  
National Social Health Atlas Project, 1999

# Admissions of females aged 30 years and over for an hysterectomy, 1995/96

## Capital city comparison (Australia as the Standard)

There were 19,868 hysterectomies (described below) performed as a principal procedure on female residents aged 30 years and over of the capital cities and an additional 2,610 on females resident in the other major urban centres. Most capital cities had either low or near average standardised admission ratios (SARs) for this variable, with the most highly elevated ratio being recorded for females in **Darwin** (with an SAR of 135\*\*); other elevated ratios were in **Hobart** (with an SAR of 115\*\*) and **Brisbane** (106\*\*).

**Table 6.54: Admissions<sup>1</sup> of females aged 30 years and over with a principal procedure of hysterectomy, capital cities, 1995/96**  
*Standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
86**	91**	106**	102	100	115**	135**	87**	94**

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Hysterectomies are performed for a number of reasons including the presence of fibroids, uterine cancer and excessive bleeding.

The number of women undergoing hysterectomy increases with age, with the largest number and rate in the 40 to 44 and 45 to 49 year age groups (40 to 44 years: 7,128 admissions and a rate of 1,067.8 per one hundred thousand females; 45 to 49 years: 7,406 admissions and a rate of 1176.3 per one hundred thousand females). As relatively few hysterectomies are performed on women younger than 30 years, the age range used in standardising this data is for women aged from 30 years.

## Capital cities

There were elevated SARs in **Sydney** for admissions of females aged 30 years and over for an hysterectomy, in **Outer South Western Sydney** (an SAR of 124\*\*) and **Gosford-Wyong** (117\*\*). The lowest ratios were recorded in **Inner Sydney** (an SAR of 66\*\*), **Eastern Suburbs** (72\*\*), **Inner Western Sydney** (73\*\*) and **Central Western Sydney** (76\*\*). There were 695 admissions for an hysterectomy of women from **St George-Sutherland**, 607 from **Blacktown-Baulkham Hills** and 581 from **Gosford-Wyong**. Both **Newcastle** (an SAR of 132\*\*; 1,132 admissions) and **Wollongong** (112\*\*; 511 admissions) had more admissions for an hysterectomy than were expected from the Australian rates.

In **Melbourne**, there were more admissions of women for hysterectomies than expected in five Statistical Subdivisions (SSDs), with the highest ratios in **Western Fringe Melbourne** (an SAR of 177\*\* and 343 admissions, the highest ratio in any metropolitan SSD) and **Western Outer Melbourne** (110\*). Significantly low ratios were recorded for admissions for hysterectomies of females aged 30 years and over in **Central Melbourne** (an SAR of 64\*\*), **Eastern Inner Melbourne** and **Northern Inner Melbourne** (both with 71\*\*), and **Southern Inner Melbourne** (72\*\*). More than 500 admissions were recorded of women resident in **Eastern Outer Melbourne** (534 admissions) and **Western Outer Melbourne** (519). In **Geelong**, there were 204 admissions, slightly more than expected (an SAR of 103).

SARs for admissions for hysterectomies in **Brisbane** were higher than expected in **Caboolture** (an SAR of 134\*\*), **Pine Rivers** (125\*\*) and **Albert** (122). The lowest ratios were in **Beaudesert** (an SAR of 90) and **Ipswich-Moreton** (94). There were 1,507 and 275 admissions for a hysterectomy of women resident in **Brisbane City** and **Logan** respectively. There were fewer admissions than expected in **Gold Coast-Tweed Heads** (an SAR of 97 and 628 admissions), and more than expected in **Townsville-Thuringowa** (114\*; 230 admissions).

Both **Northern** (with an SAR of 121\*\*) and **Southern** (110\*) in **Adelaide** had more admissions of females aged 30 years and over for hysterectomies than were expected from the Australian rates. Low ratios, below the level expected from the Australian rates, were recorded in **Eastern** (with an SAR of 80\*\*) and **Western** (83\*\*). There were 739 admissions of women from **Northern** and 690 from **Southern**.

The highest ratios in **Perth** were recorded in **South West Metropolitan** (with an SAR of 116\*\*) and **South East Metropolitan** (112\*\*), and the lowest ratio was in **Central Metropolitan** (64\*\*). The largest numbers of admissions of females aged 30 years and over for an hysterectomy were from **North Metropolitan** (679 admissions) and **South East Metropolitan** (567).

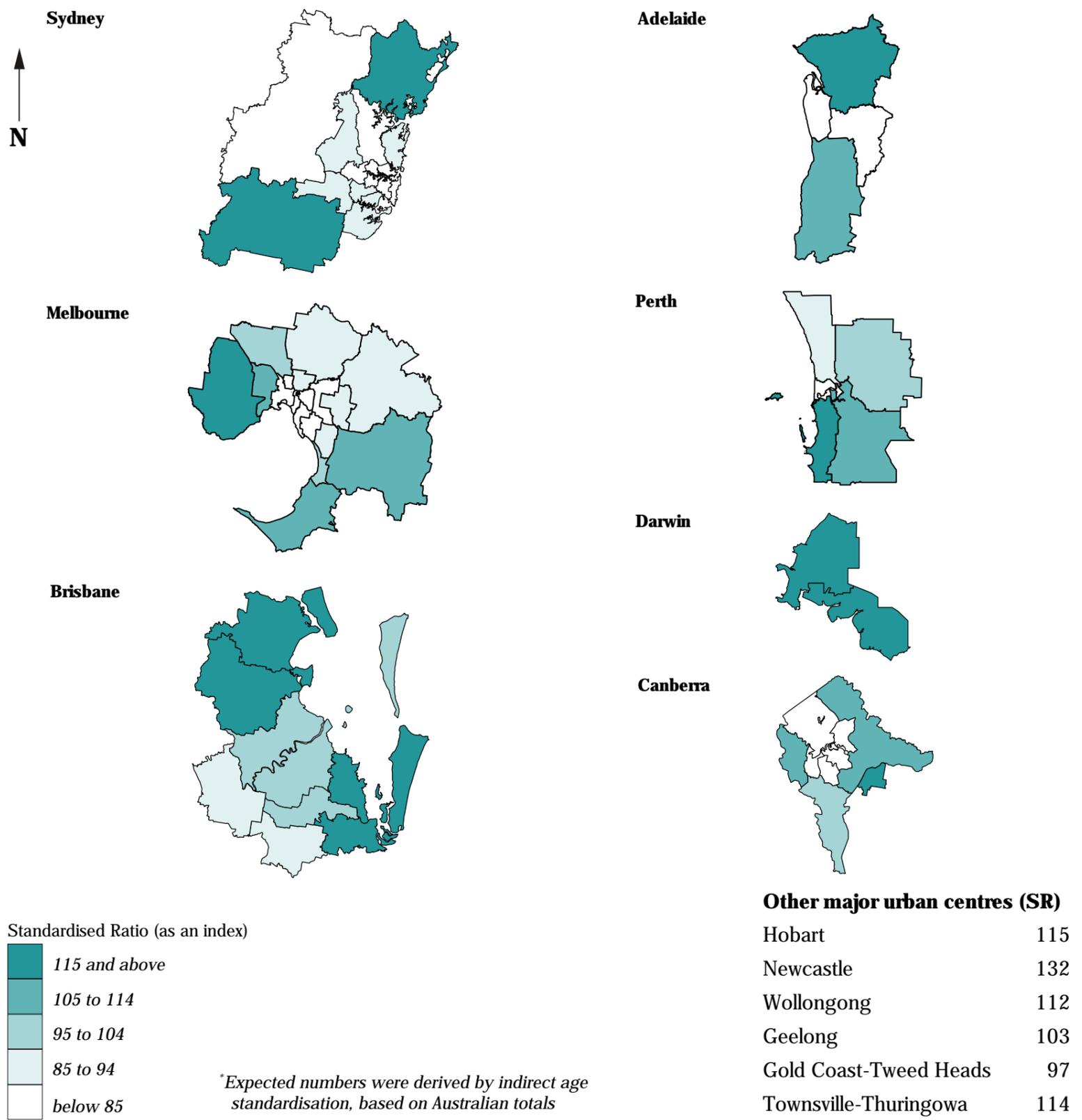
There were 420 admissions for hysterectomies of female residents of **Hobart** aged 30 years and over in 1995/96, 15 per cent more than expected (an SAR of 115\*\*).

There were more admissions of females for an hysterectomy than expected from the Australian rates in both **Palmerston-East Arm** (an SAR of 153\*; 28 admissions) and **Darwin City** (133\*\*; 156 admissions).

In **Canberra**, only **Outer Canberra** (with an SAR of 106) and **Tuggeranong** (104) SSDs had more admissions of females aged 30 years and over for an hysterectomy than were expected from the Australian rates. The lowest ratios were in **Central Canberra** (an SAR of 68\*\*) and **Woden Valley** (75\*). There were 149 admissions of female residents of **Tuggeranong** and 129 from **Belconnen**.

# Map 6.47: Admissions of females aged 30 years and over for an hysterectomy, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions of females aged 30 years and over for an hysterectomy, 1995/96

## State/Territory comparison (Australia as the Standard)

There were 10,657 hysterectomies (described on the previous text page) performed as a principal procedure on female residents of the non-metropolitan areas of Australia aged 30 years and over. Elevated standardised admission ratios (SARs) were recorded in the non-metropolitan areas of all States, with the most highly elevated ratios in South Australia (135\*\*) and Tasmania (120\*\*).

**Table 6.55: Admissions<sup>1</sup> of females aged 30 years and over with a principal procedure of hysterectomy, State/Territory, 1995/96**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	86**	91**	106**	102	100	115**	135**	87**	94**
Other major urban centres <sup>2</sup>	125**	103	98	..	..	..	..	..	114**
Rest of State/Territory	113**	108**	102	135**	106	120**	92	- <sup>3</sup>	110**
Whole of State/Territory	98*	95**	104**	110**	101	118**	113*	83**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

In New South Wales, highly elevated SARs for admissions of females aged 30 years and over for an hysterectomy were recorded in **Lower Murrumbidgee** (with an SAR of 169\*\*), **Hunter SD Balance** (152\*\*), **Central Murrumbidgee** (145\*\*), **Northern Slopes** (142\*\*) and **Lachlan** (135\*\*). The lowest ratios were in **Upper Darling** (an SAR of 62) and **Far West** (76). The largest numbers of admissions were of female residents of **Hastings** (301 admissions), **Richmond-Tweed SD Balance** (273) and **Central Murrumbidgee** (270).

Standardised admission ratios for admissions of females aged 30 years and over for an hysterectomy were elevated by ten per cent or more above the expected levels in half of the Statistical Subdivisions (SSDs) in Victoria. Highly elevated ratios were recorded in **Macalister-Avon** (with an SAR of 146\*\*), **South Wimmera** (139\*\*), **North Goulburn** (137\*\*), **Mitchell-Snowy** (132), **Glenelg** (131\*\*) and **North Wimmera** (130). The lowest ratios were in **West Mallee** (an SAR of 70), **South Ovens-Murray** (76) and **Mildura** (76). The largest numbers of admissions were of females in **Ballarat** (167 admissions), **East Barwon** (149) and **La Trobe Valley** (138).

The most highly elevated ratios for admissions for an hysterectomy in Queensland were recorded in **Mackay** (with an SAR of 135\*\*), **Darling Downs** (128\*\*), **Bundaberg** (127\*\*) and **Northern SD Balance** (123). The lowest ratio was in **Fitzroy SD Balance** (an SAR of 67\*). There were 457 admissions of female residents aged 30 years and over from **Darling Downs** and 311 from **Sunshine Coast**.

The highest ratios in Australia at the SSD level for admissions for hysterectomies were recorded in **Flinders Ranges** (an SAR of 260\*\* and 98 admissions) and **West Coast** (185\*\*; 18 admissions) in South Australia. Highly elevated ratios were also recorded in **Upper South East** (an SAR of 164\*\*), **Murray Mallee** (162\*\*)

and **Lincoln** (152\*\*). Only **Kangaroo Island** (with an SAR of 65) and **Onkaparinga** (94) and had fewer admissions than expected. There were 98 admissions of females aged 30 years and over from **Flinders Ranges** and 96 from **Murray Mallee**.

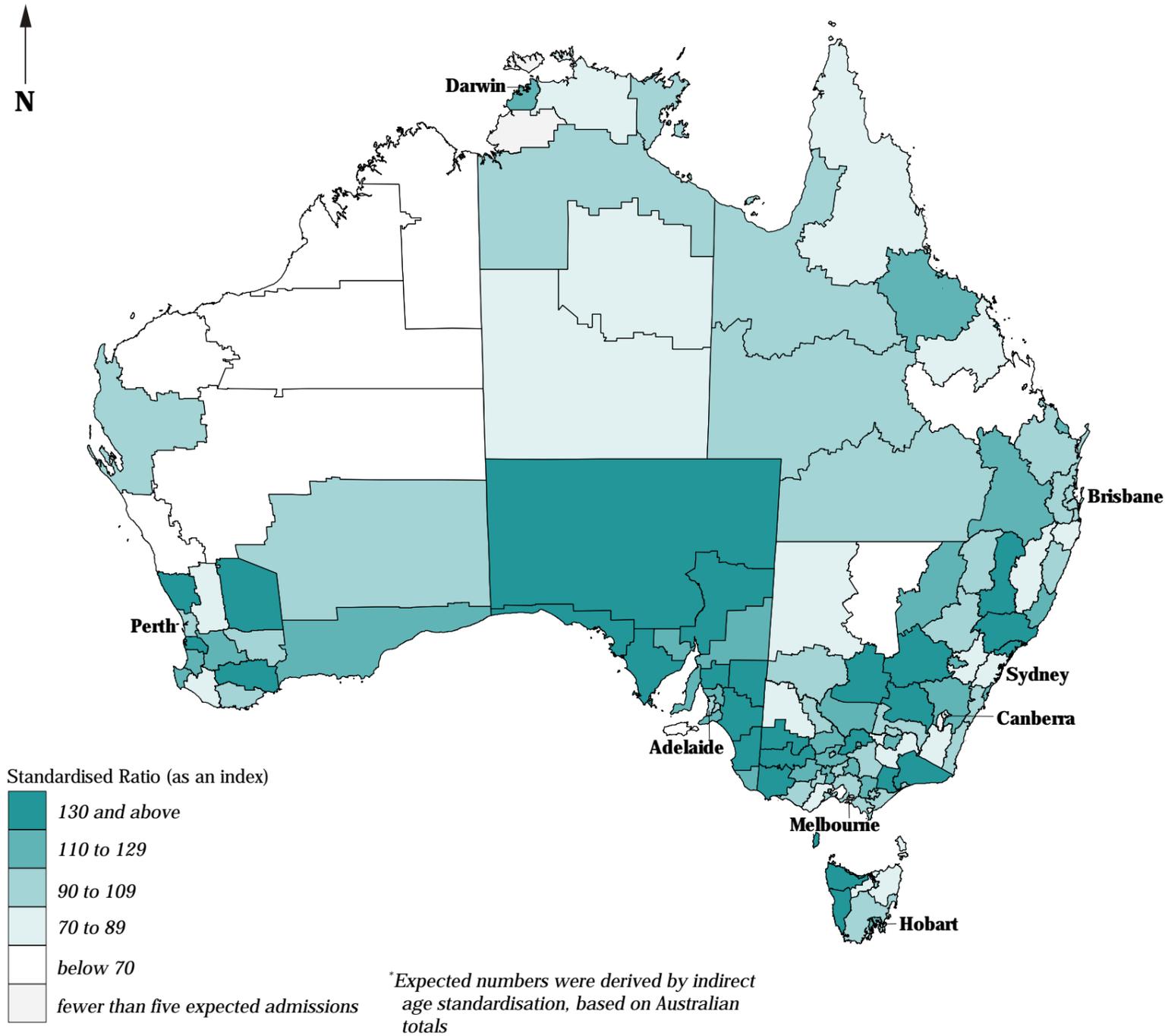
In Western Australia, there were elevated ratios of statistical significance for admissions for an hysterectomy procedure in **Campion** (with an SAR of 150\*) and **Dale** (143\*\*). Relatively high, but not statistically significant, ratios were recorded in **Pallinup** (an SAR of 141), **Moore** (136) and **Johnston** (127). The lowest ratios were in **Ord** (with an SAR of 21\*\*) and **Carnegie** (29). The only SSDs with more than 100 admissions of females aged 30 years and over for hysterectomies were **Preston** (150 admissions) and **Dale** (141).

Standardised admission ratios in **Lyell** (an SAR of 180\*), **Burnie-Devonport** (164\*\*) and **North Western Rural** (158\*\*) in Tasmania were all substantially elevated. The lowest ratio was in **North Eastern** (an SAR of 72). There were 241 admissions of women aged 30 years and over from **Burnie-Devonport** and 161 from **Launceston**.

In the Northern Territory, the highest ratios for admissions of females aged 30 years and over for an hysterectomy were recorded in **Darwin Rural Areas** (an SAR of 124), with a ratio of 108 in both **Daly** and **Lower Top End NT**. The lowest ratio was in **Bathurst-Melville** (an SAR of 38). There were 39 admissions of female residents aged 30 years and over from **Central NT** and 31 from **Darwin Rural Areas**.

# Map 6.48: Admissions of females aged 30 years and over for a hysterectomy, Australia, 1995/96

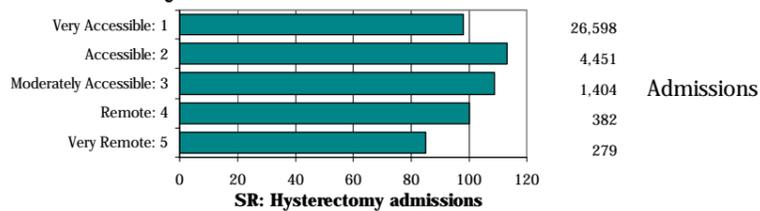
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions of females aged 30 years and over involving a hysterectomy increased from an SAR of 98 in the Very Accessible areas to a high of 113 in the Accessible ARIA category, before dropping to the lowest level, an SAR of 85, in the Very Remote category.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for a hip replacement, 1995/96

## Capital city comparison (Australia as the Standard)

There were 8,246 hip replacements (described below) performed as a principal procedure on residents of the capital cities and an additional 1,004 on residents of the other major urban centres. Females accounted for 57.4 per cent of these admissions for residents of the capital cities, reflecting their longer life expectancy. Most capital cities had either low or near average standardised admission ratios (SARs) for this variable, with the highest ratio in **Hobart** (an SAR of 135\*\*) and a very low SAR of 51\*\* in **Darwin**.

**Table 6.56: Admissions<sup>1</sup> with a principal procedure of hip replacement, capital cities, 1995/96**  
*Standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
91**	103	75**	99	90**	135**	51**	112	94**

<sup>1</sup>Includes admissions to public acute hospitals and private hospitals

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Hip replacements are mainly performed on people at older ages, and mainly on females. The operation is undertaken to replace the hip joint where there has been deterioration, usually caused by arthritis. The higher rates for females are likely to reflect the higher incidence of loss of bone density (resulting in a higher rate of accidental falls) among females, as well as their longer life expectancy.

Females accounted for just over half (54.0 per cent) the admissions for a hip replacement in Australia in 1995/96. Overall, the admission rate is higher for females than males, however there is some variation between the age groups. Rates for 55 to 59 year olds are 154.3 admissions per one hundred thousand population for males and 134.7 for females; for 65 to 69 year olds, rates are 356.7 and 344.4 respectively; and for those aged 85 years and over, they are 337.7 and 345.1 respectively. For females, 70.8 per cent of the admissions for hip replacements were for those aged 65 years and over, and for males, there were 61.7 per cent (75.8 per cent for males 60 years and over).

## Capital cities

Only **Northern Beaches** and **Gosford-Wyong**, each with an SAR of 111, and **Inner Sydney** (106) Statistical Subdivisions (SSDs) in **Sydney** had more admissions for a hip replacement than expected from the Australian rates. Of the areas with lower than expected ratios, the lowest were in **Central Western Sydney** (an SAR of 65\*\*) and **Inner Western Sydney** (67\*\*). There were 356 admissions of residents of **St George-Sutherland** and 302 from **Gosford-Wyong**. There were fewer admissions than expected from both **Newcastle** (an SAR of 96 and 392 admissions) and **Wollongong** (96; 199 admissions).

In **Melbourne**, the most highly elevated ratios were recorded in **Eastern Inner Melbourne** (an SAR of 140\*\*), **Eastern Fringe Melbourne** (133\*\*) and **Eastern Outer Melbourne** (125\*\*). Relatively high ratios were recorded in **Southern Outer Melbourne** (an SAR of 111) and **Western Fringe Melbourne** (112). The lowest ratios were recorded for residents from **Western Outer Melbourne** (an SAR of 71\*\*) and **South Eastern Inner Melbourne** (73\*\*). The largest numbers of admissions for a hip replacement were of residents in **Eastern Outer Melbourne** (287 admissions), **Eastern Middle Melbourne** (241)

and **Eastern Inner Melbourne** (211). There were 113 admissions of residents of **Geelong**, 18 per cent more than expected from the Australian rates (an SAR of 118).

In Queensland, only **Albert** (with an SAR of 126) and **Caboolture** (111) had more admissions for a hip replacement than expected from the Australian rates. Residents of both **Beaudesert** (an SAR of 60) and **Brisbane City** (69\*\*) had fewer admissions than expected. **Brisbane City** also had the largest number of admissions (469 admissions), with 73 in **Caboolture** and 62 in **Redland**. There were low ratios in both **Gold Coast-Tweed Heads** (an SAR of 93 and 302 admissions) and **Townsville-Thuringowa** (62\*; 45 admissions).

In **Adelaide**, the range of SARs for admissions for a hip replacement was relatively narrow, from a high SAR of 109 in **Eastern** to a low of 87\* in **Northern**. There were 296 admissions of residents of **Southern** and 229 from **Eastern**.

There were fewer admissions for a hip replacement than expected from the Australian rates recorded for residents in each of the SSDs in **Perth**. The highest ratios were in **South West Metropolitan** (an SAR of 97) and **North Metropolitan** (92), and the lowest in **South East Metropolitan** (84\*). The largest numbers of admissions were of residents in **North Metropolitan** (247 admissions) and **South West Metropolitan** (194).

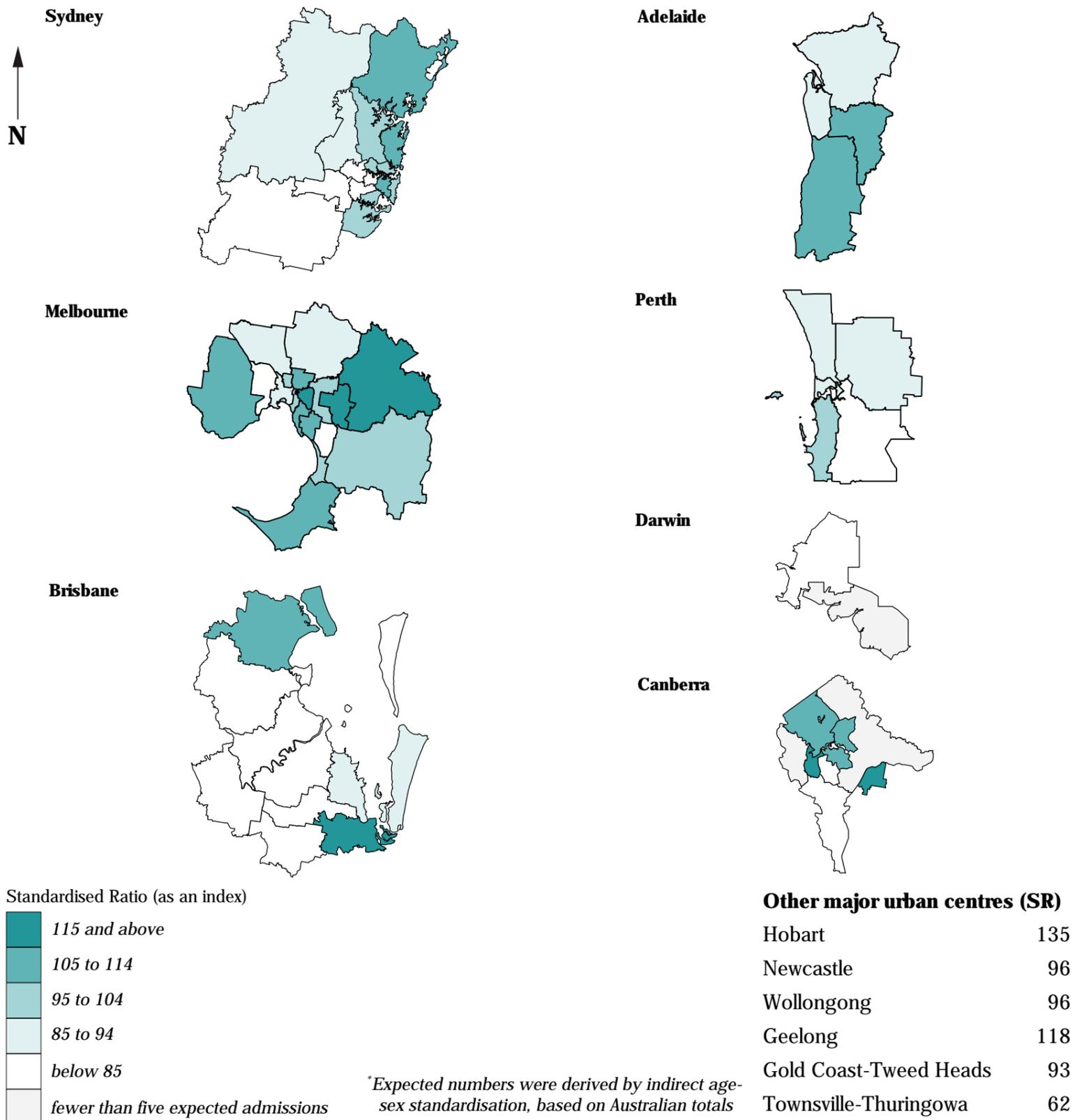
In **Hobart**, there were 217 admissions of residents for a hip replacement, 35 per cent more admissions than expected from the Australian rates (an SAR of 135\*\*).

There were 15 admissions for hip replacements of residents of **Darwin** in 1995/96, 13 from **Darwin City** (an SAR of 51\*) and two from **Palmerston-East Arm** (52).

Two thirds of the SSDs in **Canberra** recorded more admissions for a hip replacement than expected, with the highest ratios in **Outer Canberra** (an SAR of 261\*\*) and **Weston Creek** (137). The lowest ratio was in **Tuggeranong** (an SAR of 55\*). There were 58 admissions of residents of **Central Canberra** and 46 from **Belconnen**.

# Map 6.49: Admissions for a hip replacement, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for a hip replacement, 1995/96

## State/Territory Comparison (Australia as the Standard)

There were 4,955 hip replacements (described on the previous text page) performed as a principal procedure on residents of the non-metropolitan areas of Australia. Females accounted for 48.6 per cent of these admissions, lower than the 57.4 per cent in the capital cities. The higher proportion for males may in part reflect the occupations held by men in rural Australia and the need for such a procedure. Standardised admission ratios (SARs) varied across the non-metropolitan areas of Australia, with elevated ratios in all but Queensland and the Northern Territory. The highest ratio was in Victoria (an SAR of 129\*\*) and the lowest ratio (82\*\*) was in Queensland.

**Table 6.57: Admissions<sup>1</sup> with a principal procedure of hip replacement, State/Territory, 1995/96**  
**Standardised admission ratios**

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	91**	103	75**	99	90**	135**	51**	112	94**
Other major urban centres <sup>2</sup>	96	118	86**	..	..	..	..	..	95
Rest of State/Territory	122**	129**	82**	125**	107	120**	91	- <sup>3</sup>	113**
Whole of State/Territory	100	111**	80**	106*	94*	127**	71*	103	100

<sup>1</sup>Includes admissions to public acute hospitals, private (acute and psychiatric) hospitals

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

Standardised admission ratios for admissions for a hip replacement were highly elevated in a number of Statistical Subdivisions (SSDs) in the non-metropolitan areas of New South Wales. The most highly elevated ratios were in **Queanbeyan** (with an SAR of 217\*\* and 33 admissions, the second highest SAR of the non-metropolitan SSDs), **Bathurst-Orange** (164\*\*), **Snowy** (163), **Central Murray** (162\*\*), **Upper Darling** (158), **Southern Tablelands** (157\*\*), **Murray-Darling** (155), **Central Murrumbidgee** (152\*\*) and **Northern Tablelands** (150\*\*). The lowest ratio was in **Far West** (an SAR of 69). The largest numbers of admissions for hip replacement procedures were of residents from **Illawarra SD Balance** (167 admissions), **Hastings** (153) and **Clarence** (139).

Highly elevated SARs for admissions for a hip replacement were also recorded in a number of SSDs in the non-metropolitan areas of Victoria. The highest ratios were in **West Gippsland** (an SAR of 199\*\*), **South Gippsland** (180\*\*), **East Central Highlands** (164\*\*), **North Goulburn** (162\*\*) and **North Loddon-Campaspe** (161\*\*). The lowest ratio (an SAR of 89) was recorded in both **West Mallee** and **South Goulburn**. There were 88 admissions of residents of **South Gippsland** and 86 from **East Barwon**.

There were fewer admissions for a hip replacement than expected in all non-metropolitan SSDs in Queensland. The highest ratios were in **Moreton SD Balance** (with an SAR of 95), **Wide Bay-Burnett SD Balance** (90), **Darling Downs** and **Mackay SD Balance** (both with 89). The lowest ratios were in **North West** (an SAR of 53) and **Central West** (57). The largest numbers of admissions were of residents from **Darling Downs** (146 admissions), **Sunshine Coast** (131) and **Wide Bay-Burnett SD Balance** (130).

Very high standardised admission ratios were recorded for **Kangaroo Island** (with an SAR of 257\*\*, the highest SSD ratio in non-metropolitan Australia), **Fleurieu** (185\*\*), **Onkaparinga** (161\*\*), **Upper South East** (160) and **Pirie** (143) in South

Australia. The lowest ratios were in **Far North** (with an SAR of 26) and **Flinders Ranges** (65). There were 64 admissions for a hip replacement of residents of **Fleurieu** and 41 from **Lower South East**.

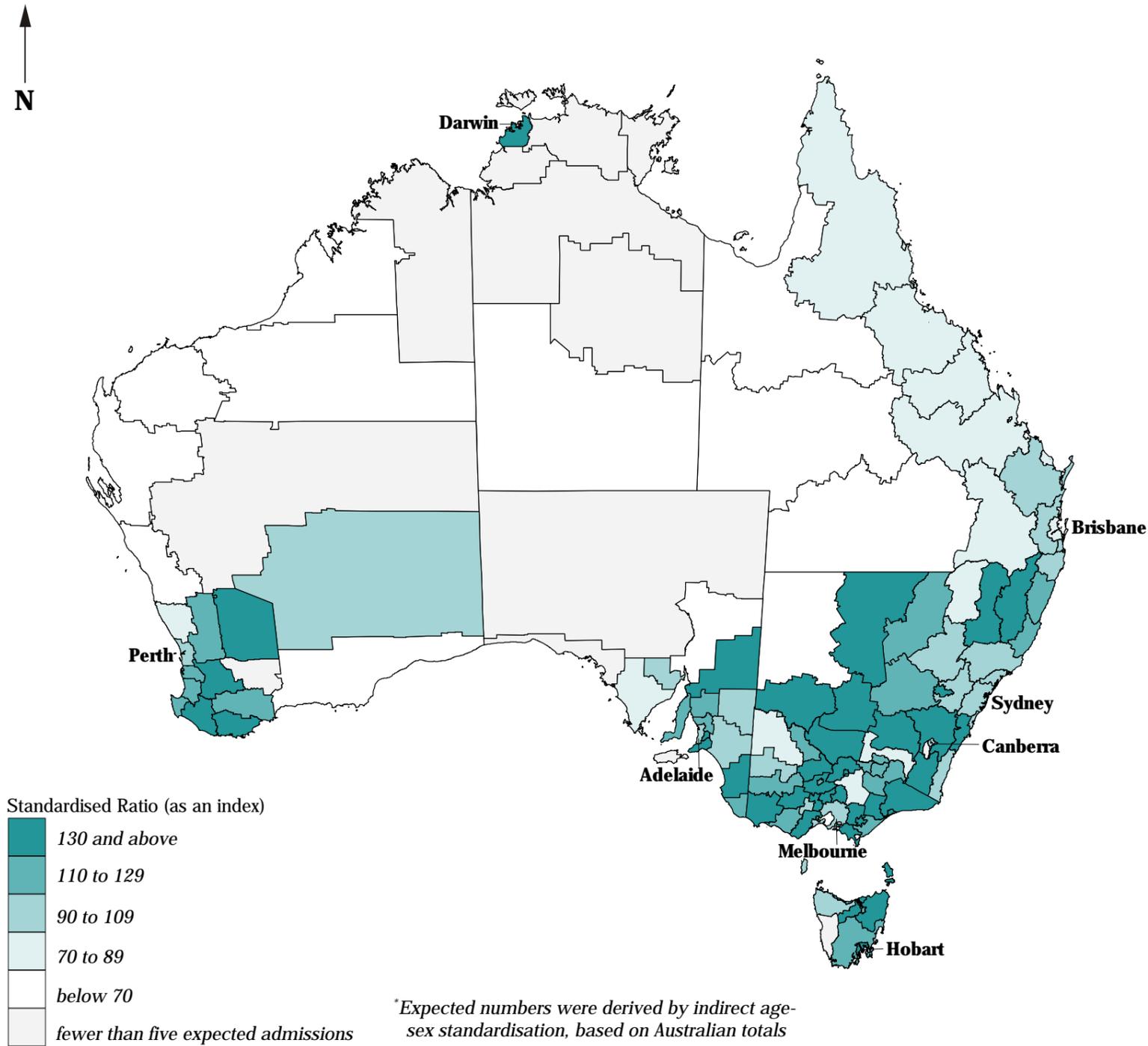
In Western Australia, the highest ratios were in **Lakes** (an SAR of 153), **Campion** (141), **Hotham** (139), **King** (137) and **Blackwood** (131) and the lowest ratios were in **De Grey** (36) and **Ord** (39). There were no admissions for hip replacements of residents of either **Fortescue** or **Fitzroy** SSDs. The largest numbers of admissions were of residents of **Dale** (65 admissions) and **Preston** (56).

There were more admissions for a hip replacement than expected from the Australian rates in all non-metropolitan SSDs in Tasmania. The highest ratios were in **North Eastern** (an SAR of 149) and **Central North** (143), while the lowest were in **Southern** (114) and **North Western Rural** (102). The highest numbers of admissions were recorded in **Launceston** (98 admissions) and **Burnie-Devonport** (81).

In the Northern Territory, only **Lower Top End NT** (with an SAR of 182) and **Darwin Rural Areas** (148) had more admissions for a hip replacement than were expected from the Australian rates. The lowest ratio was in **East Arnhem** (an SAR of 35), and there were no admissions of residents of **Bathurst-Melville** for a hip replacement. The numbers of admissions were low, with the largest at the SSD level being eight from both **Darwin Rural Areas** and **Lower Top End NT**.

# Map 6.50: Admissions for a hip replacement, Australia, 1995/96

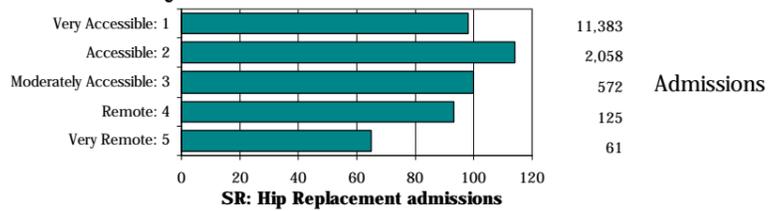
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions for a hip replacement increased from an SAR of 98 in the Very Accessible areas to a high of 114 in the Accessible ARIA category, before dropping to the lowest level in the Very Remote category (with fewer than two thirds of the number of these procedures expected from the Australian rates, an SAR of 65).

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for a lens insertion, 1995/96

## Capital city comparison (Australia as the Standard)

There were 55,446 admissions at which a lens insertion (described below) was undertaken on residents of the capital cities and an additional 8,263 on residents of the other major urban centres. Females accounted for 61.5 per cent of these admissions for residents of capital cities, reflecting their longer life expectancy. Most capital cities had either low or near average standardised admission ratios (SARs) for this variable, other than **Darwin** (with the highest ratio, an SAR of 130<sup>\*\*</sup>). The lowest SARs were in **Canberra**, with a very low SAR of 36<sup>\*\*</sup>, and **Perth** (84<sup>\*\*</sup>).

**Table 6.58: Admissions<sup>1</sup> for a lens insertion, capital cities, 1995/96**  
*Standardised admission ratios*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
102 <sup>**</sup>	97 <sup>**</sup>	105 <sup>**</sup>	93 <sup>**</sup>	84 <sup>**</sup>	99	130 <sup>**</sup>	36 <sup>**</sup>	97 <sup>**</sup>

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Cataracts are a common cause of impaired vision in people of any age. They may be congenital, or result from trauma, diseases like diabetes or changes associated with ageing. Cataract surgery is one of the most frequently performed surgical procedures in Australia since the introduction of intraocular lens implants. The implants are inserted at the time of surgery after the affected lens has been removed. Increasingly, cataract surgery is being performed as a same day procedure using local anaesthetic techniques, and the lens implant means that most patients enjoy significantly improved vision after surgery.

## Capital cities

In **Sydney**, there were more admissions than expected for a lens insertion in **Eastern Suburbs** (with an SAR of 125<sup>\*\*</sup>), **St George-Sutherland** (115<sup>\*\*</sup>), **Inner Sydney** (112<sup>\*\*</sup>), **Blacktown-Baulkham Hills** (109<sup>\*\*</sup>) and **Fairfield-Liverpool** (107<sup>\*</sup>). **Canterbury-Bankstown** and **Central Western Sydney** (each with an SAR of 101) were the only other Statistical Subdivisions (SSDs) with more admissions than expected for this procedure. The lowest ratios were in **Inner Western Sydney** (with an SAR of 87<sup>\*\*</sup>) and **Outer Western Sydney** (69<sup>\*\*</sup>). The largest numbers of admissions were of residents of **St George-Sutherland** (2,814 admissions), **Gosford-Wyong** (1,851) and **Eastern Suburbs** (1,748). There were 2,826 admissions in **Newcastle** (an SAR of 105<sup>\*\*</sup>), and 1,279 admissions in **Wollongong** (98).

The highest ratios in **Melbourne** for a lens insertion were in **Eastern Inner Melbourne** (an SAR of 126<sup>\*\*</sup>), **Southern Inner Melbourne** (108<sup>\*\*</sup>), **Mornington Peninsula Outer** (107<sup>\*</sup>) and **South Eastern Outer Melbourne** (107). **Northern Middle Melbourne** and **Northern Outer Melbourne** (both with an SAR of 81<sup>\*\*</sup>) and **Northern Inner Melbourne** (70<sup>\*\*</sup>) had the lowest ratios. There were 1,536 admissions from **Eastern Middle Melbourne**, 1,532 from **Southern Inner Melbourne**, 1,448 from **Eastern Outer Melbourne** and 1,422 from **Eastern Inner Melbourne**. There were 465 admissions of residents of **Geelong**, 27 per cent fewer than expected (an SAR of 73<sup>\*\*</sup>).

There were elevated SARs for admissions for a lens insertion in the **Brisbane** SSDs of **Ipswich-Moreton** (an SAR of 136<sup>\*\*</sup>), **Albert** (131<sup>\*\*</sup>) and **Brisbane City** (106<sup>\*\*</sup>). The lowest ratios were

in **Beaudesert** (an SAR of 61<sup>\*\*</sup>) and **Logan** (78<sup>\*\*</sup>). The largest numbers of admissions were of residents of **Brisbane City** (4,965 admissions), **Ipswich-Moreton** (592) and **Redland** (416). Both **Gold Coast-Tweed Heads** (with an SAR of 160<sup>\*\*</sup> and 3,414 admissions) and **Townsville-Thuringowa** (182<sup>\*\*</sup>; 825 admissions) had more admissions than expected from the Australian rates for a lens insertion.

In **Adelaide**, there were fewer admissions than expected for a lens insertion in each of the SSDs. The highest ratio was in **Southern** (an SAR of 98) and the lowest was in **Northern** (86<sup>\*\*</sup>). There were 1,858 admissions of residents of **Southern** and 1,471 from **Eastern**.

No **Perth** SSD had more admissions (for a lens insertion) than were expected from the Australian rates. The highest ratios were in **Central Metropolitan** (an SAR of 88<sup>\*\*</sup>) and **South East Metropolitan** (87<sup>\*\*</sup>), with the lowest in **North Metropolitan** (79<sup>\*\*</sup>). The largest numbers of admissions were of residents of **North Metropolitan** (1,317 admissions) and **South West Metropolitan** (1,081).

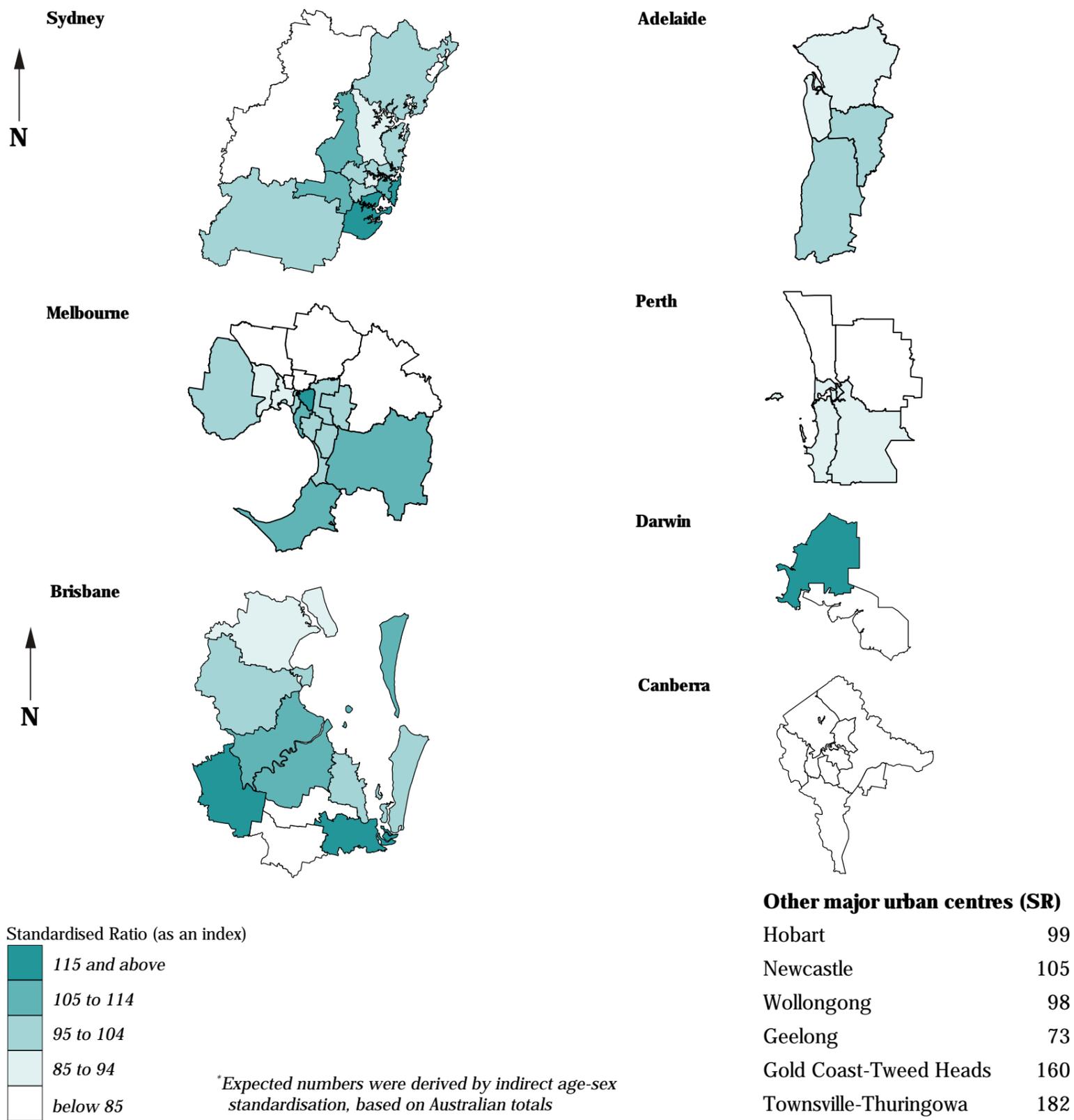
There were 1,049 admissions for a lens insertion of residents of **Hobart**, marginally fewer than expected from the Australian rates (an SAR of 99).

There were 10 admissions for a lens insertion of residents of **Palmerston-East Arm**, forty eight per cent fewer than expected from the Australian rates (an SAR of 52<sup>\*</sup>), and 168 admissions from **Darwin City**, 43 per cent more than expected (an SAR of 143<sup>\*\*</sup>).

There were no SSDs in **Canberra** with more than the expected number of admissions for a lens insertion. The highest ratios were in **Tuggeranong** (an SAR of 45<sup>\*\*</sup>) and **Belconnen** (40<sup>\*\*</sup>), with the lowest in **Central Canberra** (29<sup>\*\*</sup>). There were 103 admissions of residents of **Central Canberra** and 90 from **Belconnen**.

# Map 6.51: Admissions for a lens insertion, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for a lens insertion, 1995/96

## State/Territory comparison (Australia as the Standard)

There were 28,332 admissions for which a lens insertion (described on the previous text page) was undertaken on residents of the non-metropolitan areas of Australia. Females accounted for 58.1 per cent of these admissions, reflecting their longer life expectancy. Standardised admission ratios (SARs) varied across the non-metropolitan areas of Australia, with the highest ratios in Queensland and New South Wales (SARs of 119\*\* and 112\*\* respectively) and low ratios in Victoria and Tasmania (78\*\* and 82\*\* respectively).

**Table 6.59: Admissions<sup>1</sup> for a lens insertion, State/Territory, 1995/96**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	102**	97**	105**	93**	84**	99	130**	36**	97**
Other major urban centres <sup>2</sup>	103	73**	163**	..	..	..	..	..	120**
Rest of State/Territory	112**	78**	119**	93**	89**	82**	104	- <sup>3</sup>	101*
Whole of State/Territory	105**	91**	119**	93**	85**	89**	117**	35**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Admission rates for a lens insertion were higher in the non-metropolitan areas of Australia (519.0 admissions per 100,000 population) than in the capital cities and other major urban centres (501.2 admissions per 100,000 population).

## Rest of Australia

In New South Wales, ratios for lens insertions were elevated by more than 50 per cent in **Macquarie-Barwon** (an SAR of 174\*\*), **Tweed Heads** (170\*\*), **Central Macquarie** (167\*\*), **Clarence** (159\*\*), **Hastings** (152\*\*) and **Upper Darling** (150\*\*). Relatively high ratios were also recorded in **Northern Tablelands** (an SAR of 138\*\*) and **Hunter SD Balance** (118\*\*). Statistical Subdivisions (SSDs). The lowest ratios were in **Queanbeyan** (48\*\*) and **Snowy** (50\*\*). There were more than 1,000 admissions for lens insertions of residents of **Hastings** (1,397 admissions) and **Clarence** (1,305).

Only **Mitchell-Snowy** (with an SAR of 141\*\*), **Gippsland Lakes** (127\*\*) and **Hopkins** (108) SSDs in Victoria had SARs of greater than 100. The lowest ratios were in **South Ovens-Murray**, **South West Goulburn** and **Central Loddon-Campaspe** (each with an SAR of 56\*\*). The largest numbers of admissions for lens insertions were of residents of **East Barwon** (400 admissions) and **Hopkins** (373).

The most highly elevated SARs for lens insertions at the SSD level in non-metropolitan Australia were those in **Mackay** (an SAR of 286\*\* and 706 admissions) and surrounding **Mackay SD Balance** (220\*\*; 371). Highly elevated SARs were also recorded in **Northern SD Balance** (an SAR of 173\*\*) and **Central West** (156\*\*). **Darling Downs** and **South West** (both with an SAR of 74\*\*) had the lowest ratios. The largest numbers of admissions were in **Sunshine Coast** (1,355 admissions), **Wide Bay-Burnett SD Balance** (904) and **Darling Downs** (802).

In South Australia, the highest ratios for admissions for lens insertions were in **Flinders Ranges** (an SAR of 157\*\*), **Pirie** (150\*\*) and **Whyalla** (143\*\*). The lowest ratios were in **Yorke** (an SAR of 56\*\*) and **Onkaparinga** (63\*\*). The largest numbers of admissions were of residents of **Pirie** (248 admissions) and **Fleurieu** (239).

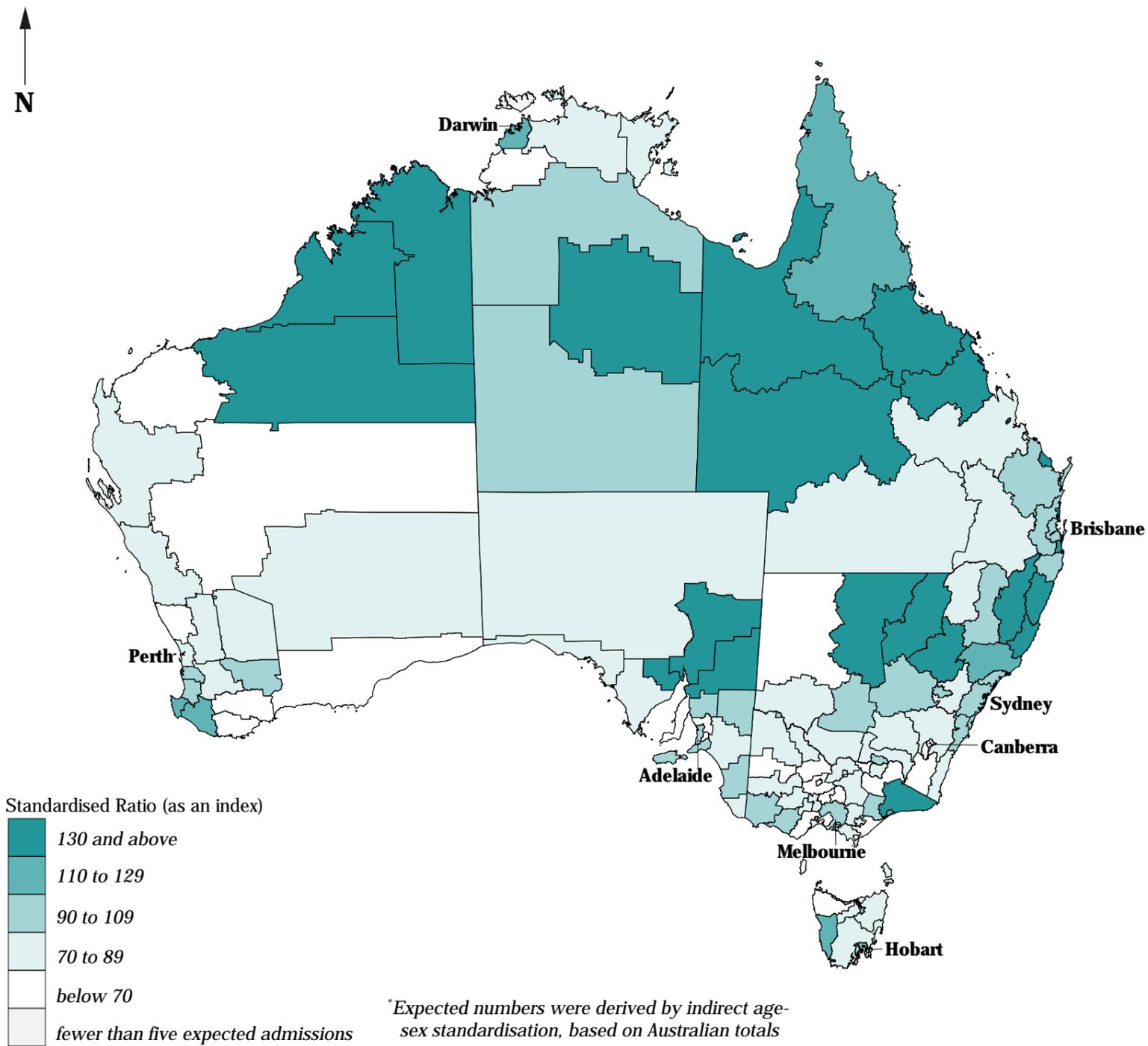
There were more than twice the expected number of admissions for lens insertions in **Ord** (an SAR of 219\*\* and 28 admissions, the second highest ratio in non-metropolitan Australia) and highly elevated ratios also in **Fitzroy** (170\*\*) and **De Grey** (143\*\*) in Western Australia. **Moore** (with an SAR of 39\*\*) and **Fortescue** (55) had the lowest SARs. There were 324 admissions of residents of **Preston**, 295 from **Dale** and 178 from **Vasse**.

In Tasmania, only **Lyell** had an elevated ratio for admissions for lens insertions, an SAR of 110; the next highest ratio was in **Launceston** (90), and the lowest was in **North Western Rural** (61\*\*). Residents of **Launceston** and **Burnie-Devonport** recorded 498 and 365 admissions, respectively.

The highest SARs in the Northern Territory for admissions for lens insertions were in **Barkly** (an SAR of 155) and **Darwin Rural Areas** (126), and the lowest ratio was in **Bathurst-Melville** (46). There were 56 admissions of residents of **Central NT** and 29 from **Darwin Rural Areas**.

### Map 6.52: Admissions for a lens insertion, Australia, 1995/96

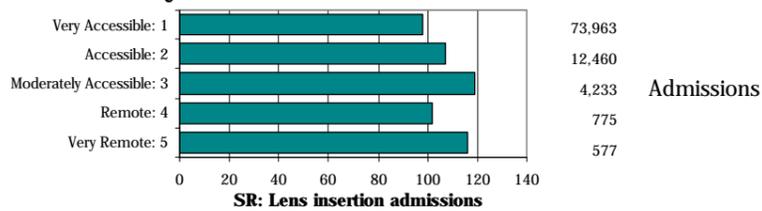
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

#### Accessibility/Remoteness Index of Australia



There are two distinct gradients in standardised admission ratios for admissions involving a lens insertion. The first is from the lowest ratio (an SAR of 98) in the Very Accessible category to the highest ratio (119) in the Moderately Accessible category; and the second is from an SAR of 102 in the Remote category to an SAR of 116 in Very Remote category.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

# Admissions for an endoscopy, 1995/96

## Capital city comparison (Australia as the Standard)

There were 249,411 endoscopies (described below) performed as a principal procedure on residents of the capital cities and an additional 26,647 on residents of the other major urban centres. Females accounted for 61.5 per cent of these admissions, reflecting their longer life expectancy. Standardised admission ratios (SARs) for this variable varied over a wide range, from a low of 58\*\* in **Canberra**, to highs of 115\*\* in **Brisbane**, 111\*\* in **Melbourne** and 111\*\* in **Hobart**. These large differences suggest markedly different clinical practice between the various States and Territories.

**Table 6.60: Admissions<sup>1</sup> with a principal procedure of endoscopy, capital cities, 1995/96**  
**Standardised admission ratios**

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>2</sup>	All capitals
110**	111**	115**	81**	82**	111**	92**	58**	104**

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Endoscopy procedures involve looking inside hollow organs or cavities in the body such as the intestinal tract, stomach, bladder, abdominal cavity and airways, using a rigid or flexible instrument, the endoscope. Endoscopies allow visual examination, photography, biopsy and some diagnostic and treatment procedures to be undertaken while a person is relaxed and conscious. These procedures are often now performed in accredited day endoscopy facilities, relieving pressure on hospital inpatient beds.

## Capital cities

There were elevated ratios for admissions for an endoscopy in two thirds of **Sydney's** Statistical Subdivisions (SSDs), with the highest ratios recorded in **Eastern Suburbs** (with an SAR of 148\*\*) and **Inner Western Sydney** and **Inner Sydney** (both with 129\*\*). Relatively high ratios were recorded in **Canterbury-Bankstown** and **St George-Sutherland** (both with an SAR of 118\*\*) and **Northern Beaches** (116\*\*). The lowest ratios were in **Outer Western Sydney** (an SAR of 89\*\*) and **Gosford-Wyong** (92\*\*). There were 10,835 admissions of residents from **St George-Sutherland**, 7,807 from **Canterbury-Bankstown** and 7,688 from **Eastern Suburbs**. There were marginally more admissions than expected in **Newcastle** (an SAR of 101 and 10,450 admissions) and fewer than expected in **Wollongong** (89\*; 4,892 admissions).

In **Melbourne**, the highest ratios for admissions for an endoscopy were in **Southern Inner Melbourne** (with an SAR of 132\*\*), **South Eastern Outer Melbourne** (123\*\*), **Mornington Peninsula Outer** (122\*\*), **Eastern Fringe Melbourne** (120\*\*), **Eastern Inner Melbourne** and **Mornington Peninsula Inner** (both with 119\*\*) and **Eastern Outer Melbourne** (117\*\*). Only four SSDs had fewer admissions than expected, with the lowest ratios in **Northern Inner Melbourne** (an SAR of 95) and **Northern Fringe Melbourne** (96). The largest numbers of admissions were of residents in **Eastern Outer Melbourne** (7,676 admissions), **Eastern Middle Melbourne** (7,242) and **Southern Inner Melbourne** (5,794). There were 1,701 admissions of residents of **Geelong**, 30 per cent fewer than expected (an SAR of 70\*\*).

In **Brisbane**, SARs for an endoscopy were elevated by more than 20 per cent in **Redcliffe** (an SAR of 135\*\*), **Brisbane City** (124\*\*) and **Pine Rivers** (123\*\*). The lowest ratios were in **Beaudesert** (an SAR of 65\*\*) and **Ipswich-Moreton** (86\*\*). The largest numbers of admissions were of residents of **Brisbane City** (21,835 admissions), **Logan** (2,394) and **Redland** (2,314). There were fewer admissions of residents in **Gold Coast-Tweed Heads** (an SAR of 92\*\* and 7,280 admissions) and more than expected in **Townsville-Thuringowa** (147\*\*; 3,338 admissions).

There were fewer admissions for endoscopies than expected in each of **Adelaide's** SSDs, with the highest ratios in **Southern** (an SAR of 95\*\*) and **Eastern** (88\*\*), and the lowest in **Northern** (64\*\*). The largest numbers of admission for endoscopies were recorded for residents of **Southern** (6,792 admissions) and **Eastern** (4,529).

There were also fewer admissions than expected for endoscopy procedures in each of the SSDs in **Perth**. The highest ratio was recorded in **North Metropolitan** (with an SAR of 92\*\*), and the lowest in **South East Metropolitan** (72\*\*). There were 7,242 admissions of residents from **North Metropolitan** for endoscopies and 4,547 from **South West Metropolitan**.

There were 4,637 admissions of residents of **Hobart** for endoscopies, 11 per cent more than expected (an SAR of 111\*\*).

There were fewer admissions for endoscopy procedures of residents in **Darwin City** (an SAR of 89\*; 995 admissions) and more than expected in **Palmerston-East Arm** (109; 187 admissions).

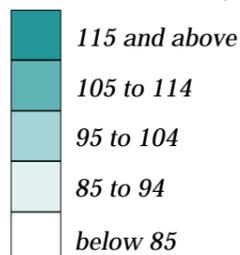
Throughout the SSDs in **Canberra**, SARs were lower than expected from the Australian rates, with the highest ratios in **Belconnen** (an SAR of 65\*\*) and **Outer Canberra** (77\*\*), and the lowest in **Weston Creek** (44\*\*). There were 1,017 admissions for an endoscopy of residents of **Belconnen** and 777 from **Central Canberra**.

### Map 6.53: Admissions for an endoscopy, major urban centres, 1995/96

Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Standardised Ratio (as an index)



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

#### Other major urban centres (SR)

Hobart	111
Newcastle	101
Wollongong	89
Geelong	70
Gold Coast-Tweed Heads	92
Townsville-Thuringowa	147

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Admissions for an endoscopy, 1995/96

## State/Territory comparison (Australia as the Standard)

There were 106,877 endoscopies (described on the previous text page) performed as a principal procedure on residents of the non-metropolitan areas. Just over half (52.5 per cent) of these admissions were females, compared with 61.5 per cent in the capital cities.

With the exception of Tasmania and the Northern Territory, the standardised admission ratios (SARs) at the *Whole of State/Territory* and *Rest of State/Territory* levels largely followed the direction of the ratios for the capital cities, although they are somewhat closer to the Australian rates. In both Tasmania (an SAR of 77\*\*) and the Northern Territory (66\*\*), ratios were substantially below the level expected from the Australian rates. The only elevated SARs were in Victoria (104\*\*) and Queensland (101\*).

**Table 6.61: Admissions<sup>1</sup> with a principal procedure of endoscopy, State/Territory, 1995/96**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	110**	111**	115**	81**	82**	111**	92**	58**	104**
Other major urban centres <sup>2</sup>	97**	70**	104**	..	..	..	..	..	97**
Rest of State/Territory	92**	104**	101*	62**	80**	77**	66**	- <sup>3</sup>	93**
Whole of State/Territory	104**	108**	108**	76**	82**	108**	78**	58**	100

<sup>1</sup>Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

Standardised admission ratios for endoscopies were 20 per cent higher than expected in the Statistical Subdivisions (SSDs) of **Central Macquarie** (with an SAR of 136\*\*), **Central Tablelands** and **Macquarie-Barwon** (both with 133\*\*), **Albury** and **Upper Darling** (both with 126\*\*) and **Bathurst-Orange** (127\*\*). The lowest ratios were in **Northern Tablelands** (an SAR of 49\*\*) and **Clarence** (64\*\*). The largest numbers of admissions were recorded for residents of **Hastings** (3,258 admissions), **Illawarra SD Balance** (2,961) and **Richmond-Tweed SD Balance** (2,525).

The highest ratios throughout Victoria were recorded for residents of **West Gippsland** (with an SAR of 180\*\*), **Hopkins** (157\*\*), **South Gippsland** (147\*\*), **Glenelg** (145\*\*), **South Goulburn** (134\*\*) and **La Trobe Valley** (132\*\*). The lowest ratios were in the State's east, in **Gippsland Lakes** (an SAR of 32\*\*) and **Mitchell-Snowy** (47\*\*). There were 2,034 admissions of residents of **Hopkins** and 1,930 from **La Trobe Valley**.

In Queensland, ratios were elevated by more than 20 per cent in **Mackay** (with an SAR of 146\*\*), **Northern SD Balance** (131\*\*) and **Darling Downs** (127\*\*). The lowest ratios for admissions for an endoscopy were recorded in **Moreton SD Balance** (an SAR of 78\*\*) and **Wide Bay-Burnett SD Balance** (86\*\*). The largest numbers of admissions were of residents of **Darling Downs** (5,410 admissions) and **Sunshine Coast** (3,404).

There were fewer admissions for endoscopies of residents in all non-metropolitan SSDs in South Australia. The highest of the ratios was recorded for residents of **Pirie** (an SAR of 92\*) and **Fleurieu** (77\*\*), and the lowest ratios were in **Lincoln** (33\*\*) and **Barossa** (32\*\*). The largest numbers of admissions were recorded for residents in the **Lower South East** (613 admissions) and **Fleurieu** (579) SSDs.

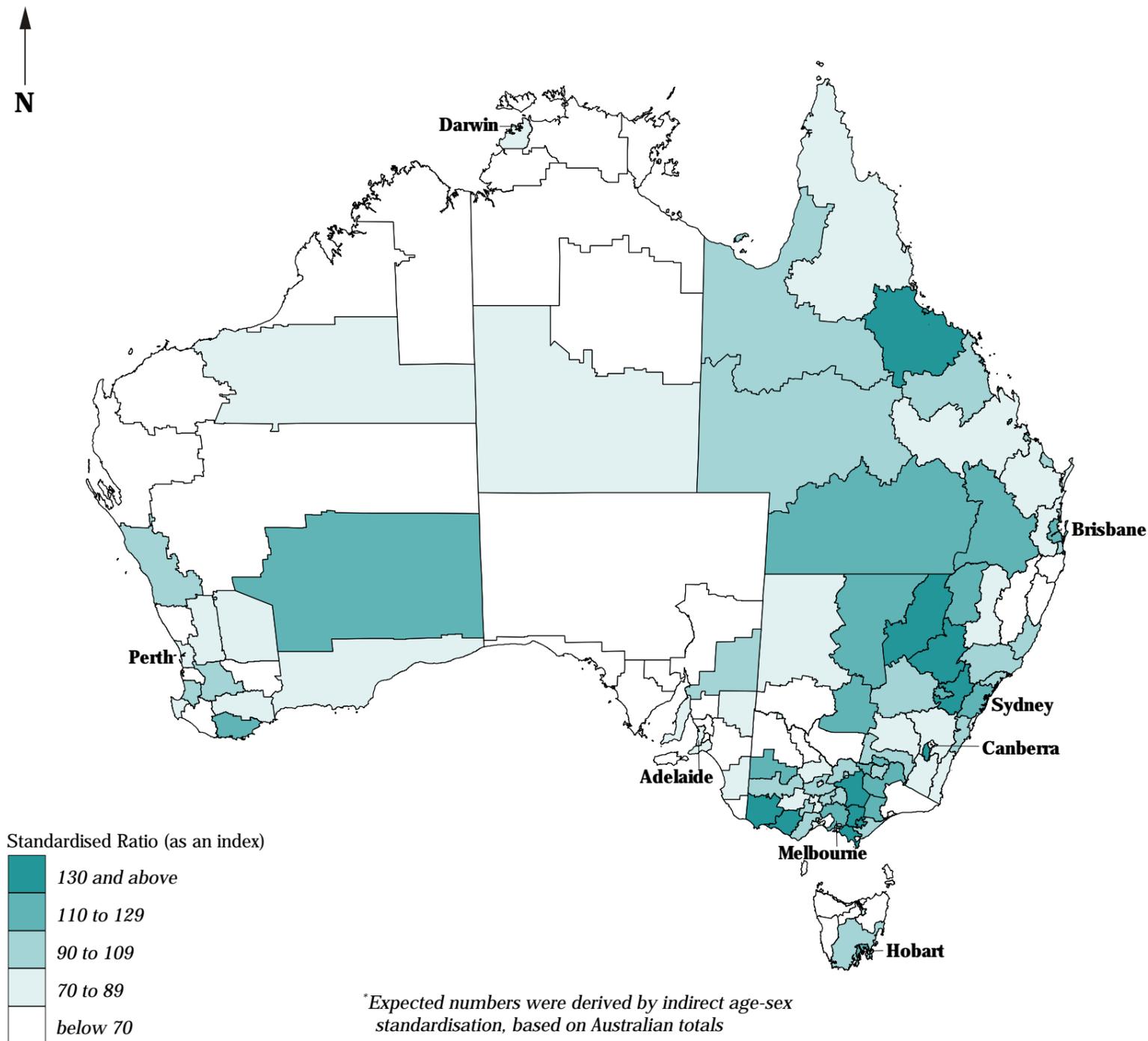
Only **Lefroy** (with an SAR of 125\*\*) and **King** (127\*\*) in Western Australia had more admissions for endoscopies than were expected at the SSD level. The lowest of the ratios in the other SSDs were recorded in **Ord** (an SAR of 29\*\*) and **Dale** (36\*\*). There were 1,282 admissions for residents of **Preston**, 1,053 from **King** and 859 from **Greenough River**.

In Tasmania, there were fewer admissions than expected in each non-metropolitan SSD. **Southern** (an SAR of 99) and **Launceston** (86\*\*) had the highest SARs, and the lowest was in **North Western Rural** (47\*\*). The largest numbers of admissions for endoscopies were of residents of **Launceston** (1,813 admissions) and **Burnie-Devonport** (1,309).

There were fewer admissions than expected from the Australian rates for endoscopies of residents in all SSDs in the Northern Territory. The highest ratios were in **Central NT** and **Darwin Rural Areas** (both with an SAR of 78\*\*), and the lowest was in **Daly** (39\*\*). There were 402 admissions of residents of **Central NT** and 186 from **Darwin Rural Areas**.

# Map 6.54: Admissions for an endoscopy, Australia, 1995/96

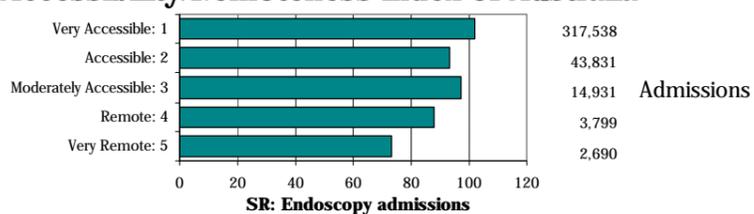
Standardised Ratio: number of admissions in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions involving an endoscopy also decrease with increasing remoteness. There are three levels in the distribution, with the highest ratios in the Very Accessible ARIA category (an SAR of 102); through lower ratios of 93, 97 and 88 in the Accessible, Moderately Accessible and Remote categories; to the lowest ratio (an SAR of 73) in the Very Remote category.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

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# General medical practitioner services

## Introduction

General medical practitioners (GPs) comprise the largest group of health professionals providing primary health care services. They are frequently the first point of contact with the health care system, for the 80 per cent of the population who visit them each year. As such, they are an essential part of the health care system.

## Background

In 1996/97, the Health Insurance Commission (which operates the national health insurance plan, Medicare) processed accounts for 102.5 million unreferral attendances (called services in this atlas)<sup>6</sup> by GPs in Australia, an average of 5.5 services for each person enrolled with Medicare. Total Medicare payments to GPs for these services were \$2.4 billion (Health Insurance Commission 1997).

Consultations with GPs cover a wide range of injuries and illness conditions, in addition to consultations for preventive measures. The most frequently reported reasons for consulting a doctor, as reported in the 1995 National Health Survey, were diseases of the respiratory, musculoskeletal and circulatory systems.

## Data limitations

The following analysis uses Medicare statistics for the year 1996. Details of the number of GP services in each postcode were provided by the Medicare Statistics Section, Department of Health and Aged Care, based on Medicare data from the Health Insurance Commission. This dataset includes services provided at a surgery/clinic, at the patient's home or in an institution (hostel, nursing home, etc). It excludes GP type services not covered by Medicare, which are mainly:

- inpatient services to 'hospital' patients in public acute hospitals (ie. patients receiving treatment under Medicare);
- attendances at accident and emergency/ casualty departments of public acute hospitals for GP type services;
- GP services at some community health services which do not bill their clients;
- services operated by the Aboriginal Medical Service and some State funded Aboriginal health services; and
- medical services provided by private companies (eg. mining companies), the defence forces and the Royal Flying Doctor Service (**Table 6.62** includes details of the operations of this service, some of which are GP type services).

<sup>6</sup>At each consultation, a GP may provide one or more service. One of these services will be the consultation itself: additional services, such as a minor surgical procedure or immunisation, may also be provided, and are recorded separately in Medicare statistics. It is estimated that there were, on average, 1.1 services per consultation.

National data are not available for the number of attendances at accident and emergency departments of public hospitals that are for primary health care services: that is, services that could have been provided by a GP. A study in South Australia in 1993/94 found that up to one third of such attendances were of this kind. This represents the equivalent of approximately 1.3 per cent of GP attendances recorded in the Medicare statistics collection for that year. These attendances are again likely to be predominantly of people of lower socioeconomic status.

Similarly, the exclusion of data for attendances at community health centres is also unlikely to change the spatial patterns of distribution evident in the maps. Not only do these centres account for a relatively small number of attendances, their clients are also predominantly of lower socioeconomic status.

The impact on the data of services provided by Aboriginal Medical Services is of particular relevance in rural and remote areas. Details of the number of services provided through Aboriginal Medical Services by GPs, Aboriginal workers, etc. are not currently available. The Office of Aboriginal and Torres Strait Islander Health is currently undertaking a collection of this information which may, in time, fill an important gap in the available data.

## Missing data

In the dataset provided for the atlas, there were 103,695 records (0.1 per cent of all records for Australia) for which the postcode was not able to be allocated to an SLA using the postcode to SLA converter from the ABS (see Chapter 2 for details of this conversion process). The postcode associated with these records was either not valid (four fifths) or was not on the postcode to SLA conversion list (one fifth). This latter group includes postcodes for businesses and post office boxes, as well as valid residential postcodes that do not appear in the ABS conversion table (eg. where there are two postcodes in a Collection District (CD), the whole CD is allocated to just one postcode and this is shown in the conversion table; the other postcode does not appear).

## Other gaps and deficiencies

The data presented here are only of services provided by general practitioners and not by specialist medical practitioners. The spatial patterns of distribution of services of specialist medical practitioners would be of value in informing strategic policy and planning activities. They cannot, however, be mapped as details of the large number of such services provided through public hospitals outpatient departments (and the lesser number through public hospital accident and emergency departments) are not available by SLA. Details of such services provided outside of public hospitals by specialist medical practitioners (and billed through Medicare) are available, but to map just this set of the whole would provide a biased view of the distribution at the small area level.

**Table 6.62: Location of Royal Flying Doctor Service bases and number of services, 1997**

Operational organisation	Remote consultations		Patients attended				Patient transport		Clinics	Patient contacts	Doctors	Nurses	
	Radio	Telephone	Field clinics	Other clinics	Inpatient services	Immunisations	Evacuation	Hospital transfers					
<b>Queensland</b>													
Mt Isa	6	3,624	4,522	-	-	-	-	240	473	335	9,200	-	-
Charleville	37	1,893	4,373	-	-	-	-	185	168	259	6,915	-	-
Cairns	10	6,370	10,609	-	-	-	-	396	757	602	18,744	-	-
Rockhampton	-	-	-	-	-	-	-	14	939	-	953	-	-
Brisbane	-	-	-	-	-	-	-	5	843	-	948	-	-
Townsville	-	-	-	-	-	-	-	14	357	-	371	-	-
<b>Total</b>	<b>53</b>	<b>11,887</b>	<b>19,504</b>	-	-	-	-	<b>854</b>	<b>3,537</b>	<b>1,196</b>	<b>37,031</b>	<b>11</b>	<b>24</b>
<b>New South Wales</b>													
Broken Hill	5	6,741	14,624	-	-	506	-	339	484	917	23,616	-	-
Moomba	-	-	-	5,782	-	-	-	-	-	-	5,782	-	-
Sydney	-	-	17,962	-	-	-	-	-	-	-	17,962	-	-
Tasmania	-	-	-	-	-	-	-	-	162	-	162	-	-
<b>Total</b>	<b>5</b>	<b>6,741</b>	<b>32,586</b>	<b>5,782</b>	-	<b>506</b>	-	<b>339</b>	<b>646</b>	<b>917</b>	<b>47,522</b>	<b>5</b>	<b>10</b>
<b>Central Section</b>													
Alice Springs	60	870	3,552	-	-	-	-	1,459	237	158	6,336	-	-
Yulara	-	-	-	9,242	-	93	-	-	-	364	9,699	-	-
Port Augusta	12	8,020	3,682	119	3,683	555	-	947	574	278	17,870	-	-
Adelaide	-	-	-	-	-	-	-	306	2,712	-	3,018	-	-
<b>Total</b>	<b>72</b>	<b>8,890</b>	<b>7,234</b>	<b>9,361</b>	<b>3,683</b>	<b>648</b>	-	<b>2,712</b>	<b>3,523</b>	<b>800</b>	<b>36,923</b>	<b>6</b>	<b>25</b>
<b>Western Operations</b>													
Derby	-	-	7,346	-	-	-	-	338	662	477	8,823	-	-
Jandakot	98	2,031	3,886	49	58	-	-	63	1,335	270	7,790	-	-
Kalgoorlie	15	4,267	3,075	80	973	-	-	281	842	299	9,832	-	-
Meekatharra	2	2,591	735	7,658	1,135	-	-	82	729	57	12,989	-	-
Port Hedland	146	2,941	1,987	880	1,144	-	-	184	577	155	8,014	-	-
<b>Total</b>	<b>261</b>	<b>11,830</b>	<b>17,029</b>	<b>8,667</b>	<b>3,310</b>	-	-	<b>948</b>	<b>4,145</b>	<b>1,258</b>	<b>47,448</b>	<b>10</b>	<b>25</b>
<b>Tasmania Section</b>													
Launceston	-	-	-	118	-	-	-	180	262	-	560	-	-
<b>All Sections</b>	<b>391</b>	<b>39,348</b>	<b>76,353</b>	<b>23,928</b>	<b>6,993</b>	<b>1,154</b>	-	<b>5,033</b>	<b>12,113</b>	<b>4,171</b>	<b>169,484</b>	<b>32<sup>2</sup></b>	<b>84<sup>2</sup></b>

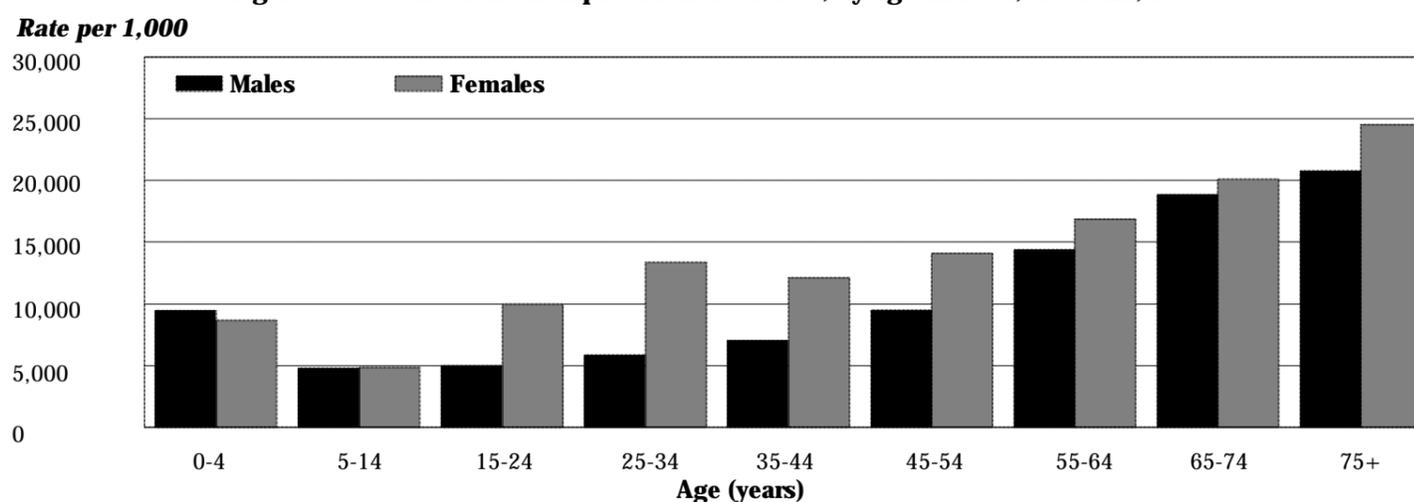
Source: Annual Report 1996, Royal Flying Doctor Service of Australia

### GP services by age and sex of patient

Females used GP services more than males, accounting for 58.4 per cent of services in Australia in 1996. Females accounted for more services per patient at each age group from the 15 to 24 year age group right through to 75 years and over, with males

accounting for more services only in the 0 to 4 year age group (Figure 6.10). Females and males had similar rates in the five to 14 year age group.

**Figure 6.10: General medical practitioner services, by age and sex, Australia, 1996-97**



Source: Statistical Tables, 1996-97, Health Insurance Commission

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# General medical practitioner services to males, 1996

## Capital city comparison (Australia as the Standard)

Standardised ratios (SRs) for general medical practitioner (GP) services to males varied between the capital cities (broadly in proportion to their population) from the highest ratio in the largest capital city of **Sydney** (125\*\*), to the lowest in **Darwin** (80\*\*). The differentials between the highest and lowest ratios is substantial, at just over fifty per cent.

Between 1989 and 1996 the *All capitals* SR increased (relative to the Australian rate) from 108\*\* to 113\*\*, indicating a higher rate of use of GP services by male residents of the capital cities relative to those in the non-metropolitan areas of Australia. At the capital city level, the largest movements were increases in **Melbourne** (where the ratio moved from well below the *All capitals* figure in 1989 to equal it in 1995/96) and **Perth** (where the ratio remained well below the *All capitals* average) to a decrease in **Hobart**.

**Table 6.63: General medical practitioner services to males, capital cities**  
*Standardised ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1996	125**	113**	106**	107**	101**	90**	80**	87**	113**
1989	124**	99**	111**	106**	91**	101**	84**	86**	108**

<sup>1</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

Almost 33 million GP services were recorded male residents of the capital cities and other major urban centres 1996.

## Capital cities

In **Sydney**, standardised ratios for GP services provided to males were elevated by more than 50 per cent in **Fairfield-Liverpool** (an SR of 155\*\*) and **Canterbury-Bankstown** (151\*\*). Elevated ratios were also recorded in **Central Western Sydney** (an SR of 144\*\*), **Inner Sydney** and **Blacktown-Baulkham Hills** (both with 131\*\*) and **Outer South Western Sydney** (130\*\*). The lowest ratios were in **Lower Northern Sydney** (an SR of 100\*) and **Hornsby-Ku-ring-gai** (100) where the number of services provided was at the level expected. There were more than a million services provided in four SSDs, with the largest numbers in **St George-Sutherland** (1,124,079 services), **Fairfield-Liverpool** (1,097,926) and **Canterbury-Bankstown** (1,067,763). In **Newcastle**, there were 1,010,035 services provided by GPs to males in 1996, eight per cent fewer than expected (92\*\*); and in **Wollongong**, males received 674,742 GP services, 13 per cent more than expected from the Australian rates (an SR of 113\*\*).

The highest rates of use of GP services in **Melbourne** were in **Dandenong** (an SR of 137\*\*), **Moreland** (136\*\*), **Hume** (128\*\*) and **Western Melbourne** (125\*\*). The lowest ratios were in **Boroondara** (an SR of 90\*\*), **Mornington Peninsula** (92\*\*) and **Yarra Ranges** (98\*\*); these were the only SSDs in **Melbourne** where male used GP services at levels below those expected. The largest number of services were provided in **Western Melbourne** (1,154,153 services), **Eastern Middle Melbourne** (1,001,429) and **Southern Melbourne** (904,366). In **Geelong**, there were 313,089 GP services, ten per cent fewer than expected (an SR of 90\*\*).

Standardised ratios for GP service use by males were elevated in all of the SSDs in **Brisbane** with the exception of **Beaudesert** (with an SR of 95\*\*). The highest ratios were in **Logan** (an SR of 120\*\*) and **Gold Coast Part A** (125\*\*). The largest numbers of GP services were in **Brisbane City** (1,914,129), **Logan** (427,907) and **Ipswich-Moreton** (297,846). There were 904,386

GP services provided to males in **Gold Coast-Tweed Heads**, two per cent fewer than expected (an SR of 98\*\*) and 257,370 in **Townsville-Thuringowa**, 11 per cent fewer than expected (89\*\*).

In **Adelaide**, the highest standardised ratios for the provision of GP services to males were in **Western** (an SR of 117\*\*) and **Northern** (115\*\*), and the lowest in **Eastern** (95\*\*). There were 879,645 GP services provided to males in **Northern** and 718,756 in **Southern**.

Males in **North Metropolitan** (with an SR of 111\*\*) and **East Metropolitan** (103\*\*) SSDs in **Perth** had more GP services than expected. The SRs in the other SSDs were all lower than expected, the lowest ratio being in **Central Metropolitan** (an SR of 84\*\*). There were 960,510 GP services to males in **North Metropolitan** and 671,680 in **South East Metropolitan**.

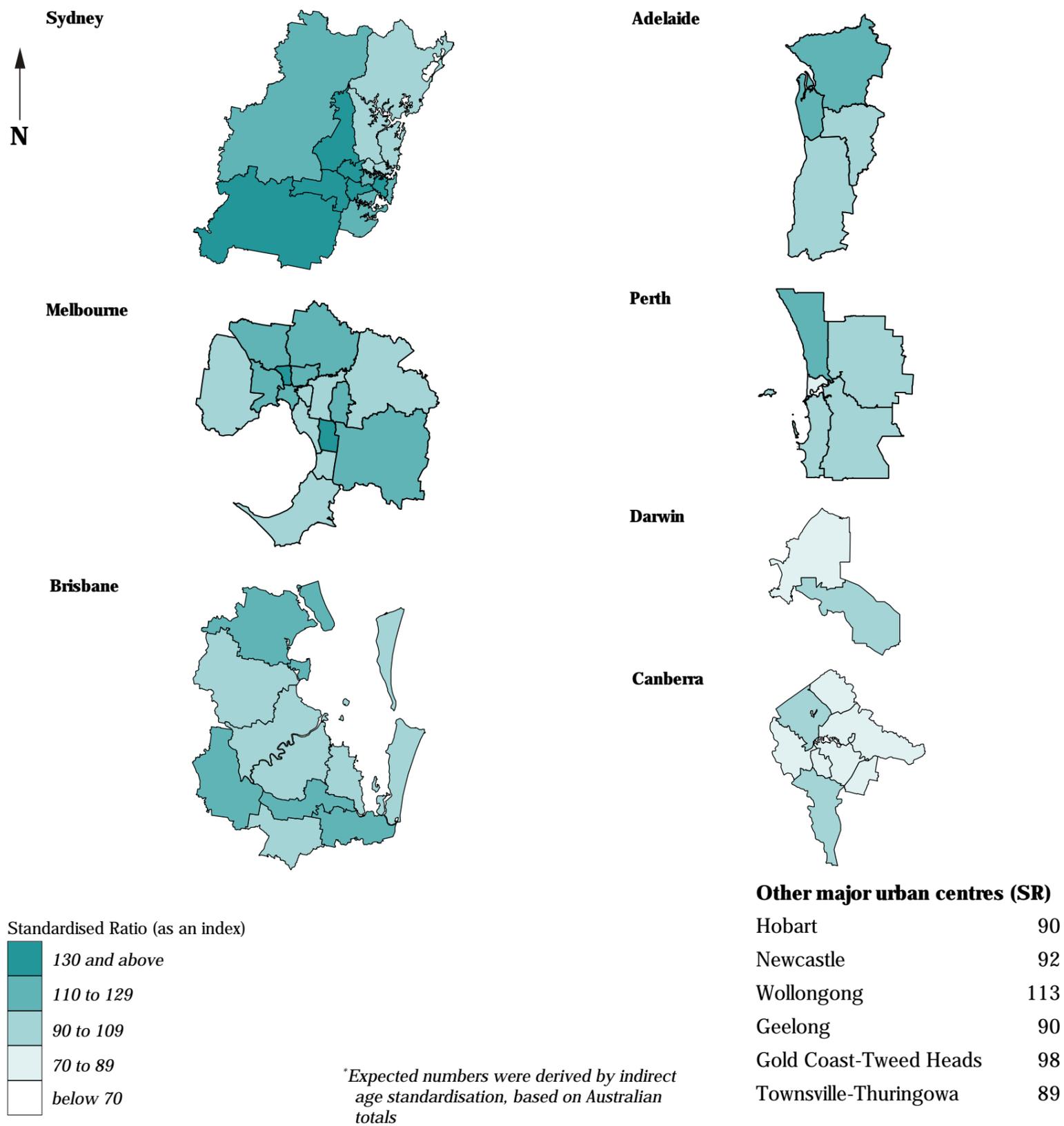
During 1996, there were 402,111 GP services provided to male residents of **Hobart**, ten per cent fewer than expected (an SR of 90\*\*).

In **Darwin**, males in both **Palmerston-East Arm** (with an SR of 91\*\* and 27,576 services) and **Darwin City** (78\*\*; 131,346 services) used fewer GP services than expected.

Males in each of **Canberra's** SSDs had fewer than the expected number of GP services. The highest ratios were in **Belconnen** (an SR of 92\*\*) and **Tuggeranong** (90\*\*), while low ratios were reported from **South Canberra** (76\*\*) and **Gungahlin-Hall** (80\*\*). **Tuggeranong** and **Belconnen** had the largest numbers of GP services provided to males, with 170,233 and 166,704 services, respectively.

# Map 6.55: General medical practitioner services to males, major urban centres, 1996

Standardised Ratio: number of services in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# General medical practitioner services to males, 1996

## State/Territory comparison (Australia as the Standard)

Standardised ratios (SRs) for GP services to males were lower in the non-metropolitan areas than in the capital cities, some substantially so. SRs ranged from a high of 83\*\* in Tasmania (the State with the smallest differential between the capital city and *Rest of State* rate) to a very low 31\*\* in the rural and remote areas of the Northern Territory. Readers should be aware of the notes on page 309, under *Data limitations*, as to the gaps in the data which are particularly likely to be contributing to the low rates in the Northern Territory and, to a lesser extent, Western Australia. The information in Chapter 7 as to the numbers and distribution of GPs in these areas is also of relevance.

With the exception of Victoria, SRs declined (relative to the Australian rate) in the non-metropolitan areas of all the States and the Northern Territory. The largest declines were in the Northern Territory, New South Wales and Tasmania,

**Table 6.64: General medical practitioner services to males, State/Territory**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1996</b>									
Capital city	125**	113**	106**	107**	101**	90**	80**	87**	113**
Other major urban centres <sup>1</sup>	99**	90**	97**	..	..	..	..	..	97**
Rest of State/Territory	74**	76**	79**	79**	61**	83**	31**	- <sup>2</sup>	74**
Whole of State/Territory	108**	103**	93**	99**	90**	86**	53**	88**	100
<b>1989</b>									
Rest of State/Territory	87**	76**	85**	80**	63**	95**	44**	- <sup>2</sup>	81**

<sup>1</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>2</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

In New South Wales, the use of GP services by males was 15 per cent or more below the levels expected from the Australian rates in every Statistical Subdivision (SSD). The highest ratios were in **Hastings** (with an SR of 85\*\*), **Richmond-Tweed SD Balance** (84\*\*), **Illawarra SD Balance** and **Central Tablelands** (both with 83\*\*). The lowest ratio was recorded for males in **Snowy** (an SR of 38\*\*, with 62 per cent fewer GP services to males than expected for a population of this size and age composition). SSDs with the largest numbers of GP services for males were **Richmond-Tweed** (331,931 services), **Hastings** (276,941), **Clarence** (260,700) and **Illawarra SD Balance** (239,381).

GP service use by males was also lower than expected in each of Victoria's SSDs, although SRs in **North Wimmera** (an SR of 97\*\*) and **East Central Highlands** (91\*\*) were just below the level expected. The next highest of these low SRs were in **Ballarat** (an SR of 89\*\*), **La Trobe Valley** (84\*\*), **South West Goulburn** (82\*\*), **South Loddon** (81\*\*) and **West Gippsland** (80\*\*). The lowest ratios were reported from **East Ovens-Murray** (an SR of 57\*\*) and **West Central Highlands** and **East Mallee** (both with 67\*\*). Males in **Ballarat** received 158,694 GP services, with 142,671 in **La Trobe Valley** and 135,025 in **North Goulburn**.

Only in **Toowoomba** (with an SR of 104\*\*) did male residents of the non-metropolitan areas of Queensland use more GP services than expected from the Australian rates. The next highest ratios were in **Sunshine Coast** (an SR of 99\*\*) and **Moreton SD Balance** (90\*\*). The lowest ratios were recorded for males in the remote **North West** (an SR of 42\*\*), **Central West** (49\*\*) and **Far North SD Balance** (60\*\*) SSDs. The largest numbers of services used were by males in **Sunshine Coast** (409,773 services), **Wide Bay-Burnett SD Balance** (353,005) and **Moreton SD Balance** (318,192).

Males in each of the South Australian SSDs also had fewer GP services in 1996 than were expected from the Australian rates. The highest ratios were in **Onkaparinga** (an SR of 93\*\*), **Fleurieu** (92\*\*) and **Yorke** (90\*\*), and the lowest ratio was in **Far North** (39\*\*). Low SRs were also recorded for males in **Kangaroo Island** (an SR of 61\*\*) and **West Coast** (64\*\*). The largest numbers of GP services were for males in **Barossa** (79,993 services), **Murray Mallee** (70,201) and **Lower South East** (65,956).

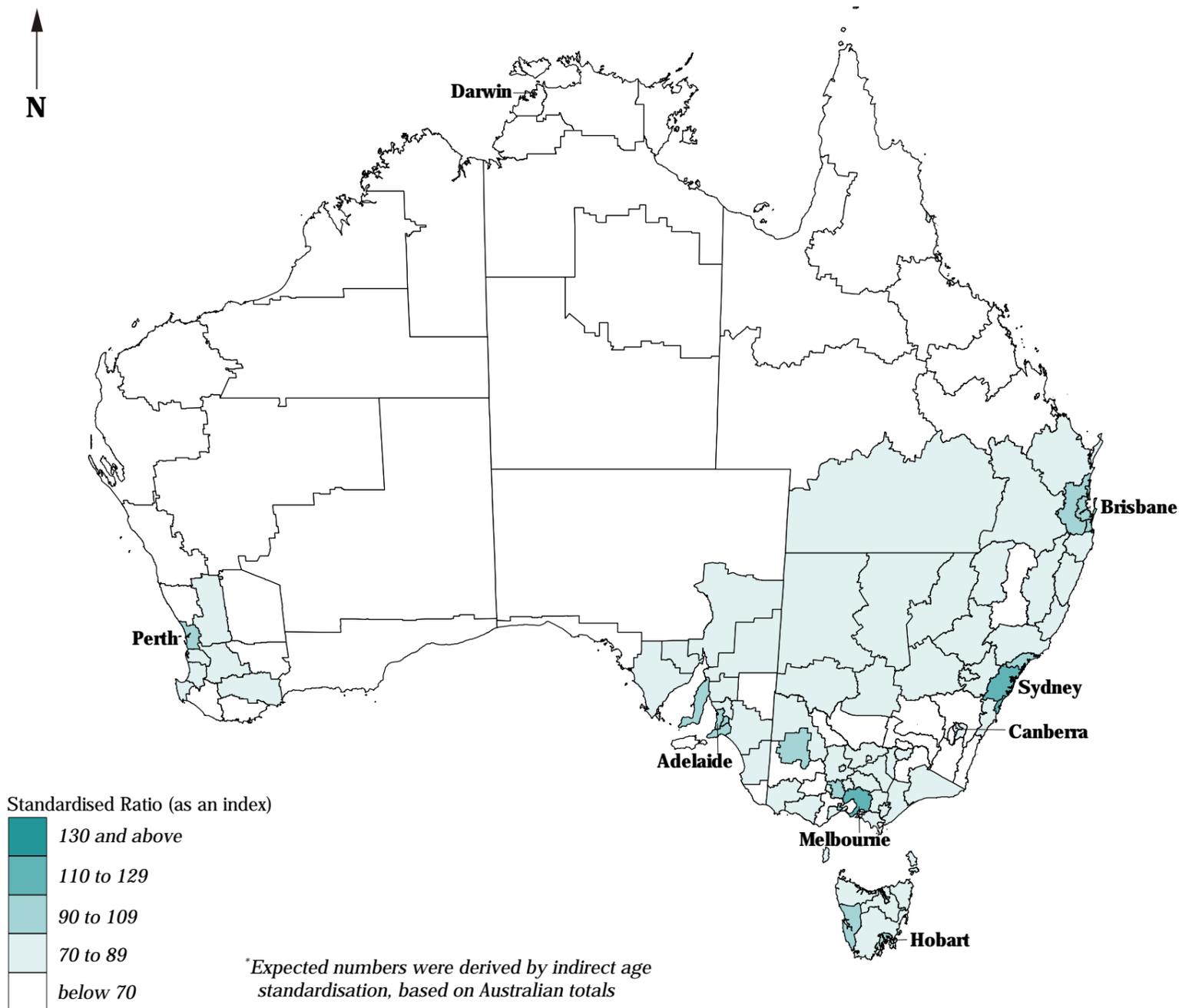
GP service use by males was below expected levels in all SSDs in Western Australia. The highest ratios were in **Dale** (with an SR of 85\*\*), **Pallinup** (84\*\*), **Vasse** (74\*\*), **Avon** (73\*\*), **Hotham** (72\*\*) and **Preston** (71\*\*). Very low ratios prevailed in **Gascoyne** (an SR of 26\*\*), **Fitzroy** (24\*\*) and **Carnegie** (21\*\*), with the lowest ratio in **Ord** (15\*\*), where GP service use by males was 85 per cent lower than expected from the Australian rates. The largest usage of GP services was by males in **Preston** (112,077 services), **Dale** (110,882) and **Greenough River** (70,363).

In Tasmania, the highest ratios for GP service use by males was in **Lyell** (with an SR of 95\*\*). Ratios in **Southern** and **Launceston** (both with an SR of 85\*\*) were 15 per cent lower than expected, and the lowest ratio was in **North Western Rural** (73\*\*). Males in **Launceston** received 194,582 services from GPs in 1996, and those in **Burnie-Devonport** received 150,840 services.

In the Northern Territory, GP service use by males was more than 50 per cent below expected levels in every SSD. The highest ratios were in **Darwin Rural Areas** (an SR of 36\*\*) and **Barkly** (46\*\*), and the lowest were in **Bathurst-Melville** (4\*\*), **Daly** (8\*\*) and **Alligator** (20\*\*). The largest numbers of services were for males in **Central NT** (30,104) and **Darwin Rural Areas** (14,475).

# Map 6.56: General medical practitioner services to males, Australia, 1996

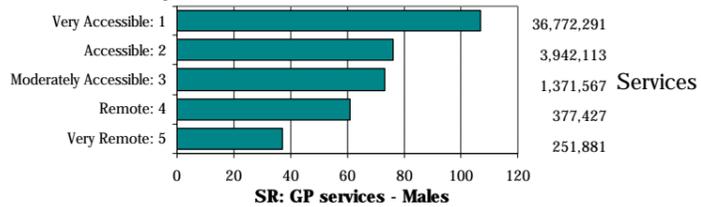
Standardised Ratio: number of services in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



Males in areas in the Accessible category had the highest rate of use of GP services, using 7 per cent more services than expected from the Australian rates (an SR of 107). Ratios in the other categories dropped away to SARs of 76 and 73 in the Accessible and Moderately Accessible categories, and to an SR of 61 in the Remote category, before declining to a very low SR of 37 in the Very Remote category (with 63 per cent fewer GP services to males than were expected from the Australian rates). Details of the distribution of GPs (Chapter 7) are of relevance in interpreting these data.

Source: Calculated on ARIA classification, DHAC  
National Social Health Atlas Project, 1999

# General medical practitioner services to females, 1996

## Capital city comparison (Australia as the Standard)

As was the case for GP services to males, the level of GP services received by females resident in the capital cities closely mirrored population size. There was, however, a lower differential (of 44.4 per cent) between the highest ratio, of 117\*\* in **Sydney**, and the lowest, of 81\*\* in **Darwin**, than was evident for males (56.2 per cent).

Between 1989 and 1996 SRs declined (relative to the Australian rates) in five of the capital cities, with the largest declines being in **Darwin** and **Hobart**.

**Table 6.65: General medical practitioner services to females, capital cities**  
*Standardised admission ratios*

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
1996	117**	110**	107**	105**	102**	96**	81**	88**	110**
1989	120**	99**	110**	103**	92**	102**	88**	89**	107**

<sup>1</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

As noted in the introductory text above, females use more general medical practitioner (GP) services than males, 6.7 services per female and 4.9 services per male. The highest rates of use by women, and the greatest difference between their rates of use and those of men, were by women in the 20 to 50 year age groups. The age distribution of women receiving these services is shown in **Figure 6.10** on page 313.

Female residents of the capital cities and other major urban centres used just over 46 million GP services in 1996.

## Capital cities

In **Sydney**, ratios of use of GP services by females were elevated by more than 30 per cent in **Fairfield-Liverpool** (an SR of 144\*\*), **Canterbury-Bankstown** (138\*\*) and **Central Western Sydney** (131\*\*). Relatively high ratios were also recorded for females in **Outer South Western Sydney** (128\*\*) and **Blacktown-Baulkham Hills** (an SR of 127\*\*). Only in **Hornsby-Ku-ring-gai** (an SR of 95\*\*) and **Lower Northern Sydney** (97\*\*) was GP service use lower than expected. The highest service usage was recorded for females in **St George-Sutherland** (1,537,975 services), **Blacktown-Baulkham Hills** (1,422,050) and **Fairfield-Liverpool** (1,387,966). GP service use by females was lower than expected in **Newcastle** (an SR of 94\*\* and 1,457,179 services) and higher than expected in **Wollongong** (106\*\*; 881,922 services).

The highest standardised ratios for GP service use by females in **Melbourne** were in **Dandenong** (an SR of 129\*\*), **Moreland** (126\*\*), **Hume** (123\*\*), **Western Melbourne** (117\*\*), **Northern Middle Melbourne** and **South Eastern Outer Melbourne** (both with 114\*\*). Relatively low service usage was recorded in **Yarra Ranges** and **Mornington Peninsula** (both with SRs of 101\*\*), but only **Boroondara** (with an SR of 89\*\*) had GP service usage by females below the level expected. More than one million services were received by females in each of **Western Melbourne** (1,525,362 services), **Eastern Middle Melbourne** (1,447,157) and **Southern Melbourne** (1,370,548). In **Geelong**, female residents used eight per cent fewer services than expected (an SR of 92\*\* and 465,747 services).

GP service use by females in **Brisbane** was either at, or above, expected levels in every SSD. The highest ratios were recorded for females resident in **Gold Coast Part A** (with an SR of 123\*\*), **Logan** (122\*\*), **Caboolture** (114\*\*) and **Ipswich-Moreton** (112\*\*). **Beaudesert** (an SR of 100) and **Brisbane City** (101\*\*) recorded the lowest ratios. There were 2,833,796 services used by females in **Brisbane City**, with 597,192 in next ranked **Logan**. GP service use by females was lower than expected in both **Gold Coast-Tweed Heads** (an SR of 98\*\*; 1,290,020 services) and **Townsville-Thuringowa** (92\*\*; 362,345 services).

There were elevated ratios for use of GP services by females in **Adelaide's Northern** (with an SR of 115\*\*) and **Western** (111\*\*) SSDs, with lower than expected usage in **Eastern** (93\*\*) and **Southern** (99\*\*). During 1996, there were 1,230,699 GP services to female residents of **Northern** SSD.

In **Perth**, the highest standardised ratios for GP service use by females were in **North Metropolitan** (with an SR of 111\*\*) and **East Metropolitan** (105\*\*), while the lowest ratio was in **Central Metropolitan** (83\*\*), with 17 per cent fewer GP services than expected for a population of this size and age composition. There were more than a million services provided to residents of **North Metropolitan** (1,384,265 services) and 987,579 in **South East Metropolitan**.

There were 626,330 GP services provided to female residents of **Hobart** in 1996, four per cent fewer than expected (an SR of 96\*\*).

In **Darwin**, the use of GP services by females was lower than expected in both **Darwin City** (with an SR of 77\*\*; 165,071 services) and **Palmerston-East Arm** (98\*\*; 38,678 services) SSDs.

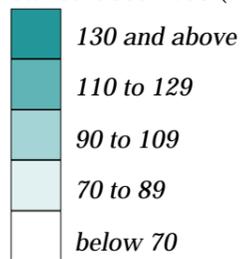
GP service use by females was below the level expected in each of **Canberra's** SSDs. The highest ratios were in **Tuggeranong** (an SR of 94\*\*) and **Belconnen** (91\*\*) and the lowest were in **South Canberra** (78\*\*) and **Weston Creek-Stromlo** (84\*\*). Over 100,000 services were provided in to females in each of **North Canberra** (110,731 services), **Belconnen** (235,943) and **Tuggeranong** (247,147).

# Map 6.57: General medical practitioner services to females, major urban centres, 1996

Standardised Ratio: number of services in each Statistical Subdivision compared with the number expected\*



Standardised Ratio (as an index)



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

### Other major urban centres (SR)

Hobart	96
Newcastle	94
Wollongong	106
Geelong	92
Gold Coast-Tweed Heads	98
Townsville-Thuringowa	92

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# General medical practitioner services to females, 1996

## State/Territory comparison (Australia as the Standard)

As for males, standardised ratios (SRs) for GP services for females were lower in the *Rest of State/Territory* areas than in the capital cities for all the States and the Northern Territory. SRs were, however, generally higher than those for males. Again, SRs ranged from the highest in Tasmania (89\*\*) to the lowest in the Northern Territory (33\*\*). The data limitations for these rural and remote areas should be borne in mind when using this data (see page 309). The information in Chapter 7 as to the numbers and distribution of GPs in these areas is also of relevance.

There was less movement in the SRs between 1989 and 1996 than was evident for GP services to males. The largest declines in GP service use were in the ratios for Queensland and the Northern Territory.

**Table 6.66: General medical practitioner services to females, State/Territory**  
*Standardised admission ratios*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
<b>1996</b>									
Capital city	117**	110**	107**	105**	102**	96**	81**	88**	110**
Other major urban centres <sup>1</sup>	98**	92**	97**	..	..	..	..	..	97**
Rest of State/Territory	78**	81**	82**	82**	70**	89**	33**	- <sup>2</sup>	79**
Whole of State/Territory	105**	102**	95**	99**	94**	93**	55**	89**	100
<b>1989</b>									
Rest of State/Territory	88**	79**	100	81**	70**	95**	46**	- <sup>2</sup>	87**

<sup>1</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>2</sup>Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Statistical significance: \* significance at 5 per cent; \*\* significance at 1 per cent

## Rest of Australia

In New South Wales, GP service use by females was below expected levels in each non-metropolitan Statistical Subdivision (SSD). The highest ratios were recorded for females from **Upper Darling** and **Macquarie-Barwon** (both with an SR of 92\*\*), **Central Tablelands** (90\*\*) and **Hastings** (87\*\*). In contrast, the lowest ratios were in **Snowy** (an SR of 46\*\*), **Central Murrumbidgee** (66\*\*) and **Lower South Coast** (70\*\*). The largest numbers of GP services were recorded for females resident in **Richmond-Tweed SD Balance** (469,389 services), **Hastings** (394,154) and **Clarence** (357,609).

GP service use was below the level expected from the Australian rates in all Victorian SSDs other than **North Wimmera** (with an SR of 106\*\*). The highest of these other ratios were in **East Central Highlands** (an SR of 94\*\*), **Ballarat** (93\*\*) and **La Trobe Valley** (89\*\*) and the lowest ratios were in **East Ovens-Murray** (65\*\*) and **Mildura** (69\*\*). There were more than 200,000 GP services recorded for females in **Ballarat** (248,139 services) and **La Trobe Valley** (210,468), and 198,549 services in **Bendigo**.

Only in **Toowoomba** (with an SR of 103\*\*) did female residents of the non-metropolitan areas of Queensland use more GP services than expected from the Australian rates. The next highest ratios were in the surrounding SSDs of **Darling Downs** (an SR of 89\*\*) and **Moreton SD Balance** (94\*\*), as well as in **Sunshine Coast** (97\*\*). The lowest ratios were in the more remote areas of the State, in **North West** (an SR of 46\*\*), **Central West** (54\*\*) and **Far North SD Balance** (63\*\*). The largest numbers of services were for females in **Sunshine Coast** (575,703 services), **Wide Bay-Burnett SD Balance** (485,000) and **Moreton SD Balance** (423,609).

All of the South Australian SSDs had lower rates of GP service usage by females in 1996 than expected from the Australian rates. The highest ratios were in **Fleurieu** (an SR of 92\*\*), **Yorke** (93\*\*) and **Onkaparinga** (96\*\*). In contrast, the lowest ratios were in **Far North** (an SR of 47\*\*, with 53 per cent fewer services than expected), **Lower South East** (68\*\*) and **Riverland** (69\*\*). The largest numbers of services were recorded for female residents in **Barossa** (108,776 services), **Murray Mallee** (94,037) and **Lower South East** (92,056).

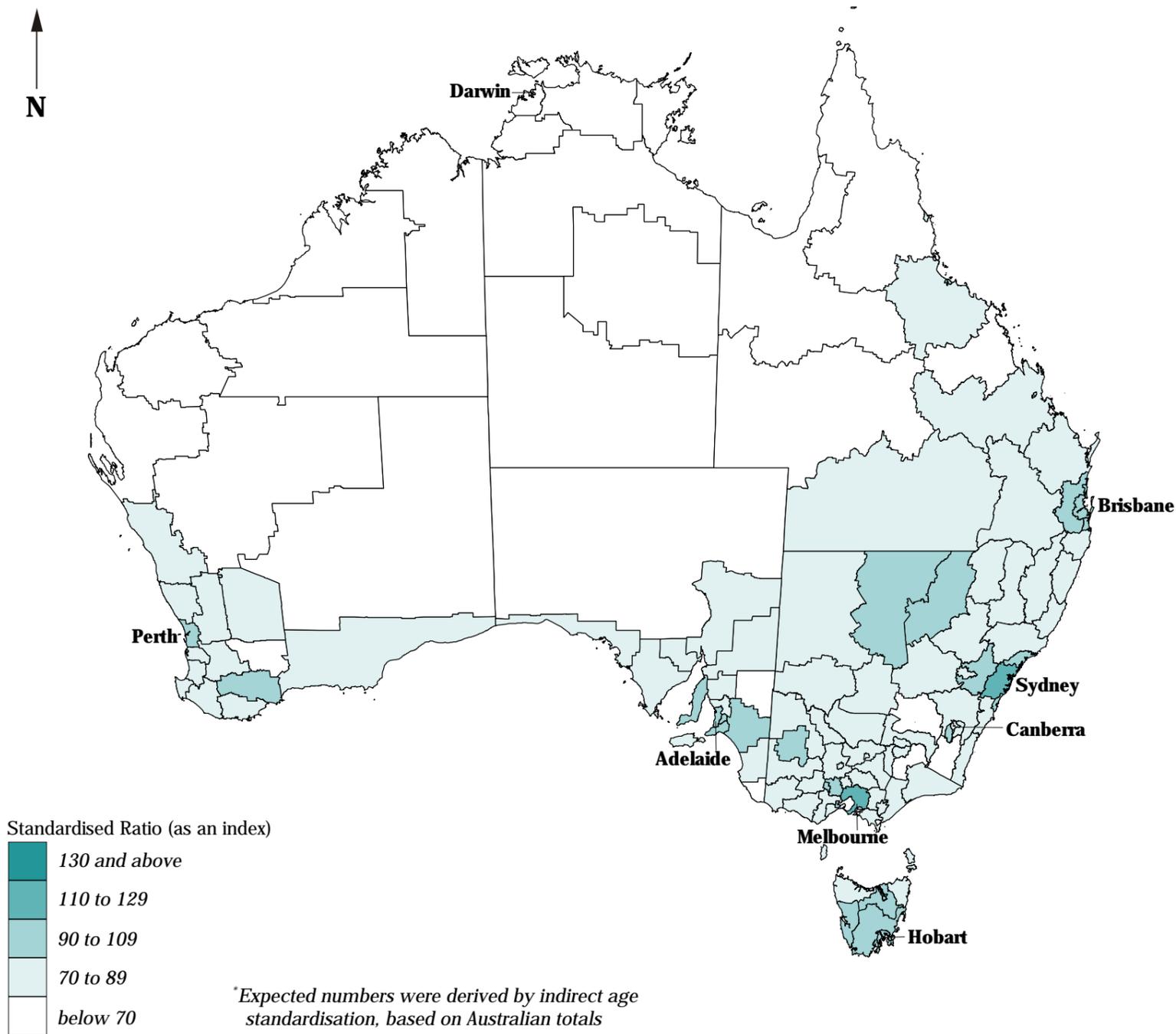
In Western Australia, standardised ratios for GP service use by females ranged from an SR of 96\*\* in **Pallinup** to 18\*\* in **Ord**, where there were 82 per cent fewer services than expected. SSDs with relatively high ratios were **Dale** (an SR of 88\*\*), **Vasse**, **Hotham** and **Moore** (each with an SR of 80\*\*). Low ratios were recorded in **Carnegie** (an SR of 41\*\*), **Gascoyne** (31\*\*) and **Fitzroy** (27\*\*). The largest numbers of GP services were recorded for females in **Preston** (162,668 services), **Dale** (153,766) and **Greenough River** (97,156).

In Tasmania, there were seven per cent more GP services to females resident in **Lyell** than expected, an SR of 107\*\*. In the remaining SSDs, GP service use was lower than expected, with the highest ratios in **Southern** (an SR of 95\*\*) and **Central North** (92\*\*) and the lowest ratio in **North Western Rural** (82\*\*). There were 301,969 GP services provided to female residents in **Launceston** and 226,182 in **Burnie-Devonport**.

Female residents of the Northern Territory used the smallest number of GP services. The highest ratios were recorded for females in **Barkly** (an SR of 46\*\*) and **Lower Top End NT** (37\*\*), with extremely low ratios recorded in **Bathurst-Melville** (4\*\*) and **Daly** (8\*\*). There were 42,879 GP services used by females in **Central NT**, and 19,861 in **Lower Top End NT**.

# Map 6.58: General medical practitioner services to females, Australia, 1996

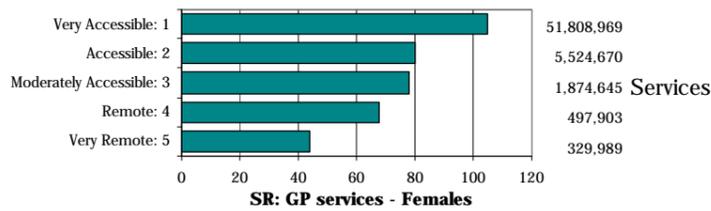
Standardised Ratio: number of services in each Statistical Subdivision compared with the number expected\*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

## Accessibility/Remoteness Index of Australia



As for males, females in areas included in the Accessible category had the highest rate of use of general medical practitioner (GP) services, using 5 per cent more GP services than expected from the Australian rates (an SR of 105). Ratios in the Accessible and Moderately Accessible categories were 80 and 78, respectively, with lower ratios again in the Remote and Very Remote categories, SRs of 68 and 44, respectively. Details of the distribution of GPs (Chapter 7) are of relevance in interpreting these data.

Source: Calculated on ARIA classification, DHAC

National Social Health Atlas Project, 1999

# Immunisation status of children at 12 months of age, 1998

## Capital city comparison

Immunisation data are collected by the Health Insurance Commission which maintains the Australian Childhood Immunisation Register (ACIR). The ACIR, a project funded by the Commonwealth Government through the Commonwealth Department of Health and Aged Care, provides comprehensive information on the immunisation status of children under seven years of age in Australia. These data are used to provide a measure of coverage at a National, State/Territory and local level and to provide an effective management tool for monitoring immunisation coverage and service delivery. The register was commenced in 1996 and by mid 1998 had sufficient coverage of the immunisation status of children at twelve months of age to be used for this analysis. Hull et al. (1999) reported that 80.1 per cent of vaccinations recorded in the ACIR for New South Wales were provided by GPs, 8.4 per cent by municipal councils and 11.5 per cent by other providers (eg. Government operated community health centres, Aboriginal health services and Royal Flying Doctor services).

The data shown here are the proportion of children born between 1 October 1996 and 30 September 1997 who were registered with Medicare and who were shown on the ACIR at 31 December 1998 as being fully immunised. Children who were fully immunised at 12 months of age were those who had been immunised for three doses of DTP (diphtheria, tetanus and pertussis), three doses of OPV (oral polio vaccine) and three doses of Hib (*Haemophilus influenzae* type b). The calculations shown in the tables and maps were made by the National Centre for Immunisation Research and Surveillance (NCIRS).

Immunisation rates for the capital cities were all close to the *All capitals* average of 82.5 per cent, ranging from 79.7 per cent in **Sydney** to 86.9 per cent in **Canberra**.

**Table 6.67: Proportion of children who were fully immunised at 12 months of age, capital cities, 1998**  
Per cent

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra <sup>1</sup>	All capitals
79.7	84.0	85.4	84.5	81.2	84.0	80.0	86.9	82.5

<sup>1</sup>Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

## Capital cities

In **Sydney**, only **Gosford-Wyong** (85.1 per cent) and **Outer South Western Sydney** (83.0 per cent) Statistical Subdivisions (SSDs) had proportionately more children immunised than the *All capitals* average. The next highest percentages were in **Outer Western Sydney** (82.0 per cent), **Northern Beaches** (80.9 per cent), **Eastern Suburbs** (73.0 per cent) and **Inner Sydney** (73.7 per cent). There were 6,196 fully immunised 12 month old children in **Blacktown-Baulkham Hills**, 5,497 in **Fairfield-Liverpool** and 5,426 in **St George-Sutherland**, at the end of December 1998. In **Newcastle**, the immunisation rate was a higher 87.0 per cent (6,143 children), while in **Wollongong** it was 84.3 per cent (3,471 children).

There were higher immunisation rates at the SSD level in **Melbourne**, reflecting the higher overall percentage than in **Sydney**. The highest rates were in **Eastern Outer Melbourne** (87.8 per cent), **South Eastern Outer Melbourne** (87.7 per cent), **Melton-Wyndham** (86.9 per cent) and **Northern Outer Melbourne** (86.4 per cent). **Yarra Ranges** (77.4 per cent) and **Inner Melbourne** (77.5 per cent) had the lowest immunisation rates. The largest numbers of 12 month old children who were fully immunised were in **Western Melbourne** (5,535 children), **Southern Melbourne** (4,649) and **Eastern Middle Melbourne** (4,566). In **Geelong**, there were 2,088 fully immunised children, 86.9 per cent.

The highest immunisation rates of 12 month old children in **Brisbane** were recorded in **Pine Rivers** (89.2 per cent), **Ipswich** (87.9 per cent) and **Redland** (87.0 per cent). **Logan**, **Caboolture** and **Redcliffe** SSDs had the lowest levels, with rates of 83.0, 83.2 and 83.5 per cent respectively. The largest numbers of 12 month old children who had been fully immunised were in **Brisbane City** (10,284 children), **Logan** (2,700) and

**Ipswich** (2,004). The immunisation rate in **Townsville-Thuringowa** was 86.2 per cent (1,899 children), with a rate of 82.9 per cent in **Gold Coast-Tweed Heads** (4,368 children).

Immunisation rates were almost the same in each SSD in **Adelaide**, with the highest rate in **Southern** (84.9 per cent) and the lowest in **Eastern** and **Western** (both with 83.8 per cent). There were 4,845 children in **Northern** who were fully immunised at 12 months and 3,677 in **Southern**.

The highest immunisation rates in **Perth** were in **East Metropolitan** (85.5 per cent) and **North Metropolitan** and **Central Metropolitan** (both with 81.7 per cent) and the lowest rate was in **South East Metropolitan** (77.2 per cent). The largest numbers of children who were fully immunised were in **North Metropolitan** (5,413 children) and **South East Metropolitan** (4,115).

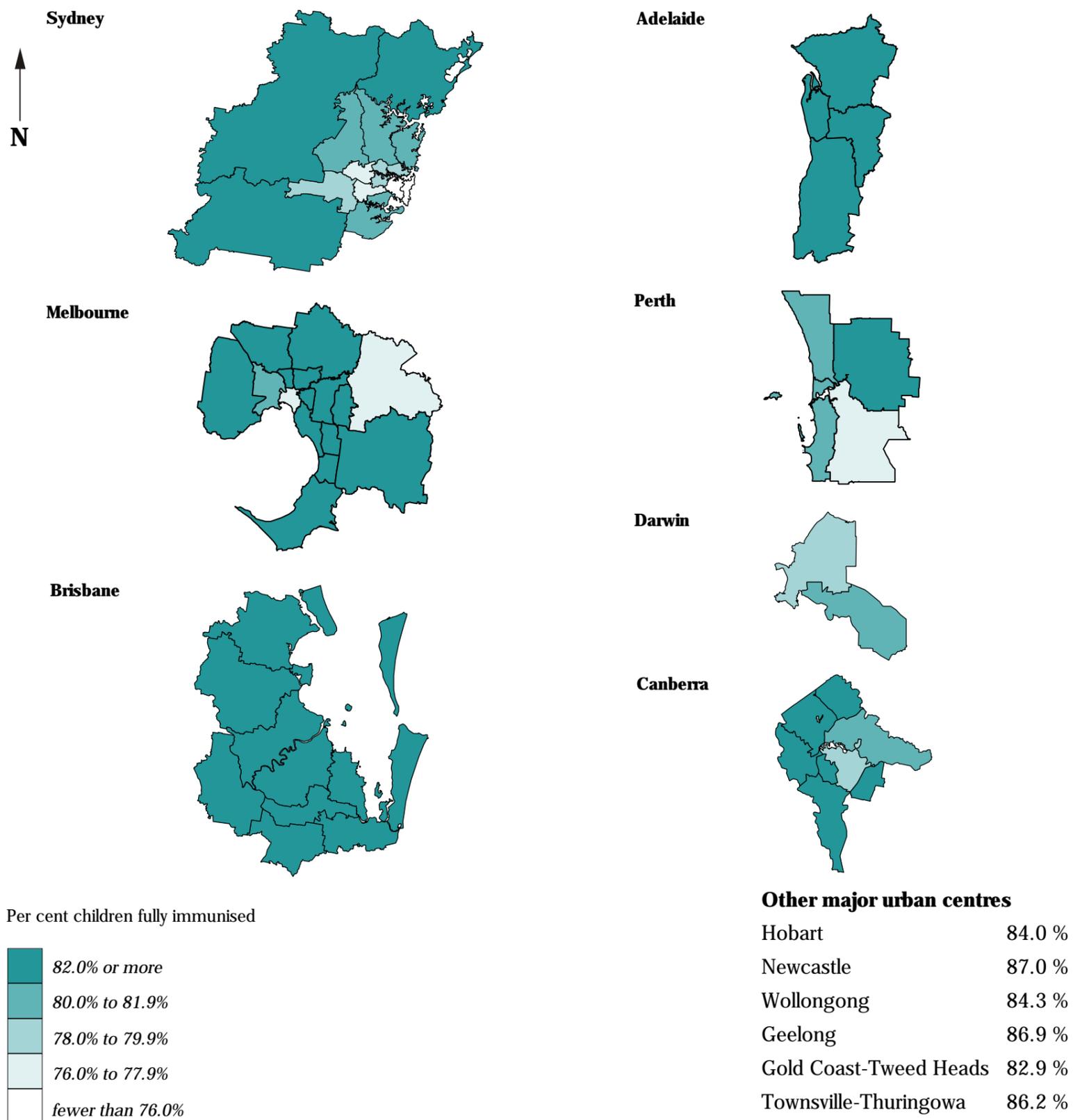
At 31 December 1998, there were 2,450 12 month old children in **Hobart** recorded as being fully immunised, 84.0 per cent of children.

In **Palmerston-East Arm** (453 children) and **Darwin City** (1,144 children) SSDs, immunisation rates were 81.8 and 79.3 per cent, respectively.

The highest immunisation rates for 12 month old children in **Canberra** were in **Gungahlin-Hall** (91.7 per cent), **Belconnen** (89.0 per cent) and **Weston Creek-Stromlo** (88.4 per cent). The lowest rates were in **North Canberra** (82.0 per cent) and **South Canberra** (79.8 per cent). In December 1998, 1,561 12 month old children in **Tuggeranong** and 1,004 in **Belconnen** were fully immunised.

# Map 6.59: Immunisation status of children at 12 months of age, major urban centres, 1998

as a percentage of all children at 12 months of age in each Statistical Subdivision



### Other major urban centres

Hobart	84.0 %
Newcastle	87.0 %
Wollongong	84.3 %
Geelong	86.9 %
Gold Coast-Tweed Heads	82.9 %
Townsville-Thuringowa	86.2 %

Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2  
National Social Health Atlas Project, 1999

# Immunisation status of children at 12 months of age, 1998

## State/Territory comparison

Details of the information described below are on the previous text page. Immunisation rates were higher in the *Rest of State/Territory* areas than in the capital cities in a number of States, with the highest rates in Queensland and Victoria. As can be seen from the graph of the ARIA index (opposite page), these higher rates do not apply uniformly across the *Rest of State/Territory* areas. With the exception of the Northern Territory, immunisation rates for the non-metropolitan areas of Australia were all close to the *Rest of State/Territory* average of 83.6 per cent. The low rate reported for the Northern Territory reflects a number of factors, including difficulties in transmitting accurate data on levels of immunisation in the Territory: it is unclear whether the real rate is lower than in other parts of Australia.

**Table 6.68: Proportion of children who were fully immunised at 12 months of age, State/Territory, 1998**  
*Per cent*

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total <sup>1</sup>
Capital city	79.7	84.0	85.4	84.5	81.2	84.0	80.0	86.9 <sup>1</sup>	82.5
Other major urban centres <sup>2</sup>	86.0	86.9	84.2	..	..	..	..	..	85.4
Rest of State/Territory	81.8	86.0	86.1	83.6	80.6	84.5	62.8	— <sup>3</sup>	83.6
Whole of State/Territory	81.0	84.6	85.5	84.2	81.0	84.3	70.6	86.8	83.0

<sup>1</sup>Includes Queanbeyan (C)

<sup>2</sup>Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

<sup>3</sup>Data included with ACT total

Source: See *Data sources*, Appendix 1.3

## Rest of Australia

In New South Wales, there were relatively high immunisation rates in **Albury** (88.5 per cent), **Hunter SD Balance** (87.3 per cent), **Southern Tablelands** (87.0 per cent), **Murray-Darling** (86.7 per cent) and **Queanbeyan** (86.4 per cent). Immunisation rates of less than 80 per cent were recorded in six Statistical Subdivisions (SSDs), with the lowest rates in **Upper Darling** (70.1 per cent), **Far West** (72.0 per cent) and **Richmond-Tweed SD Balance** (77.0 per cent). The largest numbers of fully immunised children were recorded in **Richmond-Tweed SD Balance** (2,171 children), **Clarence** (1,820), **Hastings** (1,567) and **Illawarra SD Balance** (1,563).

Very high immunisation rates were recorded for 12 month old children in the Victorian SSDs of **South Wimmera** (93.7 per cent), **West Mallee** (92.3 per cent) and **West Central Highlands** (91.8 per cent). The lowest rates were in **East Ovens-Murray** (75.1 per cent, and the only SSD with a rate less than 80 per cent), **North Loddon** (81.0 per cent) and **Shepparton** (83.1 per cent). There were 1,111 fully immunised children in **Ballarat**, 1,105 in **La Trobe Valley**, 1,096 in **North Goulburn** and 1,000 in **Bendigo**.

Immunisation rates of above 90 per cent were also recorded in the Queensland SSDs of **Central West** (96.0), **Mackay** (91.5 per cent) and **Mackay SD Balance** (91.0 per cent), while there were relatively high rates in **Toowoomba** (89.7 per cent), **Gladstone** (89.6 per cent) and **Bundaberg** (89.2 per cent). The lowest rates were in **Far North SD Balance** (78.5 per cent) and **Cairns** (82.6 per cent). There were 2,381 fully immunised children in **Wide Bay-Burnett SD Balance**, 2,010 in **Sunshine Coast** and 1,969 in **Moreton SD Balance**.

In South Australia, the highest immunisation rates were recorded in **Pirie** (89.9 per cent), **Lower South East** (89.3 per cent), **Upper South East** (87.9 per cent) and **Lower North** (85.8 per cent). Five SSDs had proportions of less than 80 per cent of 12 month old children recorded as being fully immunised, with the lowest in **Flinders Ranges** (68.6 per cent) and **West Coast**

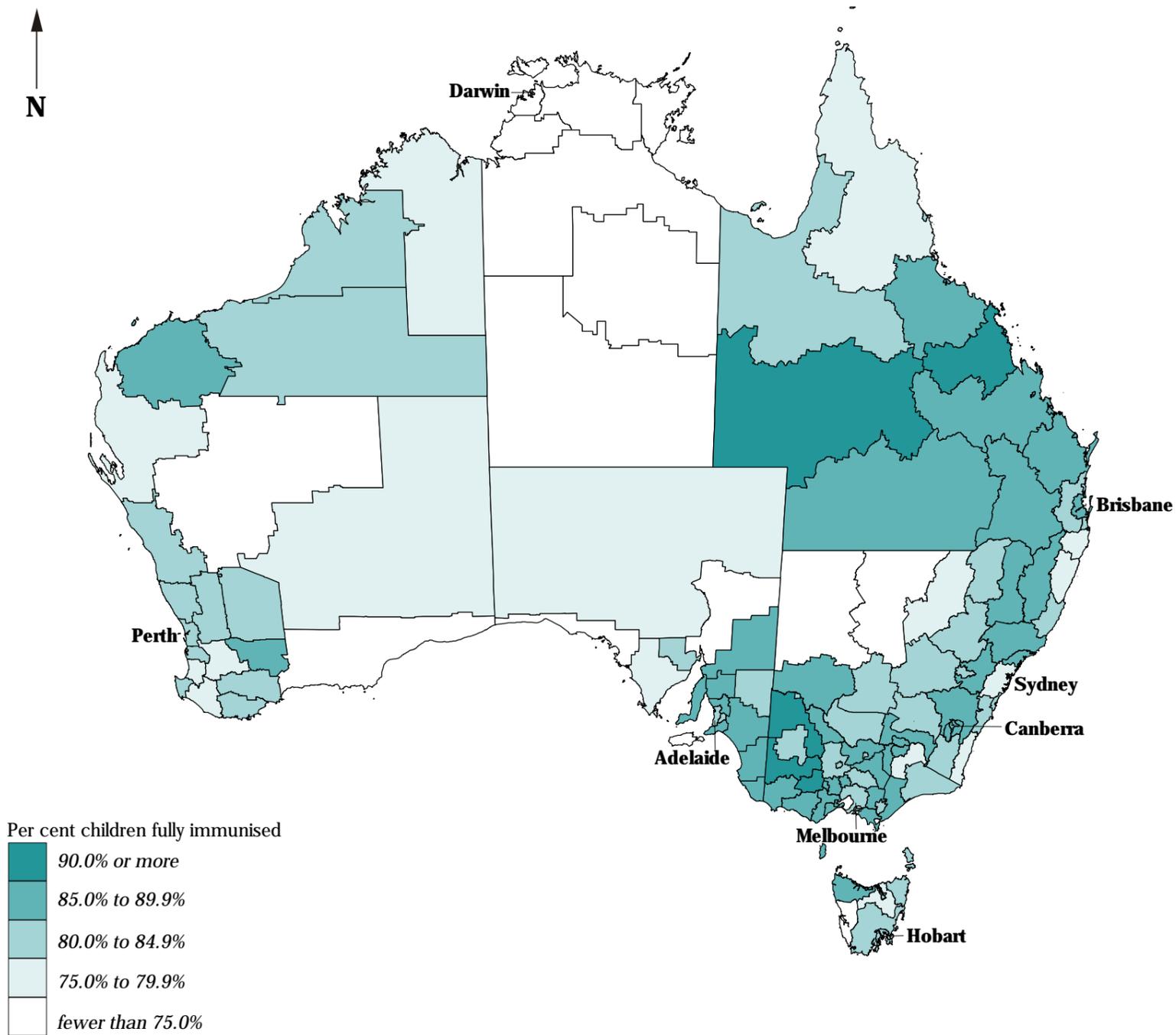
(73.7 per cent). The largest numbers of fully immunised children at 12 months of age were in **Lower South East** (623 children), **Barossa** (509) and **Riverland** (464).

The highest rates of fully immunised children in Western Australia were recorded for children in **Lakes** (88.3 per cent), **Fortescue** (86.7 per cent), **King** (84.9 per cent) and **Moore** (83.1 per cent). Eight SSDs had proportions of below 80 per cent, with the lowest being in **Carnegie** (54.7 per cent), **Johnston** (74.9 per cent) and **Ord** (75.4 per cent). There were 1,045 fully immunised children in **Preston**, 811 in **Lefroy** and 796 in **Greenough River**.

There were relatively high immunisation rates for children at 12 months in **Burnie-Devonport** (89.5 per cent), **North Western Rural** (87.6 per cent) and **Launceston** (84.2 per cent) in Tasmania, and lower rates in **Central North** (76.1 per cent) and **Lyell** (68.8 per cent). The largest numbers of fully immunised children were in **Launceston** (1,321 children) and **Burnie-Devonport** (1,062).

Immunisation rates were lower in the non-metropolitan areas of the Northern Territory than elsewhere in Australia. The highest rates were in **Lower Top End NT** (68.6 per cent), **Darwin Rural Areas** (66.1 per cent) and **Barkly** (61.8 per cent). There were very low rates in **Bathurst-Melville** (50.7 per cent) and **Daly** (52.9 per cent). The largest numbers of fully immunised children were in **Central NT** (738 children) and **Lower Top End NT** (383).

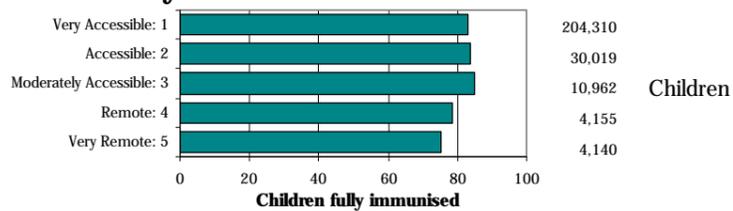
**Map 6.60: Immunisation status of children at 12 months of age, Australia, 1998**  
as a percentage of all children at 12 months of age in each Statistical Subdivision



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

**Accessibility/Remoteness Index of Australia**



There is little variation in recorded immunisation rates across the ARIA categories. Just over 80 per cent of 12 month old children in each of the three 'accessible' ARIA categories were fully immunised, with lower rates of 78.5 per cent in the Remote category and 75.3 per cent in the Very Remote category.

Source: Calculated on ARIA classification, DHAC  
National Social Health Atlas Project, 1999

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