

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
Children (0 to 14 years)				
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***
Youth (15 to 24 years)				
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
Adults (25 to 64 years)				
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**
Older people (65 years & over)				
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***
All ages				
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 include 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 183 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 time¹. There are, however, relatively small but significant deficiencies in the database. These deficiencies are described under *Deficiencies in the admissions data* (page 191).

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 (eg. community health services, including community mental health services), domiciliary care services and home based nursing and care services;
- 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).

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

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 191).

Admissions to hospitals

Introduction

There were almost 4.8 million admissions (see the box below) to hospitals in Australia in 1995/96 (884,000 admissions in Queensland), 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 191)

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 (i.e. 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 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; genito-urinary 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 hospitals¹, by cause, Australia, 1996/97

Cause	Admissions identified as Indigenous		Age-standardised admission ratio ²		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
All causes (excluding dialysis)	49,293	63,454	1.4	1.4	78.4	77.7
All causes (including dialysis)	62,838	81,626	1.7	1.7	100.0	100.0

¹Excludes admissions to the Darwin Private Hospital

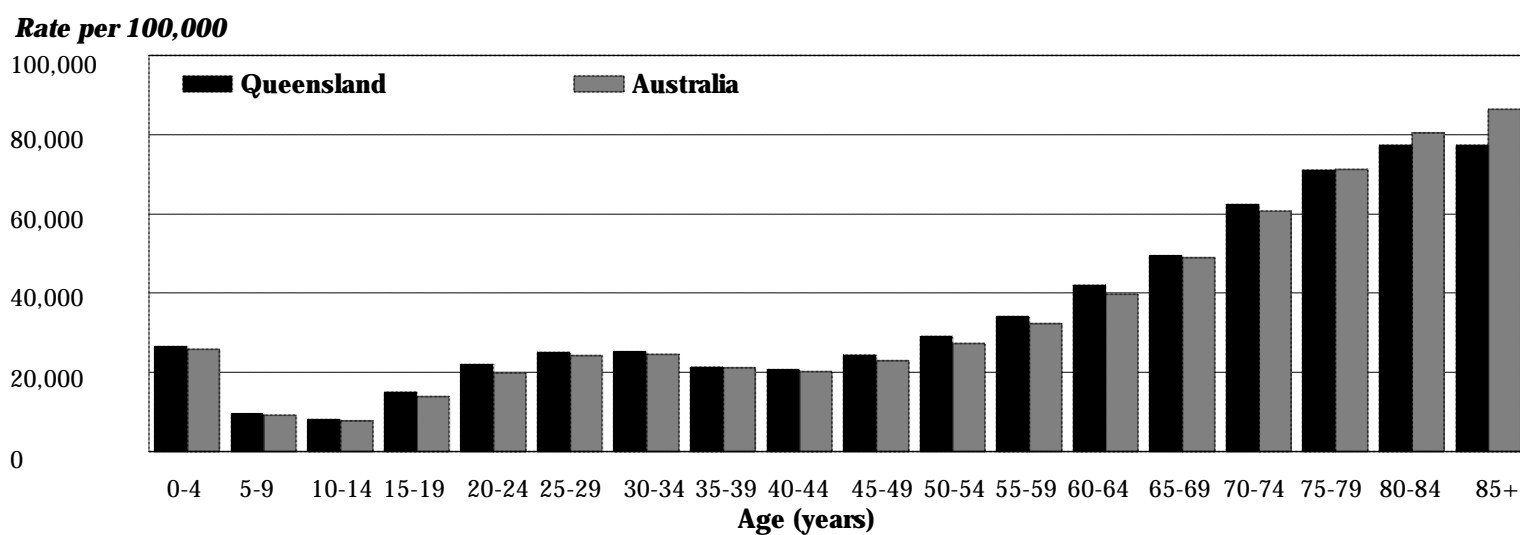
²Age-standardised hospital admission ratio is equal to hospital admissions identified as being of Indigenous people, divided by expected admissions, based on all-Australian rates

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

Differences between Queensland and Australia

Figure 6.1 shows the rates of admission per 100,000 population for residents of Queensland and Australia for each five year age group. Admission rates for Queensland and Australia are similar across the age groups, with Queensland residents having slightly higher rates in all age groups.

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



Source: See Data sources, Appendix 1.3

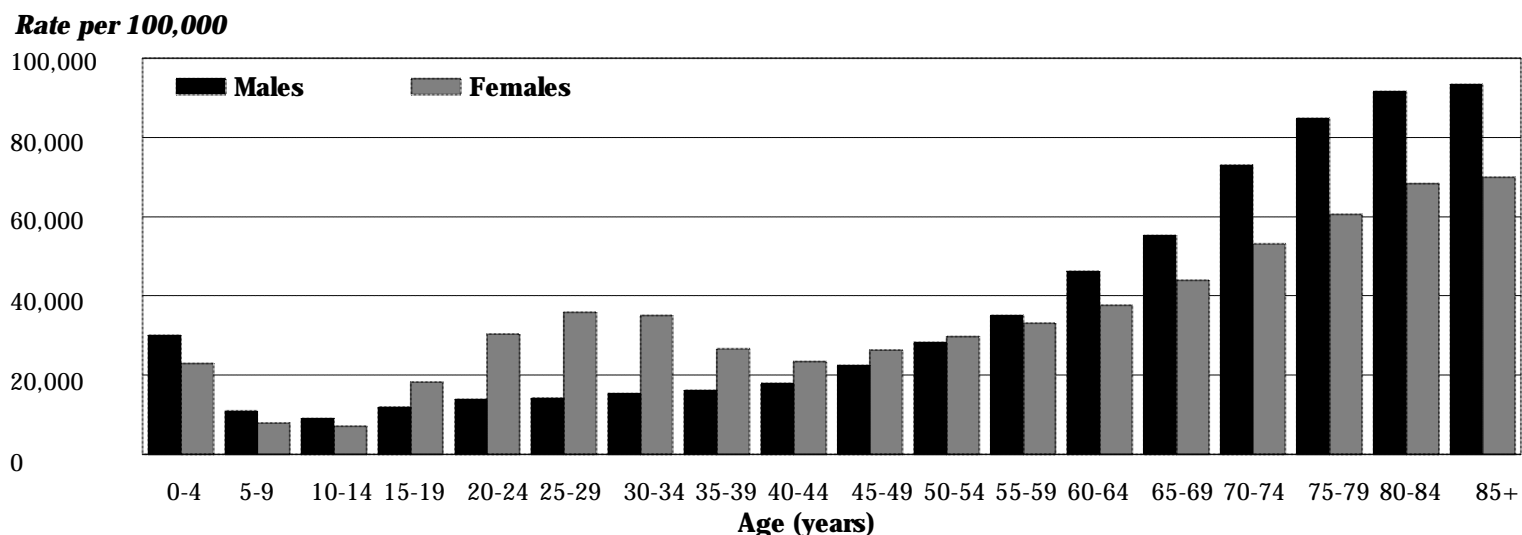
Differences related to age, sex and hospital type

Figures 6.2 to 6.10 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 Queensland admitted to a hospital.

Females accounted for 54.2 per cent of admissions, 15.5 per cent more than males in 1995/96 (Figure 6.2). 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 2.5 times that for males. Female rates in the 20 to 24 (2.2 times), 30 to 34 (2.3 times) and 35 to 39 (1.7 times) year age groups were still well above those for males. These higher rates largely reflect episodes of hospitalisation for childbirth and associated admissions. The rates for males were higher than for females among those aged 5 to 9 years (1.4 times as high, respectively), and from age 55 (the greatest disparity being the rate for males aged 70 years and over) averaging 1.4 times higher than the corresponding female rate.

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



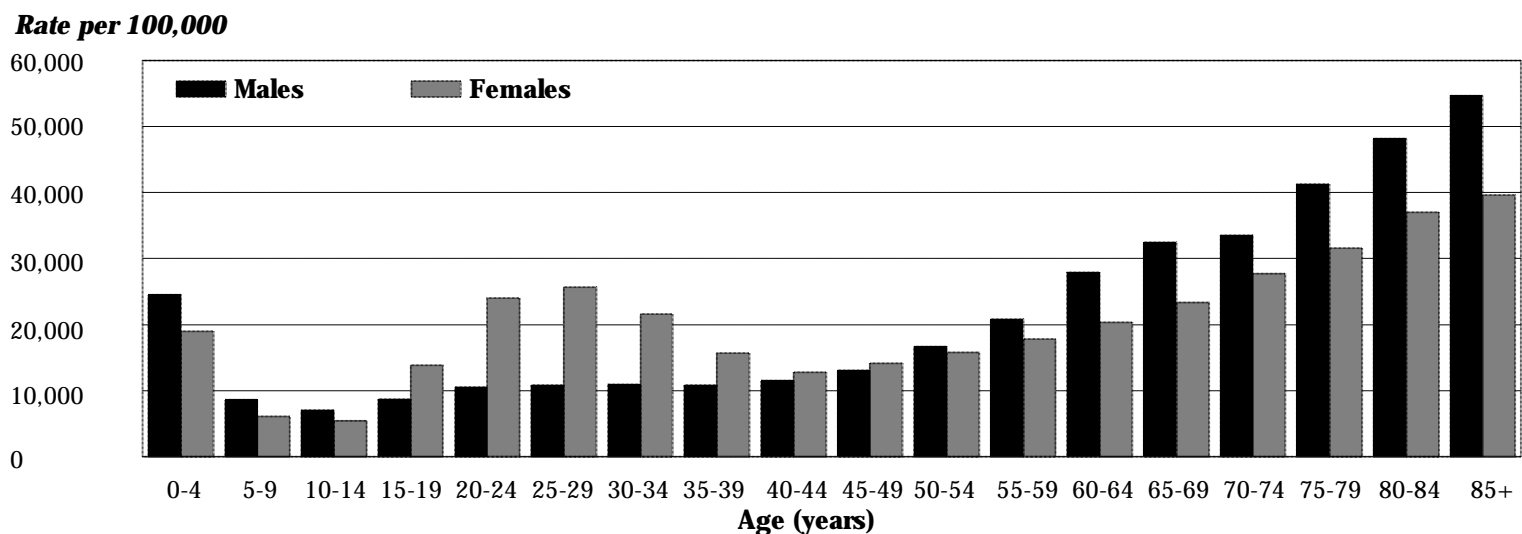
Source: See Data sources, Appendix 1.3

The profile of admissions to public acute hospitals (Figure 6.3) is markedly similar to that for all admissions (Figure 6.2). Higher rates of admissions of females are evident from the 15 to 19 year age group through to the 45 to 49 year age group. Male rates are higher at the youngest ages, and again from the 50 to 54 year age group onwards.

Overall, private hospitals accounted for 37.1 per cent of the admissions analysed for Queensland. Females make greater use

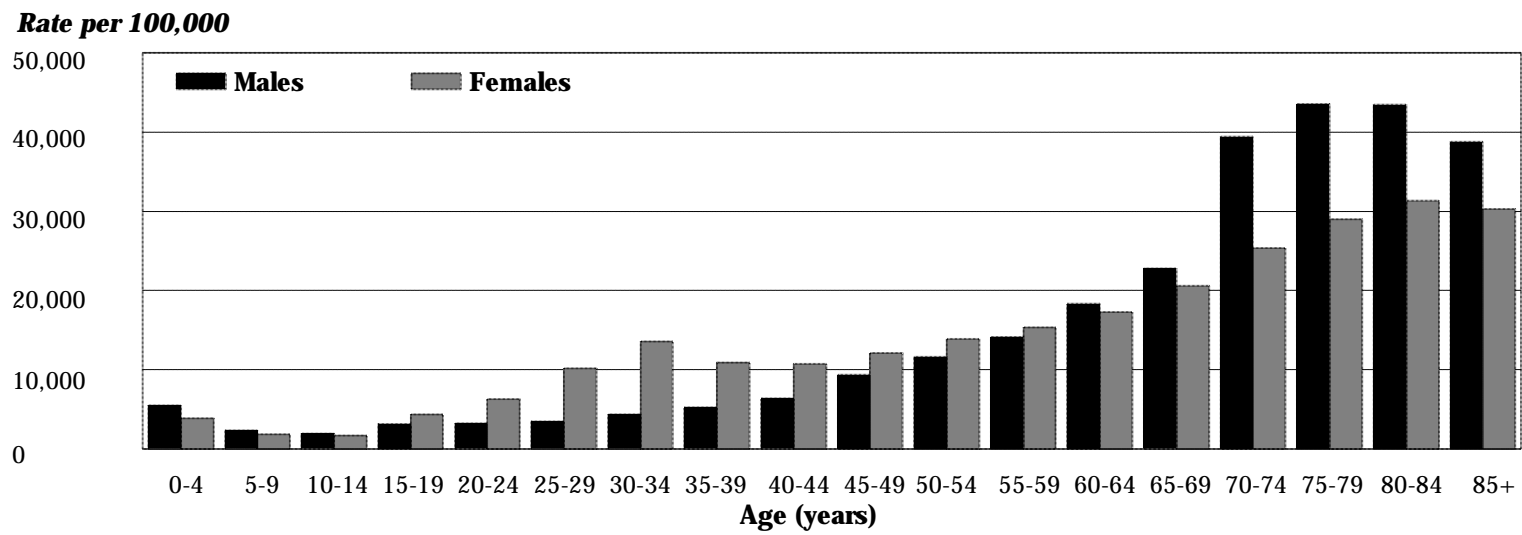
of private hospitals than males, with admissions to private hospitals representing 37.9 per cent of all female admissions studied (compared with 36.3 per cent for males) and accounting for 55.3 per cent of private hospital admissions (53.6 per cent in public acute hospitals). The pattern of admissions to private hospitals by age and sex (Figure 6.4) is again similar to that in the previous graphs. The most noticeable differences are the lower overall rates of admission and the lower admission rates for males above 80 years of age.

Figure 6.3: Admissions to public acute hospitals, by age and sex, Queensland, 1995/96



Source: See Data sources, Appendix 1.3

Figure 6.4: Admissions to private hospitals, by age and sex, Queensland, 1995/96

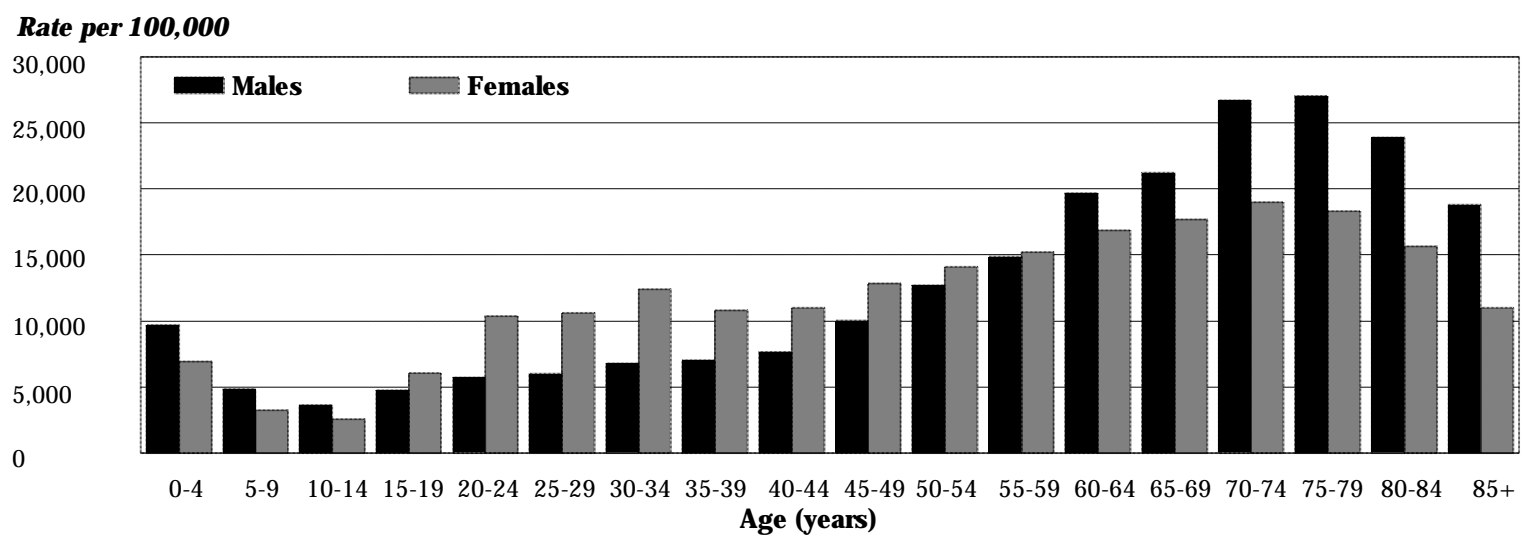


Source: See Data sources, Appendix 1.3

The general pattern of higher admission rates among females aged 15 to 44 years and among males in the youngest and oldest age groups is also evident for same day admissions (Figure 6.5). However, there are some notable differences. From the age of 25 years, female rates remain reasonably consistent, increasing

marginally in the 45 to 49 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 of 75 to 79 year age group, from where they begin to decline.

Figure 6.5: Same day admissions, by age and sex, Queensland, 1995/96

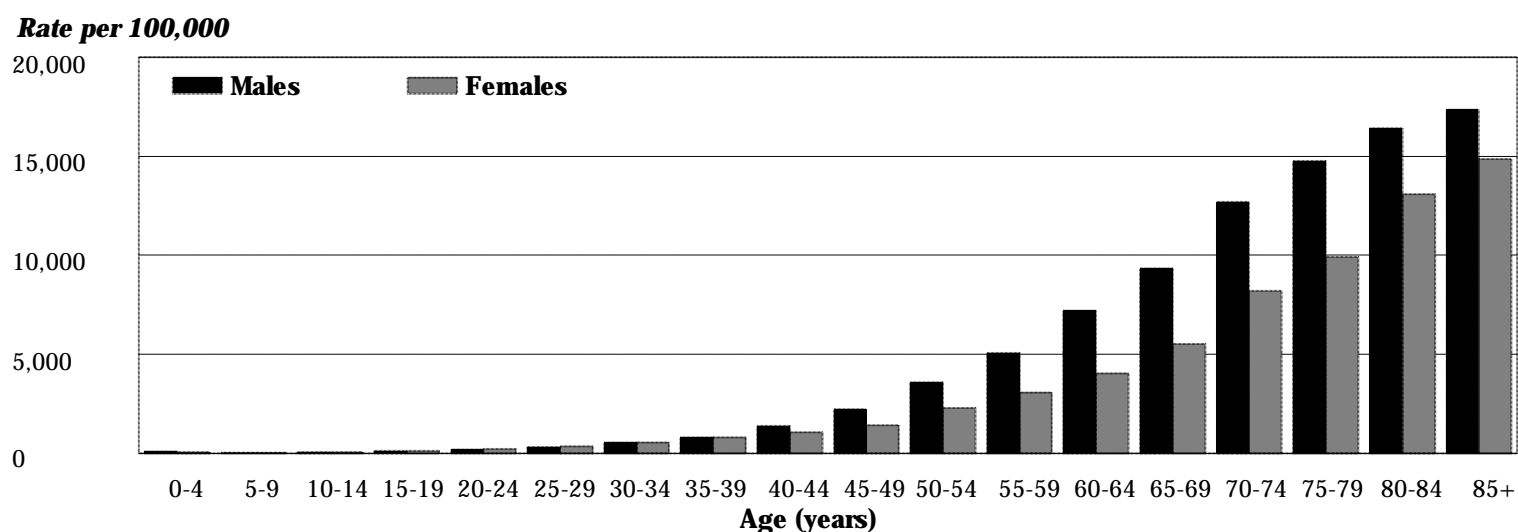


Source: See Data sources, Appendix 1.3

Figure 6.6 and **Figure 6.7** show admissions for circulatory and respiratory system diseases, respectively. **Figure 6.6** highlights the steep rise in hospital admissions for circulatory system diseases from the age of 30 years, with males predominating across the age groups. Admission rates for respiratory system

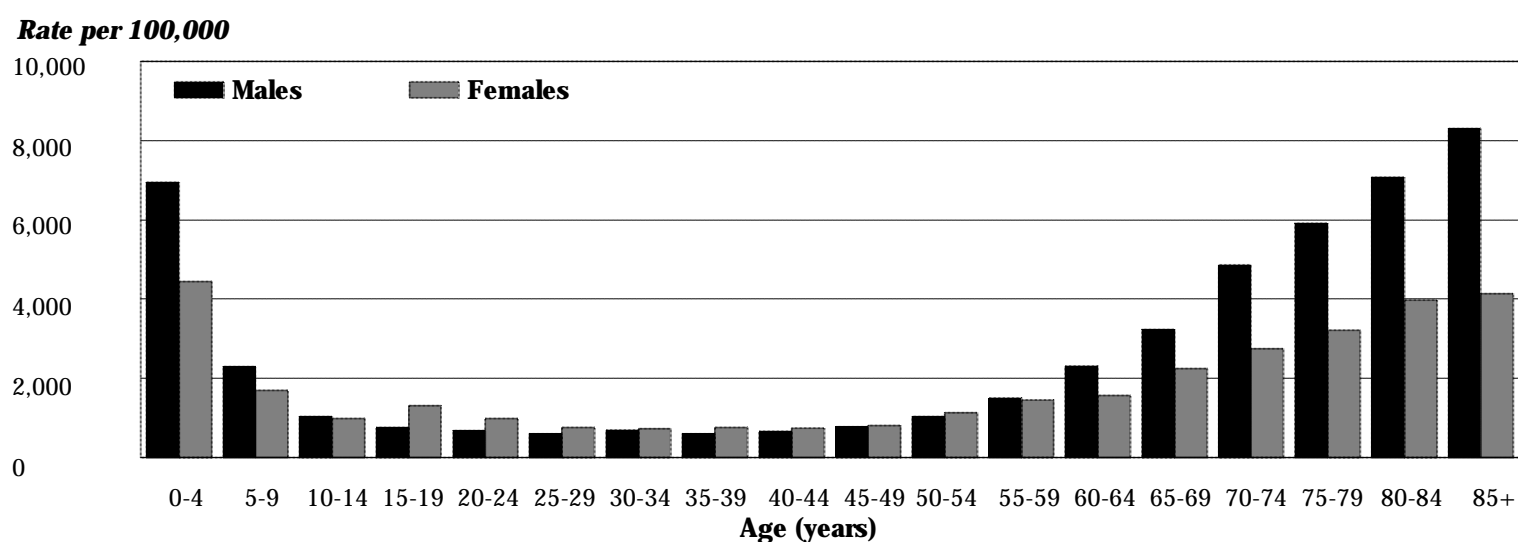
diseases were highest among children aged 0 to 4 years and people aged 75 years and over, with little difference between the age groups from 20 to 49 years (**Figure 6.7**): males predominate in the majority of these groups.

Figure 6.6: Admissions for circulatory system diseases, by age and sex, Queensland, 1995/96



Source: See *Data sources*, Appendix 1.3

Figure 6.7: Admissions for respiratory system diseases, by age and sex, Queensland, 1995/96

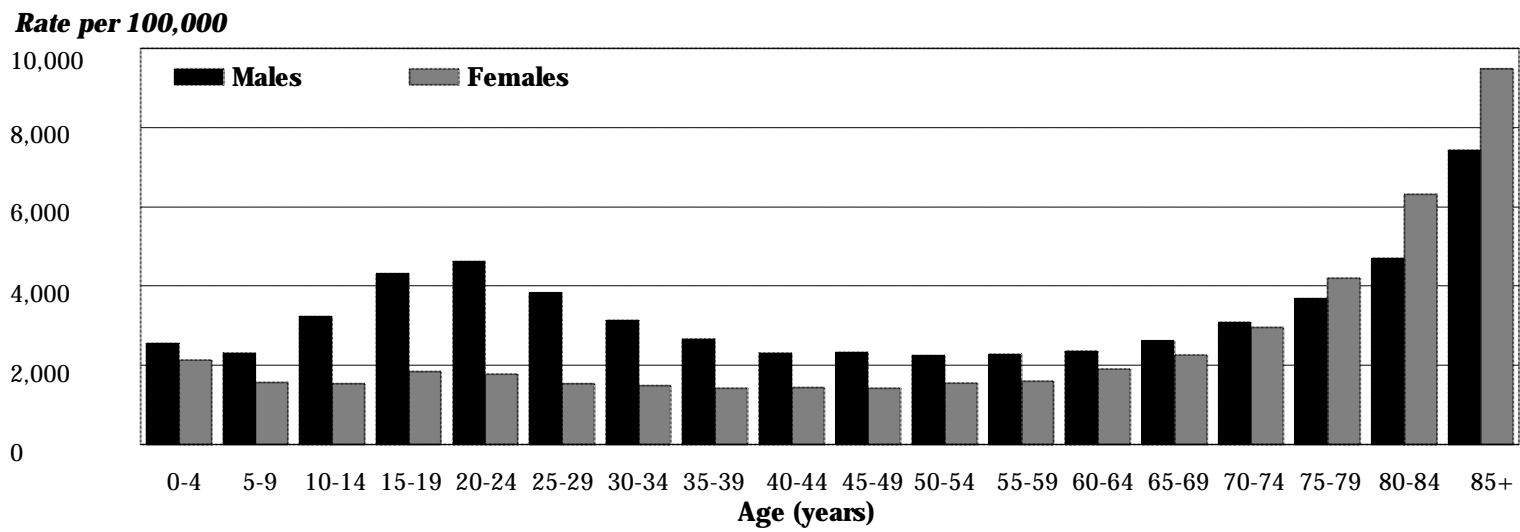


Source: See *Data sources*, Appendix 1.3

Male and female admission rates for accidents, poisonings and violence (**Figure 6.8**) are in direct contrast with the pattern for total admissions (**Figure 6.2**). 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 and 39 years.

Female admission rates are consistent across most of the age groups until around the 70 to 74 year age group, after which the rates begin to increase steadily, and to exceed eventually those for males.

Figure 6.8: Admissions from accidents, poisonings and violence, by age and sex, Queensland, 1995/96

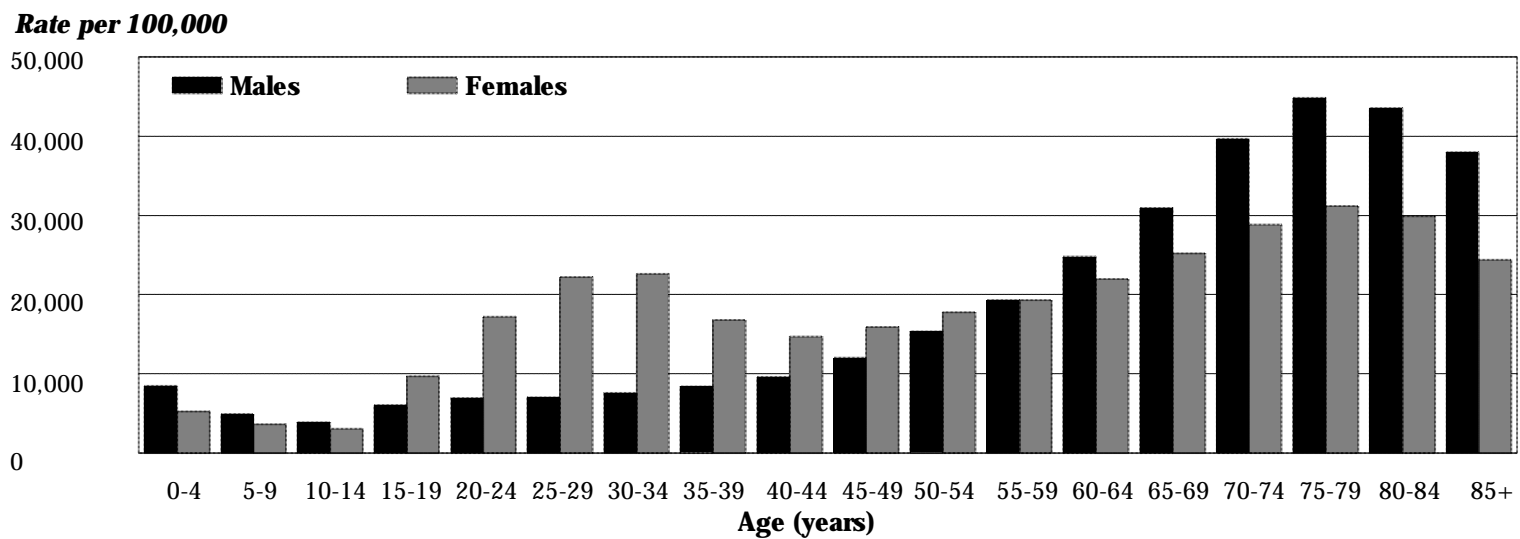


Source: See Data sources, Appendix 1.3

There is little variation in admission rates by either age or sex for admissions for a surgical procedure (Figure 6.9) and same day admissions for a surgical procedure (Figure 6.10), with the major difference occurring for females aged from 35 to 59 years.

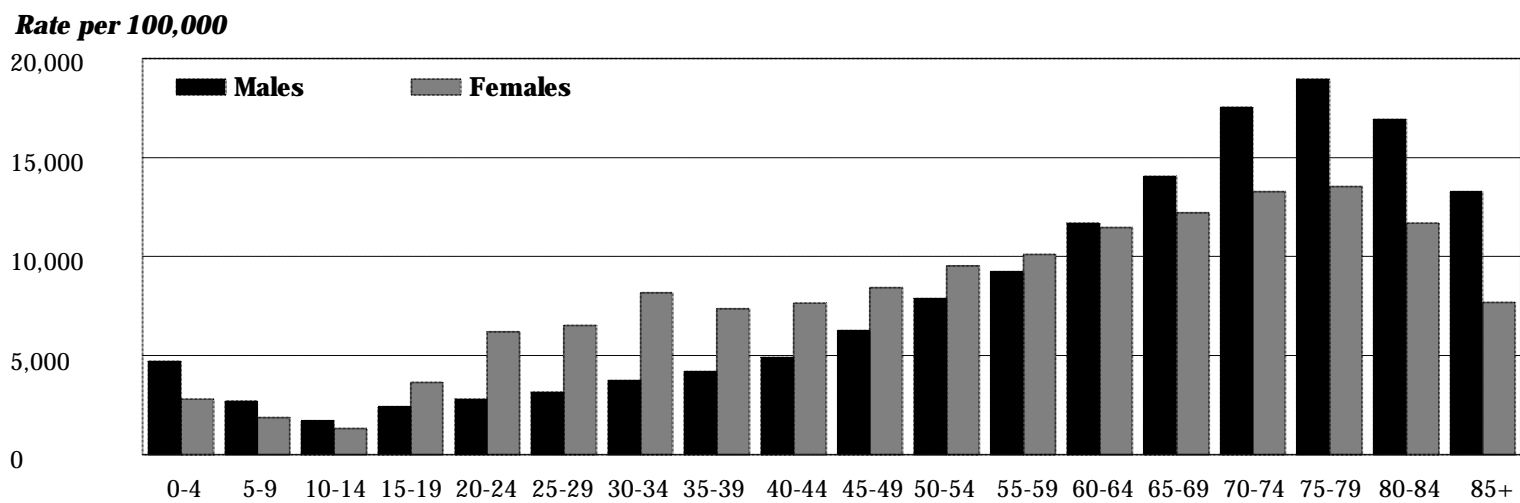
Within this age group, rates for same day admissions of females for a surgical procedure increased rather than decreased, as they did for total surgical admissions.

Figure 6.9: Admissions for a surgical procedure, by age and sex, Queensland, 1995/96



Source: See Data sources, Appendix 1.3

Figure 6.10: Same day admissions for a surgical procedure, by age and sex, Queensland, 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 183, 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 hospitals) 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 conditions².

Data for public psychiatric hospitals are not available for all States and Territories in a standard format and were 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. Some four fifths (80.9 per cent) of bed days for patients in this category in Queensland occurred in hospitals in the non-metropolitan areas, where there are fewer 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.

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.

²Some 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.

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

Data issues

Data mapped

The 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 contributions 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 94.3 per cent of the total acute admissions for 1995/96.

Standardised admission ratios have been calculated for SLAs 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 analysis¹, Queensland, 1995/96

Principal diagnosis/procedure	Same day		Overnight		Total	
	No.	% ²	No.	% ²	No.	% ²
Principal diagnosis						
Infectious and parasitic diseases	3,475	1.0	12,434	2.3	15,909	1.8
Cancer						
lung cancer	516	0.2	2,611	0.5	3,127	0.4
cancer of the female breast	459	0.1	2,238	0.4	2,697	0.3
Total cancer	19,077	5.7	28,854	5.3	47,931	5.4
Mental disorders						
psychosis	4,047	1.2	13,069	2.4	17,116	1.9
neurotic, personality and other disorders	4,898	1.5	12,175	2.2	17,073	1.9
Total mental disorders	8,967	2.7	25,276	4.6	34,243	3.9
Circulatory system diseases						
ischaemic heart disease	1,777	0.5	23,798	4.3	25,575	2.9
Total circulatory system diseases/disorders	8,599	2.6	62,448	11.4	71,047	8.0
Respiratory system diseases						
bronchitis, emphysema or asthma	1,430	0.5	12,923	2.4	14,393	1.6
Total respiratory diseases/disorders						
0 to 4 year olds	1,687	0.5	12,051	2.2	13,738	1.6
all ages	6,354	1.9	49,225	9.0	55,579	6.3
Accidents, poisonings and violence	26,622	7.9	56,361	10.3	82,983	9.4
All causes (excl. renal dialysis)						
Females	176,687	52.7	302,535	55.1	479,222	54.2
Males	158,454	47.3	246,498	44.9	404,952	45.8
Public acute hospitals (excl. renal dialysis)	184,498	55.1	371,399	67.6	555,897	62.9
Private acute & psychiatric hospitals (excl. renal dialysis)	150,643	44.9	177,634	32.4	328,277	37.1
Total admissions (excl. renal dialysis)	335,141	100.0	549,033	100.0	884,174	100.0
Total admissions						
Admissions for renal dialysis	52,621	13.6	493	0.1	53,114	5.7
All other admissions	335,141	86.4	549,033	99.9	884,174	94.3
Total admissions (incl. renal dialysis)	387,762	100.0	549,526	100.0	937,288	100.0
Principal procedure						
Tonsillectomy	333	0.2	5,346	2.1	5,679	1.2
Myringotomy	3,400	1.6	537	0.2	3,937	0.8
Caesarean section	14	0.0	9,632	3.8	9,646	2.1
Hysterectomy	10	0.0	6,134	2.4	6,144	1.3
Hip replacement	3	0.0	1,971	0.8	1,974	0.4
Lens insertion	12,184	5.8	6,748	2.6	18,932	4.1
Endoscopy	61,209	29.2	12,285	4.8	73,494	15.8
Total (incl. all other) procedures	209,527	100.0	256,511	100.0	466,038	100.0

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

²Percentage 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 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 AHIW 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 (e.g. 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 hospital³. 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 53,114 admissions in 1995/96, 5.7 per cent of all admissions (**Table 6.3**). 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 the 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 would 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 Queensland 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**)⁴. 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.

³Although 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.

⁴The comparison in **Table 6.3** 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 editions¹

Admission type	1989 ²		1995/96	
	Number	Per cent	Number	Per cent
South Australia				
Same day				
Renal dialysis			34,897	7.5
Other			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
New South Wales				
Same day				
Renal dialysis	60,022	4.8	111,065	6.3
Other	289,489	23.0	627,508	35.7
Total same day	349,511	27.8	738,573	42.0
Overnight stay	904,099	72.2	1,017,892	58.0
Total admissions	1,253,610	100.0	1,756,465	100.0

¹The 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 the period shown: they were also the States with the greatest differentials in standardised ratios

²1989-90 for New South Wales

Source: See *Data sources*, Appendix 1.3

There were 884,174 admissions of residents of Queensland in 1995/96, of which 98.81 per cent were admissions to hospitals within the State, 0.97 per cent were to hospitals in New South Wales and 0.12 per cent were to hospitals in Victoria (**Table 6.5**).

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 of residents of Queensland by State/Territory of location of hospital, 1995/96

	Location of hospital								Total
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	
Number	8,461	1,038	873,618	345	299	116	195	102	884,174
Per cent	0.97	0.12	98.81	0.04	0.03	0.01	0.02	0.01	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 189. 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 private¹ hospitals, capital cities
Age-sex standardised admission ratios

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

¹Includes acute and psychiatric hospitals and day surgery facilities

²Includes Queanbeyan (C)

³Includes same day admissions, other than for renal dialysis

⁴Excludes 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

Brisbane (Queensland as the Standard)

There were 379,662 admissions to public acute and private hospitals of residents of **Brisbane**, 5 per cent fewer admissions than expected from the State rates (an SAR of 95**). Females account for 56.1 per cent of these admissions.

Almost three quarters (74.7 per cent) of the small areas had average or below average ratios, with the majority recording ratios in the second lowest range mapped, between 5 per cent and 15 per cent lower than expected from the State rates. Only six areas had SARs in the highest range mapped and 29 had SARs in the lowest range (**Map 6.1**).

The highest SAR of 174**, was recorded in the area of Greenback [Part B], indicating that there were 74 per cent more admissions than were expected from the State rates. The remaining five areas with SARs in the highest range were City/Spring Hill (with an SAR of 157**), Salisbury (134**), New Farm (123**) and Karalee and Loganlea (both with 121**).

The area of Capalaba West had the lowest standardised admission ratio for this variable, with 75 per cent fewer admissions than were expected from the State rates (an SAR of 25**). Low ratios were also recorded in Nathan (an SAR of 59**), Waterford West (59**), Rochedale South/Slacks Creek (63**), Greenbank [Part A]/ Beaudesert (73**) and Underwood (74**) - all of which are located to the south of the Brisbane River - and in St Lucia (65**) and Moreton Island (60*).

The largest number of admissions to public acute and private hospitals was recorded for residents of Caboolture [Part A], with 25,016 admissions (and an SAR of 101*). High numbers were also recorded for residents of Ipswich, with 22,804; Redcliffe, with 15,477; and in the area of Bridgeman Downs/Boondall, with 12,000.

There were weak positive correlations with the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.32), suggest the existence of an association at the small area level between high rates of admissions to hospital and socioeconomic disadvantage.

Gold Coast-Tweed Heads

Residents of **Gold Coast-Tweed Heads** had 92,148 admissions, 5 per cent fewer admissions than expected from the State rates (an SAR of 95**).

Palm Beach/Currumbin (113**) and Tweed Heads (111**) recorded the highest ratios for this variable. At the other end of the scale, 34 per cent fewer admissions than expected were recorded in the combined areas of Currumbin Waters/Elanora and 29 per cent fewer admissions in Broadbeach Waters/Mermaid Waters.

Townsville-Thuringowa

There were 7 per cent fewer hospital admissions than were expected from the State rates (an SAR of 93**) in **Townsville-Thuringowa** (a total of 29,400 admissions).

An elevated ratio of 103* was recorded for residents of Townsville Coastal/Magnetic Island, while the remaining areas recorded fewer admissions than expected, with SARs ranging from 87** in Gulliver/Hermit Park to 95** in Murray/Mt Louisa.

Map 6.1: Admissions to public acute hospitals and private hospitals, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 admissions in this chapter include all acute admissions to hospitals in Australia, as well as 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 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 189, 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 private¹ hospitals, State/Territory
Age-sex standardised admission ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1995/96²									
Capital city	99**	97**	98**	101**	88**	102**	101	70**	97**
Other major urban centres ³	94**	83**	97**	..	..	..	..	..⁴	94**
Rest of State/Territory	107**	105**	111**	118**	112**	92**	123**	.. ⁴	108**
Whole of State/Territory	101**	99**	103**	105**	95**	96**	113**	69**	100
1989⁵									
Rest of State/Territory	118**	..	123**	136**	151**	..	172**	..	127**

¹Includes acute and psychiatric hospitals and day surgery facilities

²Includes same day admissions, other than for renal dialysis

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

⁴Data unreliable: included with ACT total

⁵Excludes 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 State (Queensland as the Standard)

There were 395,996 admissions of residents of the non-metropolitan areas of Queensland to public acute and private hospitals in 1995/96, 7 per cent more than were expected from the State rates (an SAR of 107**). The elevated ratio is in contrast to the below average rate of admissions of residents of **Brisbane** and the other major urban centres. Females accounted for 52.5 per cent of these admissions.

SLAs with ratios elevated by 30 per cent or more were generally located in the far northern and western regions of the State (**Map 6.2**). Almost two thirds (62.7 per cent) of the State's SLAs had more admissions than were expected, with only 6.7 per cent (9 SLAs) mapped in the lowest range.

The most highly elevated SAR was recorded in Mornington, with more than five times the number of admissions expected from the State rates (a ratio of 524** and 852 admissions). In total, 39 SLAs were mapped in the highest range, those located in the far northern region (on and near by Cape Yorke) included Burke (287**), Cook (203**), Aurukun (199**), Carpentaria (178**), Croydon (171**), Weipa (162**), Mulgrave [Part B] (154**), Mareeba (139**) and Torres (131**).

In total, there were 31 SLAs mapped in the middle range, with SARs ranging from 90** in Waggamba to 108** in Toowoomba.

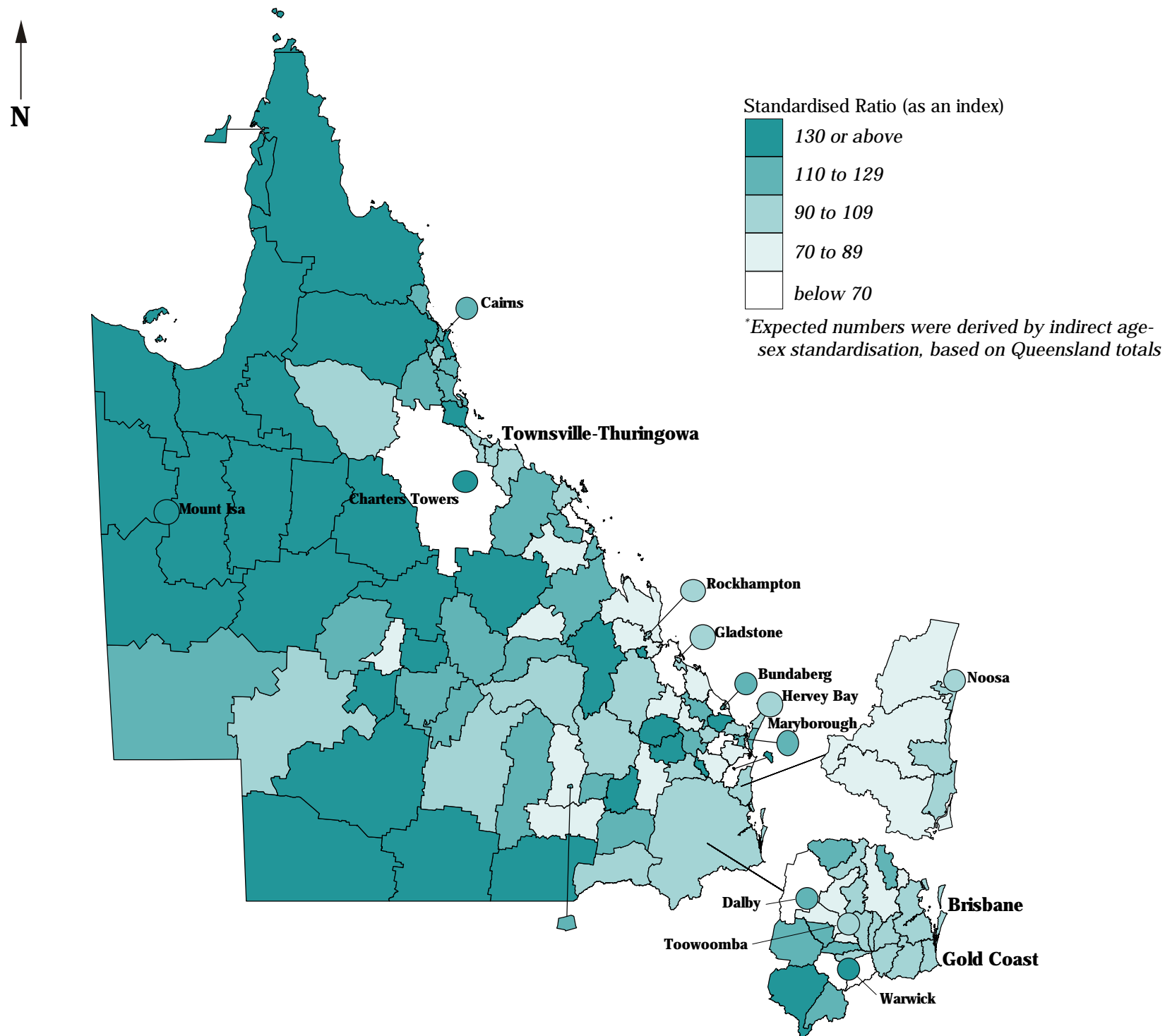
Residents of Burnett [Part B], Dalrymple and Woocoo had the lowest ratios for this variable, with SARs of 31**, 36** and 37** respectively. Other ratios mapped in this range were in Warwick West (with an SAR of 41**), Cooloola (50**), Warwick East (60**), Mackay [Part B] (67**) and Wambo and Calliope [Part B] (both with 68**).

The largest numbers of admissions were recorded for residents of Cairns, with 28,785 admissions, Toowoomba, with 26,865 admissions and Maroochy [Part A], with 22,510 admissions.

There were correlations of substantial significance with the variables for dwellings with no motor vehicle (0.68) and Indigenous people (0.68), and of lesser significance with most of the other indicators of socioeconomic disadvantage. These results, together with the inverse correlation with the IRSD (-0.58), indicate the existence of an association at the SLA level between high rates of admissions to hospital and socioeconomic disadvantage.

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

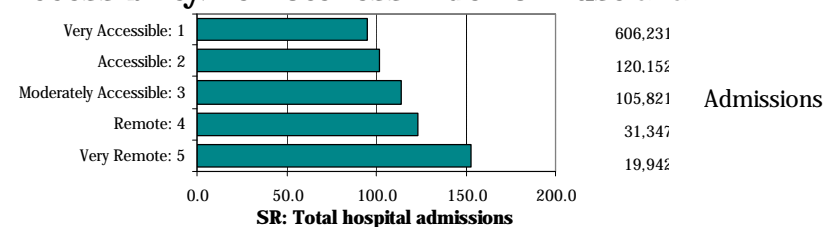
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 (SARs) for admissions to hospital increases by almost two thirds (61.1 per cent), from an SAR of 95 in the Very Accessible ARIA category to 153 in the Very Remote category. SARs in the three middle categories were also elevated, by 2 per cent in the Accessible, 14 per cent in the Moderately Accessible and 23 per cent in the Remote categories.

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 189 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 hospitals¹, capital cities, 1995/96
Age-sex standardised admission ratios

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

¹Includes same day admissions other than for renal dialysis

²Includes 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 62.9 per cent of the State's admissions in 1995/96. The remaining 37.1 per cent of admissions were to private (acute or psychiatric) hospitals. For metropolitan residents, the proportion was 59.4 per cent and for country residents, it was a substantially higher 67.2 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 (53.6 per cent of admissions) and male admissions is graphed in **Figure 6.3**, page 185. 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.

Brisbane (Queensland as the Standard)

There were 235,248 admissions to public acute hospitals in **Brisbane** in 1995/96, 7 per cent fewer than were expected from the State rates (an SAR of 93**). Of the 235,248 admissions, females accounted for over half (55.3 per cent).

The pattern of distribution of SARs at the small area level reveals a strong association between SLAs whose residents are high users of public acute hospitals and those whose residents are of lower socioeconomic status, as described in Chapter 3. The highest ratios were recorded in the inner city and outer southern areas, while the lowest were recorded in areas just north of the Brisbane River (**Map 6.3**).

The highest SAR, of 170**, was recorded for residents in the City/Spring Hill area, indicating that there were 70 per cent more admissions than were expected from the State rates. Ratios elevated by at least 15 per cent were also recorded in the inner city and middle areas of New Farm (an SAR of 140**), Dutton Park/Woolloongabba (138**), Darra-Sumner/Wacol (132**), Herston/Newstead (130**), Rocklea (129**), Murarrie (124**), Bald Hills (118**) and Windsor/Lutwyche/Woolloowin (115**).

Of the thirteen SLAs mapped in the middle range, with SARs of between 95 and 104, the only area with a ratio of statistical significance was Balmoral/Bulimba/Hawthorne, with an SAR of 95*.

By far the lowest ratio was recorded for residents of Capalaba West, with 89 per cent fewer admissions than were expected from the State rates (an SAR of 11**). Relatively low ratios were also recorded in St Lucia (25**), Upper Brookfield/Fig Tree Pocket (33**), Anstead/Bellbowrie/Moggill (38**), Nathan (39**), Chelmer/Taringa (43**), Jindalee/River Hills (48**) and Toowong (50**).

In 1995/96, the largest number of admissions to public acute hospitals was recorded for residents of Caboolture [Part A], with 19,912 admissions. More than 7,000 admissions were also recorded for residents of Ipswich (14,722 admissions), Redcliffe (11,588), Gold Coast [Part A] (7,248), Bridgeman Downs/Boondall (7,161) and Berrinba-Karawatha/Kingston (7,090).

The were correlations of meaningful significance at the small area level with the variables for single parent families (0.62), low income families (0.56), housing authority rented dwellings (0.55), unskilled and semi-skilled workers (0.54), Indigenous people (0.53) and unemployment (0.51). These results, together with the inverse correlation of substantial significance with the IRSD (-0.72), indicate the existence of an association at the small area level between high rates of admissions to public acute hospitals and socioeconomic disadvantage.

Gold Coast-Tweed Heads

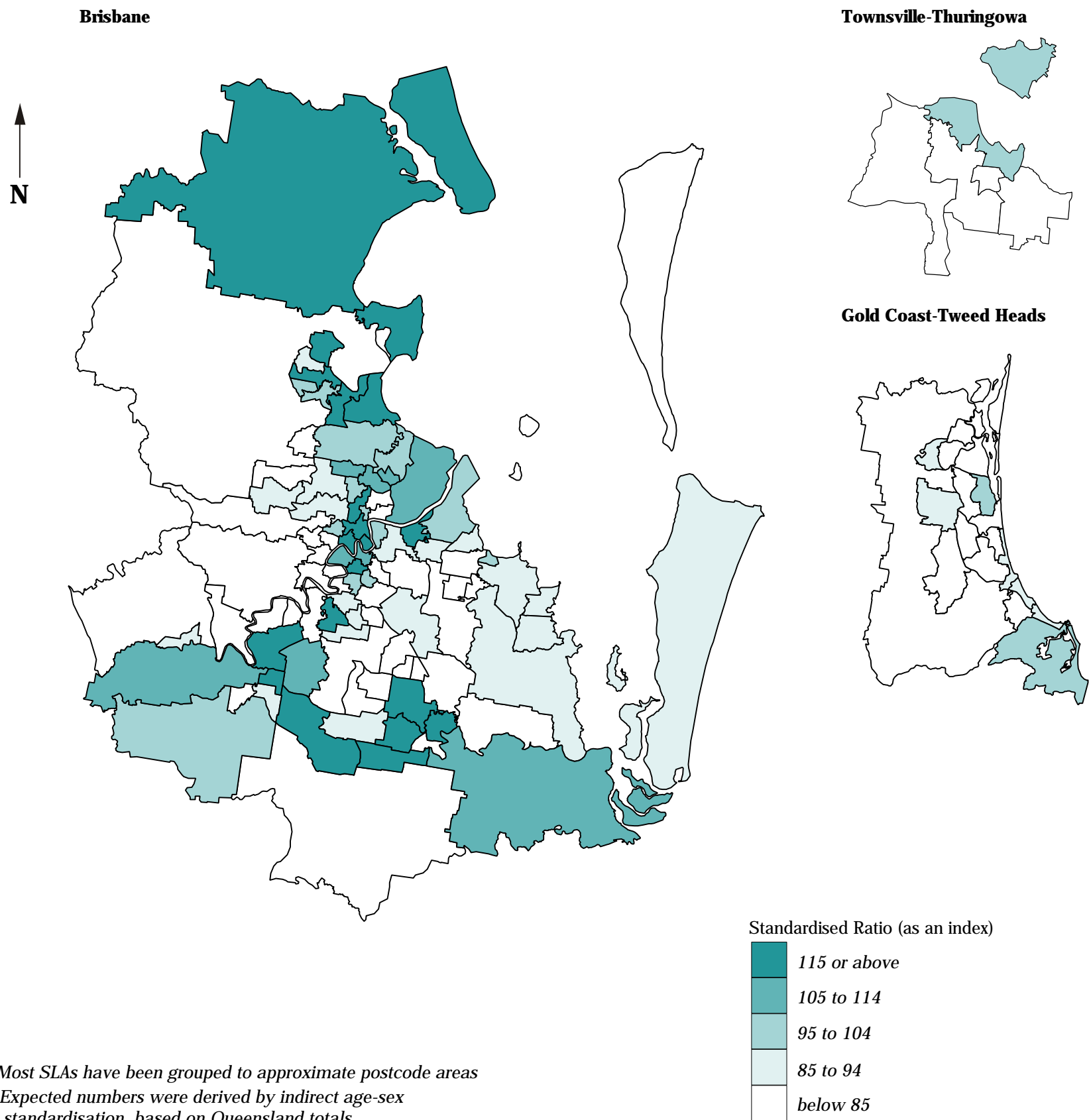
Residents of **Gold Coast-Tweed Heads** had 22 per cent fewer admissions to public acute hospitals than were expected from the State rates (an SAR of 78**, and a total of 46,038 admissions). The only elevated ratio was recorded for residents of Labrador/Southport, an SAR of 101. The remaining SARs ranged from 42** in Broadbeach Waters/Mermaid Waters to 100 in Tweed Heads.

Townsville-Thuringowa

In 1995/96, there were 15,641 admissions to public acute hospitals of residents of **Townsville-Thuringowa**, 23 per cent fewer than were expected from the State rates (an SAR of 77**). All areas, excluding Townsville Coastal/Magnetic Island (with an SAR of 102) recorded ratios below the level expected, with the SARs ranging from 64** in Murray/Mt Louisa to 78** in Townsville South East.

Map 6.3: Admissions to public acute hospitals, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 204 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 hospitals¹, 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 ²	93**	89**	73**	..	..	..	..	..	86**
Rest of State/Territory	123**	122**	110**	149**	139**	80**	159**	- ³	121**
Whole of State/Territory	105**	96**	96**	108**	102**	80**	126**	78**	100

¹Includes same day admissions, other than for renal dialysis

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

³Data 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 State (Queensland as the Standard)

The relative availability of public acute hospitals and the lack of private hospitals throughout the non-metropolitan areas of Queensland is evident from the high rate of use of public compared with private hospitals. Residents of the non-metropolitan areas had 15 per cent more admissions to public acute hospitals than expected from the State rates and 5 per cent fewer private hospital admissions. In 1995/96, there were 265,940 admissions to public acute hospitals, of which 138,289 were admissions of females (52.0 per cent).

Just over half of the SLAs (51.1 per cent) in the non-metropolitan areas of Queensland recorded ratios in the highest range mapped (**Map 6.4**). Highly elevated ratios were recorded for admissions to public acute hospitals of residents of Mornington (an SAR of 774**), Burke (414**), Murgon (349**) and Isisford (332**). Relatively high ratios were also recorded in the central western SLAs of Aramac (an SAR of 301**), Boulia (225**) and Winton (212**); in the far northern areas of Cook (301**), Aurukun (294**), Croydon (243**) and Mulgrave [Part B] (212**); and in the far north western SLAs of Cloncurry (270**), Carpentaria (262**) and McKinlay (200**).

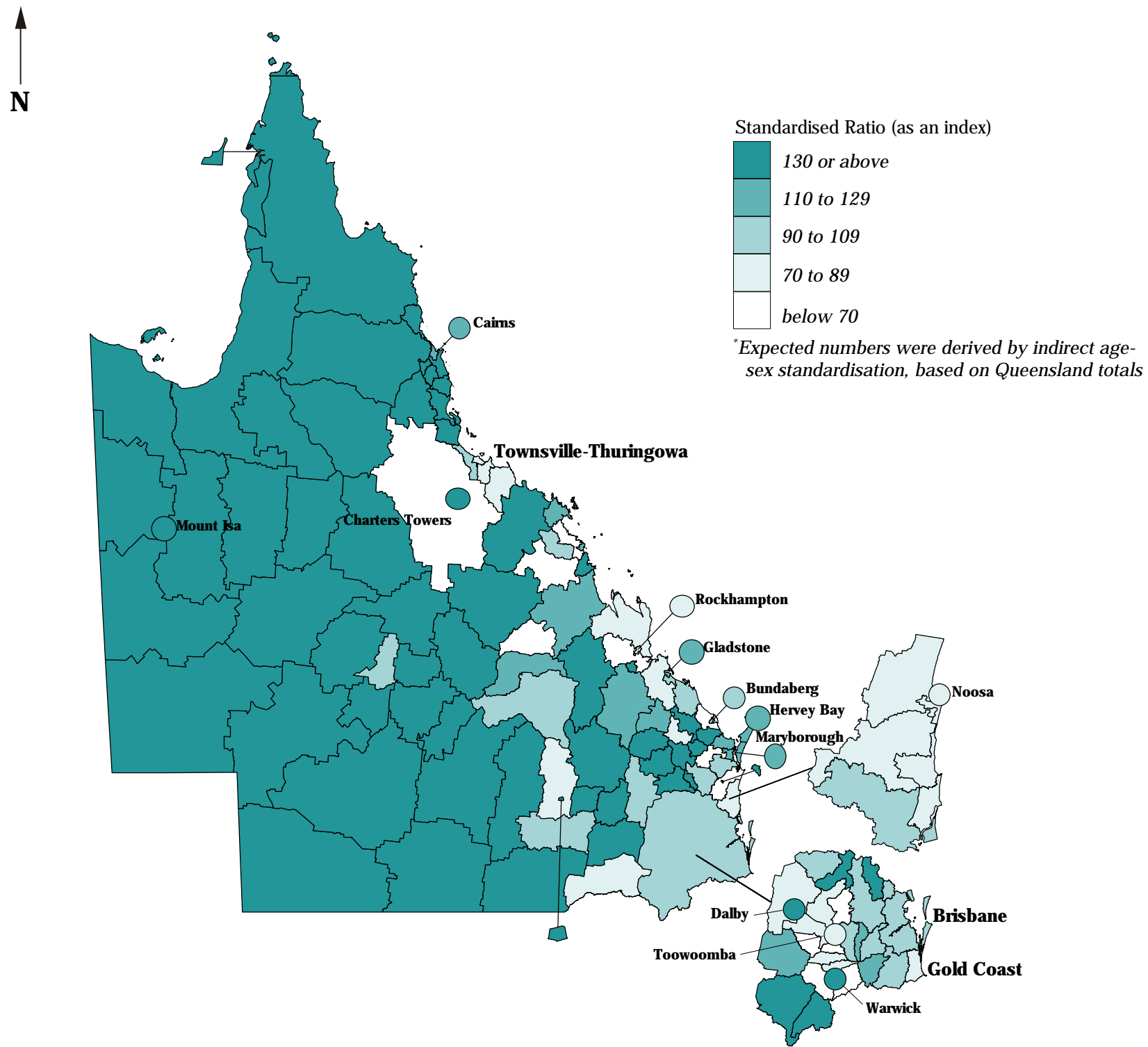
Almost one third (30.8 per cent) of the SLAs had ratios lower than expected from the State rates. The lowest of these were recorded for residents of Burnett [Part B] (with 68 per cent fewer admissions than expected, an SAR of 32**), Dalrymple (40**), Woocoo (43**) and Warwick East (45**). The remaining SLAs with ratios in the lowest range mapped were Warwick West (51**), Cambooya (55**), Pittsworth (57**) and Crows Nest (62**), all located just west of **Brisbane**; and Fitzroy [Part B] (52**), Nebo (53**), Mackay [Part B] (59**), Cooloola (60**) and Peak Downs (64**), situated to the north-west of the city.

The largest numbers of admissions to public acute hospitals in the non-metropolitan areas of Queensland were recorded in Cairns, with 20,882 admissions; Toowoomba, 13,371 admissions; Maroochy [Part A] 13,218 admissions and Mackay [Part A], 11,515 admissions.

There were correlations with most of the indicators of socioeconomic disadvantage (the strongest being with the variables for Indigenous people (0.71) and dwellings with no motor vehicle (0.70) and inverse correlations with the indicators of high socioeconomic status. These results, together with the inverse correlation with the IRSD (-0.64), indicate the existence of an association at the SLA level between high rates of admissions to public acute hospitals and socioeconomic disadvantage.

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

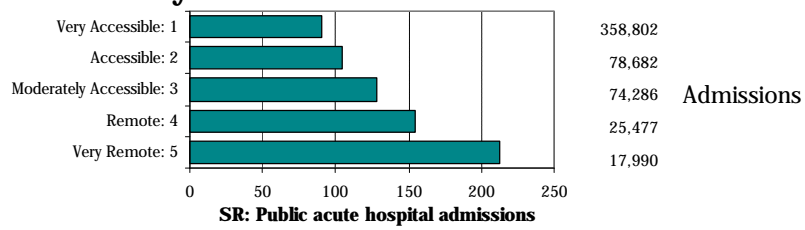
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 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 212. The lowest ratio is in the Very Accessible category (an SAR of 90), with SARs elevated by between five and 54 per cent in the three middle 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 189 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 198, **Table 6.8**) are also relevant.

Table 6.10: Admissions to private¹ hospitals, capital cities, 1995/96
Age-sex standardised admission ratios

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

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

²Includes 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 37.1 per cent of all admissions in 1995/96 in this analysis. The remaining 62.9 per cent were admissions to public acute hospitals. For metropolitan residents, the proportion was higher, at 40.6 per cent, and for country residents, it was a substantially lower 32.8 per cent.

Females make greater use of private hospitals than males, with admissions to private hospitals representing 37.9 per cent of all female admissions studied (compared with 36.3 per cent for males) and accounting for 55.3 per cent of private hospital admissions (53.6 per cent in public acute hospitals). The age profile for admissions of females and males is graphed in **Figure 6.4**, page 186. The most notable features are the higher admission rates for females from age 15 years through the child-bearing years to the mid-fifties. This is in contrast to the profile in public hospitals, where males had higher rates at older ages.

Brisbane (Queensland as the Standard)

The standardised admission ratio recorded in **Brisbane** was 2 per cent lower than expected in relation to the State rates (an SAR of 98** and 144,415 admissions).

Just as the use of public acute hospitals had a distribution strongly associated with the location of residents of lower socioeconomic status postcodes, private hospital admission rates are generally higher in areas of higher socioeconomic status; that is, in areas where residents are more likely to have private health insurance.

The most highly elevated ratios were recorded for residents of Greenbank [Part B] (220**), Salisbury (195**), Karalee (177**), Calamvale/Stretton (162**), Upper Brookfield/Fig Tree Pocket (161**), and Keperra/Upper Kedron and Ashgrove/The Gap (both with 150**). Also mapped in the highest range were the middle and inner areas of Chelmer/Taringa (149**), Anstead/Bellbowrie/Moggill (145**), St Lucia (140**), Ascot/Hamilton (139**), Mt Gravatt/Rochedale (139**), Chandler (137**), Toowong (135**), City/Spring Hill (134**), Jindalee/River Hills (131**), Camp Hill/Carindale (131**), MacGregor/Pallara-Heathwood-Larapinta (127**), Coorparoo (126**), Bardon (119**), Clayfield/Hendra (119**) and Holland Park/Tarragindi (118**).

The lowest standardised admission ratios were located in the western areas of Carole Park (22**) and Darra-Sumner/Wacol (50**); in the outer southern areas of Waterford West (33**) and Berrinba Karawatha/Kingston (42**); in the eastern areas of Capalaba West (50**), Moreton Island (50) and Pinkenba-Eagle Farm (59**); in the outer northern areas of Redland Balance (52**), Caboolture [Part A] (57**) and Kallangur (57**); and in the inner city areas of Dutton Park/Woolloongabba (57**), Rocklea (57**) and Herston/Newstead (58**).

The largest numbers of admissions to private hospitals were recorded in the areas of Ipswich (with 8,082 admissions), Mt Gravatt/Rochedale (5,735), MacGregor/Pallara-Heathwood-Larapinta (5,234) and Caboolture [Part A] (5,104).

The correlation analysis revealed a positive association with indicators of high socioeconomic status, with correlations of meaningful significance recorded with the variables for high income families (0.67) and managers and administrators, and professionals (0.55). These results and the correlation with the IRSD (0.70) indicate an association at the small area level between high rates of admission to private hospitals and high socioeconomic status.

Gold Coast-Tweed Heads

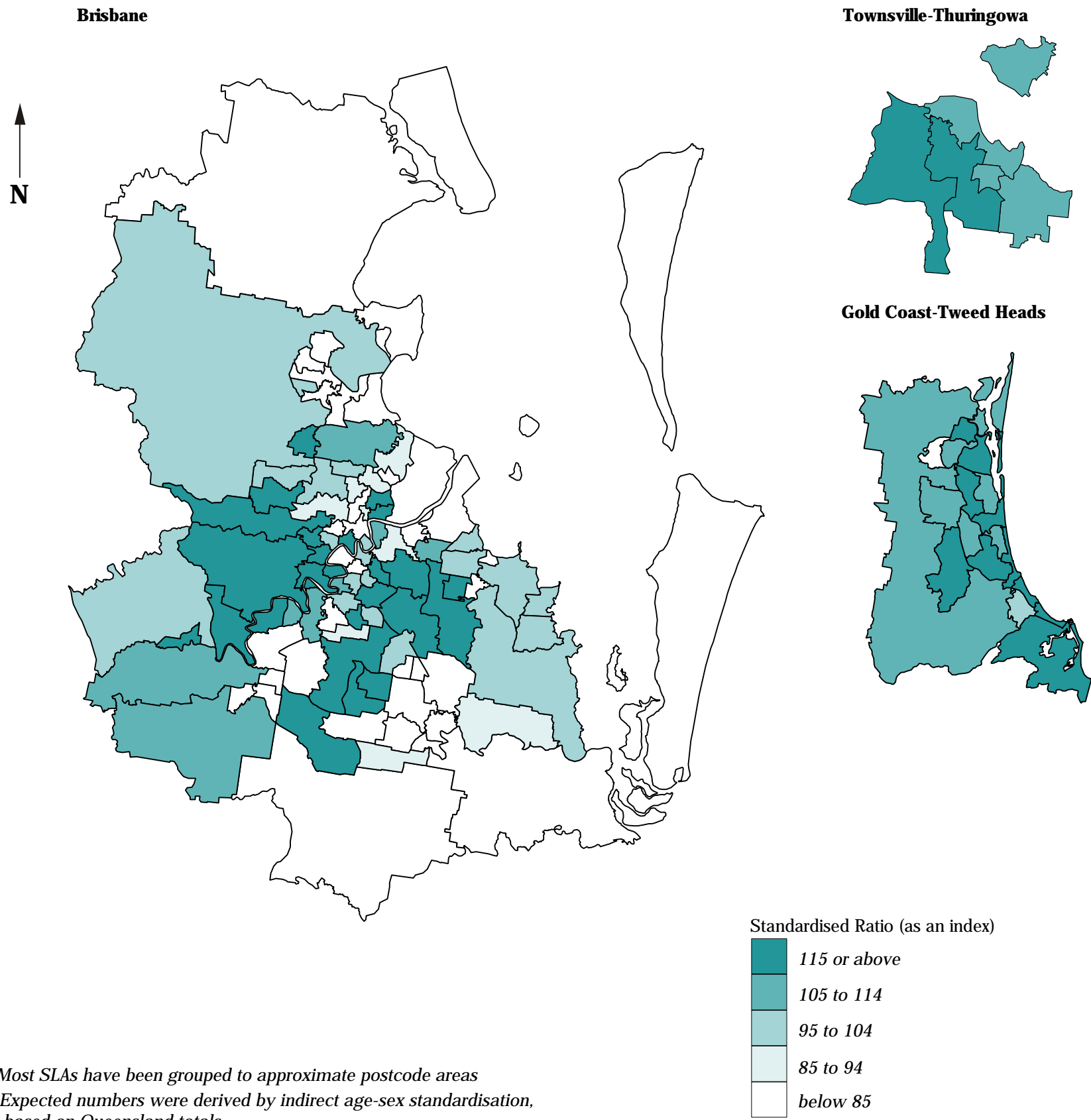
There were 46,110 admissions (21,472 males and 24,638 females) to private hospitals in **Gold Coast-Tweed Heads** in 1995/96, 23 per cent more than were expected from the State totals (an SAR of 123**). The majority of areas recorded elevated ratios, ranging from 101 in Currumbin Waters/Elanora to 160** in Hope Island. The exception to this was Oxenford (with an SAR of 79**).

Townsville-Thuringowa

In 1995/96, there were 13,759 admissions of residents of **Townsville-Thuringowa** to private hospitals, 23 per cent more than were expected from the State rates (an SAR of 123**). Just over half (54.7 per cent) were females. Again all ratios were above the level expected, with the highest in Murray/Mt Louisa (an SAR of 154**).

Map 6.5: Admissions to private hospitals, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 200, **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 private¹ 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 ²	96**	72**	147**	..	..	..	..	..	113**
Rest of State/Territory	73**	69**	113**	55**	55**	118**	39**	- ³	81**
Whole of State/Territory	91**	106**	119**	100	80**	131**	84**	48**	100

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

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

³Data 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 State (Queensland as the Standard)

Residents of the non-metropolitan areas of Queensland had 5 per cent fewer admissions to private hospitals than expected from the State rates, an SAR of 95**. Of the 130,057 admissions to private hospitals, 69,589 were females and 60,468 were males.

Just over one quarter (27.1 per cent) of the SLAs in the non-metropolitan areas of Queensland had standardised admission ratios at or above the level expected. The most highly elevated of these ratios was recorded for residents of Pittsworth, with more than twice the number of admissions expected from the State rates (an SAR of 236**). Also mapped in the highest range were the SLAs of Fitzroy [Part A] (with an SAR of 166**), Rockhampton (158**) and Peak Downs (134**), situated to the north-west of **Brisbane**; Gympie (163**), Clifton (158**), Toowoomba (146**), Crows Nest (143**), Mackay [Part A] (143**) and Bundaberg (137**), located in the areas surrounding **Brisbane**; and Mirani (158**) and Nebo (148**), on the mid north coast.

In total, 20 SLAs were mapped in the middle range, with SARs of between 90 and 109 (**Map 6.6**). Within this class interval, statistically significant ratios for admissions to private hospitals were recorded for residents of Gatton (109**), Jondaryan (108**), Burdekin (108**), Maryborough (105**), Caloundra [Part A] (104**), Maroochy [Part A] (97**), Moreton [Part B] (94**), Noosa [Part B] (93**), Hinchinbrook (93**) and Charters Towers (91**).

Fewer than half the expected number of admissions were recorded in just under one third of the non-metropolitan SLAs, however the number of admissions in each of these SLAs were quite small. The lowest of these, with more than 150 admissions, were recorded in Burnett [Part B] (an SAR of 29** and 277 admissions), Cooloola (33** and 638), Mount Isa (34** and 603), Caboolture [Part B] (36** and 151), Murweh (39** and 221), Tiaro (39** and 162), Eacham (40** and 254), Atherton (43** and 463), Wondai (43** and 187), Longreach (44** and 164),

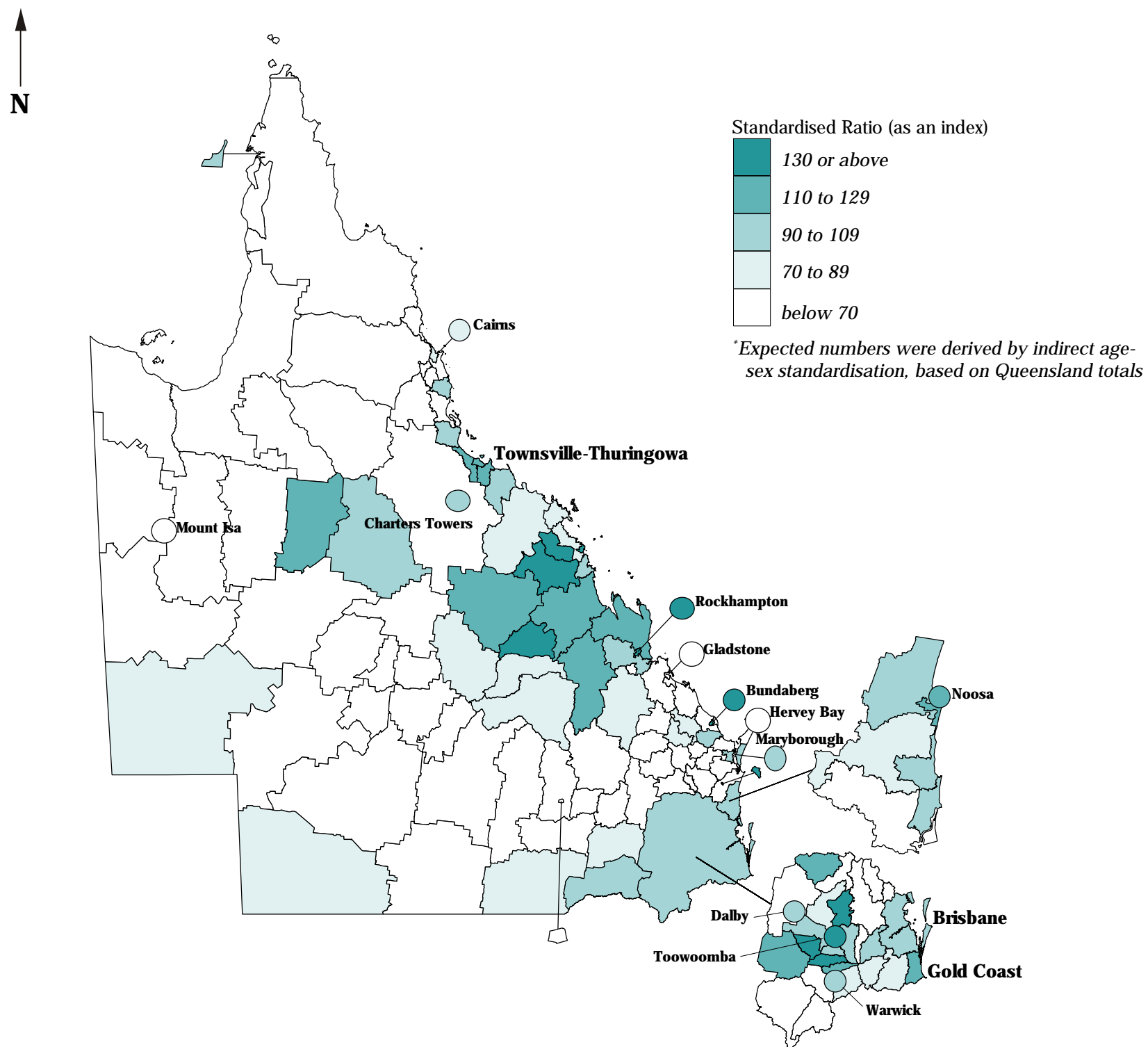
Nanango (47** and 427), Murgon (47** and 204), Mulgrave [Part B] (48** and 275) and Wambo (48** and 241).

The largest number of admissions to private hospitals was for residents of Toowoomba, with 13,494 admissions. More than 5,000 admissions were recorded for residents of Rockhampton (9,942 admissions), Maroochy [Part A] (9,291), Mackay [Part A] (7,907), Cairns (7,903), Bundaberg (6,826) and Caloundra [Part A] (5,860).

There were weak inverse correlations with the indicators of socioeconomic disadvantage and weak correlations with the indicators of high socioeconomic status. These results, together with the weak correlation with the IRSD (0.48), suggest the existence of an association at the SLA level between high rates of admissions to private hospitals and high socioeconomic status.

Map 6.6: Admissions to private hospitals, Queensland, 1995/96

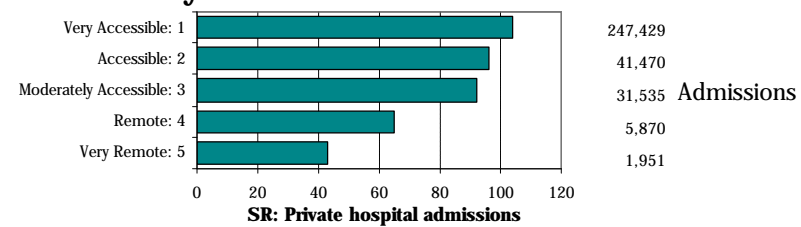
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 accounted for three quarters (75.4 per cent) of the admissions to private hospitals and had the only elevated standardised admission ratio (104), 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 43 in the Very Remote ARIA category. Private hospital beds were only located in the three 'accessible' ARIA categories (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** had the highest standardised admission ratio (SAR) with two per cent more admissions than expected from the Australian rates, followed by **Sydney**, **Adelaide** and **Darwin** 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 ¹	All capitals
1995/96 ²	101**	96**	98**	101*	89**	102**	101	68**	97**
1989 ³	80**	..	101**	104**	91**	..	103*	..	89**

¹Includes Queanbeyan (C)

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

³Excludes 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 account for 45.8 per cent of all admissions of Queensland residents (which includes admissions to public acute and private hospitals, private psychiatric hospitals 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 44.4 per cent of admissions.

Brisbane (Queensland as the Standard)

There were 166,857 admissions of males resident in **Brisbane**, 6 per cent fewer than expected from the State rates (an SAR of 94**).

The seven areas with male admission ratios in the highest category stood out in marked contrast to the pattern of generally low to average ratios (**Map 6.7**). These were recorded in the combined area of City/Spring Hill (with a standardised ratio of 201**), Karalee (130**), New Farm (130**), Herston/Newstead (126**), Greenbank [Part B] (123**), Loganlea (117**) and Dutton Park/Woolloongabba (116**). The next highest SARs for male admissions were in the areas of Rocklea, Greenslopes, Red Hill/Kelvin Grove, Mt Gravatt/Rochedale, Logan Balance, Darra-Sumner/Wacol, Windsor/Lutwyche/Wooloowin, West End/South Brisbane/Highgate Hill, Ipswich, Bracken Ridge/Sandgate and Tingalpa, with ratios ranging from 105 to 113.

Residents of the Waterford West area had the lowest SAR for this variable (for areas with at least 20 admissions), with 50 per cent fewer male hospital admissions than were expected from the State rates (an SAR of 50**). Other higher socioeconomic areas such as Anstead/Bellbowrie/Moggill and St Lucia also had similarly low ratios, with SARs of 63** and 69** respectively.

The largest numbers of admissions were recorded for residents of Caboolture [Part A] (11,741), Ipswich (9,835) and Redcliffe

(7,037) and in the areas from Bridgeman Downs to Boondall (5,257). At the other end of the scale, the only areas to record fewer than 20 admissions were Capalaba West and Moreton Island, with 10 and 12 admissions, respectively.

There were weak correlations with most of the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.23), suggest the existence of an association at the small area level between high rates of admissions of males and socioeconomic disadvantage.

Gold Coast-Tweed Heads

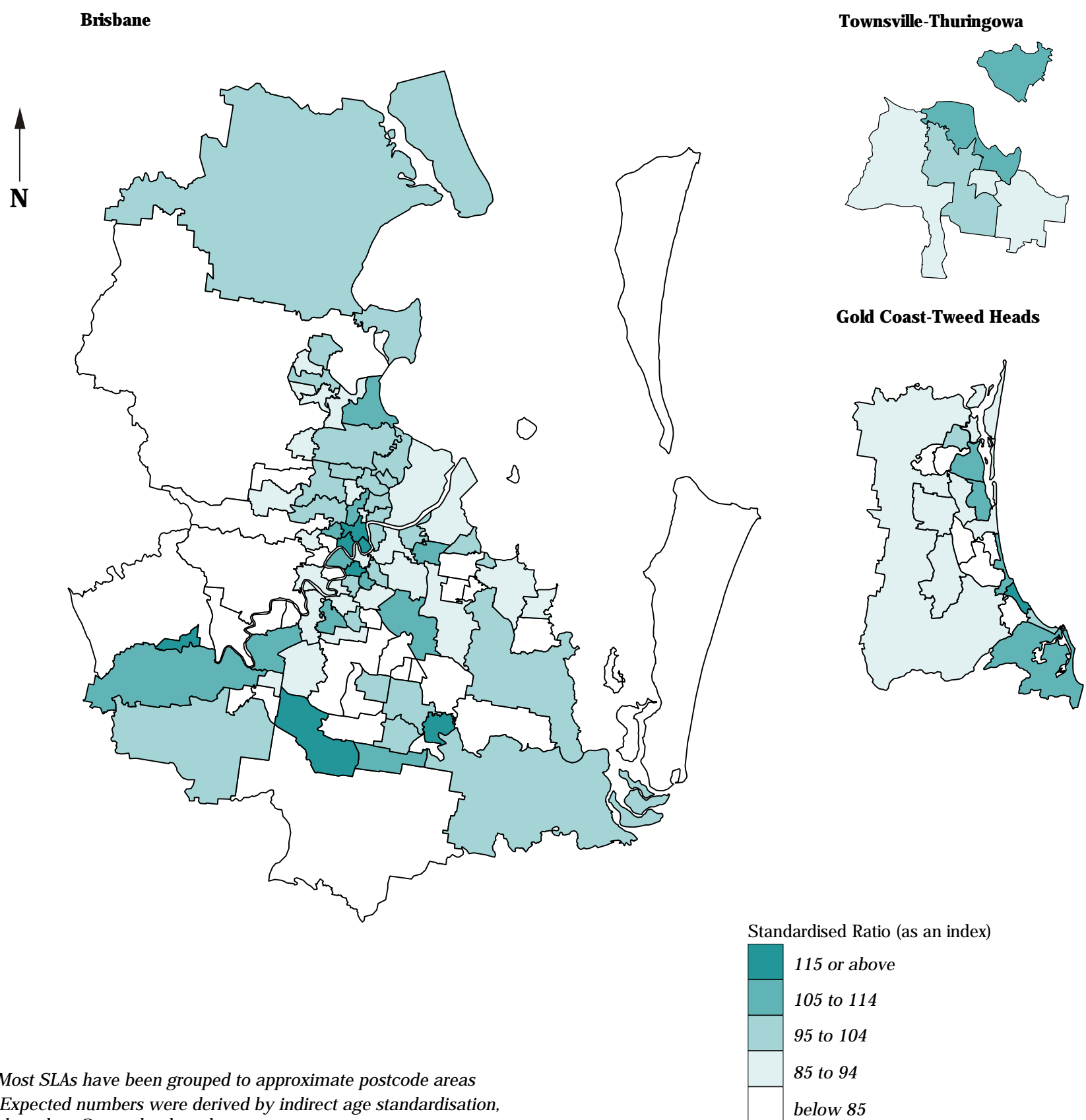
In **Gold Coast-Tweed Heads**, there were 5 per cent fewer male hospital admissions than expected from the State rates, an SAR of 95**. This represented a total of 42,814 admissions. Palm Beach/Currumbin and Tweed Heads recorded the highest ratios, with SARs of 115** and 111** respectively. Ratios below the level expected ranged from 92** in Surfers Paradise/Benowa to 65** in Currumbin Waters/Elanora.

Townsville-Thuringowa

Townsville-Thuringowa recorded 6 per cent fewer admissions of males than expected from the State rates, an SAR of 94** (and a total of 13,477 admissions). Residents of Townsville Coastal/Magnetic Island had the only elevated SAR (107) and those in the area from Gulliver to Hermit Park had the lowest (85**).

Map 6.7: Admissions of males, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age standardisation, based on Queensland totals

Source: See Data sources, Appendix 1.3

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
1995/96¹									
Capital city	101**	96**	98**	101*	89**	102**	101	68**	97**
Other major urban centres ²	93**	81**	99*	..	..	..	..	..	94**
Rest of State/Territory	106**	102**	113**	116**	108**	90**	120**	- ³	107**
Whole of State/Territory	101**	98**	104**	105**	94**	95**	111**	67**	100
1989⁴									
Rest of State/Territory	116**	..	123**	134**	142**	..	176**	..	124**

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

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

There were 188,118 admissions of males resident in country areas of Queensland, 9 per cent more admissions than were expected from the State rates. Some comments on the possible reasons for the generally higher admission ratios for residents of country areas are on page 189.

Several SLAs had admission ratios in the highest range mapped, ranging from 482** in Mornington to 131** in Roma. The highly elevated ratio in Mornington (with 358 admissions) indicated that there were more than four and a half times the number of admissions of males than were expected from the State rates. Isisford (267**) and Aramac (239**) (in the central west), Burke (261**) (in the far north west), Aurukun (230**) (in the far north) and Murgon (221**) (just north-west of the city) all had more than twice the number of admissions expected from the State rates. All of these SLAs apart from Isisford and Aramac have relatively large Aboriginal populations.

Thirty three SLAs in country Queensland were mapped in the middle range (within 10 per cent of the level expected from the State rates) (**Map 6.8**). There were 9 per cent more male hospital admissions than expected recorded for residents of Longreach (with an SAR of 109*), Stanthorpe, Whitsunday and Rockhampton (each with 109**). The only other highly significant ratios were recorded for residents of Gladstone (with an SAR of

105**), Caloundra [Part A] (95**), Beaudesert [Part B] (94**), Livingstone (92**), Burdekin (91**), Maroochy [Part A] (91**) and Calliope [Part A], Jondaryan and Maroochy [Part B] (all with 90**).

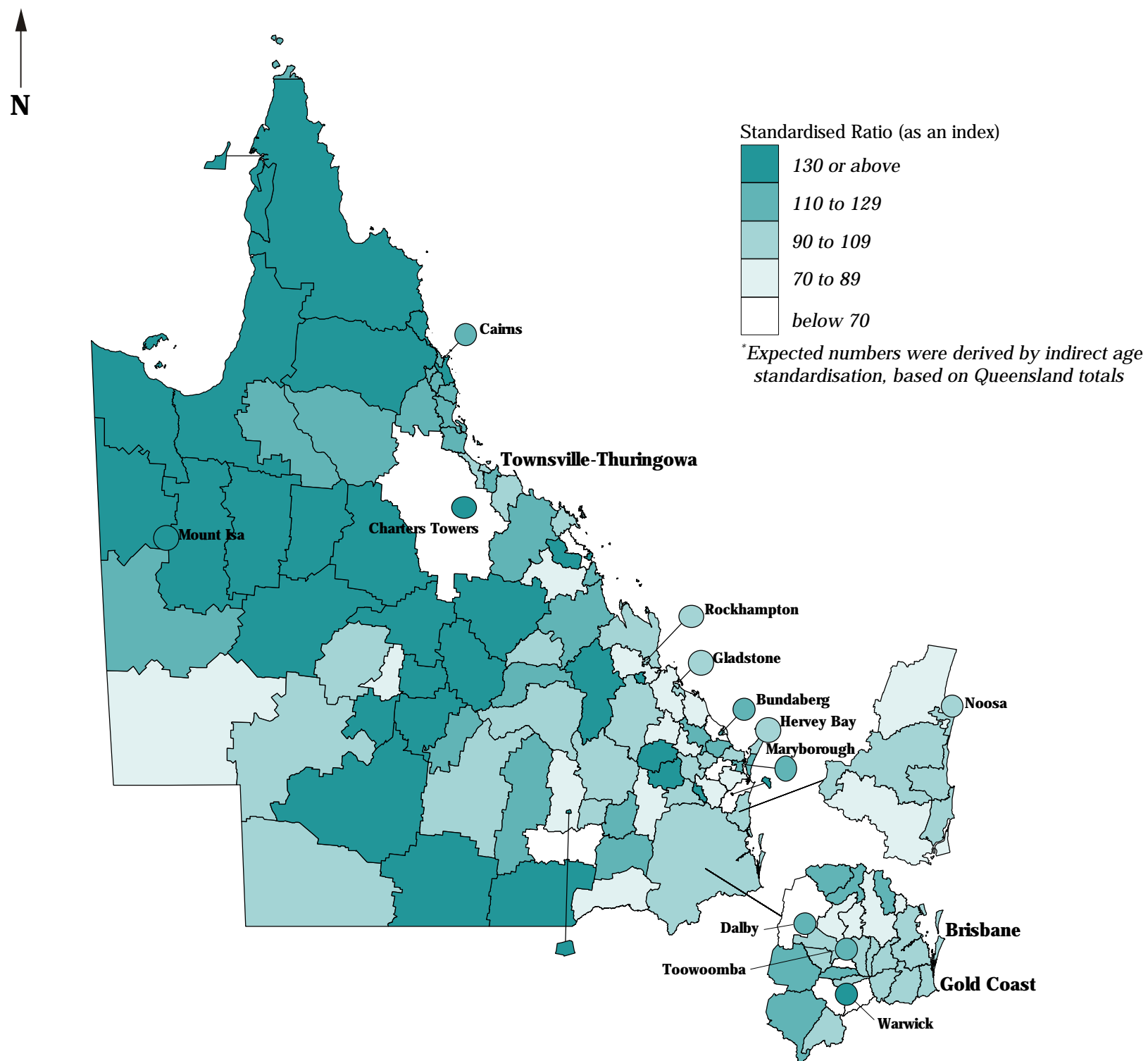
Woocoo had the lowest standardised admission ratio of 27**, followed by Warwick West and Burnett [Part B] (both with an SAR of 33**). Dalrymple, Cooloola, Warwick East, Mackay [Part B], Cambooya, Wambo, and Warroo also had ratios of 70 or lower.

The largest numbers of male admissions in the non-metropolitan areas of Queensland in 1995/96 were in the SLAs of Cairns (14,375 admissions), Toowoomba (11,936 admissions), Maroochy [Part A] (10,407 admissions), Mackay [Part A] (9,024 admissions) and Rockhampton (8,275 admissions).

There were weak correlations with most of the indicators of socioeconomic disadvantage, the strongest being with the variables for dwellings with no motor vehicle (0.65) and Indigenous people (0.64). These results, together with the inverse correlation with the IRSD (-0.53), support the existence of an association at the SLA level between high rates of admissions to hospitals and socioeconomic disadvantage.

Map 6.8: Admissions of males, Queensland, 1995/96

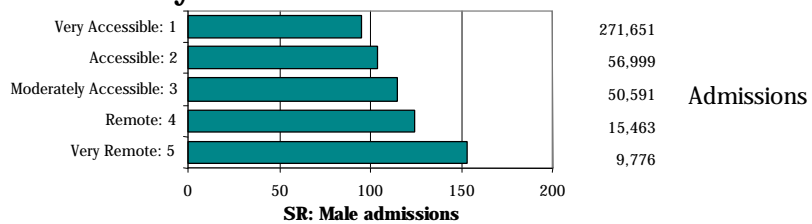
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 a ratio of 95 in the Very Accessible category; ratios of 118, 117 and 110 in the three middle categories; and increasing to an SAR of 153 in the Very Remote category.

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 ¹	All capitals
1995/96 ²	98**	98**	98**	101**	88**	103**	102	71**	97**
1989 ³	80**	..	95**	102**	95**	..	97*	..	89**

¹Includes Queanbeyan (C)

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

³Excludes 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 55.6 per cent of all admissions of residents of **Brisbane** and the other major urban centres and for 52.5 per cent of admissions of non-metropolitan residents. Overall, females had higher admission rates than males: 28,967 admissions per 100,000 population for females, compared with 24,357 admissions per 100,000 population for males.

Brisbane (Queensland as the Standard)

There were 212,805 admissions of females resident in **Brisbane**, 4 per cent fewer admissions than were expected from the State rates (an SAR of 96**).

The distribution of SARs for females across **Brisbane** was very similar to that recorded for males. There were 24 areas with SARs in the lowest range and only seven areas with SARs in the highest range of 15 per cent or more than expected (**Map 6.9**).

The area of Greenbank [Part B] had the highest ratio for this variable, the SAR of 216** indicated that there were more than twice the number of admissions of females than expected from the State rates. Salisbury (with an SAR of 164**) and New Farm (117**), just south of the Brisbane River; Keperra/Upper Kedron (126**) and Bald Hills (116**), located in the middle north; and Ipswich (116**), situated in the outer west; were also mapped in the highest range.

Residents of Nathan (with an SAR of 54**), St Lucia (62**), Rochedale South/Slacks Creek (65**), Waterford West (66**), Moreton Balance (74**), Underwood (75**), Chelmer/Taringa (76**), Greenbank [Part A]/Beaudesert (77**), Seventeen Mile Rocks (77**), Toowong (78**), Red Hill/Kelvin Grove (78**), Bardon (79**) and Milton/Paddington (80**) had the lowest ratios for this variable (of areas with at least 20 admissions).

The largest numbers of admissions were recorded for female residents of Caboolture [Part A] (13,275 admissions), Ipswich (12,969) and Redcliffe (8,440). In contrast, less than 20 admissions were recorded for residents of Capalaba West (12 admissions) and Moreton Island (10).

There were weak correlations with most of the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.34), suggest the existence of an association at the small area level between high rates of admissions of females and socioeconomic disadvantage.

Gold Coast-Tweed Heads

Gold Coast-Tweed Heads had 49,335 admissions of females, 5 per cent fewer admissions of females than expected from the State rates (an SAR of 95**). SARs in the lowest range mapped were recorded for residents of Currumbin Waters/Elanora (an SAR of 68**), Broadbeach Waters/Mermaid Waters (69**) and Gold Coast [Part B] Balance (83**). By contrast, Hope Island recorded more admissions than expected, with an SAR of 112**.

Townsville-Thuringowa

There were 15,923 admissions of females from **Townsville-Thuringowa**, eight per cent fewer than expected (an SAR of 92**). All ratios were at or below the level expected, ranging from 100 in the combined areas of Townsville Coastal and Magnetic Island to 87** in Townsville South East.

Map 6.9: Admissions of females, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age standardisation, based on Queensland totals

Source: Calculated on data from ABS 1996 Census

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
1995/96¹									
Capital city	98**	98**	98**	101**	88**	103**	102	71**	97**
Other major urban centres ²	95**	85**	96**	..	..	..	..	..	94**
Rest of State/Territory	108**	107**	109**	121**	116**	94**	126**	- ³	109**
Whole of State/Territory	100	100	102**	106**	95**	98**	114**	70**	100
1989⁴									
Rest of State/Territory	120**	..	124**	138**	159**	..	169**	..	128**

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

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

There were 207,878 admissions of females resident in country areas of Queensland, 6 per cent more than expected from the State rates (a ratio of 106**). Some comments on the possible reasons for the generally higher admission ratios for residents of country areas are provided on page 189.

As for males, the highest ratio was recorded for females of Mornington, with 494 admissions and an SAR of 558**, more than five times the number of admissions expected from the State rates. This SLA and several others with high ratios have relatively large Aboriginal populations.

In total, 39 SLAs were mapped in the highest range for admissions of females with ratios elevated by 30 per cent or more (**Map 6.10**). Apart from Mornington, the highest of these ratios were recorded in Burke (310**), Croydon (263**) and Murgon (257**), all of which were located in the far north on the Cape Yorke Peninsula. Cook, Boulia and Diamantina, in the central west, had similarly highly elevated ratios of 212**, 191** and 183**, respectively. The many other SLAs with highly elevated ratios were spread across most of the State, with particular emphasis in the northern and western regions.

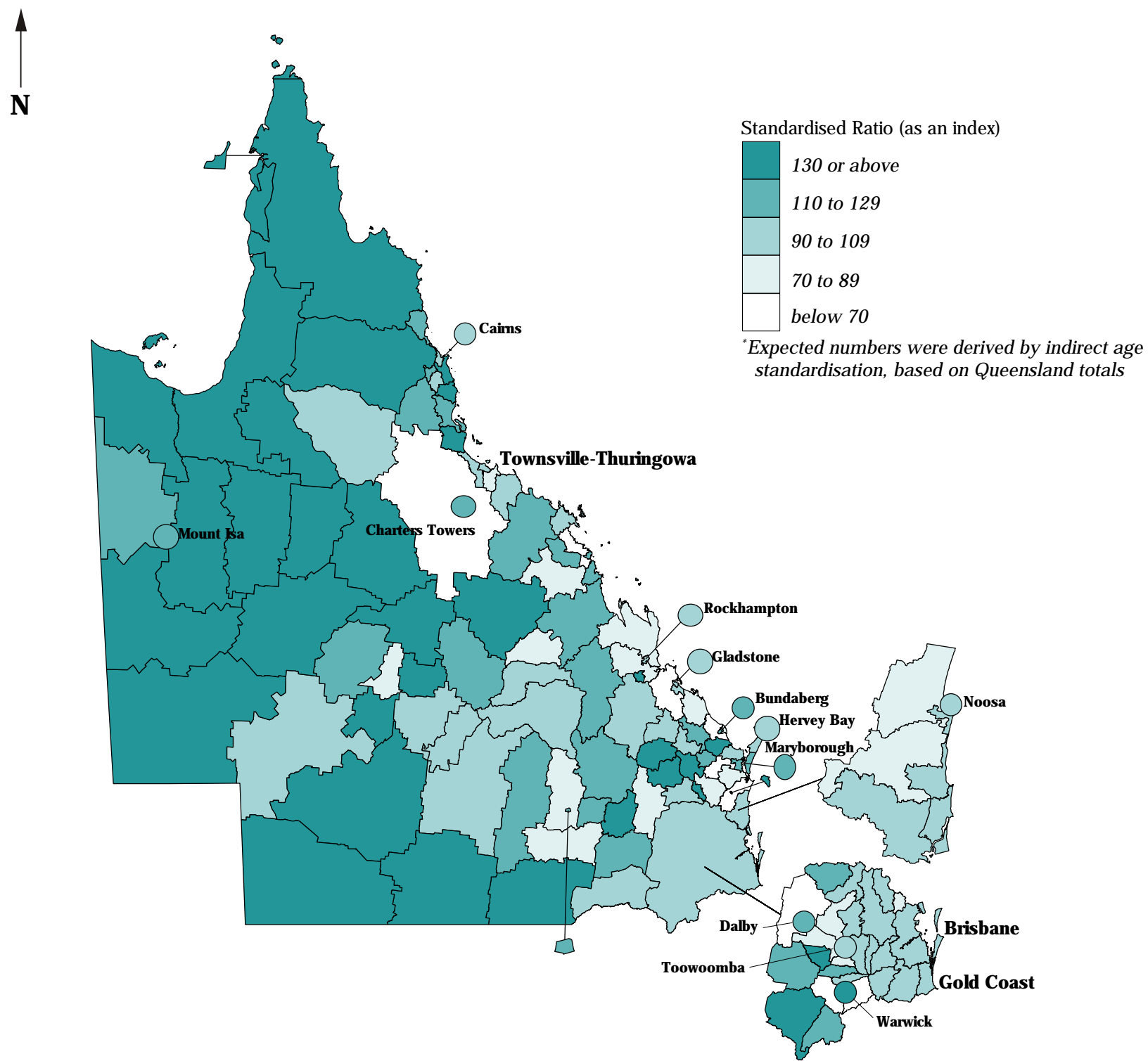
Burnett [Part B], situated just north of **Brisbane**, and Dalrymple, located in the mid north, had the lowest SARs of 28** and 35** respectively. Low ratios were also recorded in the SLAs of Woocoo (with an SAR of 47**) Warwick West (48**), Cooloola (49**), Calliope [Part B] (66**), Wambo (67**) and Mackay [Part B] and Warwick East (both with 69**), all of which were mapped in the lowest range.

The SLAs of Toowoomba, Cairns, Maroochy [Part A] and Mackay [Part A] had the largest numbers of admissions with 14,929, 14,410, 12,102 and 10,398 admissions respectively.

There were correlations of meaningful significance with the variables for dwellings with no motor vehicle (0.67), Indigenous people (0.69) and single parent families (0.52). These results, together with the inverse correlation with the IRSD (-0.60), indicate an association at the SLA level between high rates of admissions of females and socioeconomic disadvantage.

Map 6.10: Admissions of females, Queensland, 1995/96

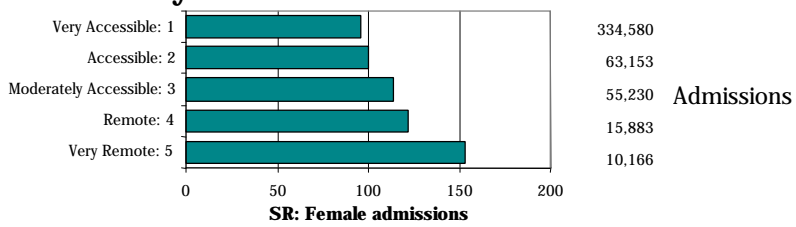
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 a ratio of 96 in the Very Accessible category; ratios of 100, 114 and 122 in the three middle categories; and increasing to an SAR of 153 in the Very Remote category. The number of admissions is higher in each category than those for males, and ratios in all but the Very Accessible category are also 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 189).

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 191).

Table 6.16: Same day admissions¹, capital cities, 1995/96
Age-sex standardised admission ratios

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

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

²Includes 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 37.9 per cent of all admissions in 1995/96 of Queensland residents, with similar percentages recorded for males (39.1 per cent) and females (36.9 per cent). Same day admissions represented a higher proportion of all admissions in **Brisbane** and the other major urban centres (41.5 per cent) than in the rest of the State (33.4 per cent).

Brisbane (Queensland as the Standard)

In 1995/96, there were 158,982 same day admissions (other than for renal dialysis) of residents of **Brisbane**, 5 per cent more than were expected from the State rates. The total of same day admissions was comprised of 87,694 females (55.2 per cent) and 71,288 males (44.8 per cent).

Residents of Greenbank [Part B] had the highest SAR for this variable, with more than twice the number of same day admissions expected from the State rates, an SAR of 234**. Ratios elevated by 30 per cent or more were also recorded in the areas of Salisbury (with an SAR of 223**), City/Spring Hill (163**), Keperra/Upper Kedron (149**) and Karalee (143**).

Several areas had ratios of same day admissions in the middle range mapped, of 5 per cent above or below the level expected from the State rates (Map 6.11). The combined areas of Lota/Manly/Manly West and Chelmer/Taringa recorded the highest SARs in this range (each with an SAR of 104), while the area of Graceville/Oxley (with an SAR of 95) had the lowest.

Fourteen areas had ratios in the lowest range mapped. Capalaba West (10 same day admissions and an SAR of 29**) and Moreton Island (8 admissions; 57) had 71 per cent and 43 per cent fewer same day admissions than were expected, respectively. However, low ratios with more than 20 same day admissions were also recorded in Redland Balance (with an SAR of 66**), Waterford West and Nathan (both with 68**), Rochedale South/Slacks Creek (70**), Greenbank [Part A]/Beaudesert (76**), Moreton Balance (78**), Underwood (79**) and Brown Plains and St Lucia (both with 80**).

More than 5,000 same day admissions were recorded for residents of Ipswich (9,663 admissions), Caboolture [Part A] (8,768 admissions), Redcliffe (5,542 admissions), Mt Gravatt/Rochedale (5,287 admissions) and Bridgeman Downs/Boondall (5,105 admissions).

There was no consistent evidence in the correlation analysis of an association at the small area level between high rates of same day admissions and socioeconomic status.

Gold Coast-Tweed Heads

There were 1 per cent more same day admissions in **Gold Coast-Tweed Heads** than were expected from the State rates, an SAR of 101 (36,753 same day admissions).

Residents of Palm Beach/Currumbin had the highest ratio, an SAR of 123**, while the lowest ratios were recorded in the combined areas of Currumbin Waters/Elanora (68**) and Oxenford (77**).

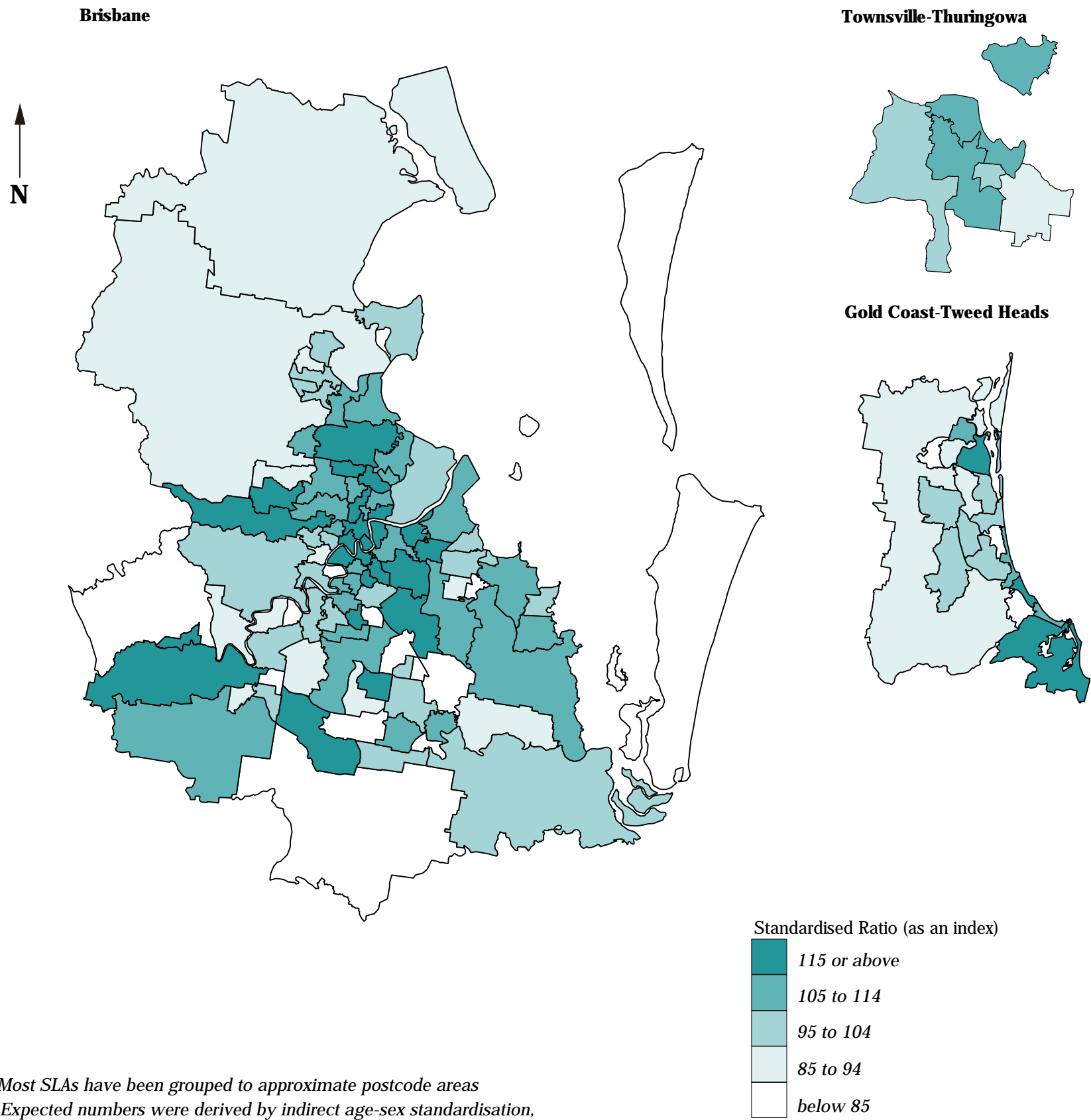
Townsville-Thuringowa

There were 12,255 same day admissions in **Townsville-Thuringowa**, 2 per cent more than expected from the State rates.

The areas of Murray/Mt Louisa (107**), Townsville Coastal/Magnetic Island (107**) and Gulliver/Hermit Park (101) had elevated SARs, while Thuringowa [Part A] and Townsville South East recorded SARs of 98 and 88** respectively.

Map 6.11: Same day admissions, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 admissions included in this analysis are of all 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 189 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 admissions¹, 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 ²	97**	71**	103**	..	..	..	..	..	97**
Rest of State/Territory	84**	94**	97**	89**	79**	77**	58**	- ³	89**
Whole of State/Territory	101**	108**	102**	95**	88**	85**	62**	61**	100

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

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

³Data 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 State (Queensland as the Standard)

There were 6 per cent fewer same day admissions in the non-metropolitan areas of Queensland than were expected from the State rates, a ratio of 94**. Females accounted for 49.8 per cent of the total 132,360 admissions, while males accounted for 50.2 per cent.

The distribution of SARs for same day patients was in direct contrast with that recorded for total admissions (admissions to public acute hospitals plus private hospitals). Only 15 SLAs had SARs in the highest range mapped for same day admissions, compared to 39 SLAs for total admissions (**Map 6.12**). The most notable difference was in the northern and western regions of the State, where same day admissions were mapped in the lower ranges, while total admissions were mapped in the highest. This emphasises the point made above as to the location of these facilities in the capital city, which limits their access by people in rural and remote regions.

Isisford, located in the central west, had the highest ratio of 282**, indicating that there were nearly three times the number of same day admissions than were expected from the State rates (a total of 79 admissions). The SLAs of Aramac and Mornington also had highly elevated ratios, with SARs of 238** and 211** respectively. Ratios elevated by 60 per cent or more were also recorded in Croydon (189**), Burke (176**), Boulia (173**) and Gympie (164**).

In total, 27 SLAs were mapped in the middle range, those with average or above average ratios were generally distributed throughout the far north west. These included McKinlay (with an SAR of 108), Mount Isa (107**), Carpentaria (106) and Richmond (103).

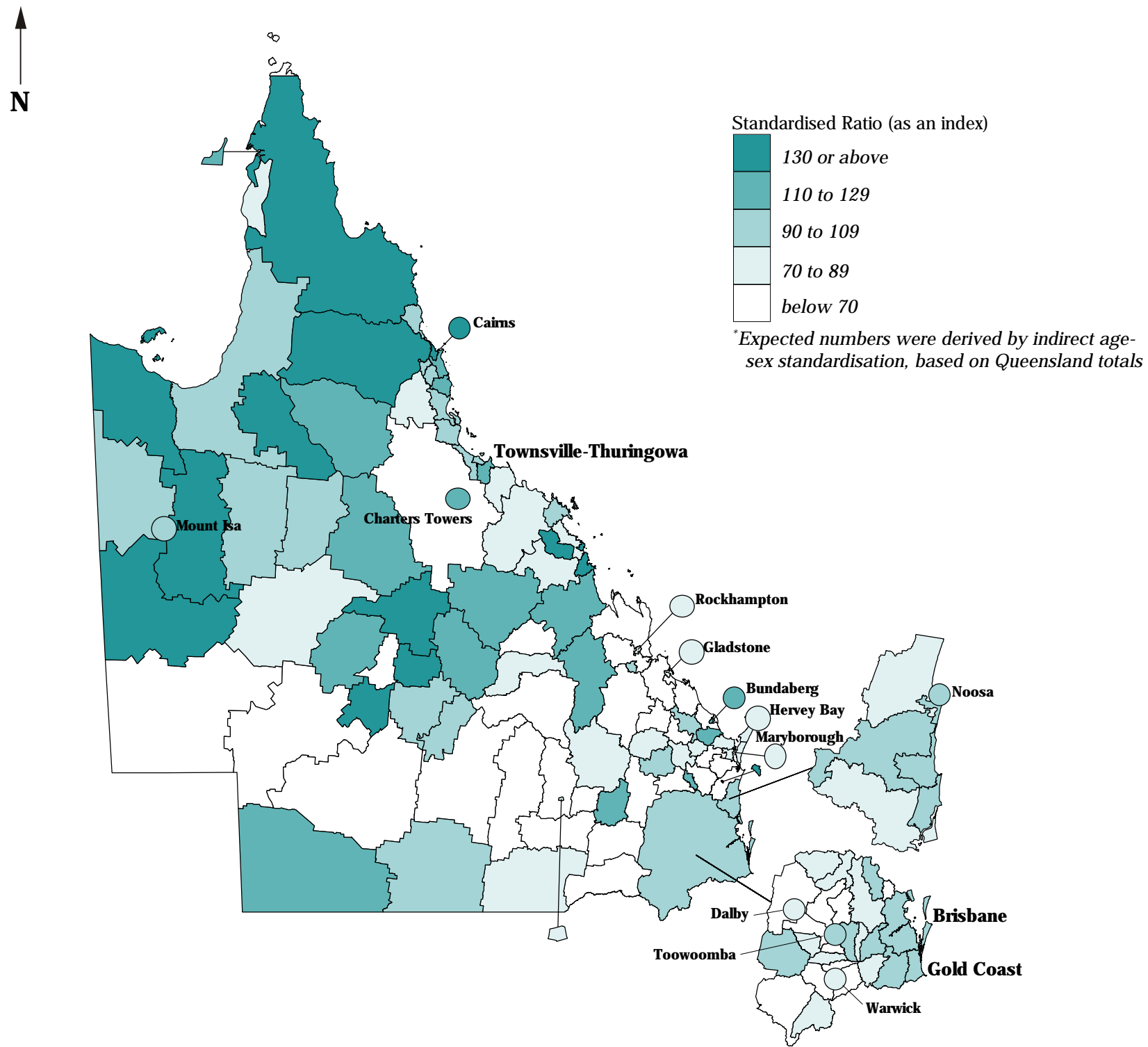
Residents of Burnett [Part B] (with an SAR of 29**), Woocoo (29**), Dalrymple (33**), Bungil (36**), Warwick East and Warwick West (both with 39**), Wambo (41**), Warroo (42**), Cooloola (43**) and Diamantina (43') had very low admission rates for this variable. Relatively low ratios were also recorded in the far northern SLA of Torres (51**) and in Calliope [Part B] (50**) and Kilkivan (52**), situated to the north of **Brisbane**.

Residents of Cairns had the largest number of same day admissions within the non-metropolitan areas of Queensland, recording 12,883 admissions. More 6,000 admissions were also recorded in Toowoomba (9,283), Maroochy [Part A] (8,863) and Mackay [Part A] (7,876).

There was no consistent evidence in the correlation analysis of an association at the SLA level between high rates of same day admissions and socioeconomic status.

Map 6.12: Same day admissions, Queensland, 1995/96

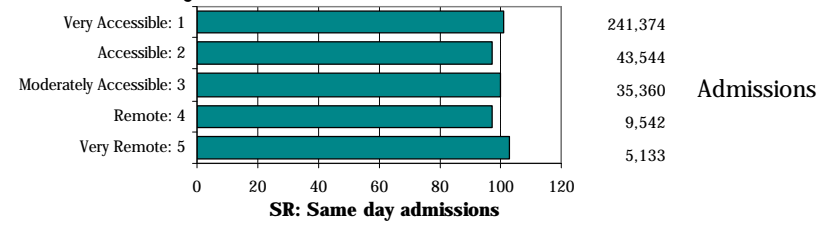
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 same day admissions vary little across the ARIA categories, from the lowest ratios in the Accessible and Remote areas (both with an SAR of 97) to the highest in the Very Remote category (103).

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 6.16**, 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 ¹	All capitals
1995/96 ²	116**	71**	84**	108**	78**	75**	106	66**	92**
1989 ³	69**	..	85**	90**	77**	..	84*	..	76**

¹Includes Queanbeyan (C)

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

³Excludes 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 hospital admission, in particular for viral diseases and intestinal infections. Children aged 0 to 4 years had the highest rate for these admissions (35.2 admissions per thousand population for males and 21.4 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 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 6 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 1.8 per cent of all admissions of Queensland residents.

Brisbane (Queensland as the Standard)

There were 5,795 admissions for infectious and parasitic diseases in **Brisbane**, 19 per cent fewer admissions than expected from the State rates (an SAR of 81**). Females accounted for 2,989 or 51.6 per cent of the admissions.

Less than one fifth (17.9 per cent) of the small areas mapped for this variable had elevated ratios, eight of which were in the highest range. The highest of these was recorded in the area of New Farm (with an SAR of 146**), where there were 46 per cent more admissions than were expected from the State rates. Highly elevated ratios were also recorded for residents of

City/Spring Hill (134), Windsor/Lutwyche/Wooloowin (134**), Karalee (132), Carole Park (123), Kuraby (121), Greenbank [Part B] (120) and Redcliffe (118**).

As noted above, the majority of SLAs had below average ratios, many of which were of statistical significance. In general, ratios mapped in the lowest range were located in a band through the middle of the metropolitan region (**Map 6.13**). The lowest ratios, in areas with at least 20 admissions, were recorded in Upper Brookfield/Fig Tree Pocket (46**), Rochedale South/Slacks Creek (47**), St Lucia (48**) and Jindalee/River Hills (50**).

The largest numbers of admissions for infectious diseases were of residents of Caboolture [Part A] (468), Ipswich (407) and Redcliffe (277).

There were weak correlations with most of the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.30), suggest the existence of an association at the small area level between high rates of admissions for infectious and parasitic diseases and socioeconomic disadvantage.

Gold Coast-Tweed Heads

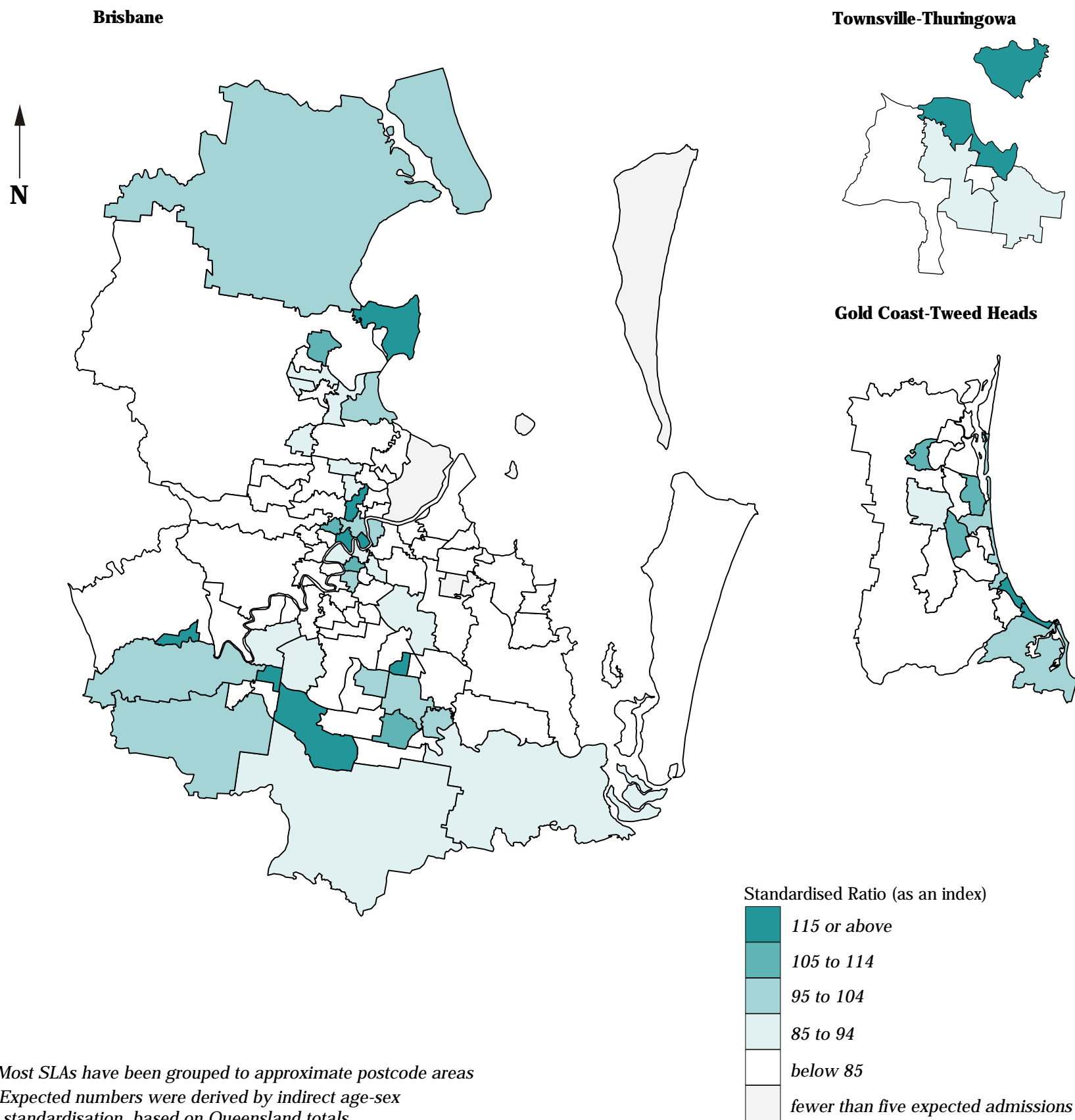
There were 1,417 admissions to hospital for infectious diseases in **Gold Coast-Tweed Heads**, 9 per cent fewer than expected from the State rates (an SAR of 91**). The combined areas of Palm Beach/Currumbin, located on the south coast, had the highest SAR, of 133**, while a ratio of 53** was recorded in Currumbin Waters/Elanora.

Townsville-Thuringowa

There were 13 per cent fewer hospital admissions for infectious diseases in **Townsville-Thuringowa** than expected from the State rates, an SAR of 87** (535 admissions). The combined areas of Townsville Coastal/Magnetic Island recorded the only elevated SAR, with a ratio of 119*. Ratios below the level expected ranged from 72** in Thuringowa [Part A] to 92 in Townsville South East.

Map 6.13: Admissions for infectious and parasitic diseases, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas

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

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
1995/96¹									
Capital city	116**	71**	84**	108**	78**	75**	106	66**	92**
Other major urban centres ²	73**	83**	93**	..	..	..	..	..	81**
Rest of State/Territory	118**	93**	126**	134**	153**	85**	305**	- ³	121**
Whole of State/Territory	111**	77**	103**	115**	99	81**	219**	66**	100
1989⁴									
Rest of State/Territory	147**	..	162**	136**	170**	..	547**	..	164**

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

There were 8,335 admissions for infectious and parasitic diseases of residents of the non-metropolitan areas of Queensland, 23 per cent more than were expected from the State rates (an SAR of 123**). This represents a substantial difference in the rate of hospitalisation between residents of the non-metropolitan areas and **Brisbane**. Males accounted for 49.8 per cent of these admissions.

Highly elevated ratios (at least twice the level expected from the State rates) were recorded:

- just north-west of the city, in Murgon (with an SAR of 763**), Gayndah (438**), Mundubbera (311**), Isis (273**) and Monto (204**);
- in the far north west, in Burke (732**), McKinlay (534**), Cloncurry (332**), Richmond (295**) and Flinders (268**);
- in the south west, in Balonne (400**), Paroo (353**) and Quilpie (297**);
- in the central west, in Winton (321**) and Barcaldine (251**);
- on the Cape Yorke Peninsula, in Carpentaria (300**), Cook (288**), Mareeba (209**) and Weipa (204**);
- just west of the city, in Pittsworth (270**), Inglewood (235**) and Millmerran (223**); and
- in Charters Towers (203**).

In total, 21 SLAs were mapped in the middle range (with SARs within 10 per cent of the level expected from the State rates) (**Map 6.14**). Within this range, there were eight per cent more admissions from residents of Hervey Bay, and 9 per cent fewer than expected from Maroochy [Part B].

The lowest standardised admission ratios in areas for which there were more than 20 admissions were in Cooloola (with an SAR of 37**), Burnett [Part A] (46**), Burdekin and Mackay [Part B] (both with 62**), Noosa [Part B] (64**) and Sarina (69**).

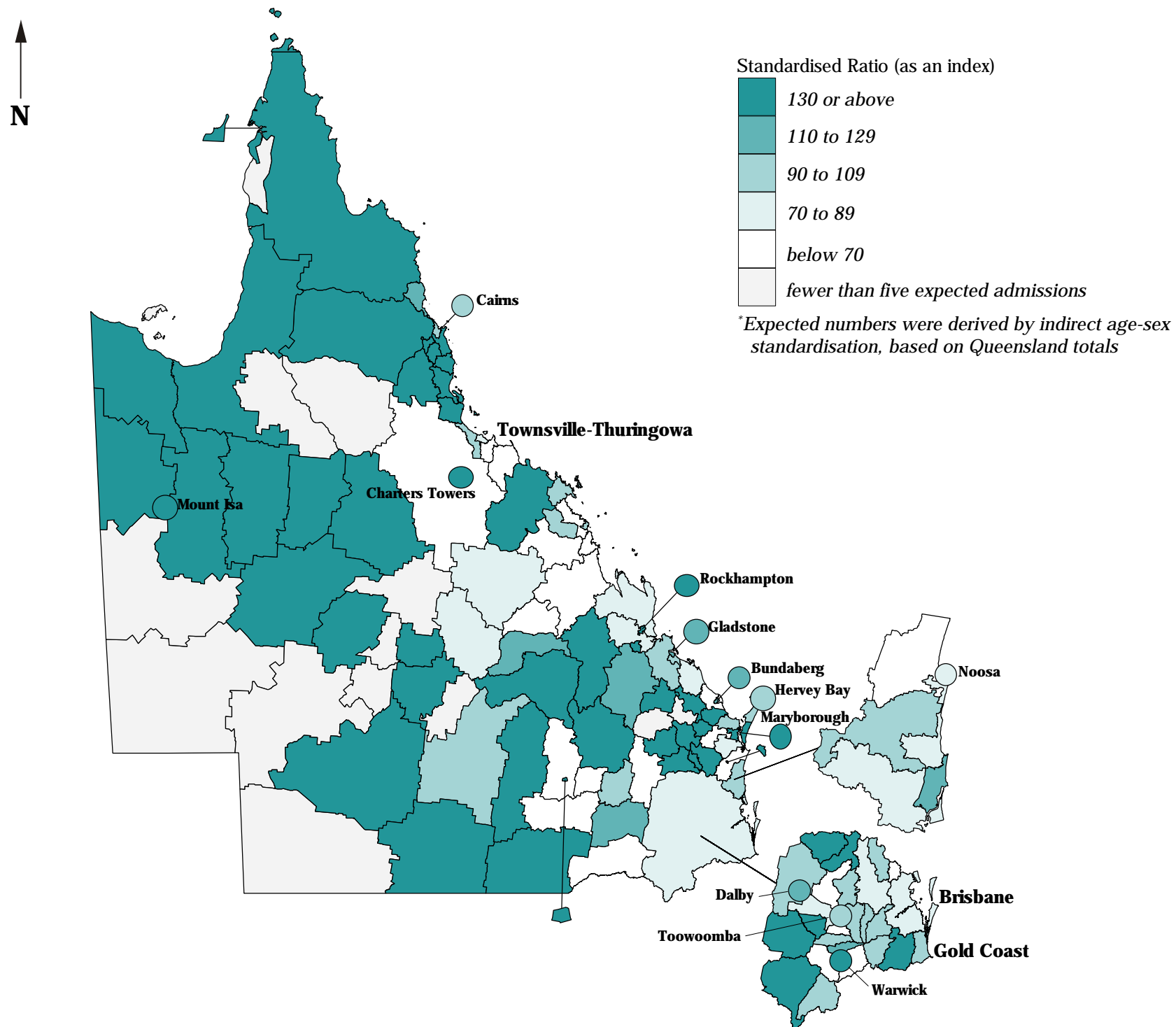
Dalrymple (with an SAR of 17**, 3 admissions compared to an expected 17.3), Woocoo (23**, 3 admissions compared to an expected 12.8) and Rosalie (30**, 13 admissions compared to an expected 43.6). had the lowest SARs, but each recorded fewer than 20 admissions.

The largest numbers of admissions for infectious and parasitic diseases over this period were recorded for residents of the towns of Cairns, with 521 admissions, Rockhampton, with 425, Toowoomba, with 419, and Bundaberg, with 266. Residents of the SLAs of Maroochy [Part A] (352 admissions) and Mackay [Part A] (282) also had relatively large numbers of admissions for these causes.

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

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

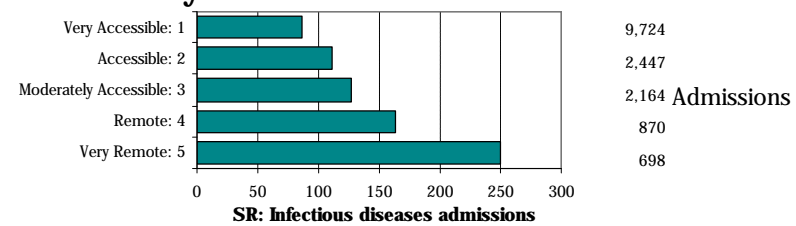
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 State rates only in the Very Accessible ARIA category (an SAR of 87). Ratios increase from 111 and 127 in the Accessible and Moderately Accessible categories, respectively, to highly elevated ratios of 164 and 250 in the Remote and Very Remote categories. The highly elevated rate for residents of the remote areas is likely to reflect high rates of admission of the Indigenous population.

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 6.18**, 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 ¹	All capitals
1995/96 ²	95**	103**	121**	105**	89**	87**	106	78**	101*
1989 ³	90**	..	121**	104**	99	..	98	..	99**

¹Includes Queanbeyan (C)

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

³Excludes 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 5.4 per cent of all the admissions analysed for Queensland residents; 5.9 per cent of residents of **Brisbane** and the other major urban centres and 4.9 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.

Just as people from middle and lower socioeconomic status postcodes have higher rates of incidence of some cancers, so too do people from higher socioeconomic status postcodes. Those cancers are reported by Esterman et al. (1988) as being of the female breast, uterus (body), prostate, testis, skin (melanoma), and colon. Overall, however, residents of middle and lower socioeconomic status postcodes had more admissions for cancers than did those from higher socioeconomic status postcodes.

Brisbane (Queensland as the Standard)

There were 22,507 admissions of residents of **Brisbane** for cancer, 7 per cent more than the number expected from the State rates (an SAR of 107**). Males accounted for a greater proportion, with 13,092 admissions (58.2 per cent).

Areas with ratios of cancer admissions elevated by 15 per cent or more were generally found in the areas to the east and south-east of the city. The highest ratios were found in Pinkenba-Eagle Farm (with an SAR of 193**), Murarrie (187**), Bald Hills (157**),

Dutton Park/Woolloongabba (142**), Rocklea (135), Nathan (134), Toowong (134**), Tingalpa (131**) and Greenslopes (131**).

Fifteen areas were mapped with admissions for cancer in the lowest range, and were scattered throughout the middle region of the metropolitan area (**Map 6.15**). Statistically significant ratios in the lowest range mapped (for areas with at least 20 admissions) were recorded in Waterford West (with an SAR of 41**), Seventeen Mile Rocks (52**), Camira (58**), Moreton Balance (60**), Browns Plains (62**), Underwood (68**), Runcorn/Eight Mile Plains (76**), Redland Balance (76**), Greenbank [Part A]/Beaudesert (77**) and Jindalee/Riverhills (81**).

The largest numbers of admissions were recorded for residents of Caboolture [Part A] (1,365 admissions), Ipswich (1,112 admissions), Redcliffe (916 admissions) and Mt Gravatt/Rochedale (827 admissions).

There was a weak association evident in the correlation analysis at the small area level with the indicators of socioeconomic disadvantage.

Gold Coast-Tweed Heads

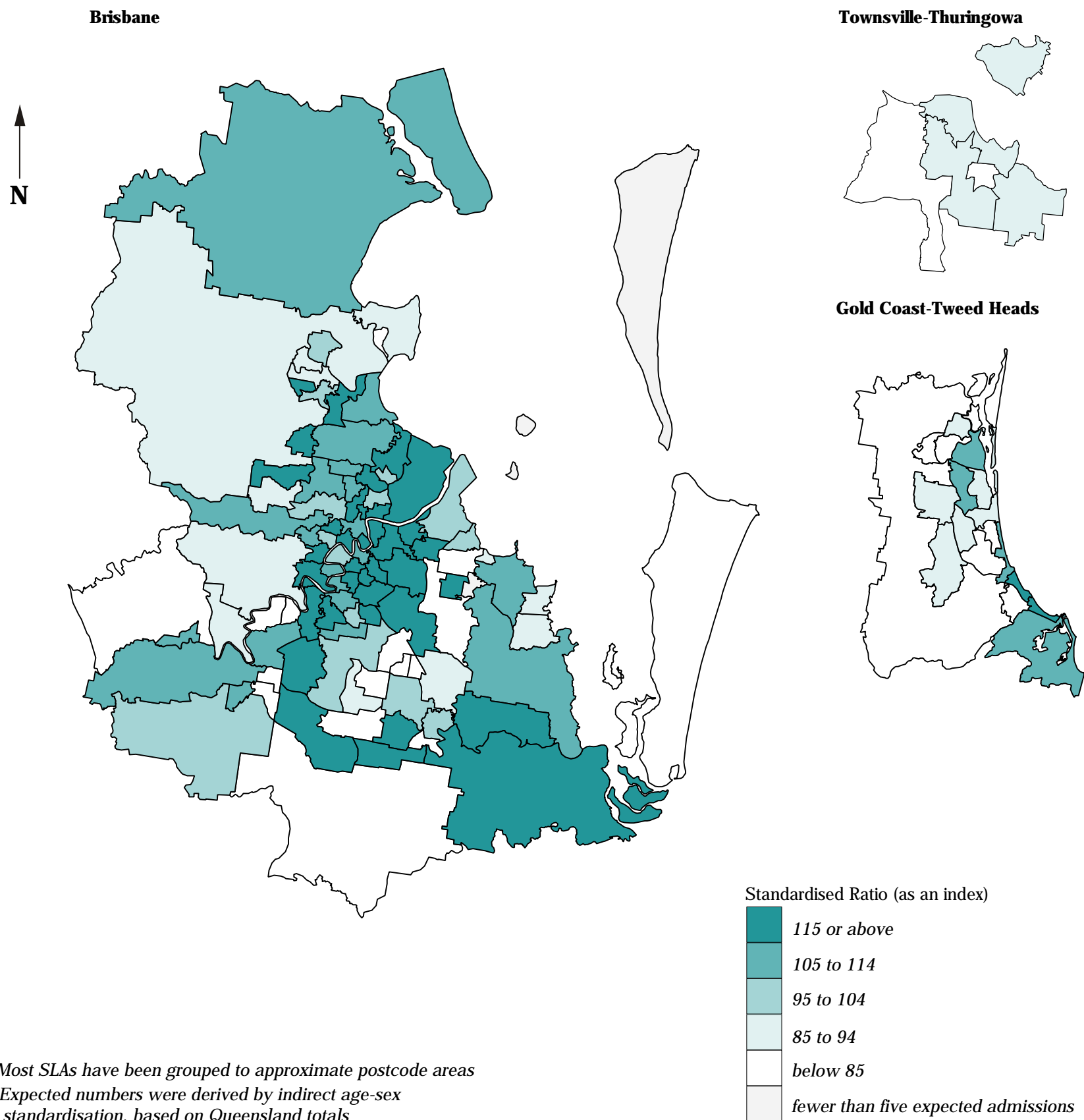
Gold Coast-Tweed Heads had 5,752 admissions for cancer, 4 per cent fewer admissions than were expected from the State rates (an SAR of 96**). There were 3,250 admissions of males for cancer (56.5 per cent). Ratios elevated by at least 15 per cent or more were recorded in the areas of Coolangatta/Tugun (143**) and Palm Beach/Currumbin (126**). Residents of Oxenford recorded the lowest ratio, with an SAR of 47**, however this area also recorded a very low number (35 admissions for cancer).

Townsville-Thuringowa

In 1995/96, there were 1,247 admissions for cancer of residents of **Townsville-Thuringowa**, 15 per cent fewer than expected from the State rates (an SAR of 85**). Of the 1,247 admissions, 697 were males and 550 were females. All ratios were below the level expected from the State rates, ranging from 78** in Gulliver/Hermit Park to 93 in Murray/Mt Louisa.

Map 6.15: Admissions for cancer, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas

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

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 6.19**, 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
1995/96¹									
Capital city	95**	103**	121**	105**	89**	87**	106	78**	101*
Other major urban centres ²	90**	87**	106**	..	..	..	..	..	95**
Rest of State/Territory	99	99	109**	104**	84**	90**	79**	- ³	100
Whole of State/Territory	96**	102**	114**	104**	88**	89**	92**	77**	100
1989⁴									
Rest of State/Territory	107**	..	107**	105**	91**	..	73**	..	..

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

In the non-metropolitan areas of Queensland, there were 19,315 admissions for cancer, 4 per cent fewer admissions than were expected from the State rates (an SAR of 96**). In total, there were 11,182 admissions of males (57.9 per cent) and 8,133 admissions of females (42.1 per cent).

Despite an overall standardised ratio just below the level expected from the State rates, some SLAs had highly elevated ratios for cancer admissions (**Map 6.16**). Those elevated by 30 per cent or more were recorded for residents:

- in the central west, in Barcaldine (with an SAR of 245**), Aramac (242**), Winton (181**) and Longreach (157**);
- just west of **Brisbane**, in Taroom (192**) and Murilla (137**);
- just north-west of the city, in Isis (159**), Gympie (153**), Charters Towers (145**) and Bundaberg (131**);
- further north-west of the city, in Mirani (133**) and Peak Downs (130); and
- in the far north, in Atherton (130**).

Of the 33 SLAs mapped in the middle range (10 per cent above or below the expected level), only two were of statistical significance. There were ten per cent fewer admissions than expected recorded for residents of Maryborough (an SAR of 90) and nine per cent fewer were recorded in Maroochy [Part A] (an SAR of 91**).

A number of SLAs had standardised admission ratios for cancer in the lowest range mapped: however, several SLAs in this category recorded fewer than 20 admissions. The lowest ratio (in areas with at least twenty admissions) was recorded in Burnett [Part B], with just under one third the number of admissions

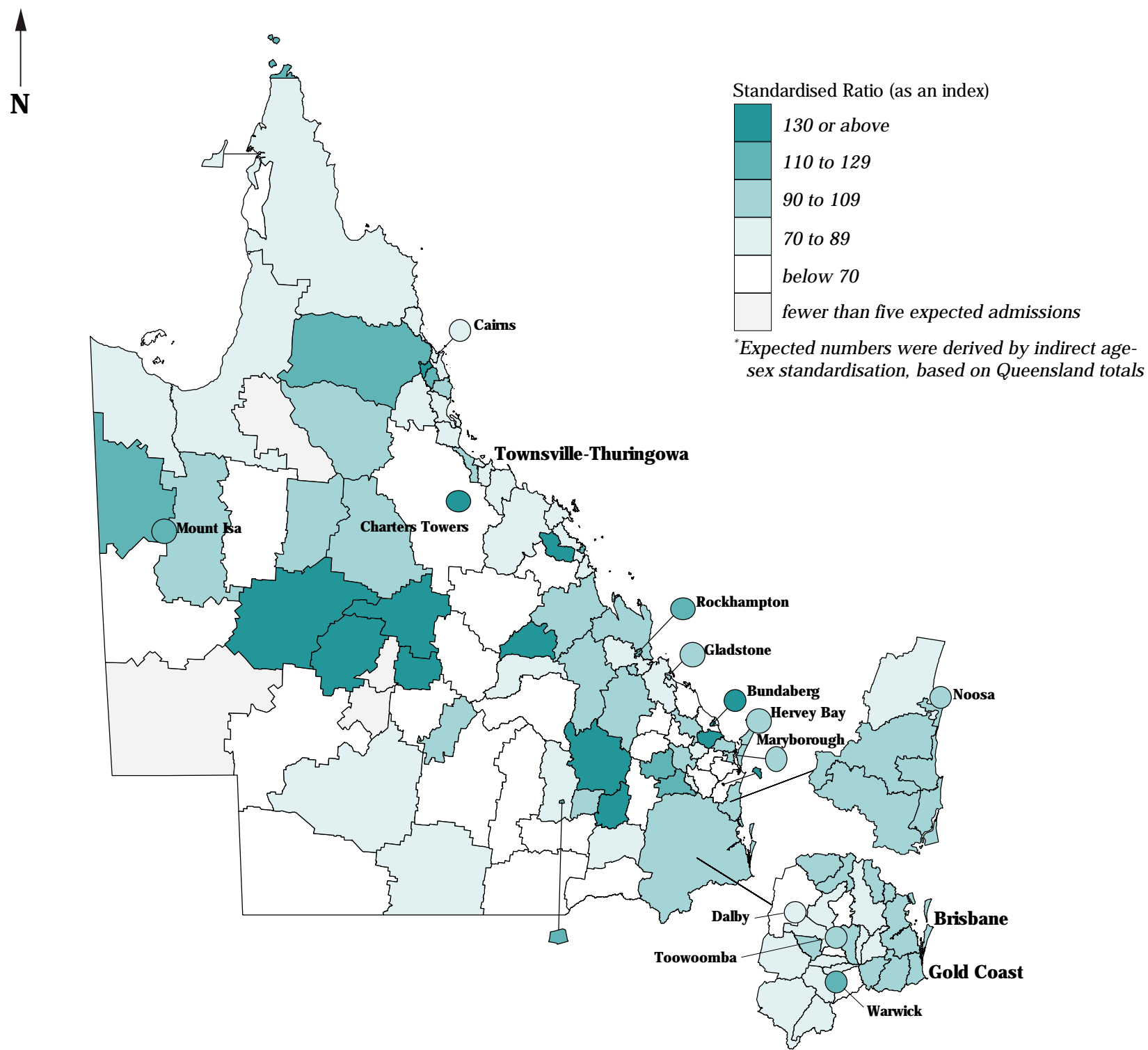
expected from the State rates, a standardised ratio of 27**. Low ratios were also recorded in Monto (with an SAR of 38**), Cooloola and Murweh (both with an SAR of 41**), Belyando (45**) and Kilkivan (50**).

In the non-metropolitan areas of Queensland, the largest numbers of admissions for cancer were recorded for residents of Toowoomba, with 1,383 admissions; Maroochy [Part A], 1,376 admissions; Rockhampton, 1,089 admissions; Bundaberg, 1,031 admissions; and Caloundra [Part A], 1,008 admissions.

There was no consistent evidence in the correlation analysis of an association at the SLA level between high rates of same day admissions and socioeconomic status.

Map 6.16: Admissions for cancer, Queensland, 1995/96

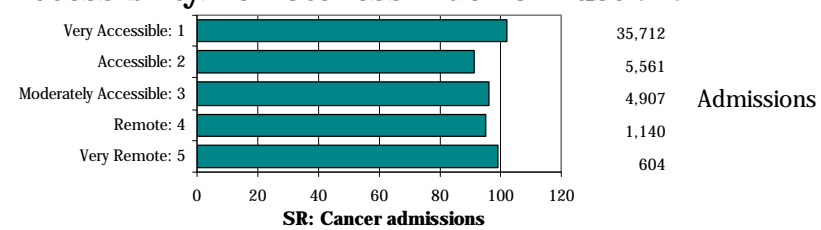
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 cancer vary little across the ARIA categories. They are highest in areas in the Very Accessible category (102), then drop to the lowest ratio (91) in the Accessible areas, before increasing steadily to an SAR of 99 in the Very Remote areas.

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 ¹	All capitals
1995/96 ²	88**	99	121**	121**	89**	95	100	54**	98
1989 ³	82**	..	154**	119**	77**	..	162**	..	100

¹Includes Queanbeyan (C)

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

³Excludes 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 from cancer in 1995/96. However, lung cancer accounted for only 0.4 per cent of all admissions analysed for Queensland residents.

As noted in the commentary to the map for all cancers (page 222), 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).

Brisbane⁵ (Queensland as the Standard)

In 1995/96, there were 1,432 admissions for lung cancer recorded for residents of **Brisbane**, 6 per cent more admissions than were expected from the State rates (an SAR of 106^{*}). Males accounted for over two thirds of these admissions (71.4 per cent).

Areas mapped in the highest range (with at least 20 admissions for lung cancer) were generally clustered in two areas, to the south-east and north of the city (**Map 6.17**). The highly elevated ratios recorded in south-eastern areas were in Gold Coast [Part A] (177**), Berrinba-Karawatha/Kingston (174**), Tanah Merah/Carbrook-Cornubia (150) and Capalaba/Redland Bay (118); and those in the north were in Caboolture [Part A] (158**), Bracken Ridge/Sandgate (126) and Redcliffe (121). Also mapped in the highest range were the inner combined areas of Inala/Durack/Doolandella-Forest Lake/Ellen Groves/Richlands (200**), Ferny Hills/Everton Hills (184**), Camp Hill/Carindale (165**) and Holland Park/Tarragindi (126).

⁵As there were relatively few areas with sufficient cases to analyse for this variable in the non-metropolitan areas of Queensland, the data have not been mapped. A summary of the main features is on page 301

Residents of Birkdale/Ormiston had the lowest ratio (among areas with at least 20 admissions) for this variable, with 21 per cent fewer hospital admissions than were expected from the State rates, an SAR of 79. Only four other areas with at least 20 admissions were mapped in the two lowest ranges: Enoggera/Wilston, with an SAR of 88 and 20 admissions; MacGregor/Pallara-Heathwood-Larapinta, with an SAR of 89 and 37 admissions; Ipswich, with an SAR of 91 and 60 admissions; and Rochedale South/Slacks Creek with an SAR of 93 and 25 admissions.

The largest numbers of admissions for lung cancer were recorded for residents of Caboolture [Part A], Redcliffe and Ipswich, with 137, 78 and 60 respectively.

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

Gold Coast-Tweed Heads

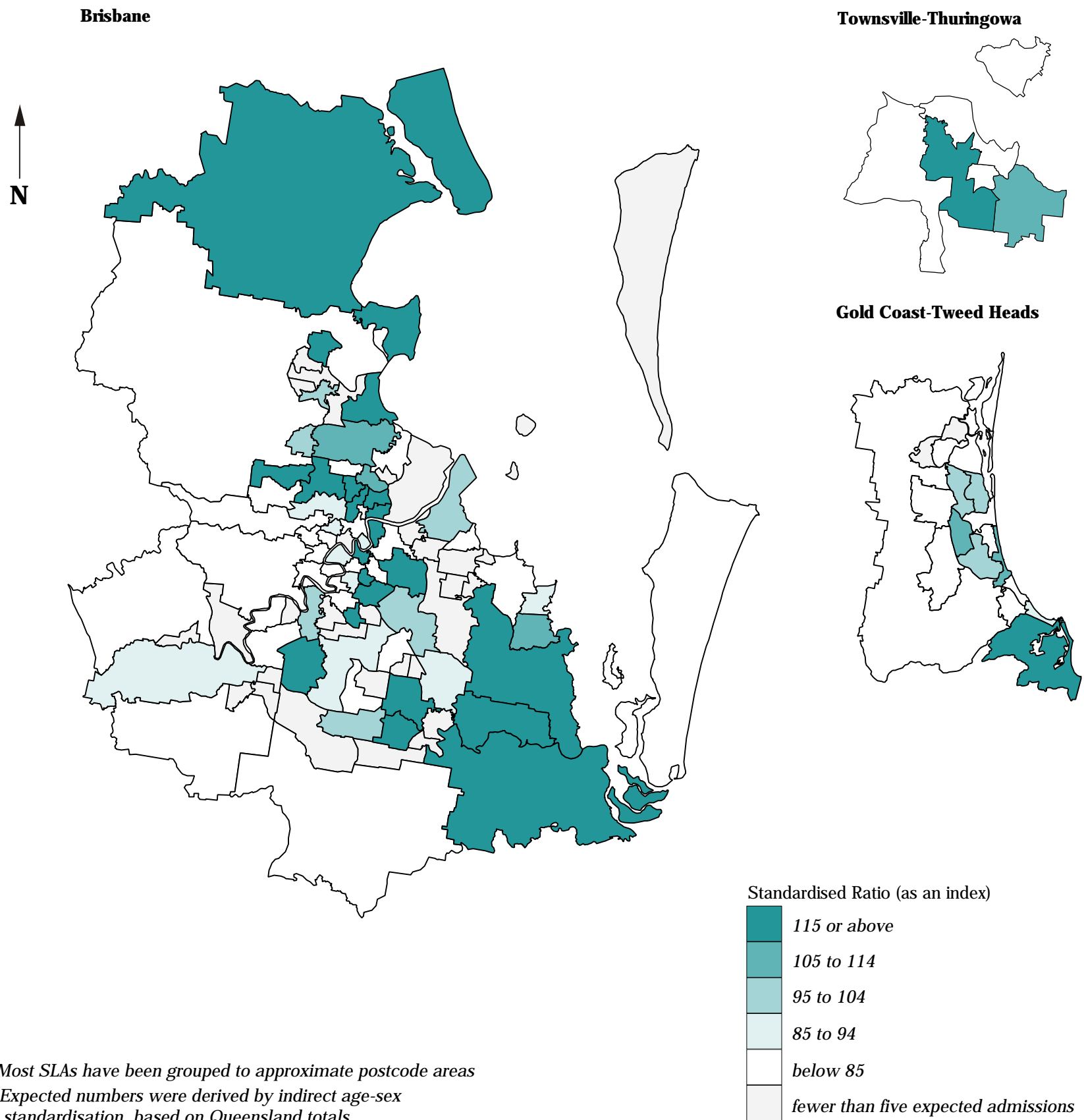
The SAR for lung cancer recorded in **Gold Coast-Tweed Heads** was the lowest among the major urban centres, with 20 per cent fewer admissions than were expected from the State rates (with an SAR of 80**). By far the highest ratio was recorded in Tweed Heads, where there were 27 per cent more admissions than expected (an SAR of 127^{*}). The lowest SAR, with at least 20 admissions, was recorded for residents of Paradise Point/Biggera Waters, with a ratio of 81.

Townsville-Thuringowa

There were 15 per cent fewer admissions from lung cancer recorded in **Townsville-Thuringowa** than were expected from the State rates, an SAR of 85. The ratios ranged from 64 in Gulliver/Hermit Park to 117 in Murray/Mt Louisa.

Map 6.17: Admissions for lung cancer, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas

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

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

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 6.23).

The SARs in **Sydney** have remained consistent for both periods shown in Table 6.23 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 6.23: Admissions of females aged 40 years and over¹ with a principal diagnosis of breast cancer, capital cities
Age-sex standardised admission ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ²	All capitals
1995/96 ³	97	125**	93*	94*	81**	71**	129	90	102
1989 ⁴	96	..	108*	102	87**	..	182**	..	98

¹Data for '1989' is of females of all ages

²Includes Queanbeyan (C)

³Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

⁴Excludes 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 Queensland. Incidence rates for some cancers are higher among people from the most affluent areas (Esterman et al. 1990).

In 1995/96, hospital admissions for breast cancer accounted for 0.3 per cent of all admissions analysed and 5.1 per cent of admissions for cancer of Queensland residents.

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.

Brisbane⁶ (Queensland as the Standard)

In 1995/96, there were 1,093 admissions for cancer of the breast for female residents of **Brisbane** (aged 40 years and over). This was marginally lower than expected from the State rates, an SAR of 99.

The combined areas of Ascot and Hamilton had the highest ratio for this variable, with more than two and a half times the number of admissions than expected from the State rates, an SAR of 267**. Cleveland (226**) and Capalaba/Redland Bay (142*), situated in the outer east, Marsden, in the outer south (217**), and the combined area of Ash Grove/The Gap (148*), located in the inner region of **Brisbane**, also recorded relatively high and statistically significant ratios.

Only four areas mapped in the lowest range recorded at least 15 admissions for breast cancer. These ratios were recorded for residents of Rochedale South/Slacks Creek (79), Hemmant-Lytton/Wynnum/Wynnum West (73), Bracken Ridge/Sandgate (59) and MacGregor/Pallara-Heathwood-Larapinta (54**).

More than 40 female admissions for breast cancer were recorded for residents of Caboolture [Part A] (63 admissions), Ipswich (56), Redcliffe (52) and Mt Gravatt/Rochedale (43).

⁶As there were relatively few areas with sufficient cases to analyse for this variable in the non-metropolitan areas of Queensland, the data have not been mapped. A summary of the main features is on page 302.

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

Gold Coast-Tweed Heads

There were 353 admissions for breast cancer in **Gold Coast-Tweed Heads**, 10 per cent more admissions than were expected from the State rates, an SAR of 110.

The area of Coolangatta/Tugun had the highest ratio for this variable (of areas with at least 20 admissions), with more than twice the number of admissions than expected from the State rates (223**). The lowest ratio was recorded in Robina/Kerrydale/Burleigh Waters (an SAR of 49**), however only 13 admissions were recorded compared to an expected 26.7.

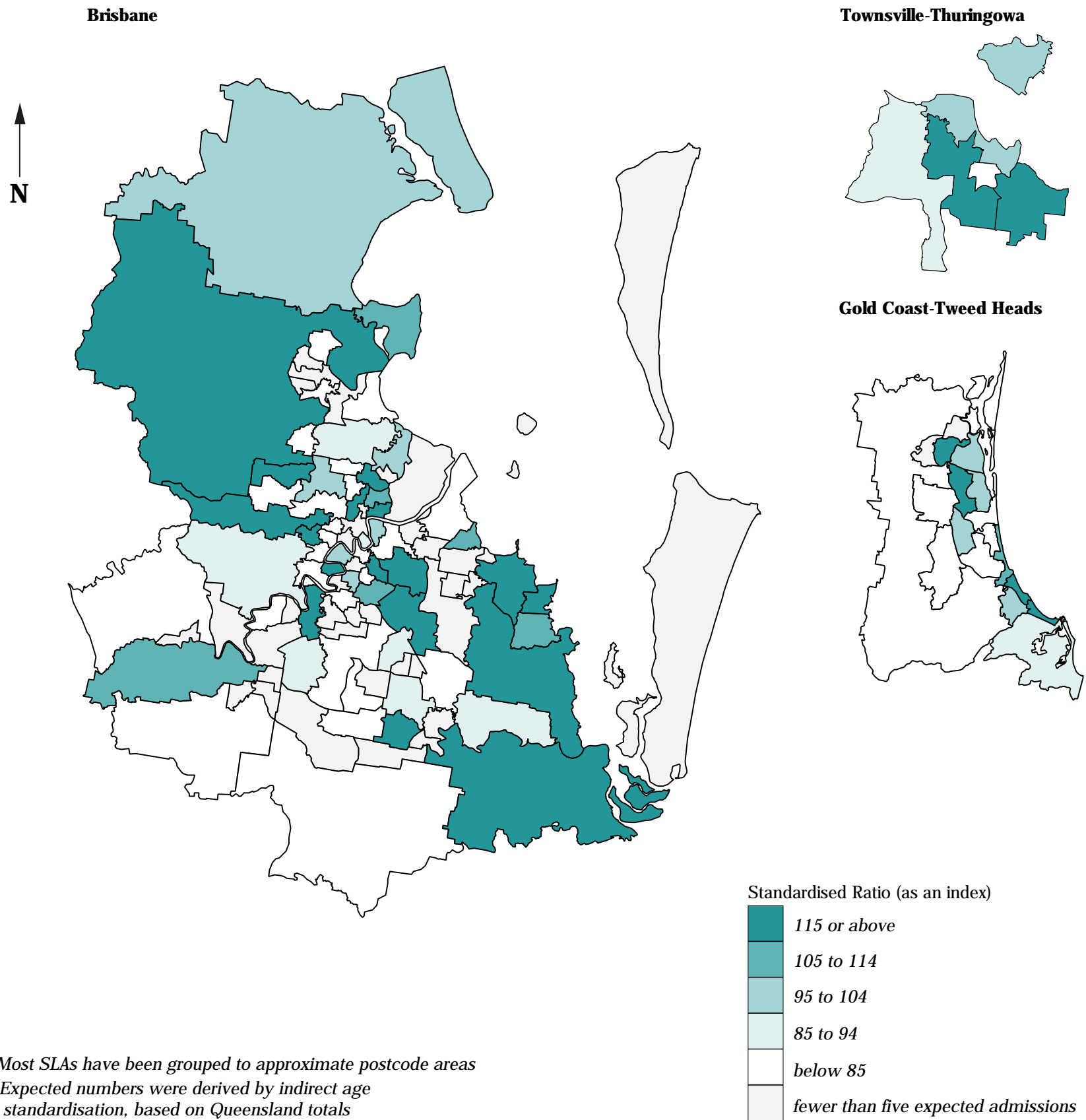
Townsville-Thuringowa

In 1995/96, there were 74 admissions for breast cancer recorded for female residents of **Townsville-Thuringowa** aged 40 years and over, 2 per cent fewer admissions than were expected from the State rates (an SAR of 98). Over one third of these admissions were recorded in the areas from Murray to Mt Louisa (29), while all other areas had fewer than 20 admissions.

Ratios ranged from 144* in Murray/Mt Louisa to 42* in Gulliver/Hermit Park (seven admissions compared to an expected 16.9).

Map 6.18: Admissions of females aged 40 years and over for breast cancer, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age standardisation, based on Queensland totals

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

Capital city comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for psychosis (described below) varied widely between the capital cities (Table 6.24). **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 6.24: Admissions¹ with a principal diagnosis of psychosis, capital cities, 1995/96
Age-sex standardised admission ratios

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

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

²Includes 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 disorders is classified as being either psychosis, neurotic, personality and other mental disorder, 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.

Hospital admissions for psychosis accounted for 1.9 per cent of all admissions analysed for Queensland residents, with similar proportions recorded for males (1.9 per cent and a rate of 473.4 per 100,000 population) and females (1.9 per cent and a rate of 558.9 per 100,000 population).

Brisbane (Queensland as the Standard)

There were 10,177 admissions of residents of **Brisbane** for psychosis, 29 per cent more than expected from the State rates (an SAR of 129**). Females accounted for 57.7 per cent of the admissions.

The spatial distribution of patient addresses for this illness can be affected by the location of hostels, boarding houses and shelters providing accommodation for people with a chronic psychiatric disability. These premises cater for people who may have several admissions in a year for mental disorders, including admissions to a public acute hospital. These admissions are also likely to include numbers of homeless people, including those who live largely 'on the street'. It is perhaps timely to reiterate that the data presented here are of the number of admissions, not the number of individuals.

Just over half of the areas in **Brisbane** had elevated ratios. The areas with the highest ratios included City/Spring Hill, with an SAR of 557**, indicating that there were more than five times the number of admissions expected from the State rates; New Farm

(432**); Herston/Newstead (387**); West End/South Brisbane/Highgate Hill (386**); East Brisbane/Kangaroo Point (317**); and Clayfield/Hendra (306**). Other areas with more than twice the number of admissions expected were Chermide West/Chermide (279**), Albion (263**), Northgate (257**), Windsor/Lutwyche/Wooloowin (253**), Bracken Ridge/Sandgate (251**) and Redcliffe (203**).

Thirty one areas were mapped in the lowest range, with at least 15 per cent fewer admissions than were expected from the State rates (Map 6.19). The lowest ratios (in areas with at least 20 admissions) were recorded in Moreton Balance (with an SAR of 40**), Greenbank [Part A]/Beaudesert (45**), Browns Plains (47**) and Inala/Durack/Doolandella-Forest Lake/Ellen Grove/Richlands (48**).

The largest numbers of admissions were recorded for residents of Redcliffe (577 admissions, an SAR of 203**), Ipswich (546, an SAR of 139**) and Caboolture [Part A] (477, an SAR of 103).

There was no consistent evidence in the correlation analysis of an association at the small area level between high rates of same day admissions and socioeconomic status.

Gold Coast-Tweed Heads

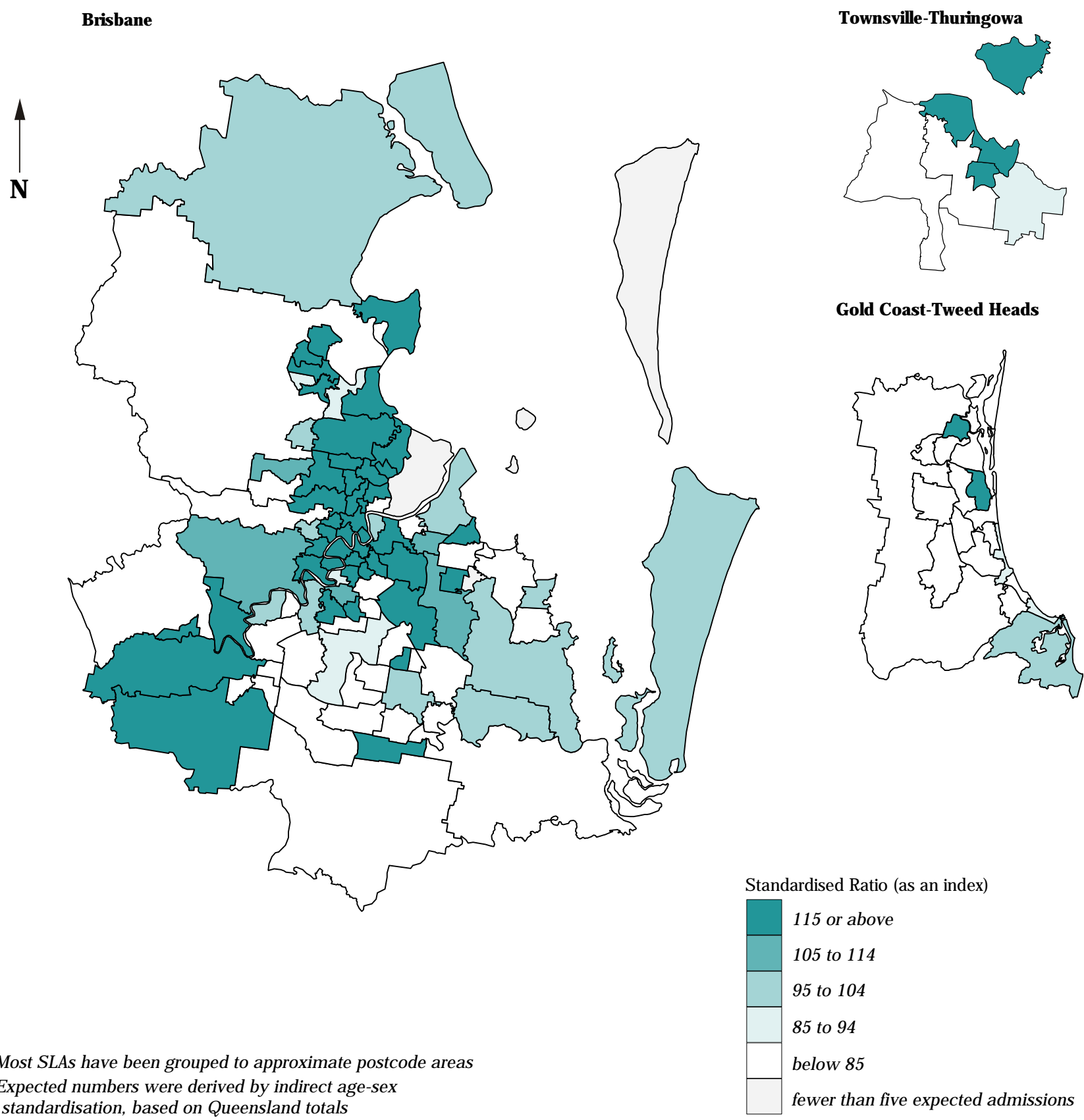
There were 1,234 admissions for psychosis of residents of **Gold Coast-Tweed Heads**, 32 per cent fewer admissions than were expected from the State rates (an SAR of 68**). Both Hope Island and Labrador/Southport recorded more admissions than expected, with SARs of 144 and 118* respectively. The combined area of Broadbeach Waters/Mermaid Waters had the lowest ratio (among areas with at least 20 admissions) of 39**.

Townsville-Thuringowa

Residents of **Townsville-Thuringowa** had 666 admissions for psychosis, 5 per cent more admissions than expected from the State rates, an SAR of 105. The combined areas of Townsville Coastal/Magnetic Island (with an SAR of 216**) and Gulliver/Hermit Park (159**) had elevated ratios. There were 60 per cent fewer admissions than expected recorded for residents of Thuringowa [Part A] (an SAR of 40**).

Map 6.19: Admissions for psychosis, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

Standardised Ratio: number of admissions in each area* compared with the number expected[#]



*Most SLAs have been grouped to approximate postcode areas
[#]Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 6.25). 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 6.25: Admissions¹ 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 ²	89**	103	82**	..	..	..	..	..	88**
Rest of State/Territory	83**	70**	81**	118**	80**	69**	74**	- ³	81**
Whole of State/Territory	103**	80**	108**	133**	109**	87**	79**	64**	100

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

In 1995/96, there were 5,244 admissions of residents of the non-metropolitan areas of Queensland (for psychosis), 25 per cent fewer than expected from the State rates (an SAR of 75**). There were similar numbers of admissions for females (2,511) and males (2,733).

More admissions than expected were recorded in 13.6 per cent of SLAs, with ratios as high as 289**.

Elevated SARs were recorded for residents in:

- the far north west of the State in Burke, with a ratio of 289** (17 admissions); Carpentaria, 209** (35); and Cloncurry, 189** (27);
- the far north in Mulgrave [Part B] (now known as Cairns [Part B]), 262** (78); Cook, 216** (52); Douglas, 133* (62); and Hinchinbrook, 110 (83);
- in the central west in Winton, 261** (22); and Jericho, 132 (7);
- just north-west of **Brisbane** in Murgon, 168** (36); and Gympie, 122 (81);
- in the south west, in Booringa 121 (12); and Warwick, 108 (65); and
- on the coast north of **Brisbane**, in Caloundra [Part A], 116** (291) and Townsville [Part B], 116 (15).

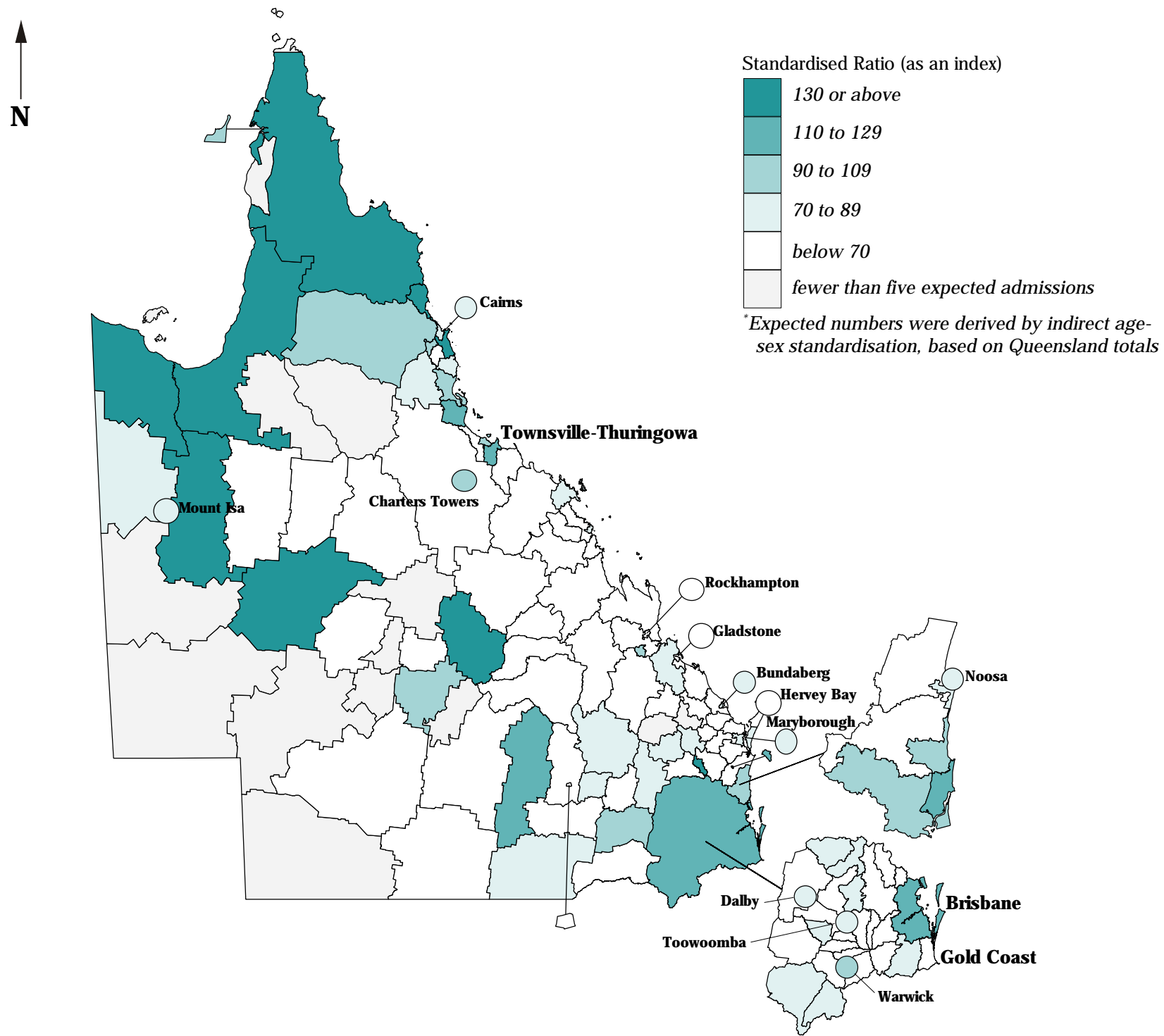
A high proportion of the non-metropolitan SLAs (68 SLAs) had ratios in the lowest range mapped, with 30 per cent fewer admissions than expected (Map 6.20). By far the lowest ratio was recorded in Fitzroy [Part B], an SAR of 4**, indicating that there were 96 per cent fewer admissions than were expected from the State rates. However, this represented only one admission compared to an expected 24.5. Low ratios in areas with at least 20 admissions were recorded for residents of Cooloola, Burdekin, Esk and Noosa [Part B], recording SARs of 25**, 32**, 35** and 37** respectively.

The largest numbers of admissions for psychosis were of residents of Maroochy [Part A], 449 admissions, Toowoomba, 388 admissions, Cairns, 381 admissions, Caloundra [Part A], 291 admissions and Mackay [Part A], 245 admissions.

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

Map 6.20: Admissions for psychosis, Queensland, 1995/96

Standardised Ratio: number of admissions in each Statistical Local Area 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 psychosis drop from an SAR of 108 in the Very Accessible category to a low of 68 in the Remote category, before increasing to 96 in the Very Remote category. As is the case for many of the earlier variables, the numbers of admissions in the remote areas are quite 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 6.26). 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 6.26: Admissions¹ 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 ²	All capitals
140**	61**	122**	86**	103*	135**	59**	44**	103**

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

²Includes 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 230) 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 admissions from neurotic personality or other mental disorders than did males (529.3 admissions per 100,000 population compared with 500.2) and higher rates at almost all ages, in particular from 15 through to 39 years of age. Admissions to hospital for neurotic, personality and other mental disorders accounted for 1.9 per cent of all the admissions analysed for Queensland residents.

Brisbane (Queensland as the Standard)

There were 8,625 admissions for neurotic, personality or other mental disorders for residents of **Brisbane**, 2.3 per cent of all admissions analysed in the metropolitan area. Females accounted for over half of these admissions (4,517 admissions, 52.4 per cent).

Residents of **Brisbane** had 10 per cent more admissions for these mental disorders than expected from the State rates (an SAR of 110**), indicating a substantially higher rate of hospitalisation from these causes than for residents of the non-metropolitan areas (97). This is in line with the higher rate of episodes of psychosis recorded for metropolitan residents (page 230).

Ratios elevated by 15 per cent or more (recorded in over one third (39.6 per cent) of SLAs) were distributed mainly throughout the inner suburbs (Map 6.21). The most highly elevated ratios were recorded in the combined inner area of City/Spring Hill (965**), New Farm (530**), Herston/Newstead (354**), Nathan (237**), Chandler (237**) Camp Hill/Carindale (225**), Windsor/Lutwyche/Wooloowin (219**), West End/South Brisbane/Highgate Hill (217**) and Calamvale/Stretton (208**).

The lowest ratio, of 23**, was recorded for residents of Camira, with a total of only nine admissions compared to an expected 39.6. Highly significant ratios below the level expected from the State rates (and in areas with at least 20 admissions) were also recorded in Greenbank [Part A]/Beaudesert (an SAR of 38**), Runcorn/Eight Mile Plains (48**), Rochedale/Slack Creek (51**), Moreton Balance (54**), Pine Rivers Balance (56**), Browns Plains and Albany Creek (both with 57**) and Gold Coast [Part A] (58**).

In 1995/96, residents of Ipswich had the largest number of 519 admissions for these mental disorders, followed by Camp Hill/Carindale, Caboolture [Part A] and Redcliffe, with 397, 381 and 294 admissions respectively.

There was some evidence in the correlation analysis for a weak association at the small area level between high rates of admission for neurotic, personality or other mental disorders and high socioeconomic status.

Gold Coast-Tweed Heads

Residents of **Gold Coast-Tweed Heads** had 1,040 admissions for neurotic, personality or other mental disorders, 40 per cent fewer admissions than were expected from the State rates, an SAR of 60**.

All 18 areas had fewer than the expected number of admissions, ranging from 3 per cent fewer in Labrador/Southport (a ratio of 97) to 81 per cent fewer in Gold Coast [Part B] Balance (a ratio of 19**, 18 admissions compared to an expected 94.9).

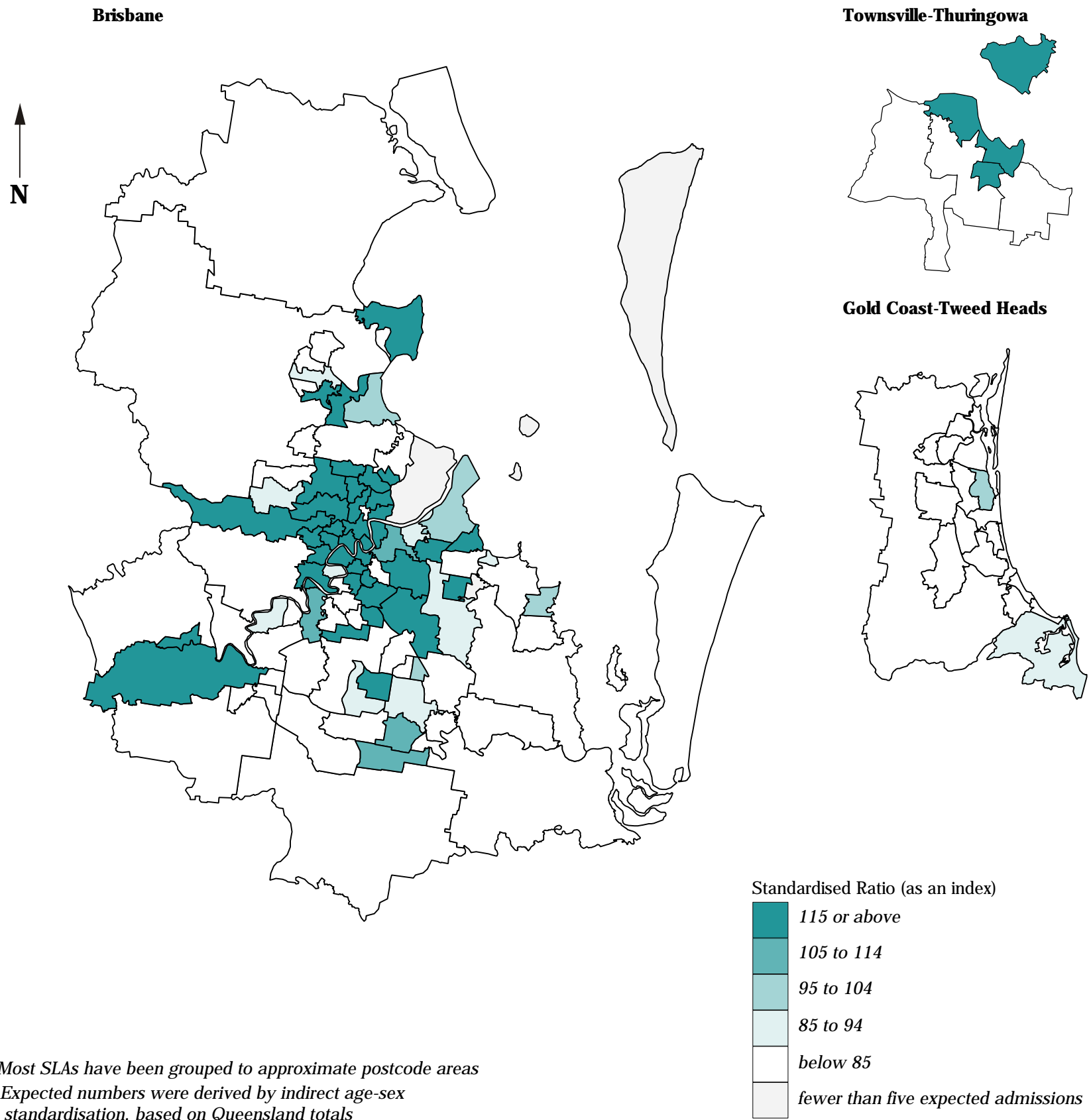
Townsville-Thuringowa

Townsville-Thuringowa had the highest SAR among the major urban centres, with a ratio of 116**. This represented a total of 761 admissions compared to an expected 654.8.

Highly elevated ratios were recorded in the combined areas of Townsville Coastal/Magnetic Island (an SAR of 281**) and Gulliver/Hermit Park (an SAR of 171**). In contrast 67 per cent fewer admissions were recorded in Townsville South East (an SAR of 33** and 13 admissions).

Map 6.21: Admissions for neurotic, personality or other mental disorders, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 6.27). 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 6.27: Admissions¹ 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 ²	81**	60**	84**	..	..	..	..	..	80**
Rest of State/Territory	104**	70**	107**	130**	112**	79**	67**	- ³	98**
Whole of State/Territory	124**	63**	111**	98	105**	102	64**	42**	100

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

There were 6,817 admissions for neurotic, personality or other mental disorders in the non-metropolitan areas of Queensland, 3 per cent fewer than expected from the State rates (an SAR of 97). This represents a substantial difference in the rate of hospitalisation between residents of the non-metropolitan areas and those of **Brisbane**. There were similar numbers of admissions for females (3,335) and males (3,482).

Just over one third (36.1 per cent) of the SLAs in the non-metropolitan areas of Queensland had elevated standardised admission ratios, many of which were highly elevated. Those in which ratios were elevated by at least fifty per cent were located:

- just north-west of **Brisbane** – in Murgon, with an SAR of 604** (128 admissions); Mundubbera, 286** (34); Mount Morgan, 283** (44); Jericho, 226** (12); Wondai, 181** (37); and Gympie, 161** (95);
- in the south-west – in Paroo, 503** (64); Quilpie, 172 (12); Warwick, 162** (91); Allora, 162* (18); Murweh, 161** (47); and Tara, 161** (30);
- in the far north-west – in the SLAs of Burke, 357** (23); Carpentaria, 259** (47); McKinlay, 170 (10); and Cloncurry, 164* (25);
- in the far north – in Cook, 245** (65); and Cairns [Part B], 217** (69); and
- in the central west-in Winton, 161 (14).

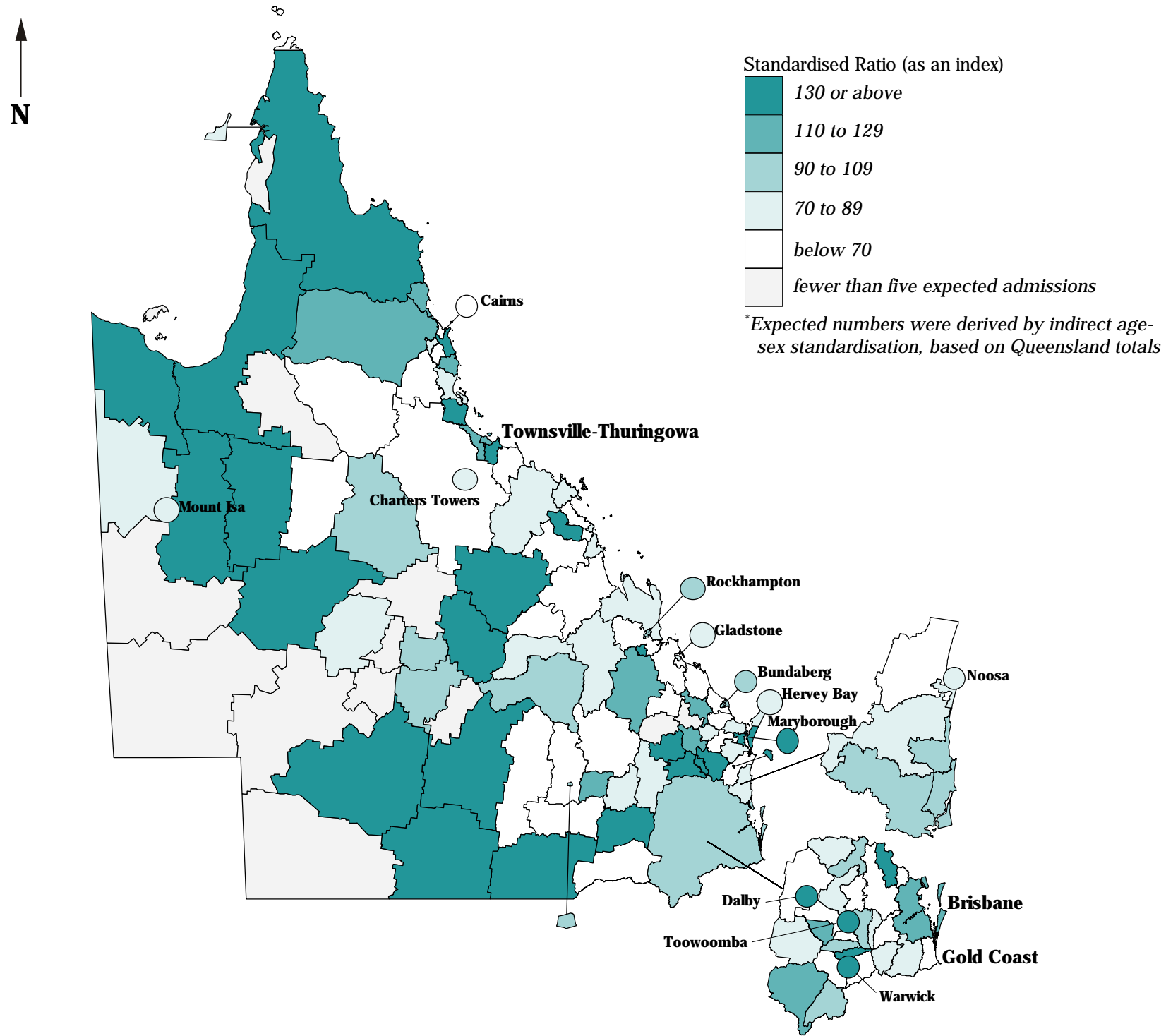
Many of the SLAs mapped in the lowest range (of 30 per cent lower than expected) recorded 20 or fewer admissions. The lowest of these included Dalrymple (with an SAR of 12**), Calliope [Part B] and Warwick West (both 15**), Warroo (17*) and Fitzroy [Part B] (19**). Cooloola (with an SAR of 27** and 28 admissions), Moreton [Part B] (38**; 28 admissions), Burdekin (43**; 42 admissions), Broadsound (48**; 21 admissions) and Noosa [Part B] (50**; 30 admissions) were among the few SLAs with more than 20 admissions to record ratios in this range.

The largest numbers of admissions for neurotic, personality or other mental disorders in 1995/96 were in the towns of Toowoomba, with 602 admissions; Maroochy [Part A], 409; Rockhampton, 319; and Cairns, 310.

There was a weak association evident in the correlation analysis at the SLA level with the indicators of socioeconomic disadvantage, the highest being with the variables for Indigenous Australians (0.47), dwellings with no motor vehicle (0.46) and single parent families (0.43). The inverse correlation with the IRSD (-0.49) supports the existence of such an association.

Map 6.22: Admissions for neurotic, personality or other mental disorders, Queensland, 1995/96

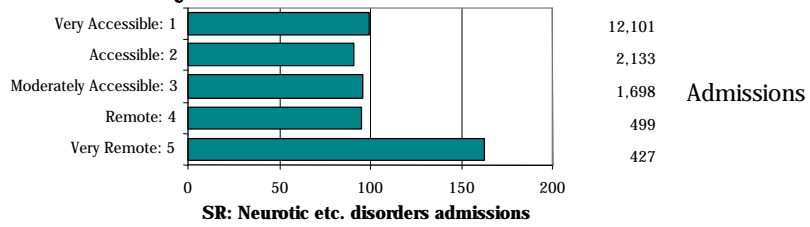
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 neurotic, personality or other mental disorders are below the level expected from the State rates in the first four ARIA categories (with the lowest SAR (91) in the Accessible areas). There is a much higher SAR of 163 in the Very Remote areas.

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 6.28).

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

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

¹Includes Queanbeyan (C)

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

³Excludes 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 for circulatory system diseases in Queensland accounted for 8.0 per cent of admissions in this analysis. 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.

For 1996/97, age-standardised admission ratios for Indigenous men for diseases of the circulatory system were 1.7 times higher, and for Indigenous women, twice the admission ratios for non-Indigenous people (ABS/AIHW 1999).

Brisbane (Queensland as the Standard)

There were 29,533 admissions for circulatory system diseases for residents of **Brisbane** in 1995/96, of which 16,281 (55.1 per cent) were males and 13,252 were females. In total, this was 6 per cent fewer admissions than were expected from the State rates, an SAR of 94**.

The spatial distribution of SARs shows the highest ratios were concentrated to the south of the Brisbane River extending to the south-east and in the far north of **Brisbane**, while the lowest were scattered through the inner region (see Map 6.23). The most highly elevated ratios were in the areas of Logan Balance (with 61 per cent more admissions for circulatory system diseases than expected from the State rates, a ratio of 161**) and Greenbank [Part B] (with 45 per cent more admissions, a ratio of 145**). Other highly significant ratios were recorded in Berrinba-Karawatha/Kingston (141**), City/Spring Hill (129**), Gold Coast [Part A] (124**), Caboolture [Part A] (122**) and Ipswich (116**).

In total, 76 areas (77.6 per cent of all SLAs in **Brisbane**) had average or below average ratios for this variable. By far the

lowest ratio was recorded for residents of Capalaba West (an SAR of 17), however this represented only one admission compared to an expected 6.1. Excluding areas with fewer than 20 admissions, residents of Waterford West and Anstead/Bellbowrie/Moggill had the lowest SARs from circulatory system diseases, with ratios of 33** and 39** respectively.

More than 1,000 admissions were recorded for residents of Caboolture [Part A] (2,293 admissions), Ipswich (1,784), Redcliffe (1,472), Mt Gravatt/Rochedale (1,060) and Bridgeman Downs/Boondall (1,052).

There was a correlation of meaningful significance at the small area level with the variable for single parent families (0.54), and of lesser significance with low income families (0.49), unemployed people (0.45), Indigenous people (0.41) and unskilled and semi-skilled workers (0.39). These results, together with the inverse correlation of meaningful significance with the IRSD (-0.52), indicate an association between high rates of admissions for circulatory system diseases and socioeconomic disadvantage.

Gold Coast-Tweed Heads

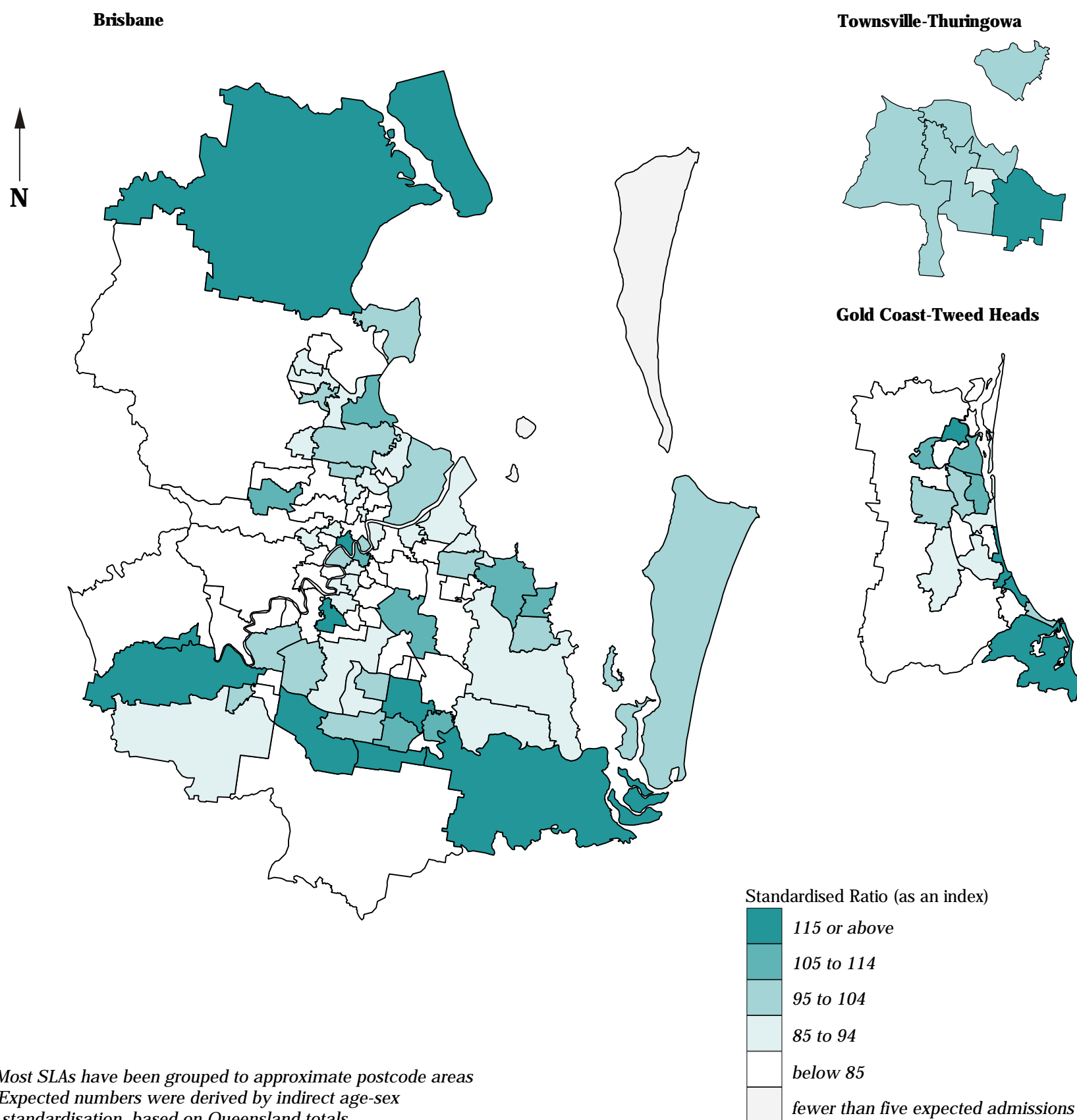
Residents of **Gold Coast-Tweed Heads** had 1 per cent more admissions for circulatory system diseases than were expected from the State rates (a ratio of 101 and 8,997 admissions). Hope Island and Palm Beach/Currumbin recorded the highest ratios for this variable, with SARs of 144** and 129** respectively. There were 32 per cent fewer admissions than expected recorded in both Gold Coast [Part B] Balance and Currumbin Waters/Elanora (each with an SAR of 68**).

Townsville-Thuringowa

Residents of **Townsville-Thuringowa** (with 2,161 admissions for circulatory system diseases) had the same number of admissions as expected from the State rates, an SAR of 100. The highest SAR was recorded in Townsville South East (an SAR of 116), while the combined area of Gulliver/Hermit Park had 12 per cent fewer admissions than expected (an SAR of 88**).

Map 6.23: Admissions for circulatory system diseases, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

Standardised Ratio: number of admissions in each area* compared with the number expected[#]



*Most SLAs have been grouped to approximate postcode areas

[#]Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 6.29**). 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 6.29** with the greatest change being the decrease shown for Western Australia.

Table 6.29: 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
1995/96¹									
Capital city	99**	94**	92**	102**	84**	97*	94	80**	95**
Other major urban centres ²	97**	91**	99	..	..	..	..	..	97**
Rest of State/Territory	116**	113**	106**	115**	103**	95**	108**	- ³	111**
Whole of State/Territory	104**	100	98**	105**	89**	96**	101	78**	100
1989⁴									
Rest of State/Territory	118**	..	110**	117**	113**	..	102	..	115**

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

There were 31,911 admissions of residents of the non-metropolitan areas of Queensland from circulatory system diseases in 1995/96. This was 7 per cent more admissions than expected from the State rates, an SAR of 107**.

SLAs with elevated SARs were more frequently located in the far north-western and southern parts of the State (**Map 6.24**). Those with the highest ratios and with at least 20 admissions were recorded:

- in the far north west in Mornington (460**), Burke (452**) and Cloncurry (253**);
- in the south-west in Bulloo (264**) and Paroo (199**);
- in the far north in Cook (178**) and Weipa (165**);
- just north-west of **Brisbane** in Murgon (173**) and Isis (166**); and
- in Aramac (176**), Millmerran (170**) and Mount Morgan (165**).

SLAs with standardised admission ratios for circulatory system diseases falling within 10 per cent of the level expected from the State rates were widespread throughout the State, and in no notable pattern. Of the 29 areas in this class interval only Cairns (with an SAR of 108**) and Toowoomba (107**) had ratios of statistical significance.

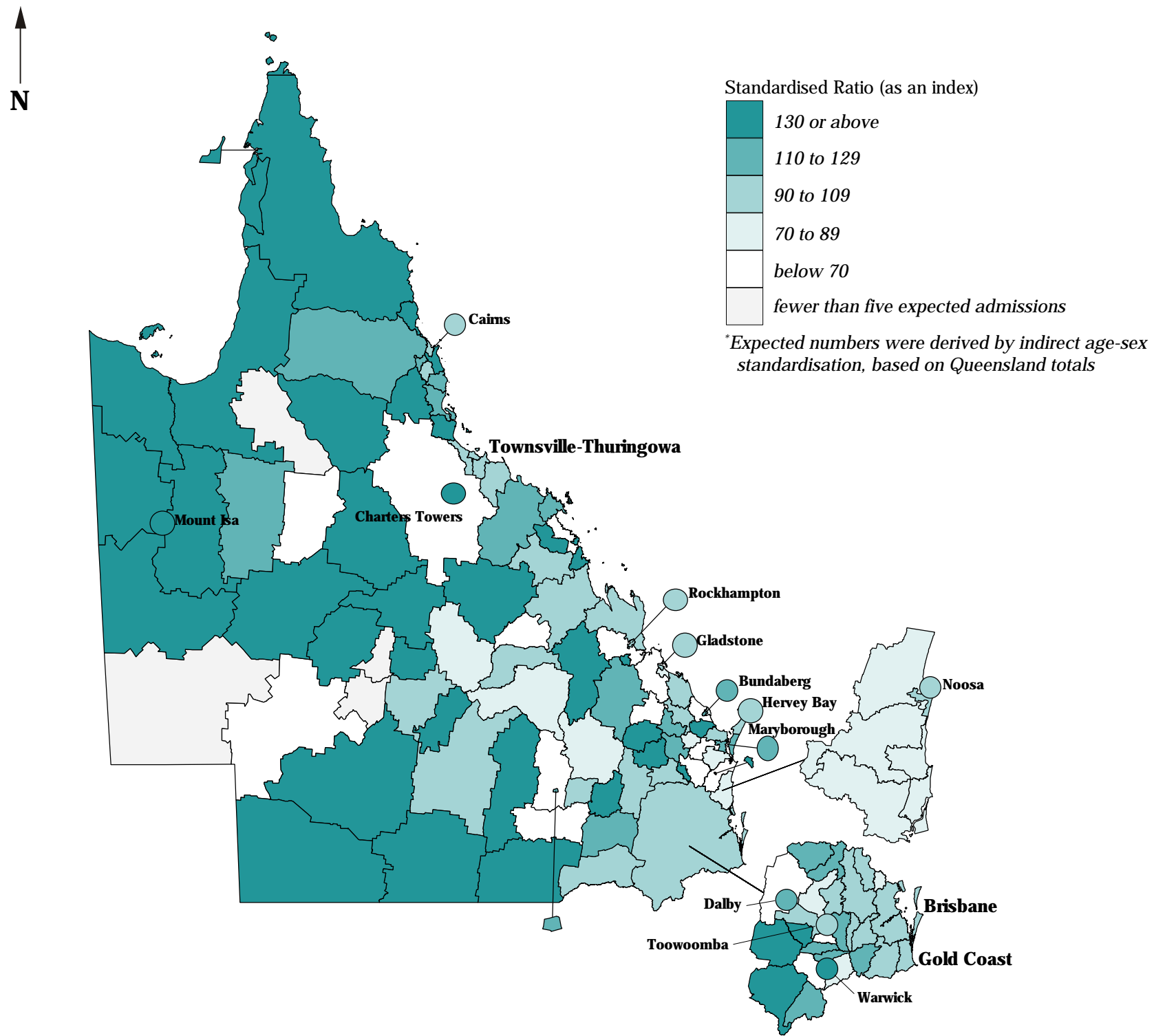
Only seventeen SLAs were mapped in the lowest range. The lowest ratios (in areas with at least twenty admissions for circulatory system diseases) were recorded in Burnett [Part B] (an SAR of 27**), Dalrymple (38**), Woocoo (40**), Peak Downs (48**), Calliope [Part B] (54**), Monto (57**), Cooloola (58**), Fitzroy [Part B] and Kilkivan (both with 61**), Mackay [Part B] and Cambooya (both with 63**) and Wambo (64**).

The largest numbers of admissions for circulatory system diseases in rural Queensland were recorded for residents of Toowoomba (2,233), Maroochy [Part A] (1,951), Cairns (1,828), Mackay [Part A] (1,491) and Rockhampton (1,462).

There were correlations of meaningful significance with the variables for single parent families (0.50), dwellings with no motor vehicle (0.62) and Indigenous people (0.62), and weak inverse correlations with female labour force participation (-0.32) and managers and administrators, and professionals (-0.27). These results, together with the meaningful inverse correlation with the IRSD (-0.51), indicate the existence of an association between high rates of admission for circulatory system diseases and socioeconomic disadvantage.

Map 6.24: Admissions for circulatory system diseases, Queensland, 1995/96

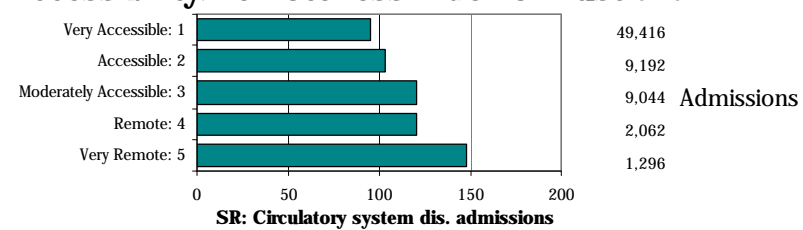
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 show three distinct levels across the ARIA categories. Ratios near the level expected from the State rates occur in the Very Accessible (an SAR of 95) and Accessible (103) areas. The other ARIA categories all have elevated ratios, rising from SARs of 120 in the Moderately Accessible and Remote areas to an SAR of 148 in the Very Remote category. The elevated rates of admissions of residents of the more remote areas are likely to reflect admissions of the Indigenous population.

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^{*}) to the lowest in **Perth** (86^{**}) (Table 6.30).

Brisbane, **Adelaide** and **Perth** each had lower ratios in the later period shown in Table 6.30, 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 6.30: Admissions with a principal diagnosis of ischaemic heart disease, capital cities

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

¹Includes Queanbeyan (C)

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

³Excludes 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 2.9 per cent of admissions of Queensland residents and 36.0 per cent of admissions from all circulatory system diseases.

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

Brisbane (Queensland as the Standard)

There were 3 per cent fewer admissions for ischaemic heart disease for residents of **Brisbane** than were expected from the State rates, an SAR of 97^{**}. Of the 10,825 admissions in 1995/96, nearly two thirds were males (6,888 admissions, 63.6 per cent).

The pattern of distribution was similar to that for all circulatory system diseases, but with more SLAs recording ratios in the highest and lowest ranges mapped (Map 6.25). The most highly elevated ratios (ratios at least fifteen per cent higher than expected from State rates) were located to the far north and south-east of the metropolitan area. The highest ratio was recorded in the area of Rocklea, with 83 per cent more admissions from ischaemic heart disease than expected (with an SAR of 183^{**}). Greenbank [Part B] (with an SAR of 181^{**}), Berrinba-Karawatha/Kingston (176^{**}), Logan Balance (173^{**}) and Gold Coast [Part A] (150^{**}) were also mapped in the highest range.

Two thirds (65 areas) of the small areas in **Brisbane** recorded admission ratios for ischaemic heart disease below the level expected from the State rates. The lowest ratios were recorded in SLAs located near the city centre. Ratios in the lowest range mapped for areas with at least 20 admissions, ranged from 49^{**} in Toowong and 51^{**} in St Lucia to 84 in Red Hill/Kelvin Grove.

The largest numbers of admissions for this disease were recorded for residents of Caboolture [Part A] (918), Ipswich (618), Redcliffe (559) and Bridgeman Downs/Boondall (419).

There was a weak association evident in the correlation analysis at the small area level with the indicators of socioeconomic disadvantage, including the variables for single parent families (0.47) and low income families and unskilled and semi-skilled workers (both 0.45). These results, together with the inverse correlation with the IRSD (-0.50), suggest the existence of an association at the small area level between high rates of admission for ischaemic heart disease and socioeconomic disadvantage.

Gold Coast-Tweed Heads

Admissions for ischaemic heart disease in **Gold Coast-Tweed Heads** (3,496 admissions) were 7 per cent more than expected from the State rates, an SAR of 107^{**}.

By far the highest ratio was recorded in Hope Island, with 74 per cent more admissions than expected, an SAR of 174^{**}. There were 28 per cent and 33 per cent fewer admissions than expected recorded in the combined area of Broadbeach Waters/Mermaid Waters and Gold Coast [Part B] Balance, respectively.

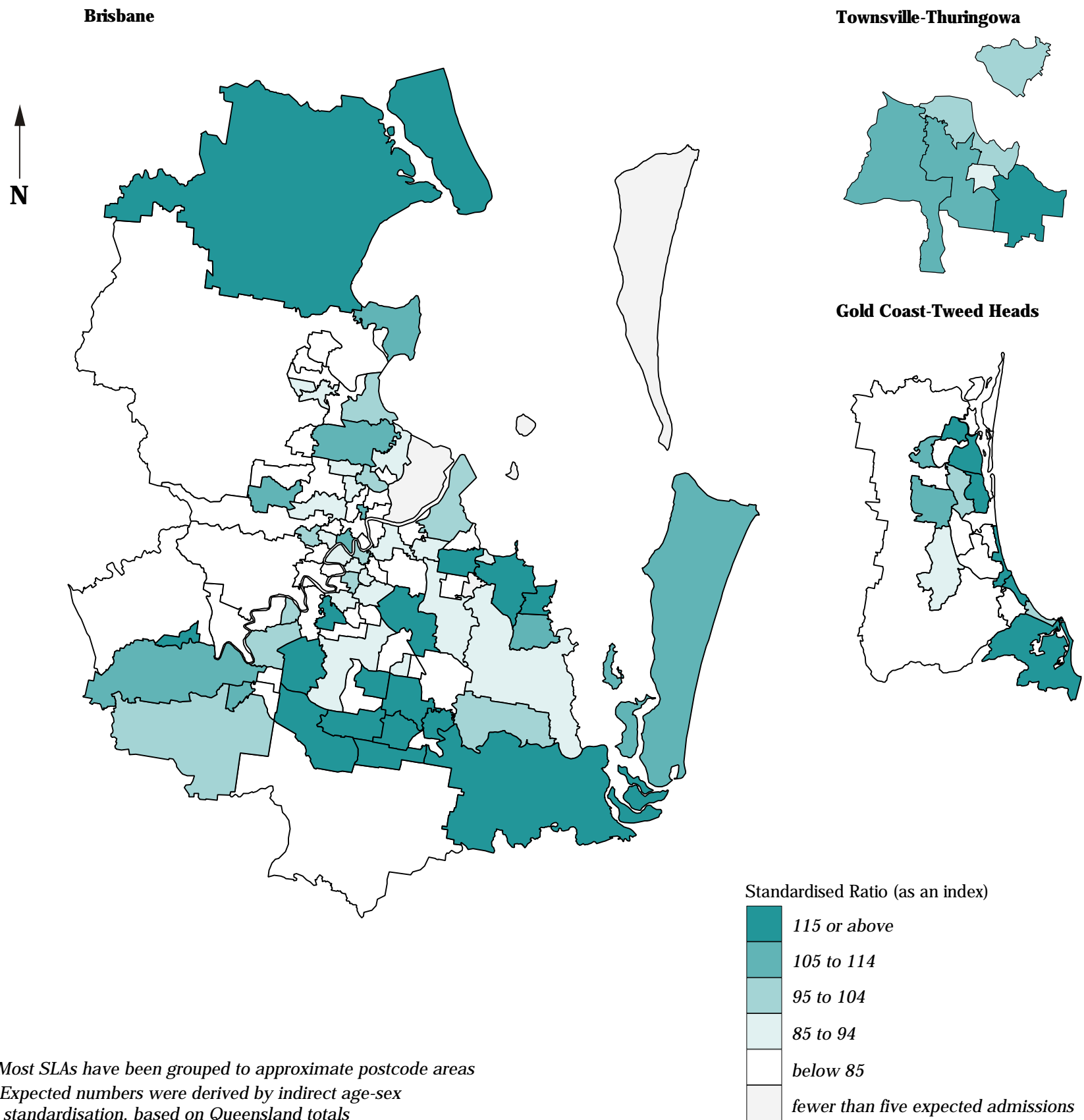
Townsville-Thuringowa

Townsville-Thuringowa had an SAR of 101, indicating that there were 1 per cent more admissions for ischaemic heart disease than were expected, with a total of 774 admissions.

The areas of Townsville South East (with an SAR of 124), Murray/Mt Louisa (108) and Thuringowa [Part A] (105) had elevated ratios, with a low ratio of 85^{*} in the areas from Gulliver to Hermit Park.

Map 6.25: Admissions for ischaemic heart disease, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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^{*}) and Northern Territory (87^{*}), higher for residents of the non-metropolitan areas than in the capital cities (**Table 6.31**). The most highly elevated ratios were in New South Wales (112^{**}) and Victoria (111^{**}).

There was relatively little change in the ratios for the non-metropolitan areas between the periods shown in **Table 6.31**, 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 6.31: 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
1995/96¹									
Capital city	103 ^{**}	93 ^{**}	93 ^{**}	98 [*]	86 ^{**}	105 [*]	87 [*]	91 ^{**}	96 ^{**}
Other major urban centres ²	114 ^{**}	95	101	..	..	..	..	..	108 ^{**}
Rest of State/Territory	112 ^{**}	111 ^{**}	99	108 ^{**}	90 ^{**}	95 [*]	87 [*]	- ³	106 ^{**}
Whole of State/Territory	107 ^{**}	98 ^{**}	96 ^{**}	101	87 ^{**}	99	87 ^{**}	89 ^{**}	100
1989⁴									
Rest of State/Territory	111 ^{**}	..	95 ^{**}	100	86 ^{**}	..	53 ^{**}	..	101 [*]

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

Admissions for ischaemic heart disease accounted for more than one third (35.1 per cent) of all admissions for circulatory system diseases for non-metropolitan residents, a total of 11,187 admissions. Residents of the non-metropolitan areas of Queensland were also more likely to be hospitalised for this disease than expected from the State rates, recording a standardised ratio of 103^{**}. Males accounted for 65.2 per cent of the admissions.

Ratios elevated by at least thirty five per cent (and with more than 20 admissions) were recorded:

- in the far north-western SLAs of Cloncurry, with an SAR of 249^{**}, Carpentaria (172^{**}), Flinders (161^{*}) and Mount Isa (152^{**});
- in the south-west in Paroo (222^{**}) and Balonne (141^{*});
- just north-west of the city in Isis (196^{**}), Mundubbera (183^{**}), Nanango (147^{**}) and Gympie (144^{**});
- just west of **Brisbane** in Warwick (182^{**}), Murilla (181^{**}), Millmerran (161^{**}), Goondiwindi (159^{**}) and Inglewood (149^{*});
- in the far north in Herberton (181^{**}) and Atherton (138^{**});
- in the central west in Longreach (179^{**}); and
- further north-west of **Brisbane** and on the north coast in Mount Morgan (172^{**}), Hinchinbrook (146^{**}), Charters Towers (145^{**}), Mackay [Part A] (138^{**}), Mulgrave [Part B] (137^{*}) and Sarina (135^{**}).

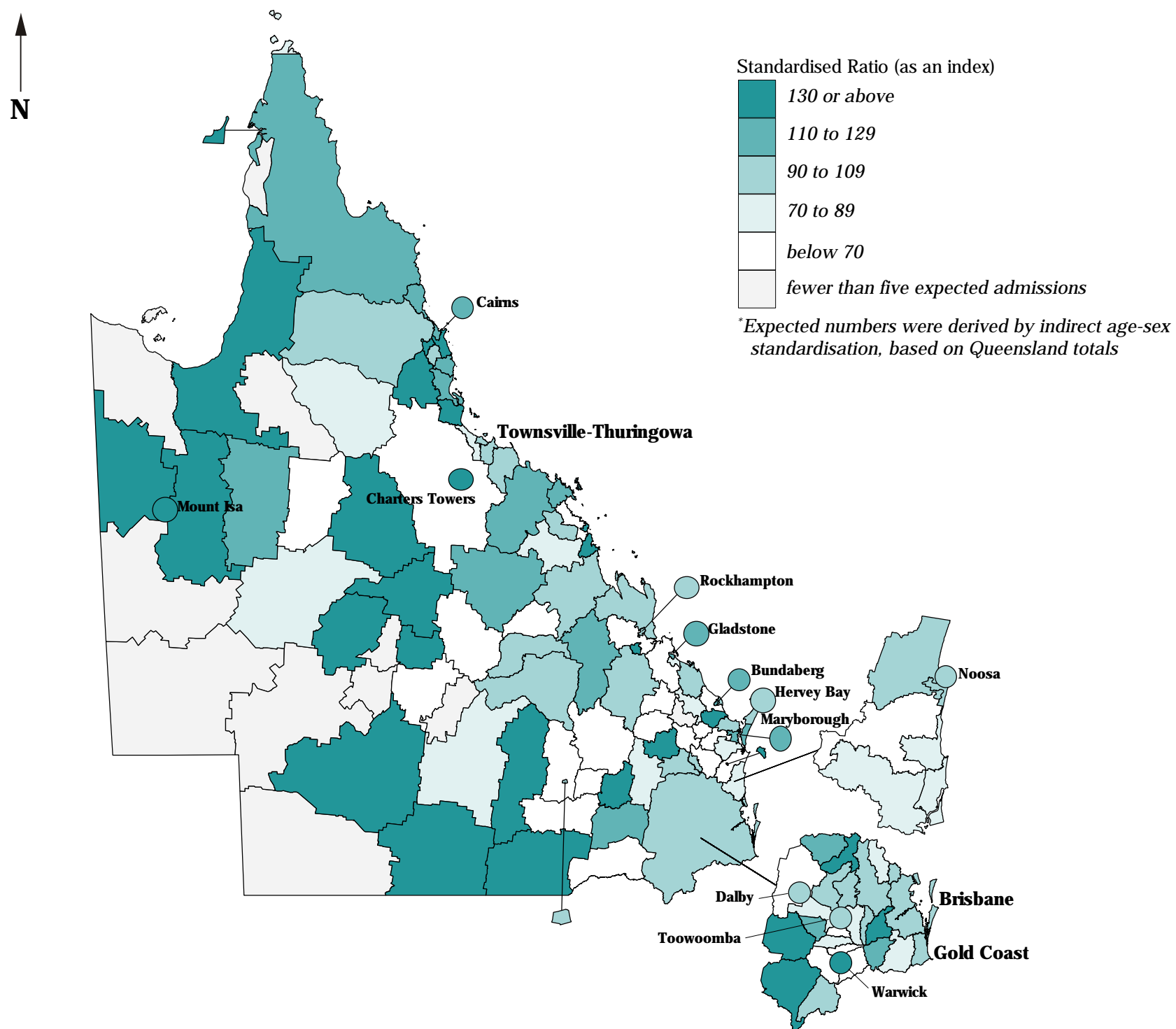
Only three SLAs mapped in the lowest range recorded 50 or more admissions for ischaemic heart disease over the period analysed. Maroochy [Part B] Mackay [Part B] had the lowest ratios in this category, with 38 per cent fewer admissions than expected, both with an SAR of 62^{**}. This was followed by Cooloola with a ratio of 67^{**}. Overall, residents of Eidsvold recorded the lowest SAR (of 12^{*}), however this represented only one admission (compared to an expected 8.3).

More than 500 admissions were recorded in Maroochy [Part A], with 720 admissions; Cairns, 671 admissions; Toowoomba, 669 admissions; Mackay [Part A], 559 admissions; and Bundaberg, 535 admissions.

The correlation analysis revealed a weak positive association at the SLA level with a number of the indicators of socioeconomic disadvantage.

Map 6.26: Admissions for ischaemic heart disease, Queensland, 1995/96

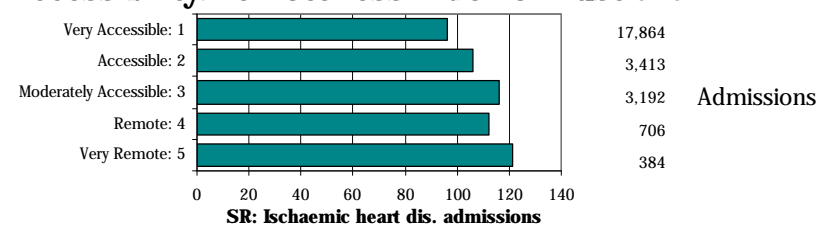
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 ischaemic heart disease rise across the ARIA categories with increasing remoteness, from the lowest ratio in the Very Accessible areas (an SAR of 96 and the only ratio below the level expected from the State rates), to an elevated ratio of 121 in the Very Remote areas.

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 6.32). 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 6.32: Admissions with a principal diagnosis of respiratory system diseases, capital cities
Age-sex standardised admission ratios

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ¹	All capitals
1995/96 ²	91**	87**	92**	114**	83**	77**	102	67**	91**
1989 ³	69**	..	93**	108**	82**	..	53**	..	81**

¹Includes Queanbeyan (C)

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

³Excludes 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 6.3 per cent of all admissions analysed for Queensland residents: 5.8 per cent of residents of **Brisbane** and the other major urban centres and 6.8 per cent in the 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).

Brisbane (Queensland as the Standard)

There were 22,503 admissions for respiratory system diseases of residents of **Brisbane**, 9 per cent fewer admissions than expected from the State rates (an SAR of 91**). Males accounted for 53.6 per cent of the admissions (12,071 admissions).

The ten areas mapped in the highest range (with ratios elevated by 15 per cent or more) were situated just south of the Brisbane River extending to the western region (Map 6.27). Residents of Logan Balance had the highest SAR for this variable, with 47 per cent more admissions than expected, a ratio of 147**. Ratios elevated by 30 per cent or more were also recorded in the combined area of City/Spring Hill, Greenbank [Part B] and Loganlea, with SARs of 143**, 132** and 131** respectively.

Just over one quarter (25.8 per cent) of the areas in **Brisbane** were mapped in the second to lowest range for admissions for respiratory system diseases, with ratios ranging from 85** in Birkdale/Ormiston to 94 in Keperra/Upper Kedron, Kallangur, Holland Park/Tarragindi and Bridgeman Downs/Boondall.

At the other end of the scale, 40 areas had admission ratios of more than 15 per cent below the level expected from the State rates, with two of these areas recording fewer than 20 admissions. St Lucia recorded the lowest ratio of 46**, indicating that there were 54 per cent fewer admissions than were

expected. Anstead/Bellbowrie/Moggill, with a ratio of 54**; Redland Balance, with a ratio of 56**; Rochedale South/Slacks Creek, with a ratio of 61**; and Moreton Balance, with a ratio of 64**; were among the lowest ratios recorded for this variable.

The largest numbers of admissions for respiratory system diseases were recorded in Caboolture [Part A] (1,747 admissions), Ipswich (1,578) and Redcliffe (987).

There was a correlation of meaningful significance with the variable for dwellings rented from the State housing authority (0.59), and of lesser significance with single parent families (0.49) and low income families and unskilled and semi-skilled workers (both 0.36). These results, together with the inverse correlation with the IRSD (-0.51), indicate an association at the small area level between high rates of admission for respiratory system diseases and socioeconomic disadvantage.

Gold Coast-Tweed Heads

Residents of **Gold Coast-Tweed Heads** had 13 per cent fewer admissions for respiratory system diseases than were expected from the State rates, an SAR of 87**. There were 5,084 admissions, of which 2,777 were for males.

The only elevated ratios were recorded in Tweed Heads and the combined area of Palm Beach/Currumbin, with SARs of 108* and 106 respectively. Ratios in the other areas ranged from 57** in Broadbeach Waters/Mermaid Waters to 100 in Labrador/Southport.

Townsville-Thuringowa

Townsville-Thuringowa had 1,645 admissions for respiratory system diseases in 1995/96, 18 per cent fewer than expected (an SAR of 82**).

Although still lower than expected from the State rates, the area of Townsville Coastal/Magnetic Island had the highest ratio, with an SAR of 92. There were 31 per cent and 27 per cent fewer admissions than expected recorded in the areas of Gulliver/Hermit Park and Townsville South East, respectively.

Map 6.27: Admissions for respiratory system diseases, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 6.33**). 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 6.33**). 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 6.33: 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
1995/96¹									
Capital city	91**	87**	92**	114**	83**	77**	102	67**	91**
Other major urban centres ²	82**	85**	86**	..	..	..	..	..	84**
Rest of State/Territory	123**	116**	115**	156**	147**	80**	180**	- ³	123**
Whole of State/Territory	99**	95**	101	125**	101	79**	146**	66**	100
1989⁴									
Rest of State/Territory	135**	..	130**	169**	176**	..	164**	..	143**

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

There were 27,125 admissions of residents of the non-metropolitan areas of Queensland for respiratory system diseases in 1995/96. This was 14 per cent more admissions than expected from the State rates and represented 6.8 per cent of all admissions of non-metropolitan residents analysed, 55.7 per cent of which were for males.

Some 64.3 per cent of rural SLAs had elevated SARs for respiratory system diseases, with the most highly elevated ratios in SLAs located across much of the northern, western and southern parts of Queensland (**Map 6.28**). Those with more than twice the number of expected admissions were recorded:

- in the far north west in Mornington (899**), Burke (494**), Flinders (327**), Cloncurry (284**) and Carpentaria (248**);
- in the far north in Aurukun (491**) and Cook (338**);
- just north-west of the city in Murgon (462**), Eidsvold (293**) and Mundubbera (211**);
- in the south-west in Paroo (355**), Quilpie (308**), Inglewood (217**), Balonne (214**) and Booringa (202**); and
- in the central west in Winton (257**) and Aramac (210**).

SLAs with ratios mapped in the middle range (within 10 per cent of the level expected from the State rates) were widespread throughout the State, with the highest ratios in Monto (an SAR of 109) and Blackall (108).

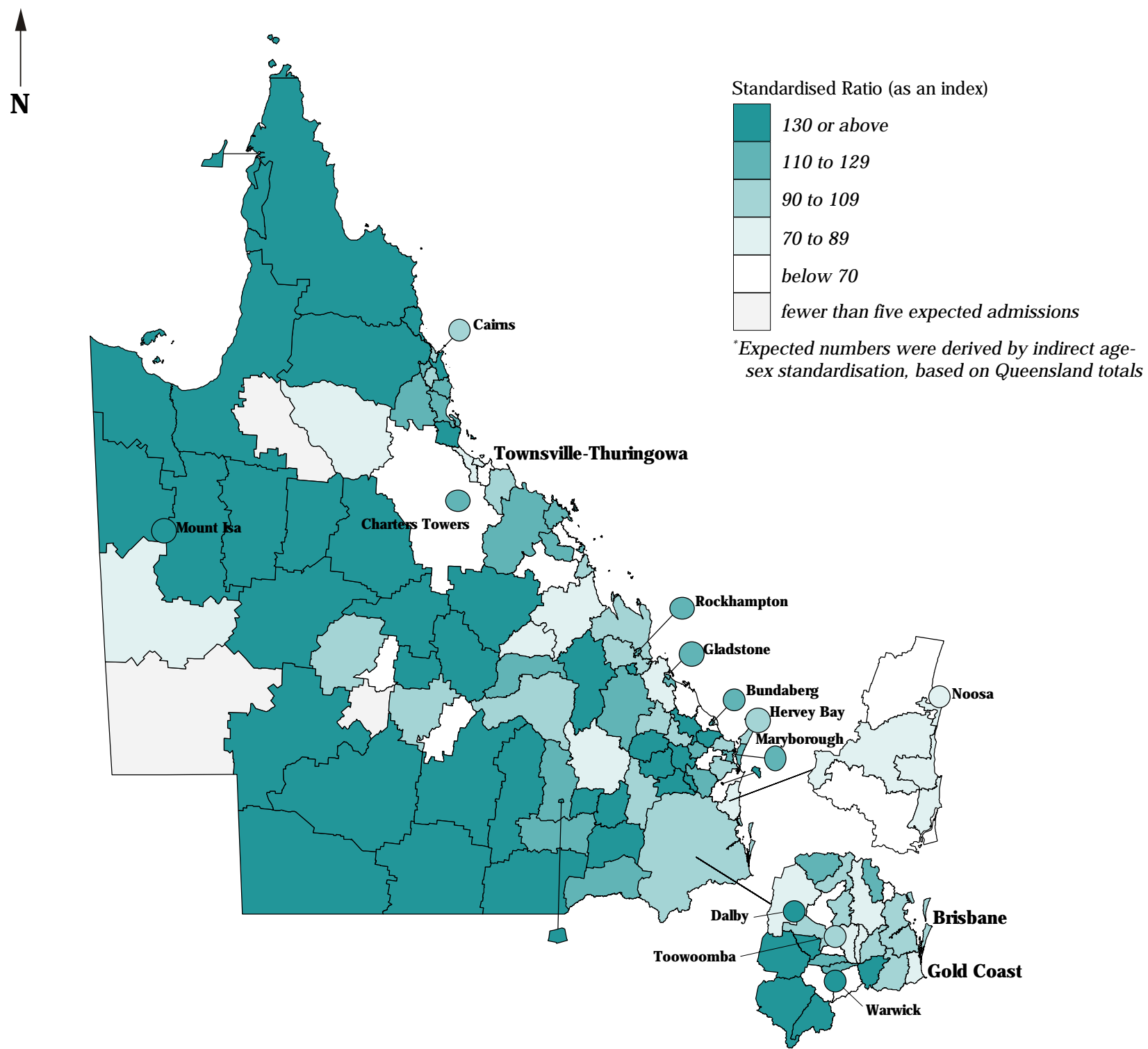
In total, 17 SLAs were mapped in the lowest range: those with 20 or more admissions were Burnett [Part B] and Dalrymple (both with an SAR of 37**), Cooloola (39**), Woocoo (48**), Noosa [Part B] (49**), Nebo (52**), Mackay [Part B] (55**), Warwick East, Cambooya and Miriam Vale (all with 63**), Rosalie (64**), Caboolture [Part B] (68**) and Caloundra [Part B] (69**).

The largest numbers of admissions were recorded in Cairns, with 1,645 admissions; Toowoomba, with 1,571 admissions; Rockhampton, 1,337 admissions; Maroochy [Part A], 1,191 admissions; and Mackay [Part A], 1,105 admissions.

The correlation analysis revealed a positive association of substantial significance with the variables for Indigenous people (0.75) and dwellings with no motor vehicle (0.73), and of meaningful significance with single parent families (0.58). These results, together with the inverse correlation of meaningful significance with the IRSD (-0.65), indicate the existence of an association at the SLA level between high rates of admission for respiratory system diseases and socioeconomic disadvantage.

Map 6.28: Admissions for respiratory system diseases, Queensland, 1995/96

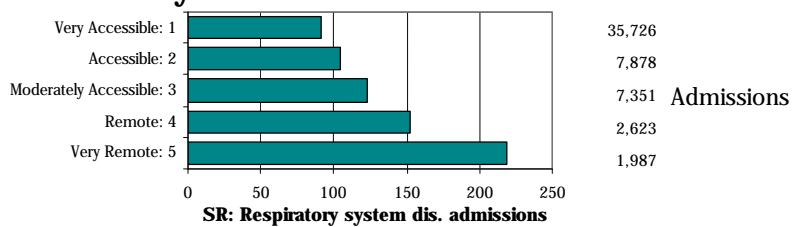
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 respiratory system diseases show a strong relationship with remoteness. The ratios increase by almost two and a half times (2.4 times), from an SAR of 91 in the Very Accessible areas to an SAR of 219 in the Very Remote areas. The second highest ratio is in the Remote areas (150), with ratios of 123 and 105 in the Moderately Accessible and Accessible categories, respectively. The highly elevated rates of admissions of residents of the remote areas are likely to reflect admissions of the Indigenous population.

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 6.34**). 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 6.34: 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 ¹	All capitals
1995/96 ²	95**	68**	99	118**	91**	71**	88*	80**	89**
1989 ³	67**	..	90**	123**	79**	..	38**	..	80**

¹Includes Queanbeyan (C)

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

³Data 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 (24.7 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.

Brisbane (Queensland as the Standard)

There were 5,652 admissions for respiratory system diseases of residents of **Brisbane** aged from 0 to 4 years. This was 5 per cent fewer admissions than expected from the State rates (an SAR of 95**), indicating an over representation of children from the non-metropolitan areas having hospital episodes for respiratory system diseases.

The most highly elevated ratio was recorded in the combined area of City/Spring Hill, with more than two and a half times more admissions than expected (an SAR of 268**). Ratios elevated by fifty per cent or more were recorded in Loganlea (with an SAR of 181**), and Salisbury and Red Hill/Kelvin Grove (both with an SAR of 161**).

Just under two thirds (63.8 per cent) of all areas had fewer admissions of children for respiratory system diseases than expected from the State rates. The lowest ratio (of areas with at least 20 admissions) was in the area from Tanah Merah to Carbrook-Cornubia, an SAR of 43**, indicating that there were 57 per cent fewer admissions than were expected from the State rates. Low ratios were also recorded for children in Jindalee/River Hills (an SAR of 63**), Petrie (64*), Nundah/Wavell Heights (65**), Moreton Balance (65*), Wilston/Enoggera (68**), Nudgee Beach/Virginia (68), Rochedale South/Slacks Creek (70**), Graceville/Oxley (71*), Thornlands (71), Greenbank [Part A]/Beaudesert (74*), Windsor/Lutwyche/Wooloowin (74) and Upper Brookfield/Fig Tree Pocket (76**).

The largest number of admissions for respiratory system diseases of children aged from 0 to 4 years was in Caboolture [Part A], with 512 admissions. More than 200 admissions were also recorded for children from Ipswich (431) and Berrinba-Karawatha/Kingston (220).

There were weak correlations with the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status. These results, together with the weak inverse correlation with the IRSD (-0.28), suggest the existence of an association at the small area level between high rates of admission of young children for respiratory system diseases and socioeconomic disadvantage

Gold Coast-Tweed Heads

In 1995/96 in **Gold Coast-Tweed Heads**, there were 965 admissions for respiratory system diseases of children aged from 0 to 4 years, 19 per cent fewer admissions than expected from the State rates (an SAR of 81**).

Residents of Coolangatta/Tugun and Tweed Heads had the highest, and only, elevated ratios in **Gold Coast-Tweed Heads**, with SARs of 133 and 113 respectively. The area from Broadbeach to Burleigh Heads, with an SAR of 60**, recorded the lowest highly significant ratio.

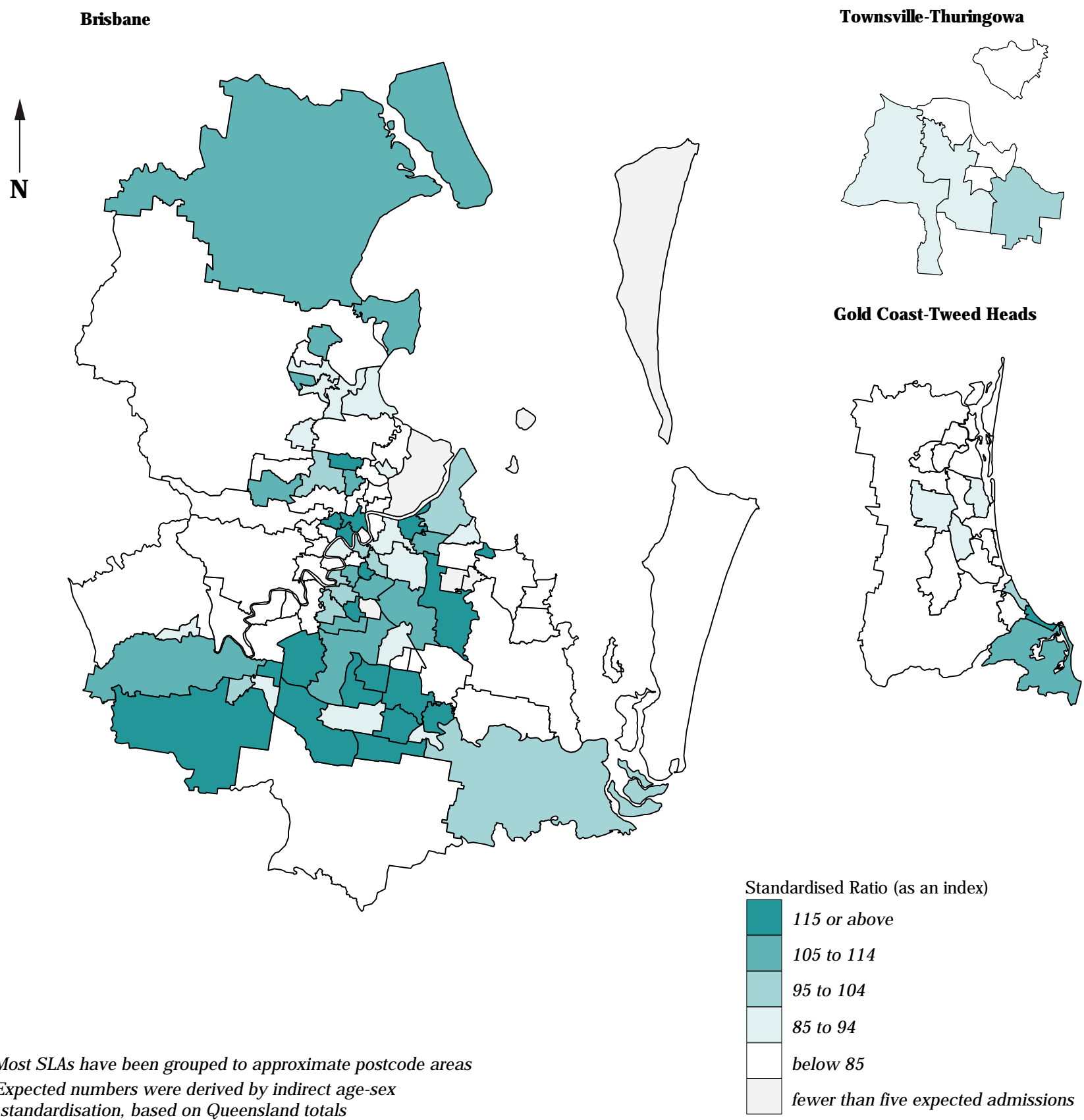
Townsville-Thuringowa

Townsville-Thuringowa had 456 admissions for this variable and the lowest SAR among the major urban centres, with 19 per cent fewer admissions than expected (a ratio of 81**).

The highest ratio was recorded in the area of Townsville South East, with an SAR of 95, while the lowest was recorded in the area from Gulliver to Hermit Park, with an SAR of 52**.

Map 6.29: Admissions of children aged 0 to 4 years for respiratory system diseases, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 admissions for respiratory system diseases (described on the previous text page) were higher, in most cases substantially so, for residents of the non-metropolitan areas than in the capital cities (**Table 6.35**). 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 6.35**). The lower ratios in the later period suggest a decline (relative to the Australian rates) in admissions of non-metropolitan residents over this period. SARs in the Northern Territory, however, increased over this period, from 163** in 1987 to 212** in 1995/96.

Table 6.35: 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
1995/96¹									
Capital city	95**	68**	99	118**	91**	71*	88*	80**	89**
Other major urban centres ²	81**	92	85**	..	..	..	..	..	83**
Rest of State/Territory	132**	103*	116**	146**	165**	68**	212**	- ³	125**
Whole of State/Territory	104**	78**	105**	126**	114**	69**	162**	81**	100
1989⁴									
Rest of State/Territory	138**	..	121**	180**	177**	..	163**	..	142**

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Data 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

Rest of State (Queensland as the Standard)

Children aged from 0 to 4 years accounted for a quarter (25.1 per cent) of all admissions of non-metropolitan residents with respiratory system diseases in 1995/96. There were 6,810 admissions of 0 to 4 year olds resident in rural Queensland (4,200 males and 2,610 females), 11 per cent more than were expected from the State rates, an SAR of 111**.

SLAs with the highest ratios were similar to those listed for admissions for all ages, with almost one third (29.3 per cent) recording ratios elevated by 30 per cent or more. Those with ratios elevated by at least 50 per cent (and more than 20 admissions) were recorded:

- just north-west of **Brisbane** in Murgon (750** and 193 admissions) Mundubbera (267**, 25) Kilkivan (172*, 21), Gympie (172**, 82) and Maryborough (153**, 161);
- in the far north west in Burke (544**, 53), Flinders (419**, 57), Cloncurry (321**, 65), Carpentaria (197**, 33), Hinchinbrook (191**, 143) and Mount Isa (169**, 240);
- in the south west in Paroo (356**, 50), Balonne (238**, 73) and Boonah (213**, 61);
- in the far north in Cook (285**, 81), Mulgrave [Part B] (210**, 77) and Mareeba (152**, 129);
- just west of the city in Inglewood (240**, 32), Warwick (183**, 101), Goondiwindi (162**, 34) and Millmerran (160*, 22); and
- in Duaringa (167**, 89) and Fitzroy [Part A] (150**, 48).

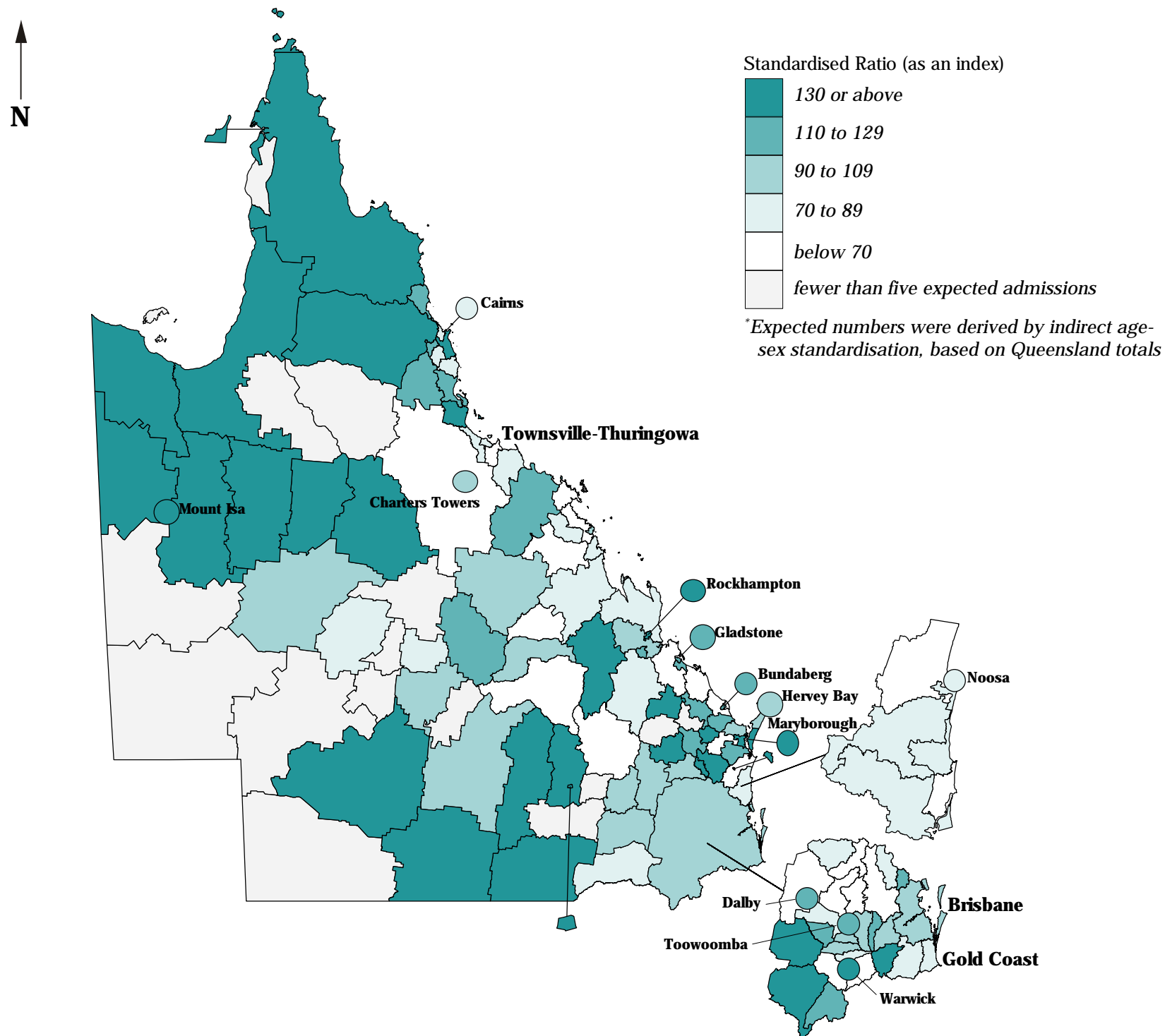
Twenty three SLAs had ratios of 30 per cent or more below the State average: a many were of statistical significance, they generally had a small number of cases. The only SLAs with SARs in the lowest range and more than 20 admissions were Cooloola, with an SAR of 47** (40 admissions compared to an expected 84.5); Whitsunday, 61** (33 admissions compared to an expected 54.5); Esk, 62** (33 admissions compared to an expected 53.6); Nanango, 65* (21 admissions compared to an expected 32.1); and Caloundra [Part A], 66** (105 admissions compared to an expected 159.4).

The largest numbers of admissions for respiratory system diseases among this age group were recorded in the SLAs of Cairns, with 416 admissions, Toowoomba (410 admissions), Rockhampton (347 admissions), Mackay [Part A] (256 admissions) and Maroochy [Part A] (253 admissions).

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

Map 6.30: Admissions of children aged 0 to 4 years for respiratory system diseases, Queensland, 1995/96

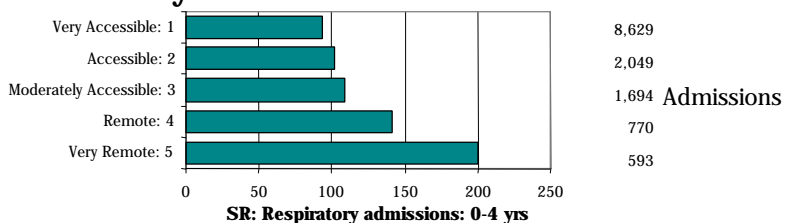
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 young children (aged from 0 to 4 years) show a similar relationship with remoteness to that noted for admissions for all ages. The ratios increase by more than double (2.2 times), from an SAR of 93 in the Very Accessible areas to an SAR of 200 in the Very Remote areas. The second highest ratio is in the Remote areas (141), with ratios of 109 and 102 in the Moderately Accessible and Accessible categories, respectively.

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 6.36). 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 6.36: 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 ¹	All capitals
1995/96 ²	99	70**	105**	123**	90**	70**	80**	60**	91**
1989 ³	67**	..	103*	103*	81**	..	44**	..	81**

¹Includes Queanbeyan (C)

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

³Excludes 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 quarter (23.8 per cent) of admissions for cystic fibrosis, bronchitis, emphysema or asthma in 1995/96 was of children aged from 0 to 4 years. Males had substantially higher admission rates in the age groups under 10 years, and marginally higher rates from 60 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 are sufficient cases for analysis.

Admissions for bronchitis, emphysema or asthma comprised 25.8 per cent of admissions for all respiratory system diseases of Queensland residents; 27.3 per cent of residents of **Brisbane** and the other major urban centres and 24.3 per cent in the non-metropolitan areas.

Brisbane (Queensland as the Standard)

Residents of **Brisbane** recorded 1 per cent more admissions than expected from the State rates for bronchitis, emphysema or asthma (an SAR of 101). In total, there were 6,430 admissions for these causes, of which 3,235 were males and 3,195 were females.

The inner city areas of City/Spring Hill (with an SAR of 217**), Salisbury (164**) and Greenslopes (158**); the areas of Carole Park (184**) and Darra Sumner/Wacol (157**), located in the west; and the outer areas of Greenbank [Part B] (156**) and Thorneside (155*), were all mapped in the highest range.

Many of the SLAs mapped in the lowest range of admissions for bronchitis, emphysema or asthma were situated in the inner, western or southern areas of **Brisbane** (Map 6.31). The lowest ratios (with more than 20 admissions) were recorded in Moreton Balance (47**), Upper Brookfield/Fig Tree Pocket (57**) and Ashgrove/The Gap (65**) in the west; in Rochedale South/Slacks Creek (60**), Greenbank [Part A]/Beaudesert (60**) and Tanah Merah/Carbrook-Cornubia (64**) in the south; and East Brisbane/Kangaroo Point (65*), Bardon (68) and Graceville/Oxley (71**), located in the inner areas.

The largest number of admissions for bronchitis, emphysema or asthma was in Caboolture [Part A] with 524. More than 200 admissions were recorded for residents of Ipswich (368 admissions), Redcliffe (309) and Bridgeman Downs/Boondall (202).

There were weak correlations with the indicators of socioeconomic disadvantage, the strongest with the variables for single parent families (0.48), housing authority rented dwellings (0.39) and low income families (0.36). These results, together with the weak inverse correlation with the IRSD (-0.43), suggest the existence of an association at the small area level between high rates of admission for bronchitis, emphysema or asthma and socioeconomic disadvantage.

Gold Coast-Tweed Heads

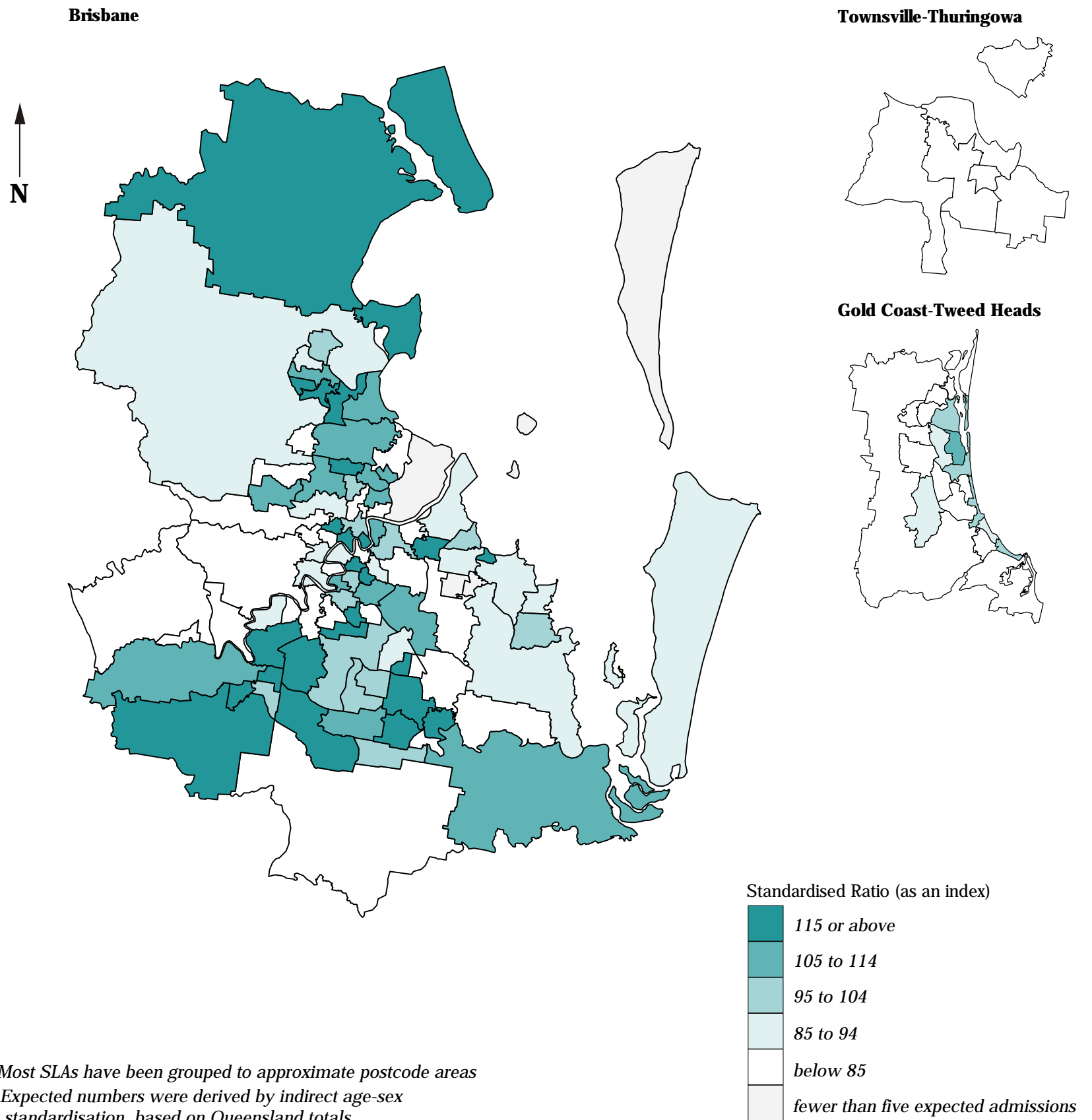
Residents of **Gold Coast-Tweed Heads** had 1,249 admissions for bronchitis, emphysema or asthma, 17 per cent fewer admissions than expected from the State rates (an SAR of 83**). The combined area of Labrador/Southport had the highest ratio for this variable, with an SAR of 109, with other ratios ranging from 51** in the combined area of Broadbeach Waters/Mermaid Waters to 104 in both Surfers Paradise/Benowa and Coolangatta/Tugun.

Townsville-Thuringowa

54 per cent fewer admissions for these diseases were recorded in **Townsville-Thuringowa**, an SAR of 46** (representing 238 admissions). Townsville South East had the highest ratio, of 62*, while Thuringowa [Part A] had an SAR of 39**.

Map 6.31: Admissions for bronchitis, emphysema or asthma, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas

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

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 6.37**). 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 6.37**. The lower ratios in the later period suggest a decline (relative to the Australian rates) in admissions of non-metropolitan residents over this period. 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 6.37: 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
1995/96¹									
Capital city	99	70**	105**	123**	90**	70**	80**	60**	91**
Other major urban centres ²	76**	74**	77**	..	..	..	..	..	76**
Rest of State/Territory	121**	117**	111**	182**	167**	62**	98	- ³	123**
Whole of State/Territory	102**	83**	104**	139**	112**	65**	90	60**	100
1989⁴									
Rest of State/Territory	130**	..	145**	181**	157**	..	83**	..	142**

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

Almost one quarter (24.3 per cent) of admissions for respiratory system diseases were for the diseases of bronchitis, emphysema or asthma. These diseases were more prevalent among residents in country areas than would be expected from the State rates. The elevated ratio (107**) is in line with that for admissions for all respiratory system diseases described earlier.

SLAs with admission ratios elevated by at least 70 per cent were recorded:

- in the south-west, in Paroo (598**), Balonne (214**) and Booringa (175*);
- just north west of **Brisbane**, in Murgon (419**), Gayndah (279**), Kolan (222**), Gympie (190**), Wondai (171**) and Mount Morgan (198**);
- in the far north west, in Flinders (300**), Cloncurry (285**) and Carpentaria (178**);
- just west of the city, in Murilla (232**), Pittsworth (202**), Goondiwindi (190**) and Inglewood (170**);
- in the far north, in Cook (231**), Mulgrave [Part B] (171**) and Mareeba (170**);
- in the central west, in Winton (228**), Longreach (215**) and Barcaldine (173*);
- in the areas surrounding **Brisbane**, in Kilcoy (226**) and Boonah (201**); and
- in Belyando (189**).

In total, 13 SLAs were mapped in the middle range (within 10 per cent of the level expected from the State rates) (**Map 6.32**). The SARs in this class interval ranged from 90 in both Nanango and Wambo to 109 in Eacham and Whitsunday.

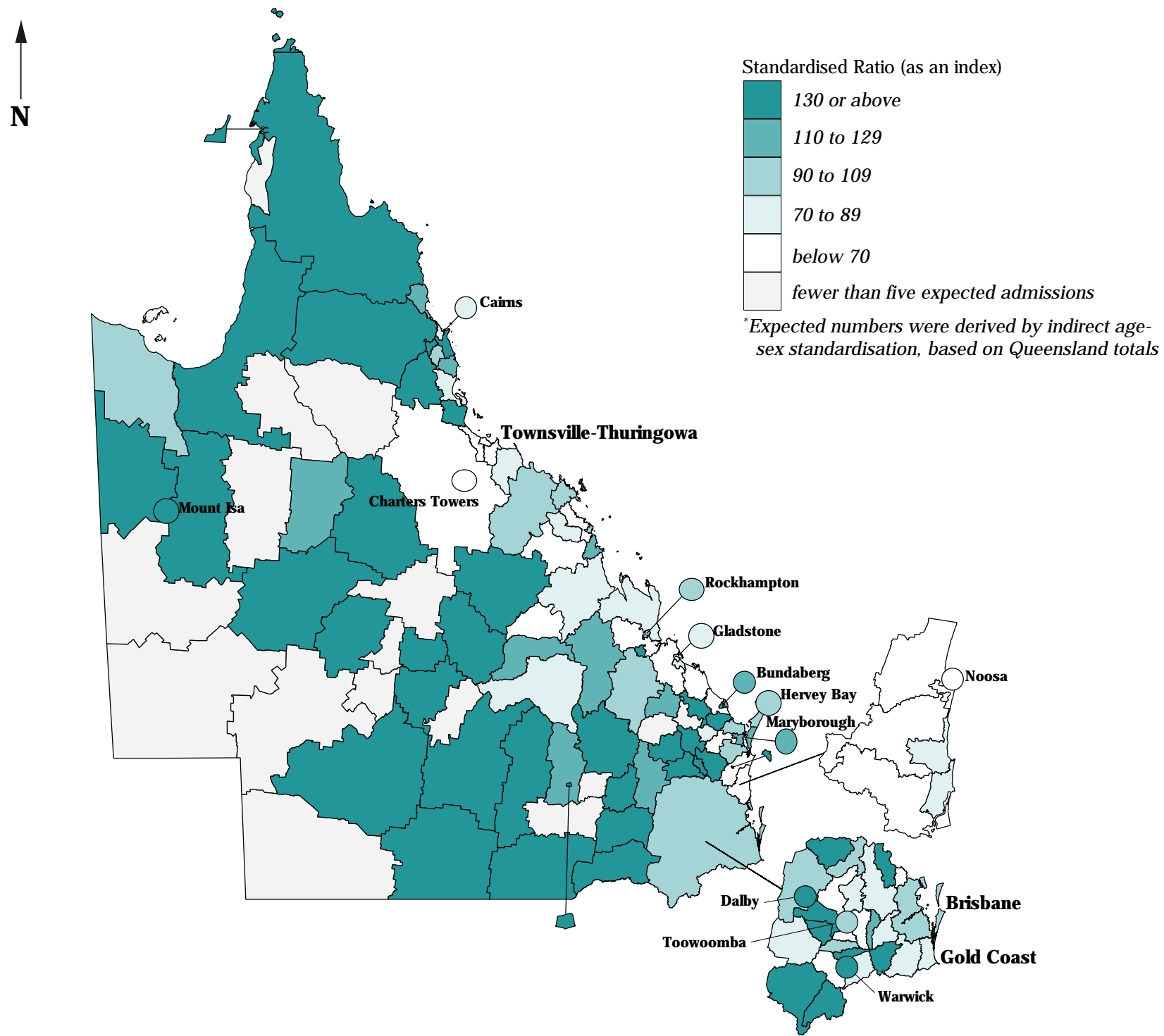
Maroochy [Part B], Noosa, Gatton, and Caloundra [Part B] were the only SLAs in the lowest range mapped to record more than 30 admissions for bronchitis, emphysema or asthma. Maroochy [Part B], with the lowest SAR in this category, had 44 per cent fewer admissions than were expected (48 admissions compared to an expected 85.8) and an SAR of 56**.

Residents of Toowoomba had the largest number of admissions (391 admissions), followed by Cairns with 337 admissions, Rockhampton with 299 admissions, Maroochy [Part A] with 292 admissions, Bundaberg with 269 admissions and Mackay [Part A] with 253 admissions.

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

Map 6.32: Admissions for bronchitis, emphysema or asthma, Queensland, 1995/96

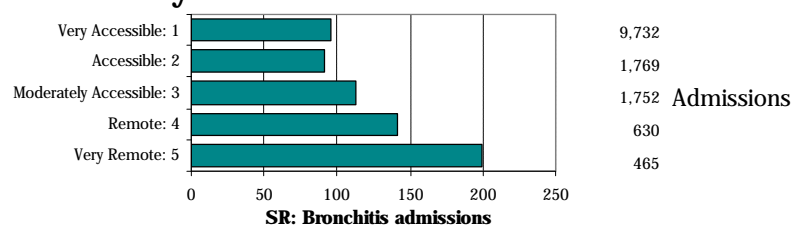
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 also show a strong relationship with remoteness. Ratios increase from SARs of 91 and 96 in the Accessible and Very Accessible areas, respectively, to 113 in the Moderately Accessible areas. There is a further increase to the Remote areas, with an SAR of 141, and a larger increase to the Very Remote category, with an SAR of 199. The highly elevated rate of admissions of residents of the remote areas are likely to reflect admissions of the Indigenous population

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 6.38).

Both **Adelaide** and **Perth** had substantially lower ratios in the later period shown in Table 6.38, 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 6.38: 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 ¹	All capitals
1995/96 ²	92**	84**	95**	94**	86**	112**	111**	60**	90**
1989 ³	78**	..	85**	114**	101	..	101	..	88**

¹Includes Queanbeyan (C)

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

³Excludes 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 9.4 per cent of all admissions analysed for Queensland residents; 12.6 per cent of male admissions and 6.7 per cent of female 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 which produced the injury, as well as by the nature of the injury.

Accidents accounted for 91.6 per cent of admissions from these external causes, and were largely accidental falls (21.9 per cent of all admissions from these external causes) and motor vehicle traffic accidents (6.6 per cent). Admission rates for males were substantially higher for motor vehicle traffic accidents and injury purposely inflicted by another person; and for females, admission rates were higher for accidental falls and attempted suicide or self-inflicted injury.

Esterman et al. (1990) found that admission rates from these external causes are affected by socioeconomic status. They reported that, for postcode areas in Adelaide, "compared with the highest income areas, admission rates were 10% higher in the middle category and 26% higher in the poorest areas".

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). Almost half (46%) of all admissions for females for intentional injury in Australia in 1996/97 were of women identified as Indigenous (ABS/AIHW 1999).

Brisbane (Queensland as the Standard)

There were 30,849 admissions of residents of **Brisbane** from the combined causes of accidents, poisonings and violence, 18 per cent fewer than were expected from the State rates (an SAR of 82**). Males accounted for 59.2 per cent of the admissions.

Four areas had SARs in the highest range mapped (Map 6.33). These included the inner combined areas of City/Spring Hill (an SAR of 223**), Dutton Park/Woolloongabba (143**); Logan Balance (122), situated in the outer south; and Darra Sumner/Wacol (119') located just south-west of the city.

Just over two thirds (68.4 per cent) of the areas were mapped in the lowest range. Excluding those with fewer than 20 admissions, the lowest ratios were recorded in St Lucia, with an SAR of 47**; Chelmer/Taringa, 49**; and Bardon, with an SAR of 50**.

The largest numbers of admissions from accidents, poisonings and violence were recorded for residents of Caboolture [Part A] (2,362 admissions), Ipswich (2,206 admissions) and Redcliffe (1,460 admissions).

The correlation analysis revealed a weak positive association at the small area level with indicators of socioeconomic disadvantage. The weak inverse correlation with the IRSD (-0.35) supports the existence of an association at the small area level between high rates of admission from the external causes of accidents, poisonings and violence and socioeconomic disadvantage.

Gold Coast-Tweed Heads

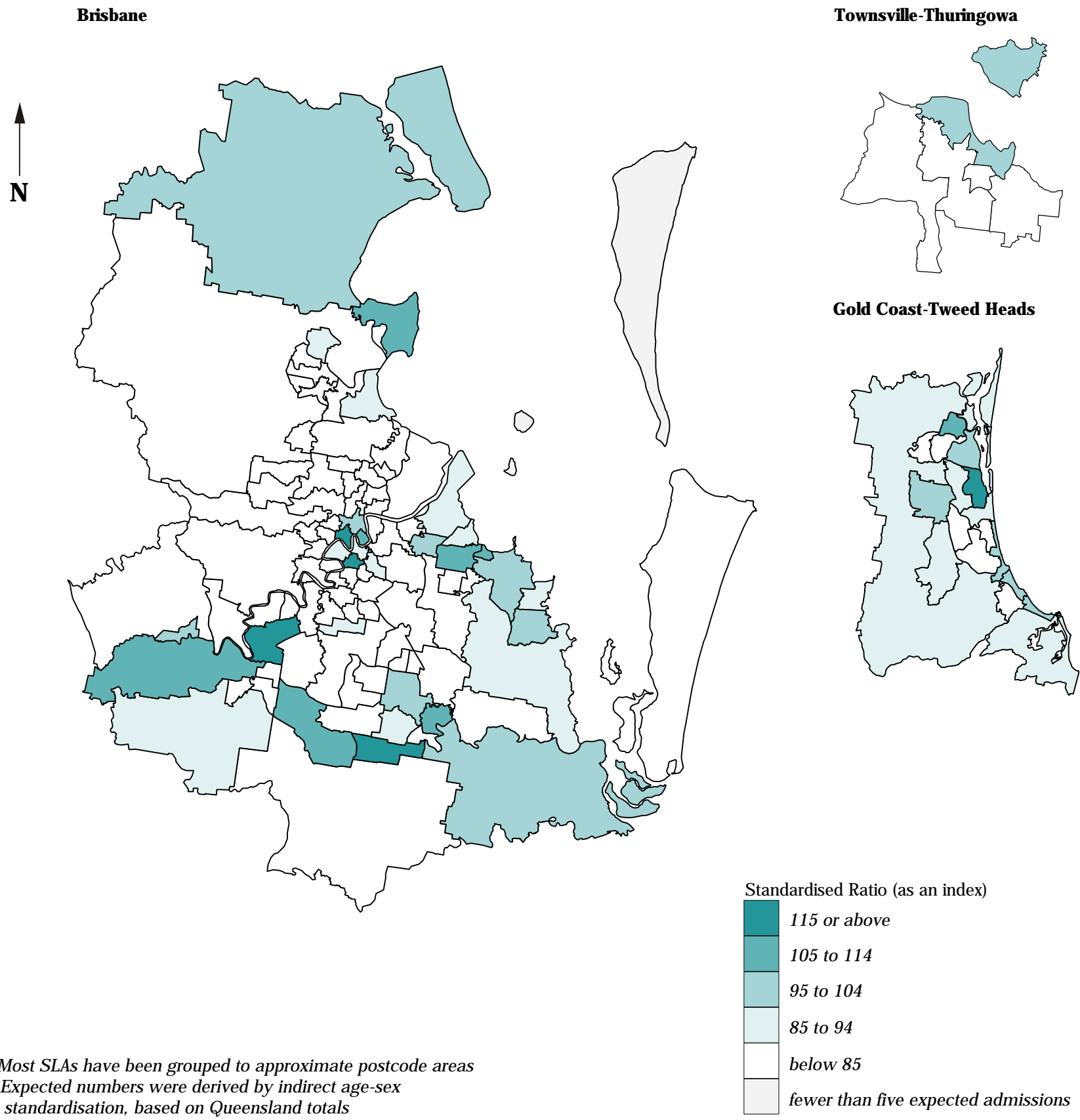
In **Gold Coast-Tweed Heads**, there were 7,418 admissions from accidents, poisonings and violence, 11 per cent fewer than were expected from the State rates (an SAR of 89**). Ratios elevated by 5 per cent or more were recorded for residents of Labrador/Southport (115**) and Hope Island (an SAR of 109), while 50 per cent fewer admissions were recorded in the combined areas of Currumbin Waters/Elanora (50**).

Townsville-Thuringowa

The ratio in **Townsville-Thuringowa** was the lowest among the major urban centres, an SAR of 67** (2,141 admissions). All ratios were below the level expected from the State rates, ranging from 53** in Townsville South East to 99 in the Townsville Coastal/Magnetic Island area.

Map 6.33: Admissions from accidents, poisonings and violence, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 6.39**). The most highly elevated ratios were in the Northern Territory (166**), Queensland (147**), Western Australia (146**) and South Australia (138**). Only in Tasmania were there fewer admissions of residents of the non-metropolitan areas than expected from the Australian rates.

The SARs for the non-metropolitan areas of the Northern Territory and Western declined between the two periods shown in **Table 6.39**, 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 6.39: 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
1995/96¹									
Capital city	92**	84**	95**	94**	86**	112**	111**	60**	90**
Other major urban centres ²	89**	87**	96**	..	..	..	..	..	91**
Rest of State/Territory	114**	106**	147**	138**	146**	86**	166**	- ³	124**
Whole of State/Territory	98**	90**	117**	106**	102**	97**	141**	60**	100
1989⁴									
Rest of State/Territory	112**	..	128**	139**	171**	..	204**	..	129**

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

There were 43,367 admissions of residents of the non-metropolitan areas of Queensland from the combined causes of accidents, poisonings and violence, 26 per cent more than expected from the State rates (an SAR of 126**). The relatively higher rates of hospitalisation of rural people in general and from these causes are discussed on page 189. In addition the higher rates of hospitalisation of Aboriginal people from these causes (see comments on page 183) may be an influence in the high standardised admission ratios recorded for some of the more remote areas.

As many of the SARs in **Map 6.34** are very high, the ranges mapped have been changed to enhance the pattern of differentiation in the map. The highest and lowest ranges have been set at 30 per cent variation from the standard, rather than 15 per cent as in the map of **Brisbane** for this variable.

As can be seen in the map (**Map 6.34**), the majority of areas had elevated ratios, with more than half of the SLAs mapped in the highest range. Those with more than two and a half times the number of expected admissions were recorded:

- in the far north west, in Mornington (1150**, 203 admissions), Burke (488**, 173), Carpentaria (410**, 355), McKinlay (316**, 91), Richmond (271**, 78) and Cloncurry (269**, 217);
- in the central west, in Isisford (625**, 49), Boulia (385**, 51), Aramac (292**, 65), Tambo (281**, 42) and Barcaldine (262**, 113);

- in the far north, in Aurukun (401**, 83) and Cook (358**, 464); and
- in Jericho (294**, 84), Murgon (284**, 333), Murilla (276**, 203) and Sarina (264**, 577).

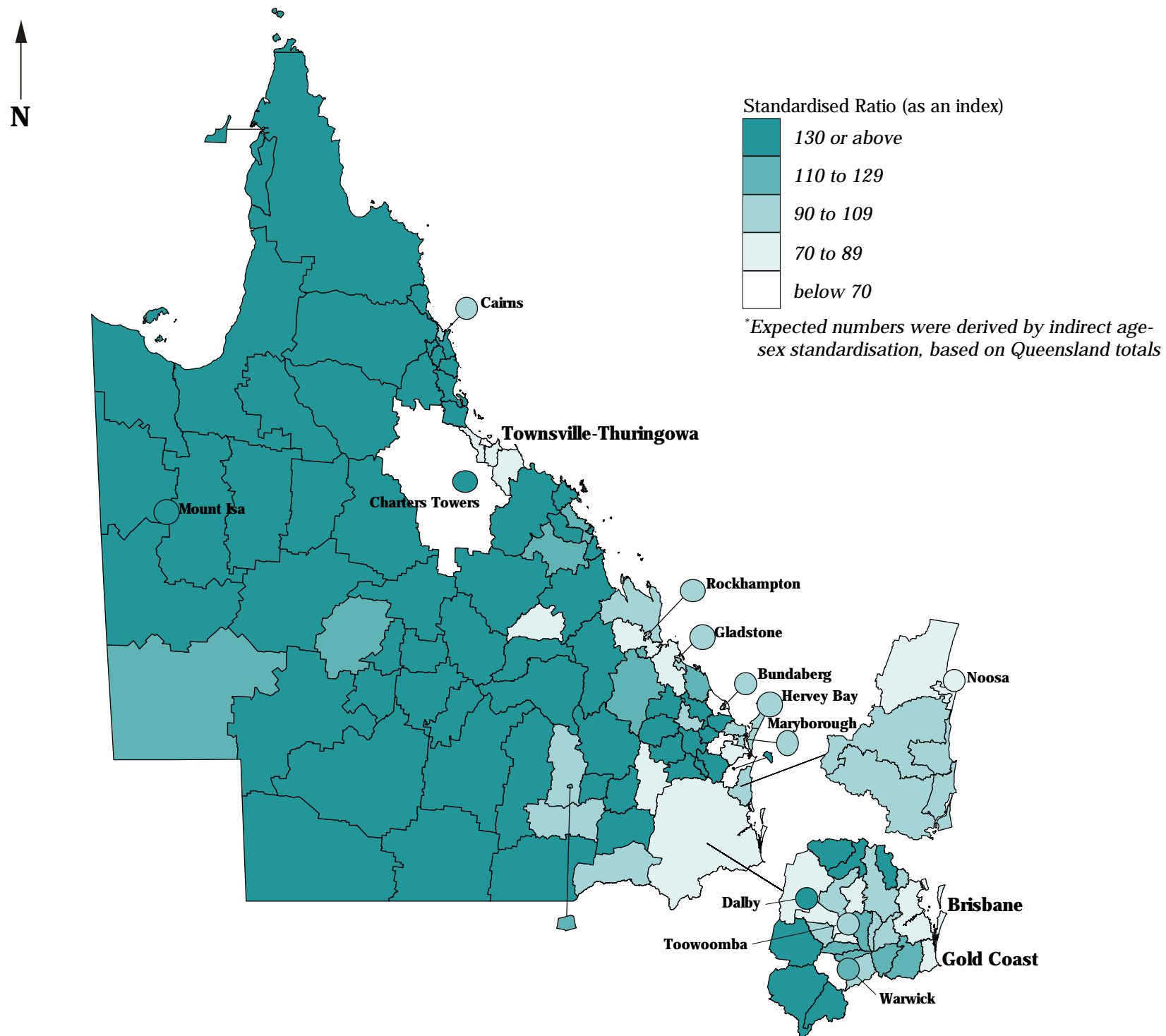
The lowest SAR from the combined causes of accidents, poisonings and violence was 27** recorded in the SLA of Burnett [Part B], with 73 per cent fewer admissions than were expected from the State rates. However, this represented only 63 admissions (compared with an expected 238.1). Also mapped in the lowest range were Warwick West (36**), Dalrymple (43**), Woocoo (45**), Cooloola (54**) and Burnett [Part A] (64**).

The largest numbers of admissions from accidents, poisonings and violence were recorded in the SLAs of Mackay [Part A], with 3,095 admissions, Cairns, 2,645 admissions, Toowoomba, 2,301 admissions, Maroochy [Part A], 2,004 admissions and Rockhampton, 1,574 admissions.

Correlations of meaningful significance at the SLA level were recorded with the variables for Indigenous people (0.64) and dwellings with no motor vehicle (0.61). These results, together with the inverse correlation of meaningful significance with the IRSD (-0.55), suggest the existence of an association at the SLA level between high rates of admission from the external causes of accidents, poisonings and violence and socioeconomic disadvantage.

Map 6.34: Admissions from accidents, poisonings and violence, Queensland, 1995/96

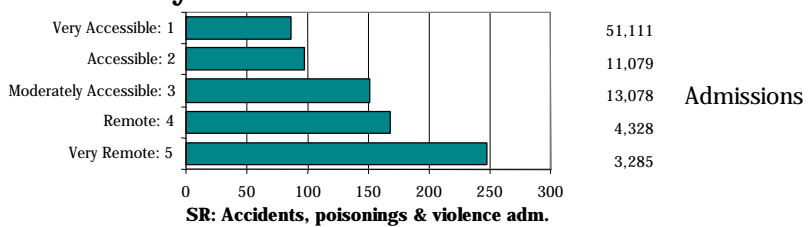
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 admissions from the external causes of accidents, poisonings and violence increase across the ARIA categories in a step wise fashion. Ratios increase from SARs of 86 and 98 in the Very Accessible and Accessible areas, respectively, to 151 and 168 in the Moderately Accessible and Remote areas. There is a further increase to the highly elevated ratio (248) in the Very 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 procedures⁷ 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. Some of these 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 6.40** lists a number of sentinel All but three of these procedures (coronary artery bypass graft,

⁷A procedure is an intervention that is surgical in nature, carries a procedural risk, requires specialised training, or requires special facilities or equipment in an acute setting (National Health Data Committee 1997).

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.

Descriptions of the procedures for which details are mapped are included in the text accompanying the maps.

In the majority of cases, the procedure is the principal procedure, that is, 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.

Queensland has a higher standardised admission rate than the average of the other States for half of these procedures, with the most highly elevated being for lens insertion, Caesarean section and endoscopy (**Table 6.40**). Rates for angioplasty and hip replacement were well below the *Other States*' rate.

Table 6.40: Admission rates for selected sentinel procedures, public and private hospitals, 1996/1997

Sentinel procedure	Standardised admission rates ¹		
	Queensland	Other States	Difference
Appendicectomy	1.38	1.43	-3.8*
Coronary artery bypass graft	0.90	0.90	-0.6
Angioplasty	0.47	0.78	-39.4**
Caesarean section	3.05	2.73	11.6**
Cholecystectomy	2.22	2.17	2.3
Endoscopy	25.14	23.75	5.9**
Hip replacement	0.87	1.03	-14.9**
Hysterectomy	1.81	1.85	-2.0
Lens insertion	6.23	4.81	29.5**
Myringotomy	2.21	2.31	-4.5**
Tonsillectomy	1.87	1.85	1.2

¹Admission rates have been produced by direct standardisation

Indicates difference is significant at the 5 per cent (*) and 1 per cent (**) levels

Source: Australian Hospital Statistics, AIHW, June 1998

Earlier studies

For 1986, Renwick and Sadkowsky (1991) reported on age sex standardised ratios for a number of surgical procedures. Those of which are available for both 1986 and 1996/97 are shown in **Table 6.41**.

Table 6.41: Standardised admission ratios¹ for selected surgical procedures, Queensland

	1986	1996/97
Appendicectomy	95.6	96.5
Caesarean section	110.8	109.3
Cholecystectomy	103.6	101.8
Hip replacement	87.9	87.0
Hysterectomy	107.8	98.4
Lens insertion	116.0	123.4
Tonsillectomy	90.3	100.5

¹Admission rates 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 from Australian Hospital Statistics, Australian Institute of Health & Welfare, June 1998

Context

Australia

There were 2,593,937 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 54.3 per cent of all admissions studied in this project (which includes all acute admissions, other than for renal dialysis). Nearly two thirds (63.0 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 7.2 per cent were of residents of the other major urban centres and 29.8 per cent were of residents of the non-metropolitan areas. Females accounted for 57.3 per cent of admissions, varying from 58.2 per cent of admissions of residents of the capital cities to 55.7 of non-metropolitan residents. Less than half (46.3 per cent) of these principal procedures were performed on a same day basis, with males having slightly more procedures on a same day basis (47.2 per cent of all male principal procedures, compared with 45.6 per cent for females).

Queensland

In 1995/96, there were 473,253 admissions of residents of Queensland to public acute and private hospitals (including day surgery facilities), 18.2 per cent of all admissions in Australia, at which at least one surgical procedure was performed. These admissions involving a procedure represented 53.5 per cent of all admissions of residents of Queensland in this analysis (which includes all acute admissions, other than for renal dialysis). Almost half (45.5 per cent) of the admissions who were residents of **Brisbane** (which comprises 44.2 per cent of the State's population), 14.2 per cent were of residents of the other major urban centres and 40.3 per cent were of residents of the non-metropolitan areas of Queensland. Females accounted for 56.8 per cent of the admissions, varying from 58.5 per cent of admissions of residents of **Brisbane**, 55.7 per cent of residents of the major urban centres to 55.0 of non-metropolitan residents. Again less than half (45.0 per cent) of the procedures were performed on a same day basis, with males having slightly more principal procedures on a same day basis (46.9 per cent of all male principal procedures compared with 43.5 per cent for females).

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Admissions for surgical procedures, 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 6.42: Admissions¹ for surgical procedures, capital cities, 1995/96
Standardised separation ratios

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ²	All capitals
99**	101**	101**	107**	95**	107**	108**	70**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

²Includes 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 (52.7 per cent) of the admissions to acute hospitals of residents of Queensland in 1995/96 involved a surgical procedure. Females accounted for 56.8 per cent of such admissions, and males for 43.2 per cent. For females, admission rates were highest in the 30 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 188).

Brisbane (Queensland as the Standard)

In 1995/96, there were 212,216 admissions of residents of **Brisbane** for surgical procedures, marginally above the level expected from the State rates (an SAR of 101**). Females accounted for 58.5 per cent (124,104 admissions), and males for 41.5 per cent (88,112 admissions).

There was little variation evident in SARs at the small area level, with only seven areas mapped in the highest range and 12 in the lowest (**Map 6.35**). The most highly elevated ratio, of 214**, was recorded for residents of Greenbank [Part B], indicating that there were more than twice the admissions for surgical procedures than were expected. Salisbury (with an SAR of 165**), Logan Balance (141**), Keperra/Upper Kedron (130**), Karalee (128**), Mt Gravatt/Rochedale (121**) and Loganlea (116**) were the other areas mapped in the highest range.

The areas of Capalaba West (15 admissions and an SAR of 31**) and Waterford West (368 admissions and an SAR of 63**) had the lowest ratios for this variable, with 69 per cent and 37 per cent fewer admissions than were expected, respectively. Other ratios in the lowest range mapped included Rochedale/Slacks Creek (67**), located in the middle south-east, and Nathan (68**) and St Lucia (70**), located in the inner city region.

The largest numbers of admissions were recorded in Caboolture [Part A] (with 13,564 admissions), Ipswich (11,125), Redcliffe (8,468) and Bridgeman Downs/Boondall (7,067).

The correlation analysis revealed a weak positive association at the small area level between high rates of admission for surgical procedures and the indicators of socioeconomic disadvantage, including a weak inverse correlation with the IRSD (-0.26).

Gold Coast-Tweed Heads

In 1995/96, an SAR of 101 was recorded for residents of **Gold Coast-Tweed Heads**, with a total of 51,715 admissions for a surgical procedure (55.7 per cent of admissions were females).

The lower south-eastern areas of Palm Beach/Currumbin (122**) and Tweed Heads (116**) recorded the highest ratios for this variable, with 22 and 16 per cent more admissions than expected, respectively. At the other end of the scale, ratios of below 80 were recorded for residents of Broadbeach Waters/Mermaid Waters (with an SAR of 79**) and Currumbin Waters/Elanora (75**).

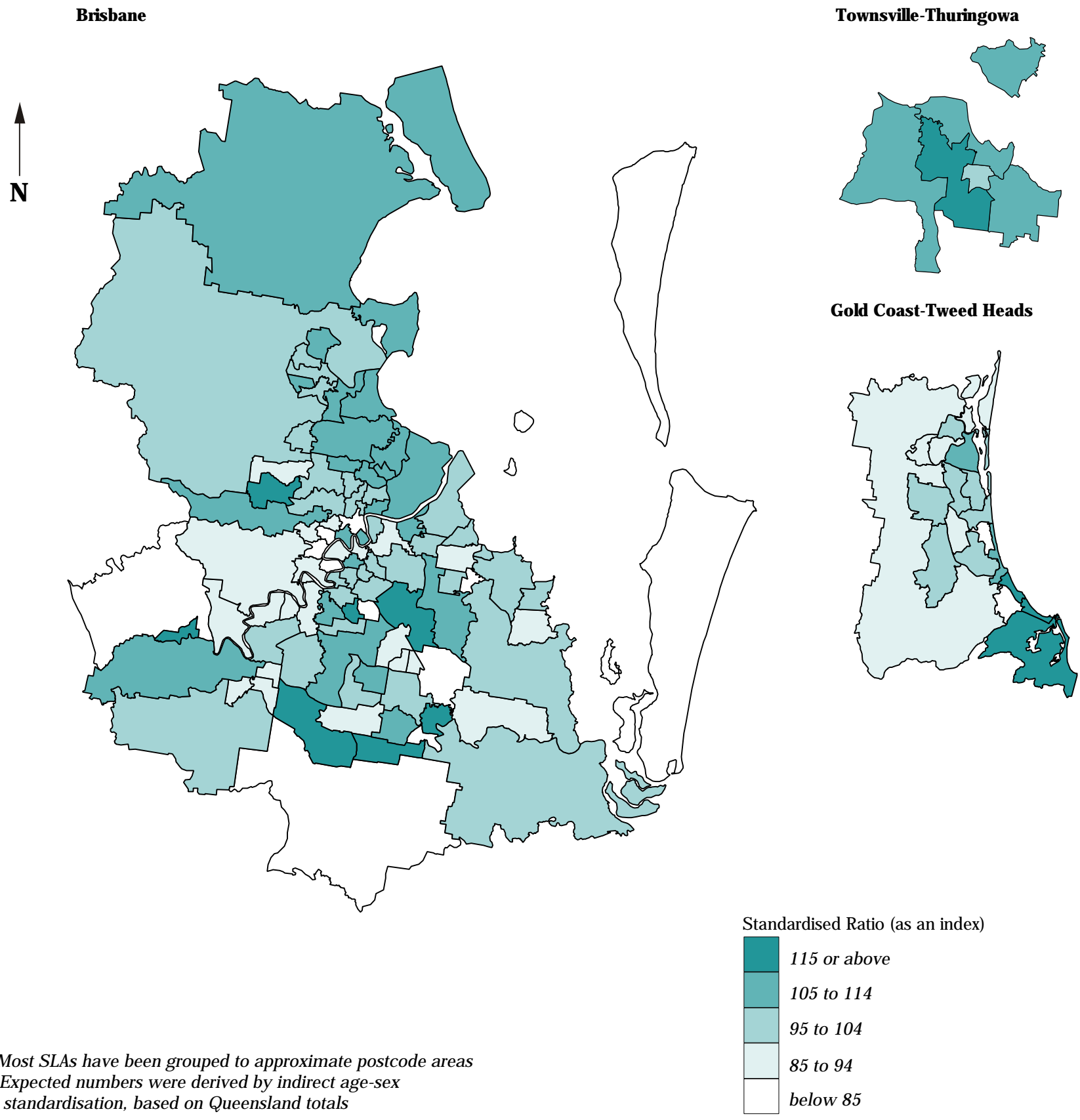
Townsville-Thuringowa

In 1995/96, there were 18,666 admissions of residents from **Townsville-Thuringowa** for a surgical procedure, 12 per cent more than expected from the State rates and the highest ratio among the major urban centres (an SAR of 112**). Over half (55.8 per cent) of the admissions were females.

All of the SARs were elevated, ranging from 101 in Gulliver/Hermit Park to 125** in Murray/Mt Louisa.

Map 6.35: Admissions for surgical procedures, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

Source: See Data sources, Appendix 1.3

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

Admissions for surgical procedures, 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 6.43: Admissions¹ 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 ²	103**	90**	102**	..	..	..	..	..	102**
Rest of State/Territory	99**	104**	98**	104**	96**	95**	95**	- ³	100*
Whole of State/Territory	100	102**	100	106**	96**	100	101	70**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

In 1995/96, 190,656 admissions for surgical procedures were recorded for residents of the non-metropolitan areas of Queensland, of which 55.0 per cent were females. This was marginally below the level expected from the State rates, an SAR of 98**.

As can be seen from the map opposite, the majority of SLAs have been mapped in the three middle ranges, with eleven SLAs mapped in the highest range and 13 SLAs mapped in the lowest (**Map 6.36**). Ratios of admissions for a surgical procedure elevated by 10 per cent or more were recorded:

- in the central western SLAs of Isisford, with an SAR of 212**, Aramac (180**), Boulia (134**), Barcaldine (118**) and Blackall (116**);
- in the far north west, in Mornington (203**), Mount Isa (126**), Burke (123**), Flinders (123**), and Richmond (111);
- in the far north, in Aurukun (164**), Weipa (156**), Croydon (140**), Mareeba (127**), Johnstone (116**), Thuringowa [Part B] (115**), Etheridge (113), Cook (112**) and Atherton (112**);
- just north-west of **Brisbane**, in Gympie (151**), Isis (127**) and Bundaberg (117**);
- further north-west of the city, in Jericho (132**), Charters Towers (131**), Mackay [Part A] (130**), Belyando (115**), Sarina (114**) and Mirani (113**); and
- just west of the city, in Warwick (116**), Dalby (114**), Clifton (113), Toowoomba (112**) and Murilla (112*).

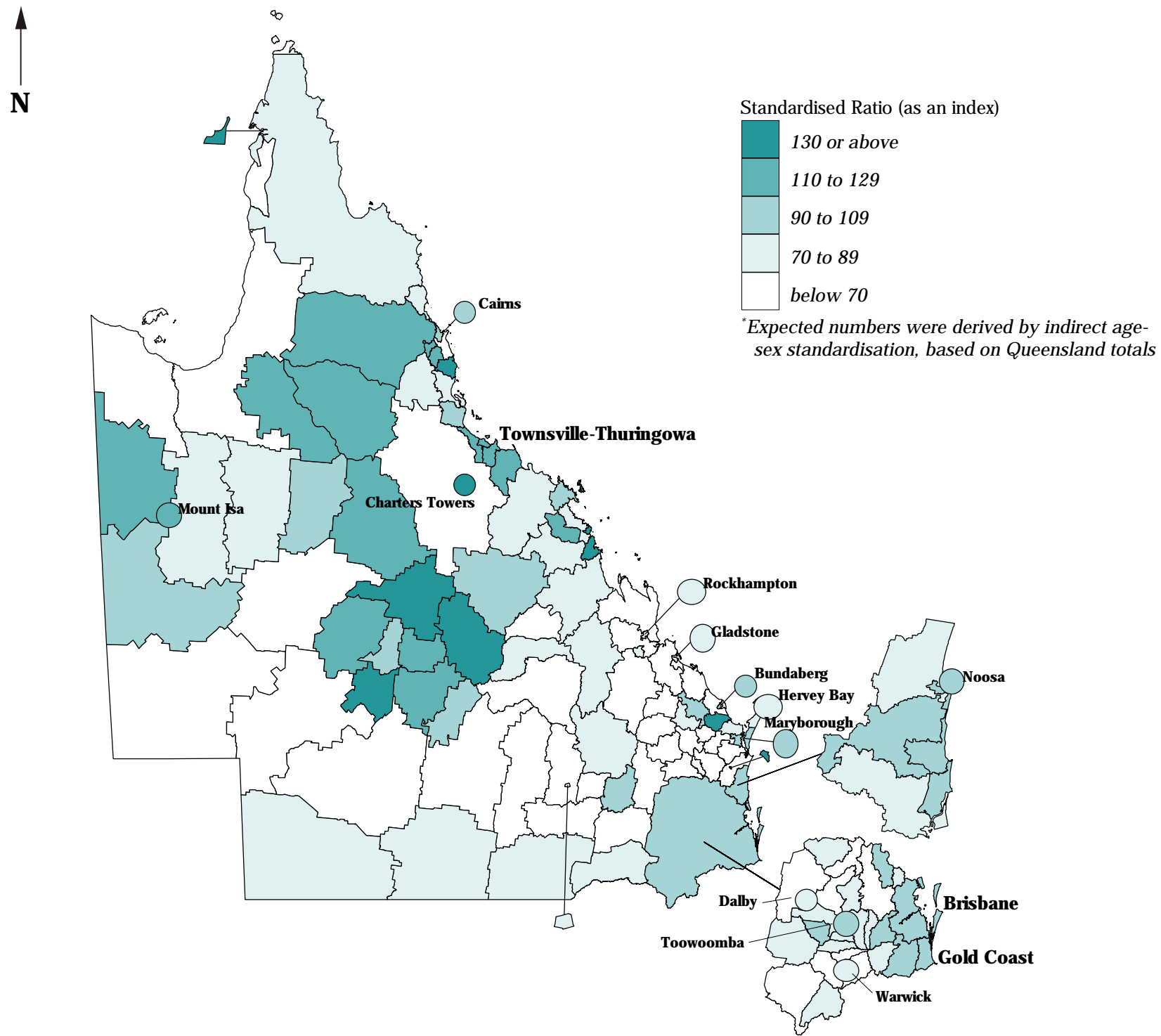
Only thirteen SLAs were mapped in the lowest range. By far the lowest ratio was recorded in Burnett [Part B], with 71 per cent fewer admissions than expected (an SAR of 29**), with 398 admissions (compared to an expected 1,378.9 admissions). Low SARs were also recorded in Warwick West and Woocoo (both with an SAR of 34**), Dalrymple (37**), Cooloola (41**), Warwick East (46**), Bungil (47**) and Wambo (54**).

The largest numbers of admissions for a surgical procedure in the non-metropolitan areas of Queensland were recorded in Toowoomba (with 14,582 admissions), Cairns (13,516), Maroochy [Part A] (11,710), Mackay [Part A] (10,363) and Rockhampton (9,217).

There was no consistent evidence in the correlation analysis of an association at the SLA level between high rates of admissions for surgical procedures and socioeconomic status.

Map 6.36: Admissions for surgical procedures, Queensland, 1995/96

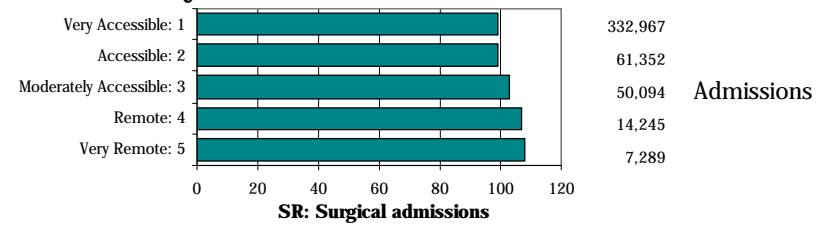
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 admissions involving a surgical procedure are close to the level expected from the State rates across all of the ARIA categories, with higher ratios of 107 and 108 in the Remote and Very Remote categories, respectively and ratios marginally lower than expected from the State rates in the Very Accessible and Accessible 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 6.42**), standardised admission ratios (SARs) for same day admissions involving a surgical procedure (**Table 6.44**) 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 6.44: Same day admissions¹ for surgical procedures, capital cities, 1995/96
Standardised admission ratios

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ²	All capitals
104**	111**	102**	101**	93**	87**	72**	64**	102**

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities

²Includes Queanbeyan (C)

Source: See *Data sources*, Appendix 1.3

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

Just under half (45.0 per cent) of all admissions of residents of Queensland in 1995/96 involving a surgical procedure were same day admissions. Females accounted for over half (54.9 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 6.10**, page 188). For males, the largest differentials over the rates for females were in the 0 to 14 year age groups and from age 60 years.

Brisbane (Queensland as the Standard)

There were 99,503 same day admissions of residents of **Brisbane** for surgical procedures in 1995/96, 6 per cent more than were expected from the State rates. Of these, 56,534 admissions (56.8 per cent) were for females and 42,969 (43.2 per cent) were for males.

The distribution of the highest SARs for same day surgical procedures follows a distinct pattern in the middle areas north and south of the Brisbane River, while those with the lowest ratios were generally located in a number of the inner areas and to the west of the city (**Map 6.37**). Only ten areas were mapped in the lowest range.

The most highly elevated ratio, of 290**, was recorded for residents of Greenbank [Part B], indicating that there were almost three times the number of admissions than expected from the State rates. The other areas with highly significant ratios elevated by 15 per cent or more were recorded in Salisbury (256**), Keperra/Upper Kedron (179**), Ashgrove/The Gap (143**), Karalee (135**), Mt Gravatt/Rochedale (132**), MacGregor/Pallara-Heathwood-Larapinta (128**), Logan Balance and Chermside West/Chermside (both with an SAR of 126**), Bridgeman Downs/Boondall (125**), Calamvale/Stretton (122**), Rocklea (122**), Nudgee Beach/Virginia (121**) and Ascot/Hamilton (117**).

There were 32 areas with SARs in the range of 5 per cent above or below the level expected from the State rates, with the highest ratio recorded in Petrie, Algester/Parkinson-Drewvale, New Farm,

Annerley, Kedron, Coorparoo, Holland Park/Tarragindi and Camp Hill/Carindale (all with an SAR of 104).

The areas of Capalaba West (an SAR of 37** and eight admissions) and Redland Balance (an SAR of 65** and 240 admissions) recorded the lowest ratios for this variable, with 63 per cent and 35 per cent fewer admissions than expected, respectively. Ratios of below 85 were also recorded in Rochedale South/Slacks Creek, Waterford West, Moreton Island, Moreton Balance, Greenbank [Part A]/Beaudesert, St Lucia, Darra-Sumner/Wacol and Carole Park.

More than 3,500 admissions for a same day surgical procedure were recorded for residents of Caboolture [Part A] (with 5,454 admissions), Ipswich (4,689) and Redcliffe (3,989).

There was no consistent evidence in the correlation analysis of an association at the SLA level between high rates of same day admissions for surgical procedures and socioeconomic status.

Gold Coast-Tweed Heads

Residents of **Gold Coast-Tweed Heads** had 8 per cent more admissions for a same day surgical procedure than were expected from the State rates, an SAR of 108**. There were 25,120 admissions, of which 54.4 per cent (13,655 admissions) were females.

The most highly elevated ratios were recorded in the coastal areas of Palm Beach/Currumbin (136**) and Coolangatta/Tugun (127**). Residents of Oxenford and Currumbin Waters/Elanora (both with an SAR of 82**) and Broadbeach Waters/Mermaid Waters (85**) recorded the lowest ratios for this variable.

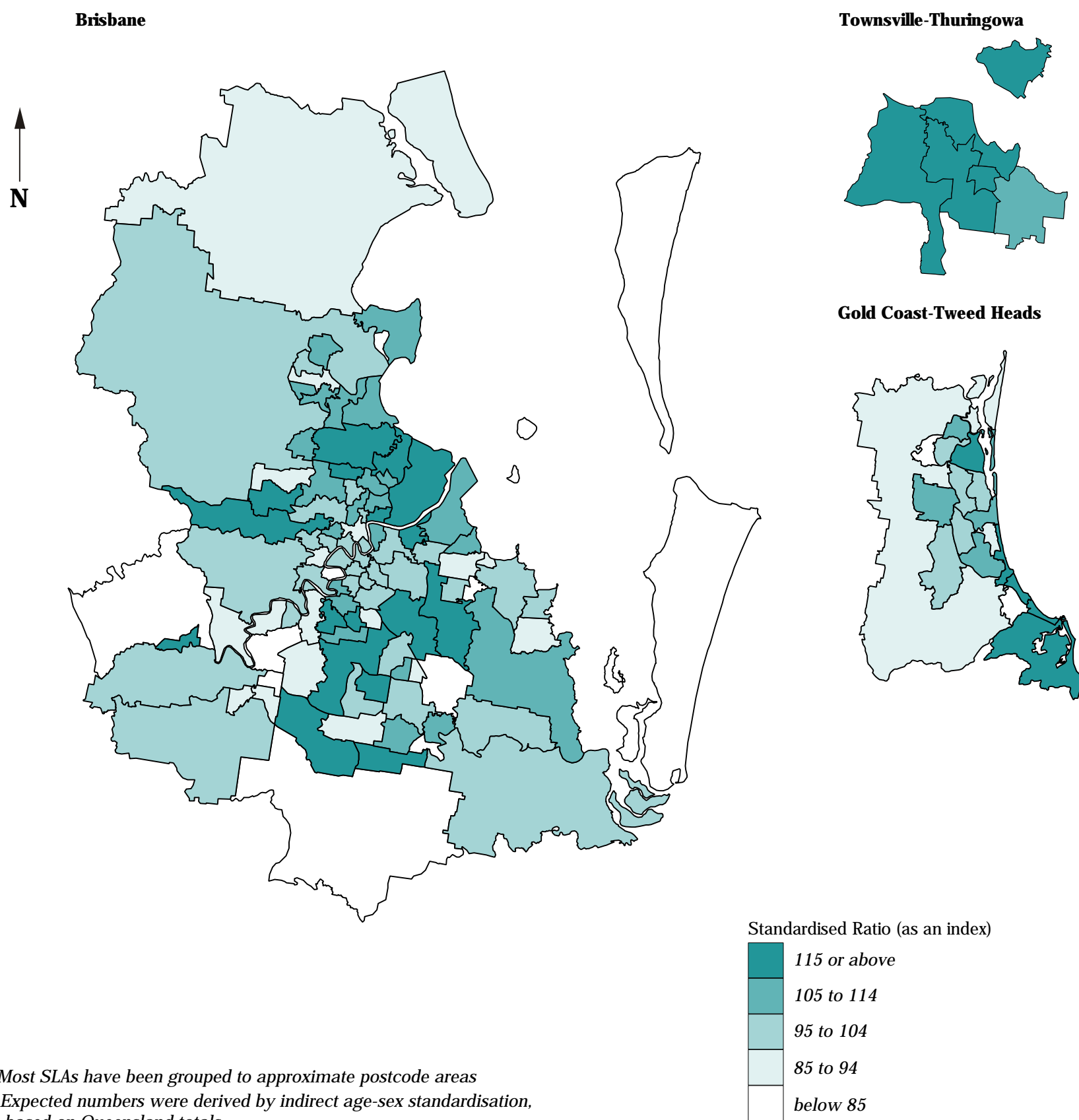
Townsville-Thuringowa

In 1995/96 an SAR of 127** was recorded for residents of **Townsville-Thuringowa**, with 9,381 admissions for a same day surgical procedure (54.0 per cent were females).

All SLAs had more admissions than expected, with ratios ranging from 113** in Townsville South East to 147** in Murray/Mt Louisa.

Map 6.37: Same day admissions for surgical procedures, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 surgical procedures, 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 6.45** 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 6.45: Same day admissions¹ 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 ²	110**	79**	109**	..	..	..	..	..	107**
Rest of State/Territory	96**	105**	88**	90**	84**	81**	62**	— ³	93**
Whole of State/Territory	102**	108**	97**	98**	90**	84**	67**	63**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities

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

³Data 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 State (Queensland as the Standard)

There were 79,081 same day admissions of residents of the non-metropolitan areas of Queensland for surgical procedures in 1995/96, 10 per cent fewer than were expected from the State rate (an SAR of 90**). Of the 79,081 admissions, 52.4 per cent were females (41,461 admissions) and 47.6 per cent were males (37,620 admissions).

As can be seen from **Map 6.38**, a large number of SLAs have been mapped in the lowest ranges of same day admissions for a surgical procedure, with only ten SLAs mapped in the highest range. Ratios elevated by 10 per cent or more were recorded:

- in the central western SLAs of Isisford, with a ratio of 231**, Aramac (230**), Longreach (128**), Barcaldine (128**) and Blackall (120**);
- on the coast in Mackay [Part A] (147**), Sarina (136**), Mirani (125**), Townsville [Part B] (125**), Thuringowa [Part B] (124**) and Burdekin (112**);
- in the far north in Weipa (134**), Johnstone (133**), Atherton (128**), Mareeba (123**), Croydon (122), Etheridge (117) and Eacham (113**);
- just north-west of **Brisbane** in Gympie (132**) and Isis (131**); and
- in Charters Towers (141**), Jericho (139**), Mount Isa (123**) and Flinders (113).

Of the SLAs mapped in the middle range, only eight had statistically significant SARs. The highest of these were in the SLAs of Bundaberg and Caloundra [Part A], both with an SAR of 107**, indicating that there were 7 per cent more admissions than were expected. Statistically significant ratios below the level expected from the State rates were recorded in Beaudesert [Part B] and Noosa (both with an SAR of 94*), Cairns (94**), Maryborough (91**), and Moreton [Part B], Maroochy [Part A] and Maroochy [Part B] (all with an SAR of 90**).

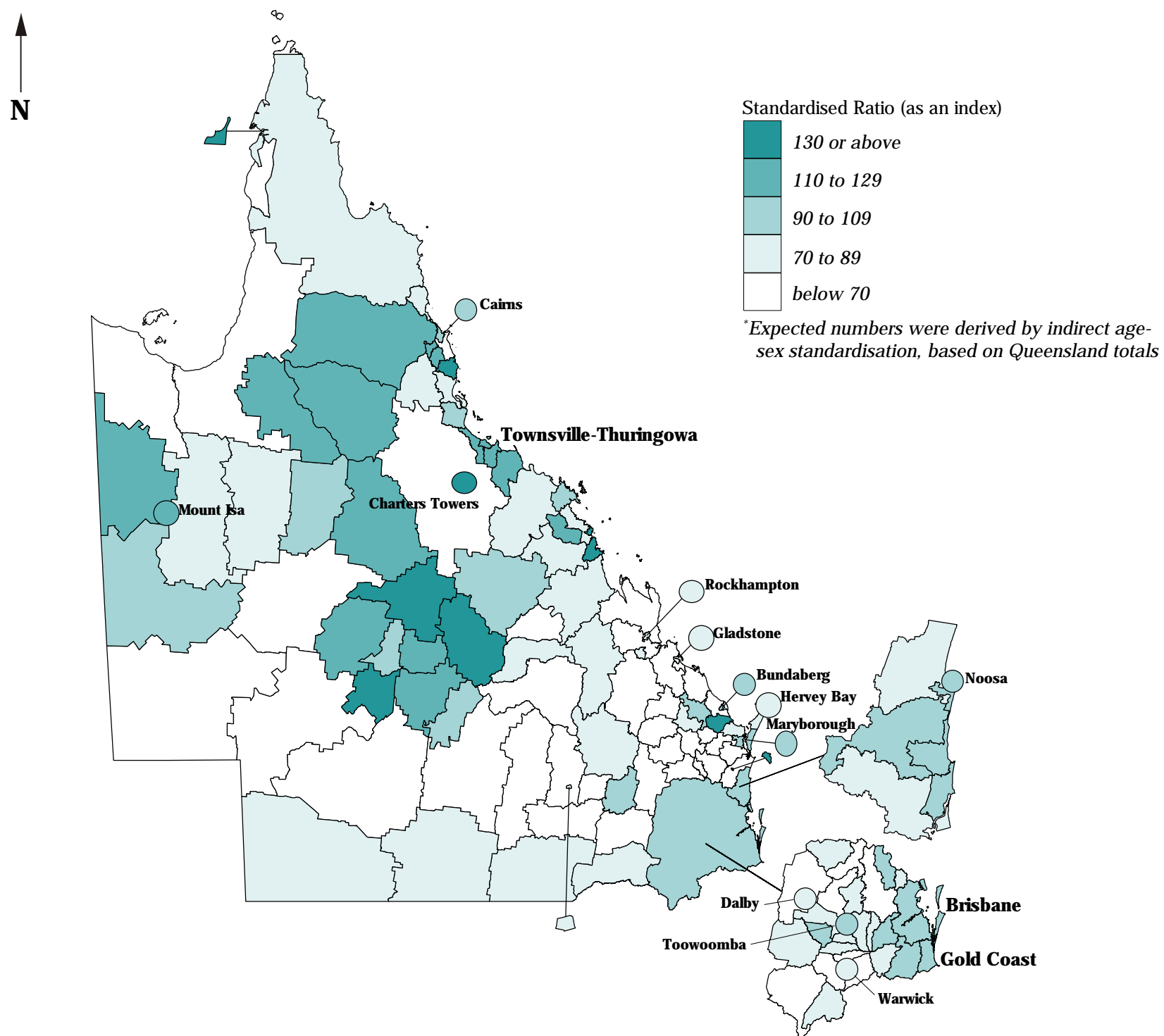
Areas with low ratios were widespread throughout Queensland, with clusters in the south and far north-west of the State. The lowest ratios (in SLAs where more than 20 admissions were recorded) were in Warwick West and Bungil (both with an SAR of 26**), Burnett [Part B] (27**), Cooloola (31**), Torres and Warwick East (both with 33**) and Wambo (34**).

The largest numbers of admissions for a same day surgical procedure in the non-metropolitan areas of Queensland were recorded in Toowoomba (with 5,873 admissions), Cairns (5,648), Maroochy [Part A] (5,324) and Mackay [Part A] (5,261).

The weak correlations at the SLA level with the indicators of high socioeconomic status, including the IRSD (0.23), suggest the existence at the small area level of an association between high rates of same day admissions for surgical procedures and socioeconomic status.

Map 6.38: Same day admissions for surgical procedures, Queensland, 1995/96

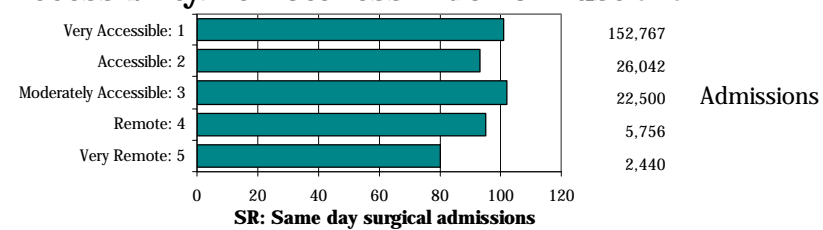
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



Standardised admissions ratios (SARs) 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. Aside from the highest ratio (102) in the Moderately Accessible category, ratios decline from an SAR of 101 in the Very Accessible category to a low of 80 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 6.46), from a low of 65** in **Canberra** to a high of 136** (more than double the ratio in **Canberra**) in **Adelaide**.

Table 6.46: Admissions¹ with a principal procedure of tonsillectomy and/or adenoidectomy, capital cities, 1995/96
Standardised admission ratios

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ²	All capitals
89**	109**	101	136**	95*	71**	71**	65**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

²Includes 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 person'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 Queensland were aged 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 735.1 admissions per one hundred thousand females and 737.3 admissions per one hundred thousand males. Up until the age of 49 years, females had the highest admission rates for all except the 0 to 9 year age groups (with 526.9 admissions per 100,000 females aged 0 to 4 compared with 782.6 admissions per 100,000 males) and with substantially higher rates than for males in the age groups from 10 to 29 years. Overall 53.1 per cent of all admissions were females.

Data for Australia published by the AIHW (1998) showed the tonsillectomy and/or adenoidectomy rate in Queensland to be 1.2 per cent above that in the other States for which data were available (Table 6.40, page 263).

Brisbane (Queensland as the Standard)

There were 2,726 admissions for tonsillectomy and/or adenoidectomy in **Brisbane** in 1995/96, 1,454 females (53.3 per cent) and 1,272 males (46.7 per cent). This was 8 per cent more admissions than were expected from the State rates, an SAR of 108**.

The distribution of SARs across **Brisbane** is shown in **Map 6.39**, with highly elevated SARs located throughout most of the metropolitan area and low ratios generally within the inner city region.

Although Northgate had the highest ratio for this variable, with more than twice the number of admissions than were expected from the State rates (an SAR of 213**), there were only 12 admissions (compared to an expected 5.6). Other areas with highly elevated ratios included Burbank/Belmont-Mackenzie (an SAR of 183* and 13 admissions), Greenbank [Part B] (183** and 33 admissions), Moreton Balance (170** and 62 admissions) and Mt Gravatt/Rochedale (161** and 89 admissions).

Areas with SARs in the lowest range mapped were mainly located in the inner suburbs. Of the 22 areas in this lowest category only Bracken Ridge/Sandgate and Greenbank [Part A]/Beaudesert recorded more than 20 admissions. The SARs recorded in these areas indicated that there were 28 per cent (an SAR of 72*) and 21 per cent (an SAR of 79) fewer admissions than were expected from the State rates, respectively.

Residents of Ipswich and Caboolture [Part A] had the largest number of admissions for these procedures, with 180 and 157 admissions respectively. The next largest numbers were recorded for residents of Gold Coast [Part A] (121 admissions), Mt Gravatt/Rochedale (89), Redcliffe (87) and Birkdale/Ormiston (85).

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

Gold Coast-Tweed Heads

Gold Coast-Tweed Heads had 8 per cent more admissions for tonsillectomy and/or adenoidectomy than expected in 1995/96, a ratio of 108. More than half of the 530 admissions were recorded for females (283 admissions, 53.5 per cent).

Residents of the combined area of Palm Beach/Currumbin had the highest SAR (of 168**), with ratios below the level expected (and at least 20 admissions) in Gold Coast [Part B] Balance (an SAR of 93), Worongary-Tallai/Mudgeeraba (90), Robina/Kerrydale/Burleigh Waters (89) and Currumbin Waters/Elanora (70).

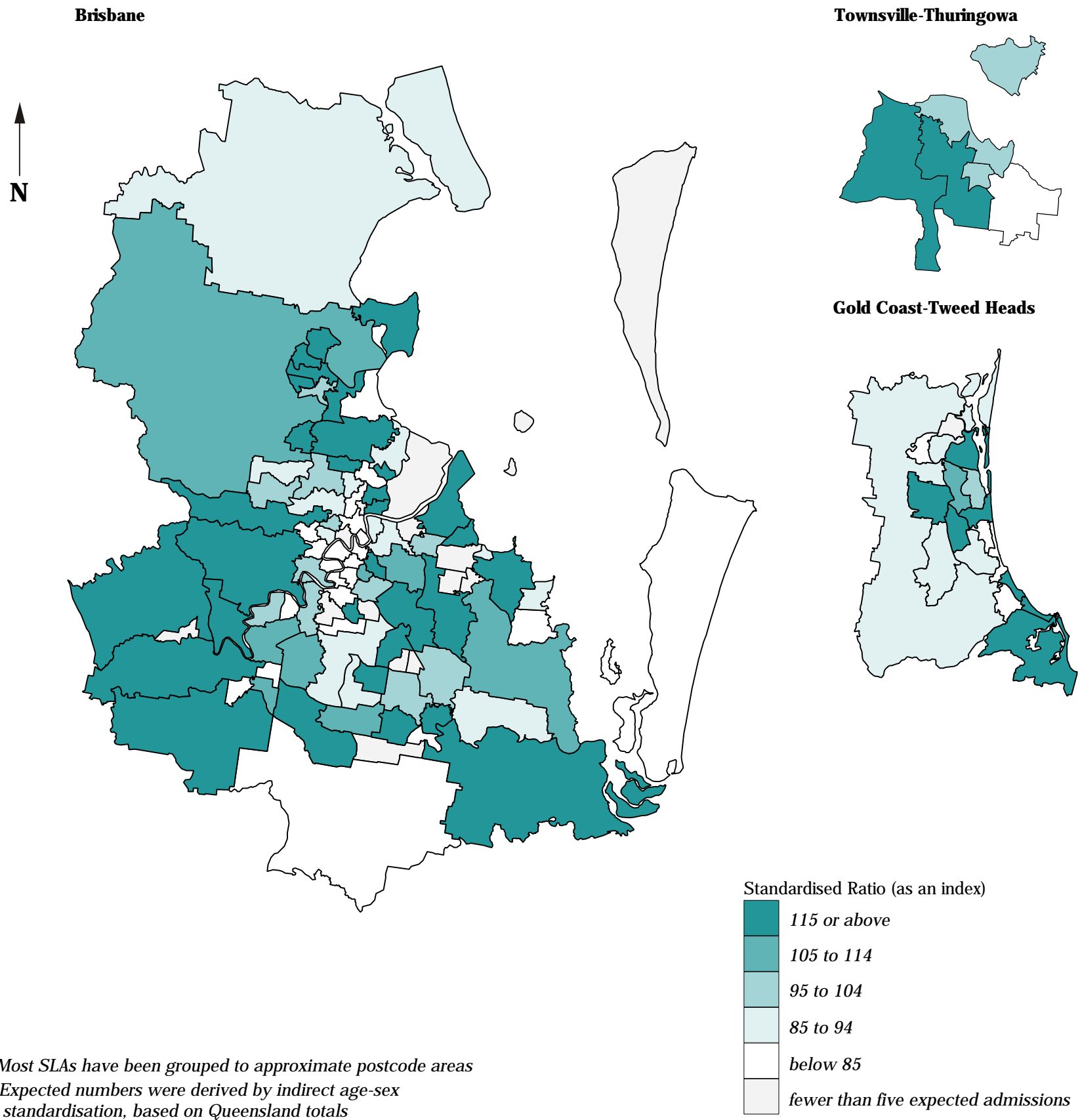
Townsville-Thuringowa

Townsville-Thuringowa had the highest SAR among the major urban centres, with 23 per cent more admissions than expected (a ratio of 123**). Females accounted for half of the 283 admissions, with 50.2 per cent (142 admissions).

Elevated ratios were recorded in the areas from Murray to Mt Louisa, with an SAR of 146**, and Thuringowa [Part A], of 133**. Residents of Townsville Coastal/Magnetic Island and Gulliver/Hermit Park recorded SARs of 100 and 99 respectively. The lowest ratio was recorded in Townsville South East, an SAR of 71 and nine admissions (compared to an expected 12.7).

Map 6.39: Admissions for a tonsillectomy and/or adenoidectomy, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas

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

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 6.47). 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 6.47: Admissions¹ 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 ²	100	147**	106	..	..	..	..	..	106**
Rest of State/Territory	101	115**	84**	141**	92*	67**	35**	- ³	99
Whole of State/Territory	94**	112**	94**	137**	94**	68**	50**	66**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

With only 2,204 admissions (1,169 females and 1,035 males) for tonsillectomy and/or adenoidectomy in 1995/96, the numbers for many non-metropolitan SLAs are quite small (as noted previously, the absolute numbers should be used in conjunction with the standardised admission ratios). There were 11 per cent fewer admissions for tonsillectomy and/or adenoidectomy than expected from the State rates, an SAR of 89**.

In total, 25 SLAs were mapped in the two highest ranges for this variable, with 15 of these recording 15 or more admissions (Map 6.40). SLAs in this category were:

- the far north west in Flinders, with 21 admissions and an SAR of 416**;
- on the coast line in Fitzroy [Part B] (16 admissions, 175*), Rockhampton (161 admissions, 147**), Fitzroy [Part A] (16 admissions, 140), Calliope [Part A] (23 admissions, 123) and Bowen (27 admissions, 117);
- just west of **Brisbane** in Pittsworth (15 admissions, 174*), Moreton [Part B] (32 admissions, 121) and Toowoomba (196 admissions, 121**);
- the south-western SLAs of Boonah (16 admissions, 137) and Roma (17 admissions, 127);
- just north-west of the city in Maryborough (56 admissions, 136*), Kingaroy (28 admissions, 128) and Gympie (24 admissions, 124); and
- in Emerald (29 admissions, 122).

Ratios within 10 per cent of the level expected from the State rates were recorded in 15 SLAs. There were 9 per cent more admissions recorded in Mackay [Part A] (an SAR of 109) and 8 per cent fewer recorded in Broadsound (an SAR of 92).

SLAs with standardised admission ratios in the lowest range (and more than ten admissions) were recorded in Hervey Bay, with a ratio of 42** (26 admissions); Mackay [Part B], with a ratio of 54* (12 admissions); Mareeba, with a ratio of 54* (17 admissions);

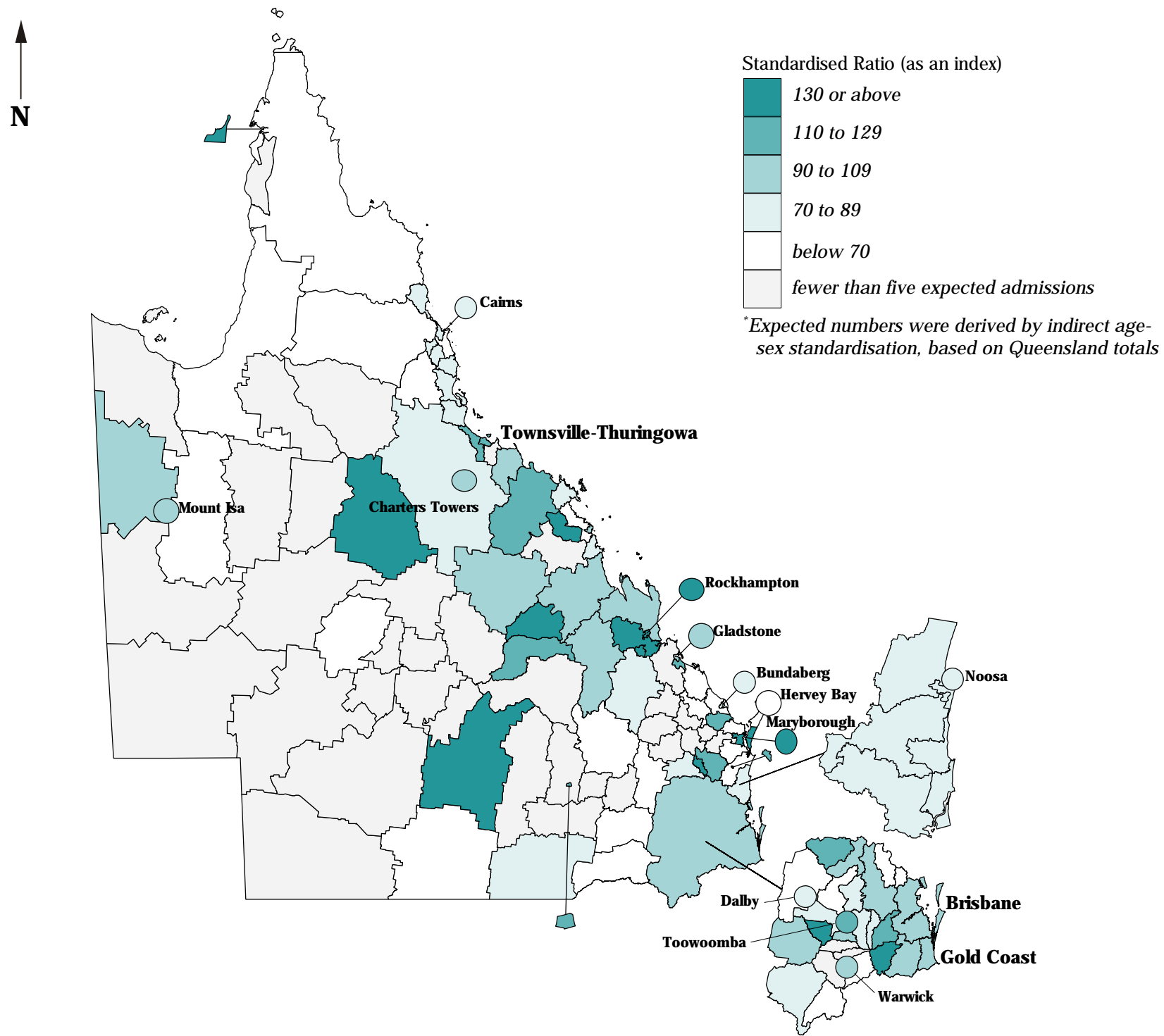
and Rosalie, with a ratio of 62 (11 admissions).

Only four SLAs had more than 100 admissions for tonsillectomy and/or adenoidectomy in 1995/96, they were Toowoomba (196 admissions), Rockhampton (161), Cairns (150) and Mackay [Part A] (114).

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

Map 6.40: Admissions for a tonsillectomy and/or adenoidectomy, Queensland, 1995/96

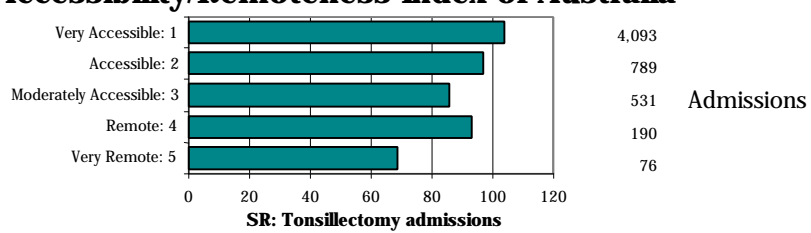
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 admissions involving a tonsillectomy and/or adenoidectomy generally decrease with increasing remoteness. The highest (and only elevated) ratio is in the areas in the Very Accessible ARIA category (an SAR of 104), dropping to an SAR of 69 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 6.48**), 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 6.48: Admissions¹ 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 ²	All capitals
78**	125**	103	205**	130**	119**	84	59**	112**

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

²Includes 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 (88.8 per cent) of admissions of Queensland residents for this procedure were of children under 10 years of age, the small area data have been standardised to the total population for those ages.

Children aged from 0 to 4 years accounted for just over half (58.1 per cent) of the admissions for this procedure, with most of the remainder (30.7 per cent) in the 5 to 9 year age group. Males accounted for over half (59.7 per cent) of all admissions for myringotomies and slightly more (62.6 per cent) in the 0 to 4 year age group.

Data for Australia published by the AIHW (1998) showed the myringotomy rate in Queensland to be 4.5 per cent below that in the other States for which data were available (**Table 6.40**, page 263).

Brisbane (Queensland as the Standard)

In 1995/96, residents of **Brisbane** had 26 per cent more admissions for a myringotomy (an elevated SAR of 126**) than were expected from the State rates. Males accounted for almost two thirds (61.6 per cent) of the 2,150 admissions. The vast majority of the admissions (83.6 per cent, 1,798 admissions) were performed on a same day basis.

SLAs with the most highly elevated ratios for this variable were clustered throughout most of the metropolitan region (**Map 6.41**). However, ratios elevated by sixty per cent or more (with at least 20 admissions) were mainly concentrated in the north. These areas included Ash Grove/The Gap (209**), Wilston/Enoggera (201**), Petrie (184**), Albany Creek (171**), Bracken Ridge/Sandgate (171**) and Keperra/Upper Kedron (166**). Highly elevated ratios were also recorded in Moreton Balance, with an SAR of 251**; Algester/Parkinson-Drewvale, with an SAR of 242**; Lota/Manly/Manly West, with an SAR of 197**; and Greenbank [Part B], with an SAR of 167*.

The only areas mapped in the lowest range, and with at least 20 admissions, were Rochedale South/Slacks Creek and Caboolture [Part A], with ratios of 71 and 78** respectively. Ratios below the level expected (for areas with more than 20 admissions) were also recorded in Browns Plains (an SAR of 87), Redcliffe (89), Greenbank [Part A]/Beaudesert (93), Berrinba-Karawatha/Kingston (94), in the combined area of Inala/Durack/Doolandella-Forest Lake/ElLEN Grove/Richlands (94) and Gold Coast [Part A] (99).

Areas with more than 100 admissions of children aged 0 to 9 years for a myringotomy were recorded in Ipswich, with 166 admissions, and Caboolture [Part A], with 107 admissions.

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

Gold Coast-Tweed Heads

Residents of **Gold Coast-Tweed Heads** had 6 per cent more admissions of children for a myringotomy than expected, an SAR of 106. Of the 360 admissions, 221 were males (61.4 per cent) and 139 were females (38.6 per cent).

The highest ratios were recorded in the combined areas of Worongary-Tallai/Mudgeeraba (with an SAR of 189**) and Palm Beach/Currumbin (148), with 89 per cent and 48 per cent more admissions than expected respectively. The lowest SAR (in areas where there were at least 20 admissions) was recorded for residents of Tweed Heads, with an SAR of 73.

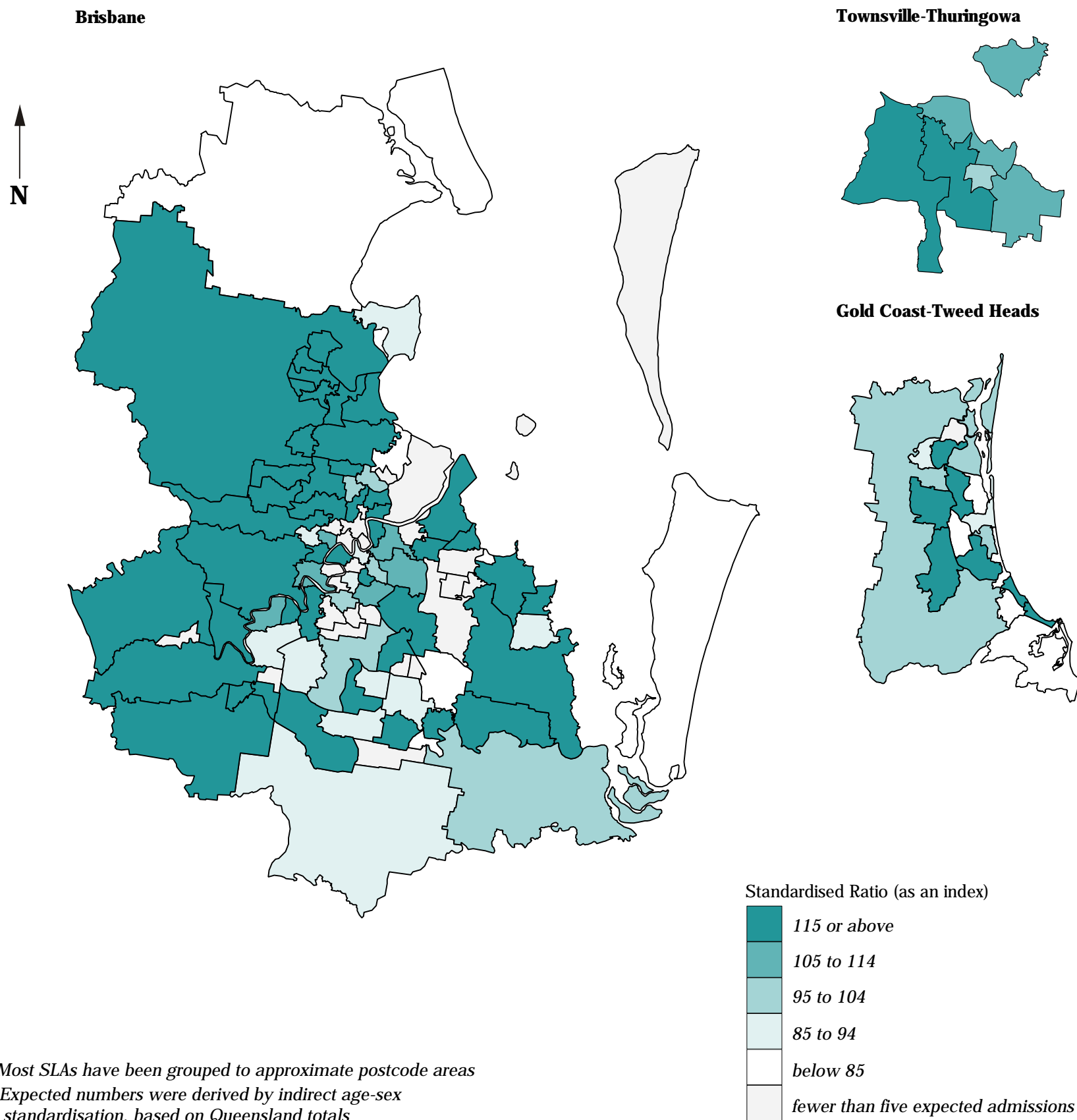
Townsville-Thuringowa

An SAR of 121** was recorded for residents of **Townsville-Thuringowa**, indicating that there were 21 per cent more admissions than expected. In total 189 admissions were recorded, of which 61.4 per cent were males.

All of the SARs were elevated, ranging from 102 in the area from Gulliver to Hermit Park to 136** in Thuringowa [Part A].

Map 6.41: Admissions of children aged 0 to 9 years for a myringotomy, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas

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

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 6.49**), from lows of 44** in the Northern Territory and 59** in Queensland, to a highly elevated 163** in South Australia.

Table 6.49: Admissions¹ 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 ²	70**	133**	91*	..	..	..	..	..	85**
Rest of State/Territory	64**	116**	59**	163**	82**	68**	44**	- ³	82**
Whole of State/Territory	73**	123**	82**	192**	114**	88**	60**	61**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

In the non-metropolitan areas of Queensland, there were 1,265 admissions of children aged 0 to 9 years for a myringotomy in 1995/96, 29 per cent below the number expected from the State rates (a ratio of 71**). Almost two thirds of these admissions were males (60.1 per cent), with females accounting for 39.9 per cent (505 admissions). There were 88.2 per cent of these admissions performed on a same day basis, with 1,116 same day admissions for a myringotomy.

As can be seen from **Map 6.42**, data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates.

The highest SAR of children for a myringotomy was in Murgon, an SAR of 187*. However this represented only 14 admissions (compared to an expected 7.5). Elevated ratios in the two highest ranges mapped and in areas with more than 20 admissions were recorded in Moreton [Part B] (with an SAR of 162**), Toowoomba (125*), Rockhampton (120), Emerald (119), Beaudesert [Part B] (116), Burdekin (113) and Cairns (110).

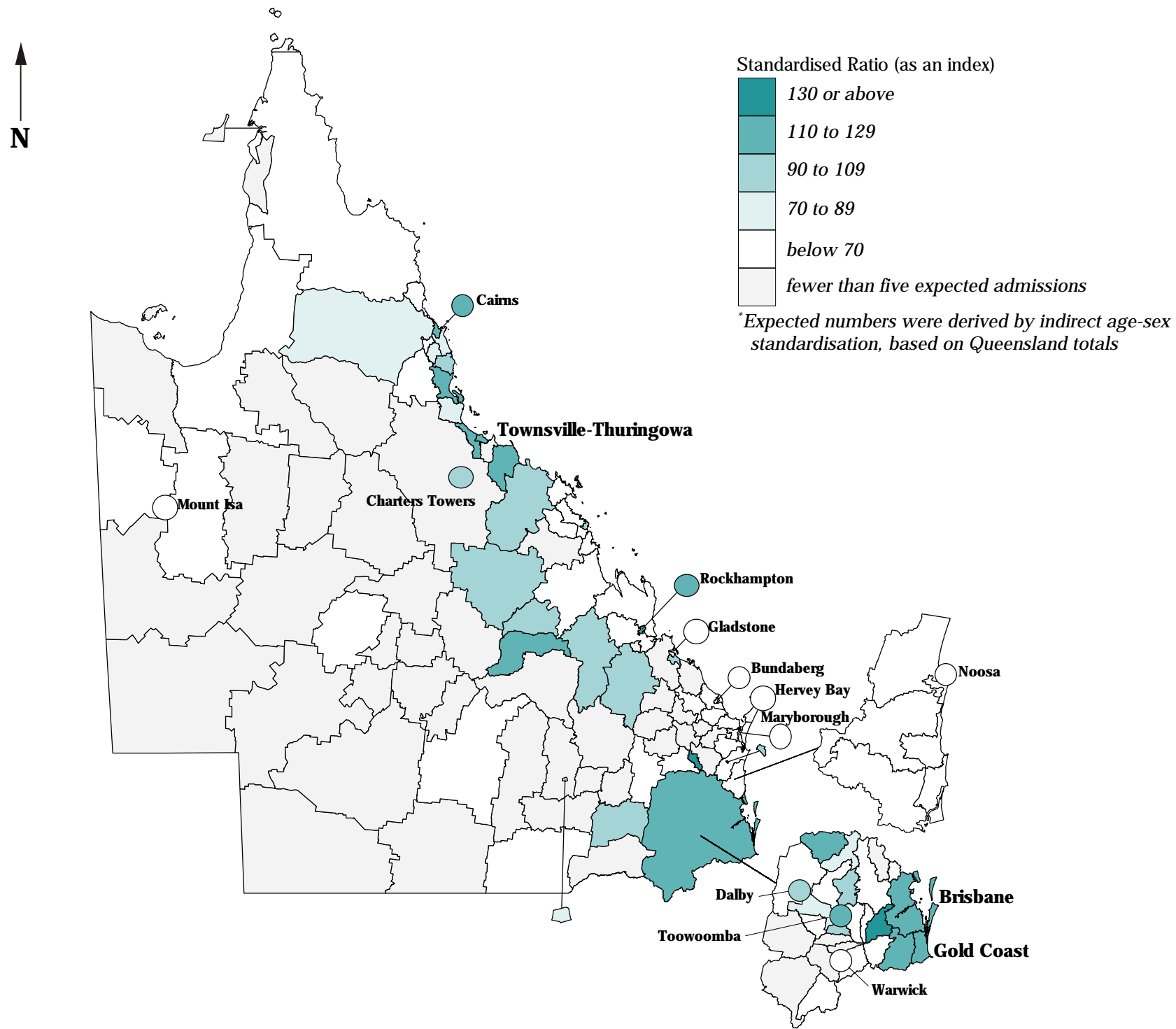
The majority of SLAs (58.0 per cent) were mapped in the lowest range with ratios of below 70. The only SLAs with more than 20 admissions were Maroochy [Part A] and Gladstone, with SARs of 43** and 68, respectively.

By far the largest number of admissions were recorded for residents of Cairns (143 admissions) and Toowoomba (131 admissions). Relatively high numbers of admissions were also recorded in Rockhampton, with 88 admissions; and Mackay [Part A], with 68 admissions.

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

Map 6.42: Admissions of children aged 0 to 9 years for a myringotomy, Queensland, 1995/96

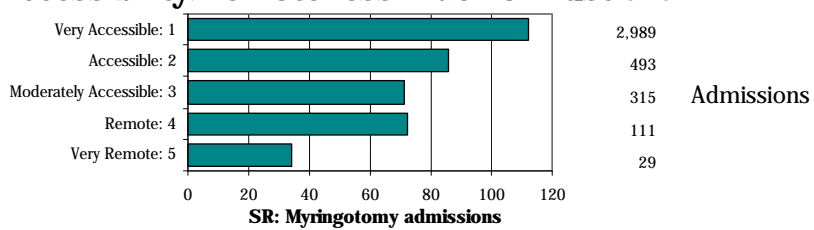
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 admissions of young children involving a myringotomy decrease markedly with increasing remoteness. The highest (and only elevated) ratio is in the areas in the Very Accessible ARIA category (an SAR of 112), dropping to an SAR of 34 in areas in the Very Remote category.

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 6.50: Admissions¹ 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 ²	All capitals
92**	92**	118**	107**	92**	100	115*	90**	97**

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

²Includes 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.

Data for Australia published by the AIHW (1998) showed the Caesarean section rate in Queensland to be 11.6 per cent above that in the other States for which data were available (**Table 6.40**, page 263).

Brisbane (Queensland as the Standard)

In 1995/96 there were 4,742 admissions for Caesarean sections of female residents of **Brisbane** aged between 15 and 44 years. This was 4 per cent more than were expected from the State rates, an SAR of 104**.

The pattern of distribution of the standardised admission ratios for Caesarean sections is high in the mid-north and in a band extending across the mid-south of **Brisbane**, with many lower ratios in and around the city centre (**Map 6.43**).

The most highly elevated ratios in areas to the south of the River were recorded for residents of Gumdale/Ransome/Wakerley (an SAR of 202*), Calamvale/Stretton (166**), Runcorn/Eight Mile Plains (166**), Burbank/Beaumont-Mackenzie (158), Inala/Durack/Doolandella-Forest Lake/Ellen Groves/Richlands (151**), Greenbank [Part B] (151**) and Bellbird Park (147); similarly high ratios were also recorded in the middle northern areas of Bald Hills (182**), Albany Creek (161**) and Ferny Hills/Everton Hills (145**).

The vast majority of areas with SARs in the lowest range mapped for Caesarean sections were in the inner city region. Those with at least 20 admissions included West End/South Brisbane/Highgate Hill (with an SAR of 58**), Rochedale South/Slacks Creek and Coorparoo (both with an SAR of 68*), Toowong and Clayfield/Hendra (both with 69*), East Brisbane/Kangaroo Point (69), Chelmer/Taringa (72*), Milton/Paddington (73), Redcliffe (75**), and Windsor/Lutwyche/ Woolloowin and Keperra/Upper Keperra (both with 82).

Admissions for Caesarean sections occurred most frequently among female residents of Caboolture [Part A] (289 admissions in 1995/96), Ipswich (248), Mt Gravatt/Rochedale (147), Gold Coast [Part A] (137), Birkdale/Ormiston (134) and Inala/Durack/Doolandella-Forest Lake/Ellen Groves/Richlands (130).

Not surprisingly, positive correlation of meaningful significance were recorded with the variables for children aged from 0 to 4 years (0.53) and the Total Fertility Rate (0.58). Despite the inverse correlation of meaningful significance with the variable for dwellings with no motor vehicle (-0.55), there was no consistent evidence of an association at the small area level between high rates of admission for a Caesarean section and socioeconomic status.

Gold Coast-Tweed Heads

There were 2 per cent fewer admissions for Caesarean sections in **Gold Coast-Tweed Heads** than were expected from the State rates (an SAR of 98), a total of 886 admissions.

Residents of Helensvale and Carrara-Merrimac had the highest ratios for this variable, with SARs of 160** and 157** respectively. The lowest ratios were recorded in Surfers Paradise/Benowa (with an SAR of 53**), Broadbeach/Burleigh Heads (61**), Robina/Kerrydale/Burleigh Waters (71*) and Broadbeach Waters/Mermaid Waters (74).

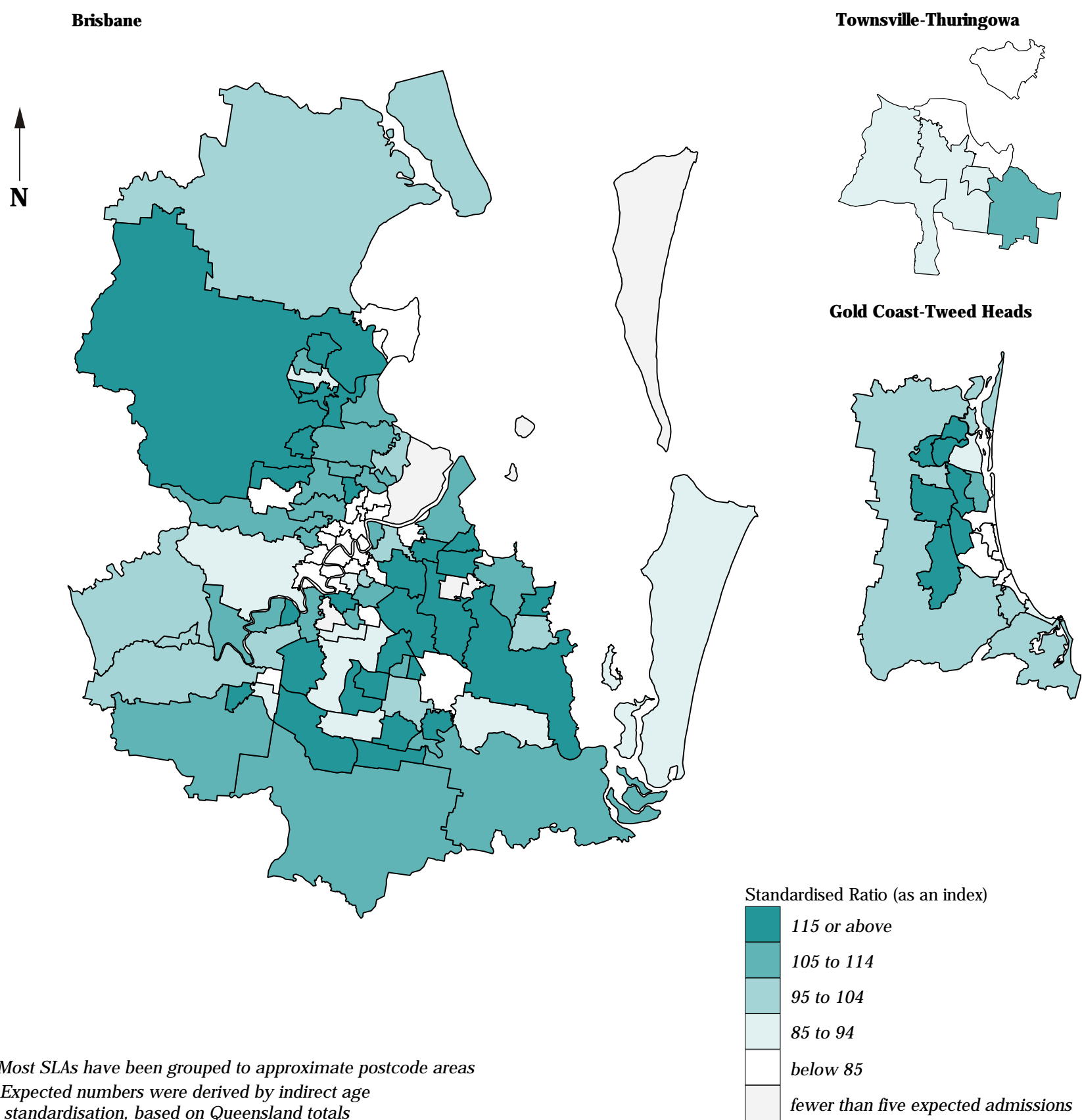
Townsville-Thuringowa

Townsville-Thuringowa had the lowest SAR among the major urban centres, with 14 per cent fewer admissions (346 admissions) than expected (a ratio of 86**).

The only elevated ratio was recorded in Townsville South East, with an SAR of 106. Ratios of below the level expected from the State rates were recorded in Gulliver/Hermit Park (91), Thuringowa [Part A] (89), Murray/Mt Louisa (85) and Townsville Coastal/Magnetic Island (70*).

Map 6.43: Admissions of females aged 15 to 44 years for a Caesarean section, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas

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

Source: Calculated on data from ABS 1996 Census

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 6.51: Admissions¹ 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 ²	95*	78**	106	..	..	..	..	..	97
Rest of State/Territory	105**	107**	109**	123**	99	104	142**	- ³	108**
Whole of State/Territory	96**	95**	112**	111**	94**	102	130**	87**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

Female residents of the non-metropolitan areas of Queensland aged from 15 to 44 years had 3,754 admissions for Caesarean sections in 1995/96. This was 3 per cent fewer than expected from the State rates, an SAR of 97*.

As can be seen from **Map 6.44**, data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates.

SLAs with highly elevated ratios of admissions for Caesarean sections (and with at least 20 admissions) were located:

- just north-west of the city, in Gympie (191**), Kingaroy (157**) and Bundaberg (139**);
- in the far north, in Torres (182**), Mareeba (144**), Eacham (142) and Cook (135);
- just west of **Brisbane**, in Goondiwindi (170**) and Dalby (147*);
- on the coast, in Calliope [Part A] (157**) and Sarina (134); and
- in the south-west, in Balonne (154*).

There were 18 SLAs mapped in the middle range, with ratios within 10 per cent of the level expected from the State rates; however no ratios in this range were of statistical significance. There were 9 per cent more admissions than expected from the State rates in Cairns (with an SAR of 109, 382 admissions), while 10 per cent fewer were recorded in Fitzroy [Part A] (90, 16 admissions).

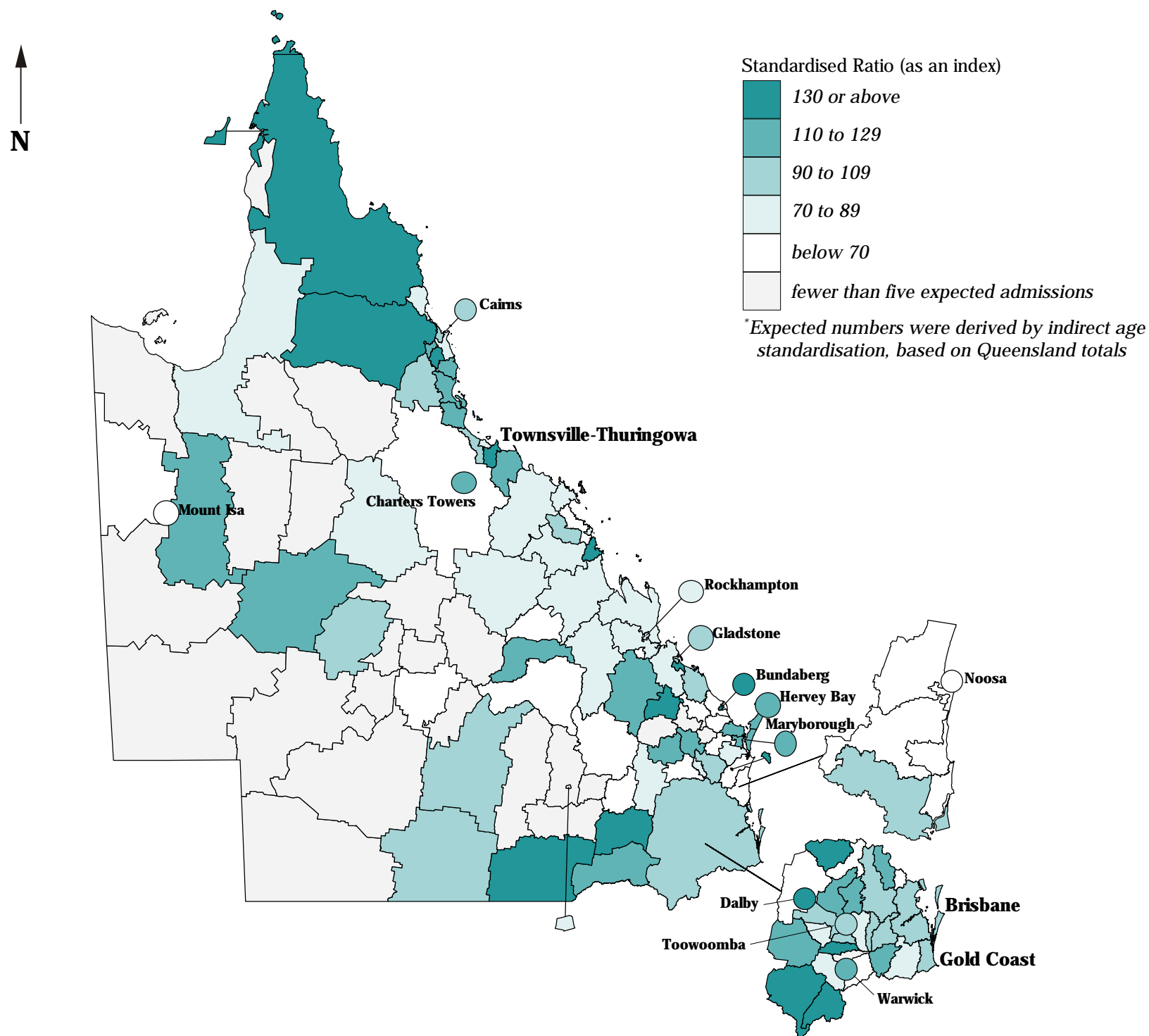
Only six SLAs in the lowest range mapped recorded more than 20 admissions for Caesarean sections: Mount Isa (with an SAR of 67**), Noosa [Part B] (66), Noosa (65**), Maroochy [Part A] (61**), and Cooloola and Caloundra [Part A] (both with 57**).

In 1995/96, more than 100 admissions for Caesarean sections were recorded for female residents in the following SLAs: Cairns (with 382 admissions), Toowoomba (277), Bundaberg (159), Mackay [Part A] (156), Rockhampton (152), Maroochy [Part A] (144) and Hervey Bay (106).

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

Map 6.44: Admissions of females aged 15 to 44 years for a Caesarean section, Queensland, 1995/96

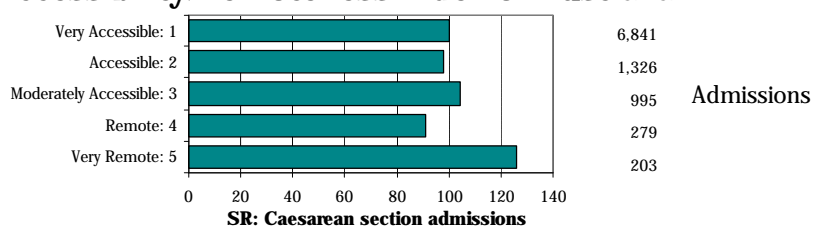
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Calculated on data from ABS 1996 Census

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



Standardised admission ratios (SARs) for admissions of females aged 15 to 44 years involving a Caesarean section are close to the level expected from the State rates in first three ARIA categories. Ratios are lower in the Remote areas (an SAR of 91) and notably higher in the Very Remote areas (an SAR of 126).

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 6.52: Admissions¹ 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 ²	All capitals
86 ^{**}	91 ^{**}	106 ^{**}	102	100	115 ^{**}	135 ^{**}	87 ^{**}	94 ^{**}

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

²Includes 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 an 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: 1,382 admissions and a rate of 1142.7 per one hundred thousand females; 45 to 49 years: 1,312 admissions and a rate of 1146.6 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.

Data for Australia published by the AIHW (1998) showed the hysterectomy rate in Queensland to be 2.0 per cent below that in the other States for which data were available (**Table 6.40**, page 263).

Brisbane (Queensland as the Standard)

Female residents of **Brisbane**, aged 30 years and over had 2,889 admissions for an hysterectomy, 3 per cent more admissions than were expected from the State rates (an SAR of 103).

Low standardised admission ratios were generally mapped in the inner and western regions, while the highest standardised admission ratios were recorded in the far north and in the middle and outer southern areas (**Map 6.45**).

Areas mapped in the highest range, with at least 20 admissions of females aged 30 years and over for an hysterectomy, were recorded in the far northern areas of Petrie (an SAR of 183^{**}), Bray Park (145), Nudgee Beach/Virginia (138), Caboolture [Part A] (129^{**}), Kallangur (126) and Pine Rivers Balance (116); in the middle south in Algester/Parkinson-Drewvale (162^{**}), Mt Gravatt/Rochedale (144^{**}), MacGregor/Pallara-Heathwood-Larapinta (116) and Inala/Durack/Doolandella-Forest Lake/Ellen Grove/Richlands (116); and in the outer southern regions of Marsden (139^{*}), Greenbank [Part B] (142) and Gold Coast [Part A] (117). Also mapped in this category were the areas of Cleveland, (an SAR of 139), Balmoral/Bulimba/Hawthorne (117) and Coorparoo (116).

Residents of Waterford West had the lowest ratio for this variable, an SAR of 34: however, there were only three admissions (when 8.7 were expected by the State rates). Statistically significant ratios in the lowest range mapped were recorded in the areas of Annerley/Fairfield (an SAR of 52^{*} and 10 admissions), Holland Park/Tarragindi (61^{**}; 27 admissions) and Rochedale South/Slacks Creek (63^{**}; 53 admissions). These were the only areas to record statistically significant ratios below the level expected from the State rates.

In 1995/96, the largest numbers of female admissions for an hysterectomy were recorded in Caboolture [Part A] (with 214 admissions), Ipswich (139), Redcliffe (116) and Mt Gravatt/Rochedale (110).

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

Gold Coast-Tweed Heads

Admissions for an hysterectomy of female residents of **Gold Coast-Tweed Heads** were 7 per cent lower than expected from the State rates, an SAR of 93. In total, there were 628 such admissions recorded for female residents aged 30 years and over.

Ratios elevated by at least 30 per cent were recorded for residents of Coolangatta/Tugun and Hope Island, with SARs of 146 and 143, respectively. Those mapped in the lowest range were Gold Coast [Part B] Balance (80), Broadbeach Waters/Mermaid Waters (74), Broadbeach/Burleigh Heads (61^{*}), Nerang (58^{**}) and Currumbin Waters/Elanora (55^{**}).

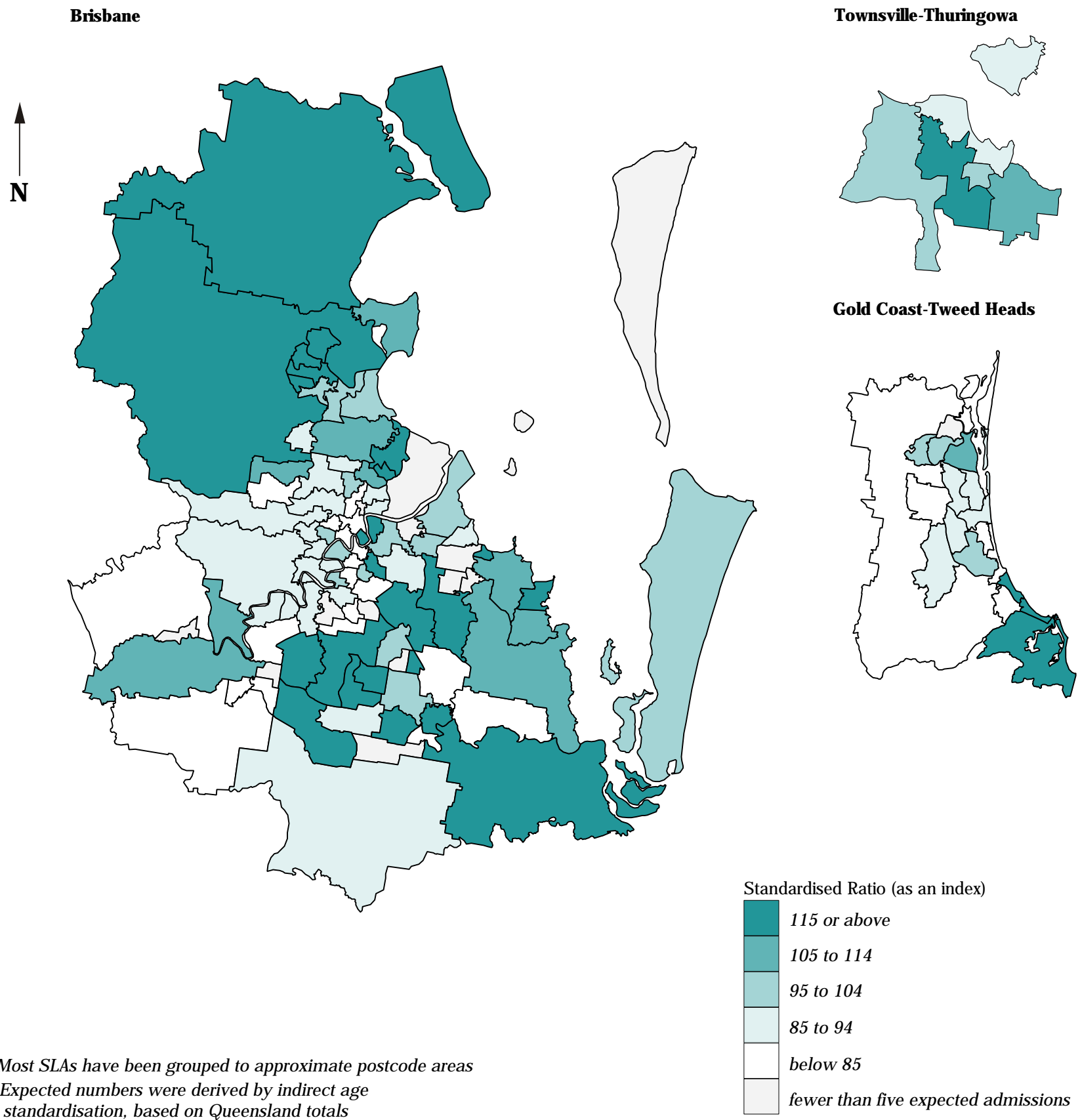
Townsville-Thuringowa

Female residents aged 30 years and over in **Townsville-Thuringowa** had 230 admissions for an hysterectomy in 1995/96, 10 per cent more than expected (an SAR of 110).

There were 40 per cent more admissions than expected in the area from Murray to Mt Louisa (a ratio of 140^{**}), with 2 per cent and 7 per cent fewer than expected in Thuringowa [Part A] (with an SAR of 98) and Townsville Coastal/Magnetic Island (93), respectively.

Map 6.45: Admissions of females aged 30 years and over for an hysterectomy, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas

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

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 6.53: Admissions¹ 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 ²	125**	103	98	..	..	..	..	..	114**
Rest of State/Territory	113**	108**	102	135**	106	120**	92	.. ³	110**
Whole of State/Territory	98*	95**	104**	110**	101	118**	113*	83**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

There were 2,492 admissions for hysterectomies of female residents aged 30 years and over of the non-metropolitan areas of Queensland, marginally lower than expected from the State rates (an SAR of 99).

Data for a number of SLAs have not been mapped for this variable, as there were considered to be too few cases from which to calculate reliable rates. As can be seen from **Map 6.46**, the areas that did record data were generally located along the coastal region. SLAs with SARs in the highest range mapped and with at least ten admissions of females for hysterectomy were recorded:

- just north-west of the city, in Gympie (228**) and Bundaberg (142**);
- just west of **Brisbane**, in Tara (194*), Cambooya (174), Dalby (157*), Warwick (156*), Crows Nest (152*), Stanthorpe (143) and Toowoomba (141**); and
- further north-west of the city, in Charters Towers (173**), Bowen (144*), Mirani (140) and Mackay [Part A] (130**).

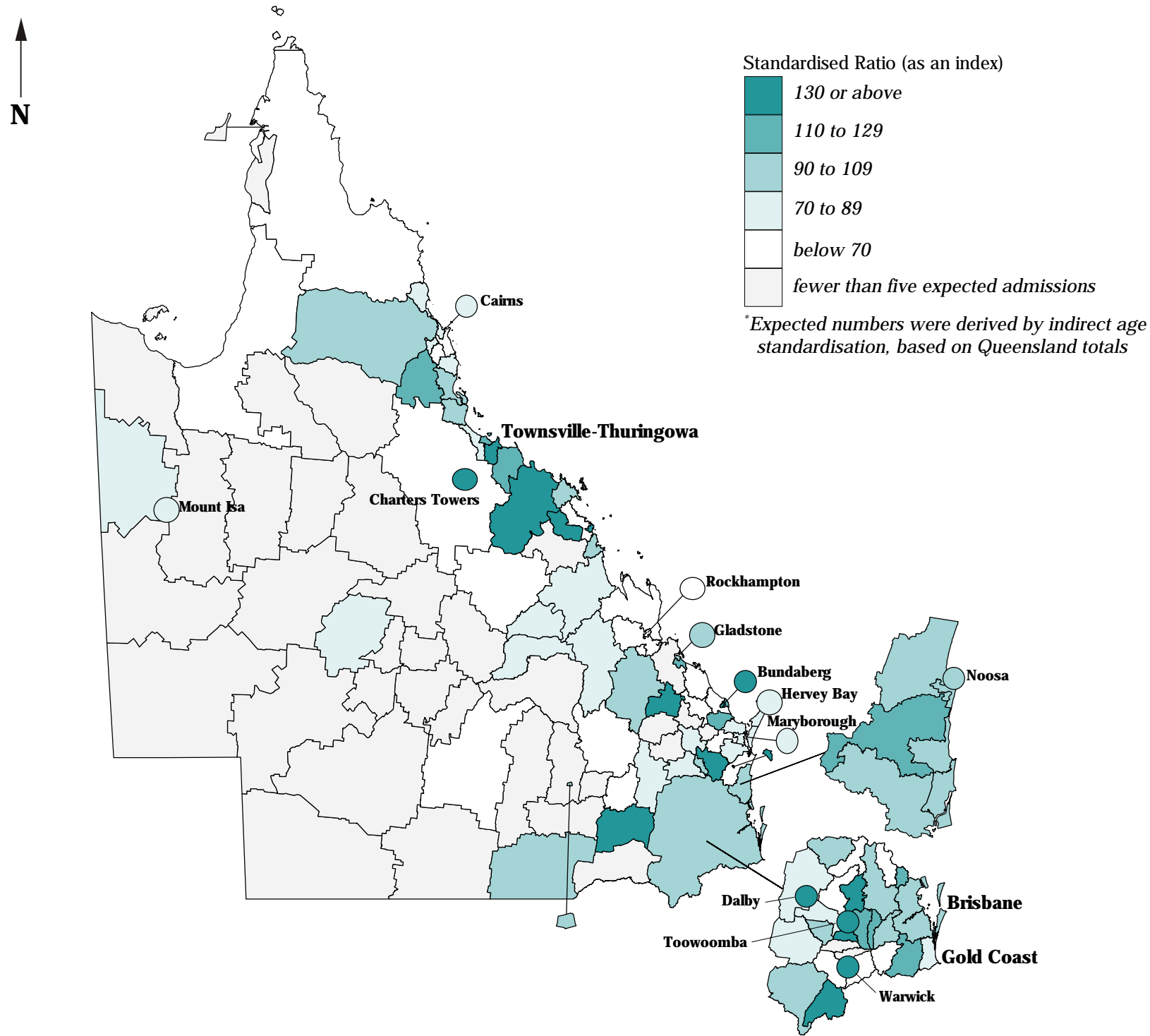
Only six SLAs with SARs in the lowest range mapped had at least ten admissions: Rockhampton (with an SAR of 69**), Mackay [Part B] (67), Rosalie (64), Nanango (57), Livingstone (51**) and Cooloola (31**). By far the lowest ratios were recorded for residents of Miriam Vale (an SAR of 15*) and Taroom (an SAR of 20): however only one admission was recorded in each of these SLAs (compared to an expected 6.7 and 5.0, respectively).

The largest numbers of admissions of females aged 30 years and over for an hysterectomy were recorded in the SLAs of Toowoomba (with 228 admissions), Maroochy [Part A] (168), Cairns (150), Mackay [Part A] (139), Bundaberg (123) and Caloundra [Part A] (94).

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

Map 6.46: Admissions of females aged 30 years and over for a hysterectomy, Queensland, 1995/96

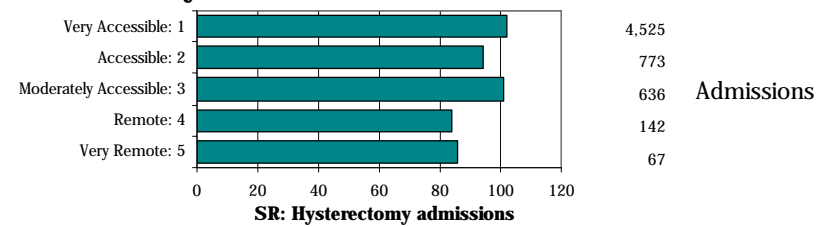
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 admissions of females aged 30 years and over involving a hysterectomy are close to the level expected from the State rates in first three ARIA categories and lower in the most remote areas. The highest ratios are in the Very Accessible and Moderately Accessible areas (with SARs of 102 and 101, respectively) and the lowest are in the Remote and Very Remote areas (with SARs of 84 and 86, respectively).

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 6.54: Admissions¹ with a principal procedure of hip replacement, capital cities, 1995/96
Standardised admission ratios

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ²	All capitals
91**	103	75**	99	90**	135**	51**	112	94**

¹Includes admissions to public acute hospitals and private hospitals

²Includes 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 (50.3 per cent) the admissions for a hip replacement in Queensland in 1995/96. Overall, the admission rate is marginally higher for females than males, however there is some variation between the age groups. Rates for 65 to 69 year olds are 241.4 admissions per 100,000 population for females and 356.4 for males; for 75 to 79 year olds, rates are 457.6 and 393.7 respectively; and for those aged 85 years and over, they are 277.1 and 332.2 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 61.2 per cent (76.2 per cent for males 60 years and over).

Data for Australia published by the Australian Institute of Health and Welfare (1998) showed there were 14.9 per cent fewer procedures for hip replacement performed in Queensland than in the other States for which data were available (**Table 6.40**, page 263).

Brisbane⁸ (Queensland as the Standard)

In 1995/96, there were 821 admissions of residents in **Brisbane** for hip replacements, 5 per cent fewer than were expected from the State rates (an SAR of 95). Of the 821 admissions, 459 were females and 362 were males.

Ratios elevated by 15 per cent or more were recorded for residents of Gold Coast [Part A] (an SAR of 159* and 30 admissions), Toowong (an SAR of 152 and 11 admissions), Inala/Durack/Doolandella-Forest Lake/Ellen Grove/Richlands (an SAR of 142 and 22 admissions), Caboolture [Part A] (an SAR of 139** and 73 admissions), Cleveland (an SAR of 131 and 12 admissions), East Brisbane/Kangaroo Point (an SAR of 130 and

⁸As there were relatively few areas with sufficient cases to analyse for this variable in the non-metropolitan areas of Queensland, the data have not been mapped. A summary of the main features is on 303.

seven admissions) and Lota/Manly/Manly West (an SAR of 115 and 12 admissions).

Areas with SARs for hip replacements in the lowest range mapped were scattered throughout the State in no notable pattern (**Map 6.47**): the majority of ratios in this category accounted for fewer than 20 admissions. Ratios below the level expected from the State rates (and with more than 20 admissions) were recorded in the areas of Bridgeman Downs/Boondall (an SAR of 83), Ipswich (91), Camp Hill/Carindale (92) and MacGregor/Pallara-Heathwood-Larapinta (94).

There were 30 or more admissions for hip replacements recorded for residents of Caboolture [Part A] (73 admissions), Redcliffe (45), Ipswich (39), and Gold Coast [Part A] and Mt Gravatt/Rochedale (both with 30 admissions).

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

Gold Coast-Tweed Heads

Residents of **Gold Coast-Tweed Heads** had 17 per cent more admissions for hip replacements than were expected from the State rates (an SAR of 117**), with a total of 302 admissions.

Residents of Nerang recorded more than two and a half times the number of admissions than expected, with an SAR of 251**. Other ratios in the highest range mapped were recorded in the coastal areas of Hope Island (205), Broadbeach/Burleigh Heads (180**), Oxenford (172), Surfers Paradise/Benowa (142*), Tweed Heads (123) and Paradise Point/Biggera Waters (120). Ratios below the level expected from the State rates ranged from 54 in Worongary-Tallai/Mudgeeraba to 95 in Helensvale.

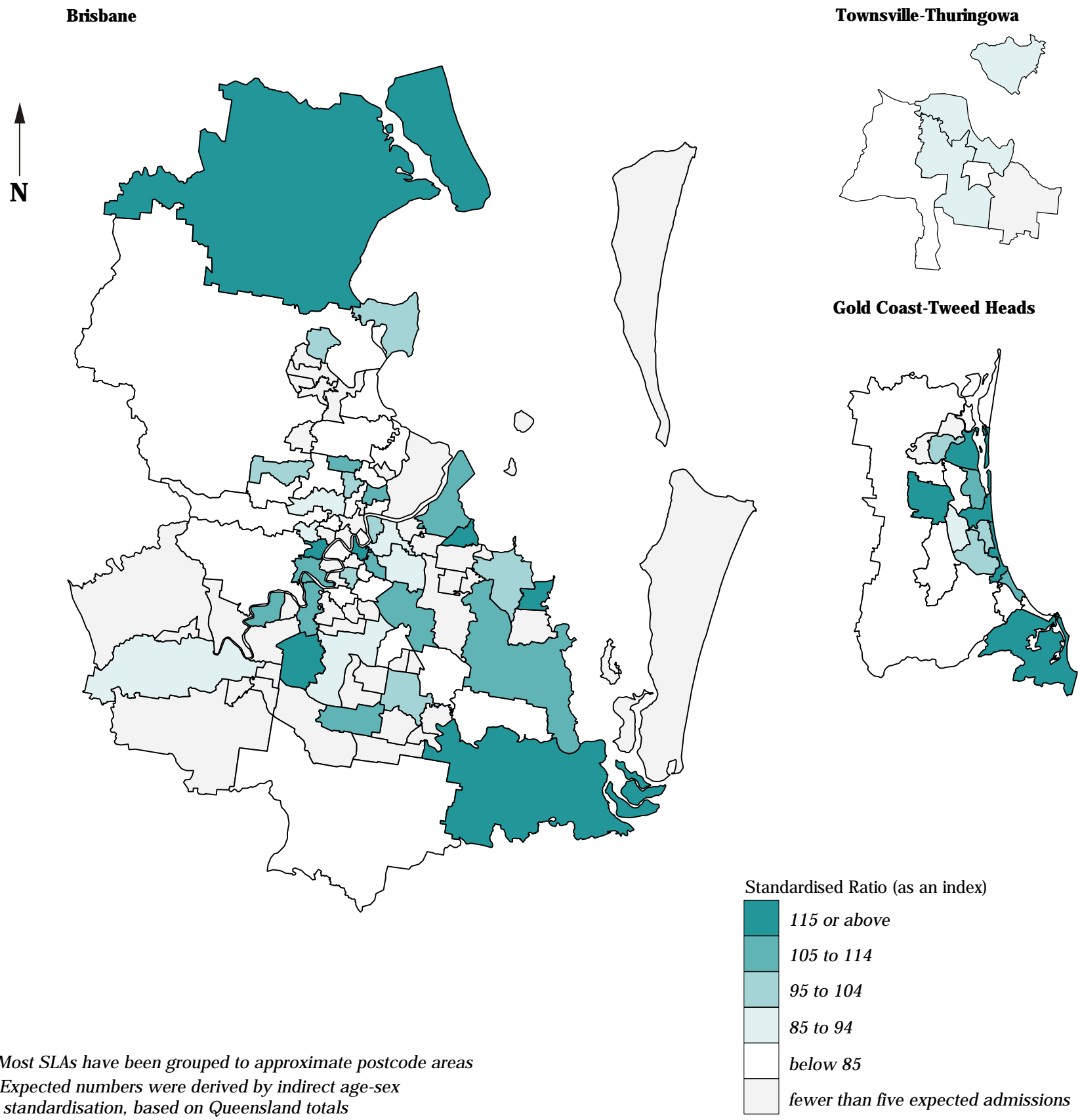
Townsville-Thuringowa

Townsville-Thuringowa had an SAR of 78, indicating that there were 22 per cent fewer admissions for hip replacements than were expected, with a total of 45 admissions.

The areas of Murray/Mt Louisa, Townsville Coastal/Magnetic Island and Townsville South East had ratios of 87, 87 and 79 respectively, while Thuringowa [Part A] had the lowest ratio of 53. All areas recorded fewer than 20 admissions.

Map 6.47: Admissions for a hip replacement, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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

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^{**}). The lowest SARs were in **Canberra**, with a very low SAR of 36^{**}, and Perth (84^{**}).

Table 6.55: Admissions¹ for a lens insertion, capital cities, 1995/96
Standardised admission ratios

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ²	All capitals
102 ^{**}	97 ^{**}	105 ^{**}	93 ^{**}	84 ^{**}	99	130 ^{**}	36 ^{**}	97 ^{**}

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

²Includes 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.

Data for Australia published by the AIHW (1998) showed the lens insertion rate in Queensland to be 29.5 per cent above that in the other States for which data were available (**Table 6.40**, page 263).

Brisbane (Queensland as the Standard)

In 1995/96, there were 7,487 admissions involving a lens insertion in **Brisbane**, representing 12 per cent fewer admissions than were expected from the State rates, an SAR of 88^{**}. Females comprised 59.3 per cent of these admissions (4,442 admissions), compared with 3,045 male admissions (40.7 per cent).

As **Map 6.48** shows, the majority of areas had ratios in the lowest ranges, with only 15 mapped in the two highest class intervals. Above average ratios for this procedure were scattered throughout the metropolitan region, while lower ratios were generally located south of the Brisbane River.

Residents of Greenbank [Part B], located in the south, had 72 per cent more admissions than expected from the State rates (an SAR of 172^{**}). The other six areas mapped in the highest range were Dutton Park/Woolloongabba (with an SAR of 129), Chelmer/Taringa (127^{**}), Ipswich (122^{**}), Albany Creek (120), and Bray Park and Lota/Manly/Manly West (both with 117).

Thirteen areas had SARs in the middle range mapped for lens insertions, ranging from 104 in Kedron to 95 in both Nudgee Beach/Virginia and East Brisbane/Kangaroo Point.

The majority of areas were mapped in the two lowest ranges - 46 in the lowest (50.0 per cent) and 18 in the second lowest (19.6 per cent). The lowest ratios in areas with more than 20 admissions were recorded in Rochedale South/Slacks Creek (an

SAR of 49^{**}), Greenbank [Part A]/Beaudesert (50^{**}), Herston/Newstead (56^{**}), Berrinba-Karawatha/Kingston (58^{**}), Browns Plains (61^{**}), Jindalee/River Hills (69^{**}), Cannon Hill/ Morningside/ Norman Park (71^{**}), Ascot/Hamilton (72^{**}), Ferny Hills/Everton Hills (73), Toowong (74), Caboolture [Part A] (75^{**}) and Runcorn/Eight Mile Plains (75^{**}).

The largest numbers of admissions involving a lens insertion in **Brisbane** were recorded for residents of Ipswich (with 506 admissions), Redcliffe (398 admissions), Caboolture [Part A] (362 admissions), Mt Gravatt/Rochedale (280 admissions) and Bridgeman Downs/Boondall (276 admissions).

There was some evidence in the correlation analysis for the existence of a weak association at the small area level between high rates of admissions for a lens insertion and high socioeconomic status.

Gold Coast-Tweed Heads

A total of 3,414 admissions involving a lens insertion were recorded for residents of **Gold Coast-Tweed Heads** (an SAR of 134^{**}). Females accounted for a larger proportion of these admissions, with 1,909 admissions (55.9 per cent).

Elevated ratios were recorded in the majority of areas, ranging from 182^{**} in Arundel/Ashmore to 106 in Oxenford. Fewer admissions than expected were recorded for residents of Broadbeach Waters/Mermaid Waters (with a ratio of 97), Worongary-Tallai/Mudgeeraba (96), Currumbin Waters/Elanora (92) and Carrara-Merrimac (81).

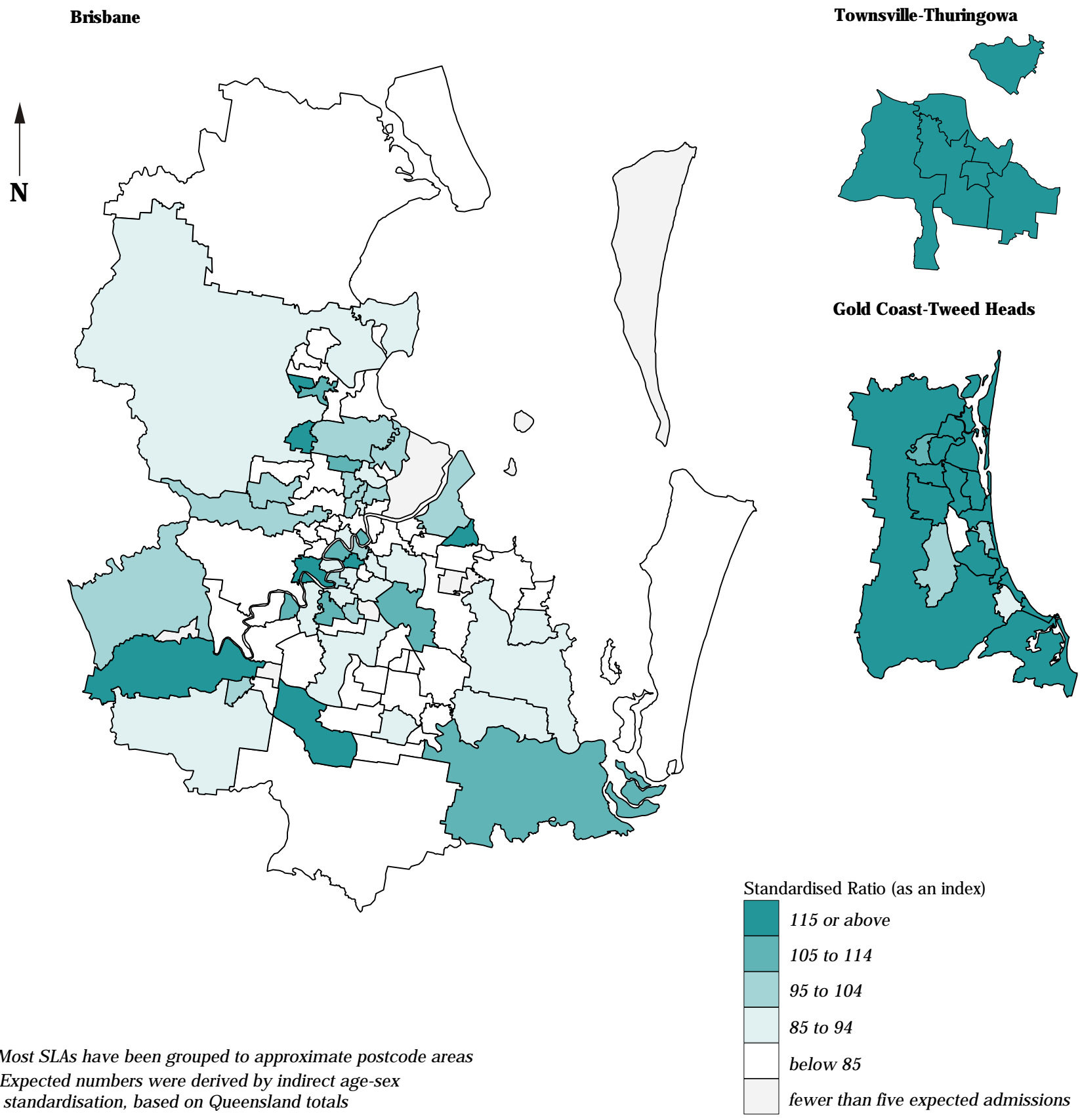
Townsville-Thuringowa

There were 53 per cent more admissions than expected from the State rates recorded for residents of **Townsville-Thuringowa**, an SAR of 153^{**}. Of the 825 admissions, 494 were females and 331 were males.

All areas were mapped in the highest range, of 15 per cent or more above the level expected from the State rates. The highest ratios were recorded in the areas of Murray/Mt Louisa (with an SAR of 171^{**}), Townsville South East (157^{**}) and Gulliver/Hermit Park (153^{**}). The lowest ratios were recorded in Townsville Coastal/Magnetic Island and Thuringowa [Part A], with SARs of 150^{**} and 130^{**} respectively.

Map 6.48: Admissions for a lens insertion, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

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 6.56: Admissions¹ 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 ²	103	73**	163**	..	..	..	..	..	120**
Rest of State/Territory	112**	78**	119**	93**	89**	82**	104	- ³	101*
Whole of State/Territory	105**	91**	119**	93**	85**	89**	117**	35**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

In the non-metropolitan areas of Queensland, there were 7,752 admissions involving a lens insertion, of which 4,414 admissions (56.9 per cent) were females and 3,338 admissions (43.1 per cent) were males. This was the same number of admissions as were expected from the State rates (an SAR of 100).

As can be seen from **Map 6.49**, the most highly elevated ratios were clustered in two distinct areas, through the centre of the State and in the far north, while those with the lowest ratios were distributed throughout much of the lower south-east.

SLAs with admission ratios for lens insertion elevated by thirty per cent or more were recorded:

- in the central SLAs of Winton (an SAR of 290** and 22 admissions), Mackay [Part A] (240** and 706 admissions), Whitsunday (238** and 123 admissions), Sarina (236** and 108 admissions), Aramac (213* and 11 admissions), Burdekin (173** and 202 admissions), Charters Towers (165** and 92 admissions), Mirani (153* and 31 admissions), Nebo (149 and nine admissions), Hinchinbrook (149** and 142 admissions), Gympie (140** and 152 admissions) and Belyando (139 and 30 admissions); and
- in the far north, in Richmond (220** and 12 admissions), Cook (182** and 28 admissions), Carpentaria (163 and 15 admissions) and Flinders (148 and 17 admissions).

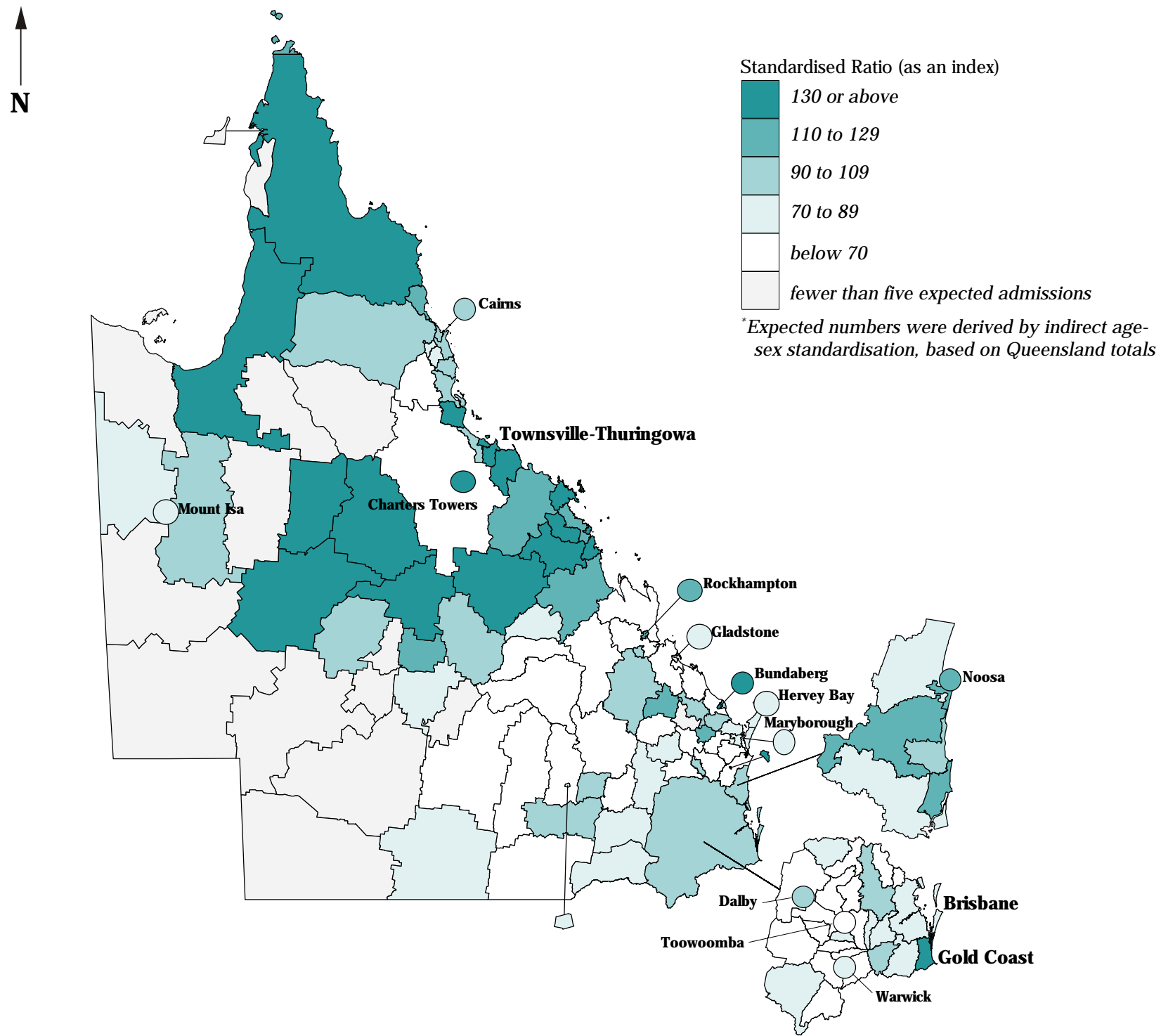
More than two thirds of the SLAs (66.4 per cent) in the non-metropolitan areas of Queensland had ratios that were lower than expected for lens insertion. Excluding SLAs with fewer than 20 admissions, the lowest SARs were in Cooloola, Jondaryan, Calliope [Part A] and Rosalie, with ratios of 46**, 53**, 54** and 55** respectively.

In 1995/96, the largest number of admissions involving a lens insertion was recorded for residents of Mackay [Part A], 706 admissions. More than 400 admissions were also recorded in Maroochy [Part A] (632 admissions), Caloundra [Part A] (517), Bundaberg (456) and Rockhampton (440).

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

Map 6.49: Admissions for a lens insertion, Queensland, 1995/96

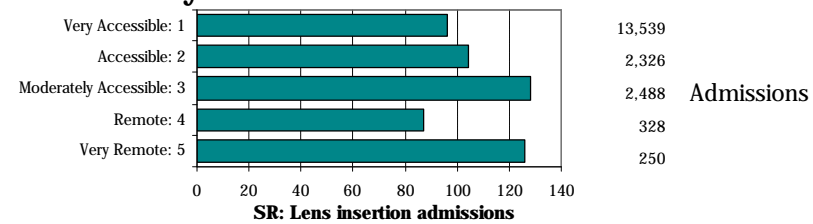
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 the graph for admissions involving a lens procedure. The first is across the 'accessible' categories, from an SAR of 96 in the Very Accessible areas to 128 (and the highest ratio) in the Moderately Accessible areas. The second is from the lowest ratio (an SAR of 87) in the Remote areas, to an SAR of 126 in the 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 6.57: Admissions¹ with a principal procedure of endoscopy, capital cities, 1995/96
Standardised admission ratios

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ²	All capitals
110**	111**	115**	81**	82**	111**	92**	58**	104**

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

²Includes 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.

Data for Australia published by the AIHW (1998) showed the endoscopy rate in Queensland to be 5.9 per cent above that in the other States for which data were available (**Table 6.40**, page 263).

Brisbane (Queensland as the Standard)

There were 35,068 admissions for endoscopies in **Brisbane** in 1995/96, 7 per cent more admissions than were expected from the State rates, an SAR of 107**. Of the 35,068 admissions, 19,272 were females (55.0 per cent) and 15,796 were males (45.0 per cent). The vast majority of the admissions (86.1 per cent, 30,185 admissions) were performed on a same day basis.

High SARs for endoscopies were generally mapped to the north and south-east of the city, while those in the lowest ranges were scattered through the inner, southern and western metropolitan areas (see **Map 6.50**). However, there were only 14 areas mapped in the lowest range.

Just under one third of the SLAs (32.7 per cent) were mapped in the highest range, with ratios elevated by 15 per cent or more. The highest of these, with 48 per cent more admissions than expected, was recorded for residents of Chermide West/Chermide (an SAR of 148**). Elevated ratios located in the mid north, were found in the areas of Chermide West/Chermide (148**), Bridgeman Downs/Boondall (147**), Ascot/Hamilton (138**), Albany Creek (136**), Northgate (136**), Stafford Heights/Mitchelton (135**), Pinkenba-Eagle Farm (132), Windsor/ Lutwyche/Woolloowin (128**), Nundah/Wavell Heights (128**), Nudgee Beach/Virginia (124**), Clayfield/Hendra (124**), Redcliffe (124**), Bracken Ridge/Sandgate (122**), Strathpine (120**), Petrie (119), Kallangur (118**) and Bald Hills (116).

Low ratios, in areas with at least 20 admissions, to the south of the city were recorded in Waterford West, with an SAR of 56**, Greenbank [Part A]/Beaudesert (61**), and Rochedale South/Slacks Creek (67**); and those situated in the inner region included Dutton Park/Woolloongabba (69**) and Rocklea (71). Other low ratios were in the areas of Carole Park (an SAR of 68**), Moreton Balance (68**) and Bellbird Park (69**), all of which are situated in the west.

In 1995/96, more than 1,500 admissions for endoscopies were recorded for residents of Caboolture [Part A] (with 1,716 admissions), Redcliffe (1,674) and Bridgeman Downs/Boondall (1,519).

There were correlations with the indicators of high socioeconomic status and weak inverse correlations with the indicators of socioeconomic disadvantage. These results, together with the weak correlation with the IRSD (0.22), suggest the existence of an association at the small area level between high rates of admissions for endoscopies and high socioeconomic status.

Gold Coast-Tweed Heads

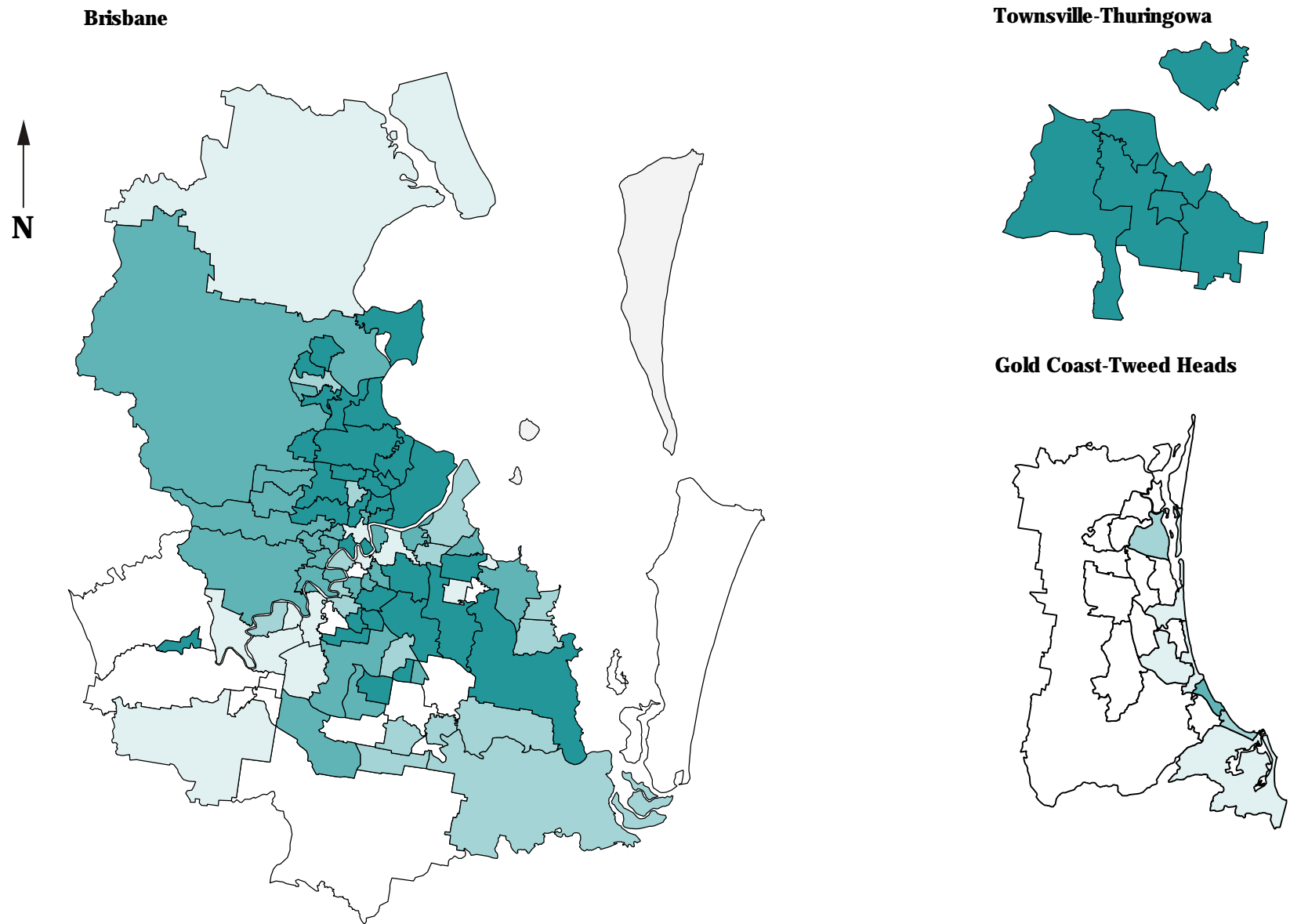
Residents of **Gold Coast-Tweed Heads** recorded 7,280 admissions (3,972 females and 3,308 males) for endoscopies in 1995/96, 15 fewer than expected, with an SAR of 85**. The areas of Palm Beach/Currumbin and Coolangatta/Tugun recorded the highest, and only elevated, ratios for this variable, with SARs of 105 and 104, respectively. Other ratios ranged from 62** in Oxenford to 97 in Paradise Point/Biggera Waters.

Townsville-Thuringowa

Townsville-Thuringowa had the highest ratio among the major urban centres, with 37 per cent more admissions for endoscopies than were expected from the State rates (a ratio of 137**). Of the 3,338 admissions, 1,742 (52.2 per cent) were females and 1,596 were males. All areas recorded more admissions for endoscopies than were expected from the State rates, with ratios elevated by 25 per cent or more. The most highly elevated ratio was recorded for residents of Murray/Mt Louisa, an SAR of 159**, while residents of Townsville Coastal/Magnetic Island had the lowest SAR of 126**.

Map 6.50: Admissions for an endoscopy, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1995/96

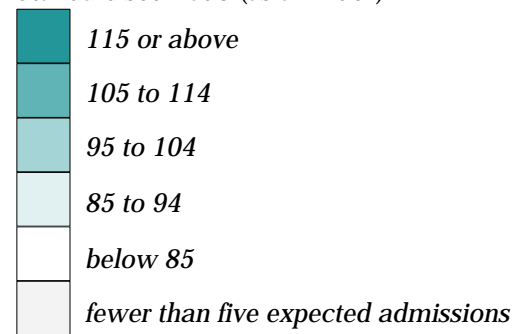
Standardised Ratio: number of admissions in each area* compared with the number expected#



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age-sex standardisation, based on Queensland totals

Source: See Data sources, Appendix 1.3

Standardised Ratio (as an index)



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 6.58: Admissions¹ 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 ²	97**	70**	104**	..	..	..	..	..	97**
Rest of State/Territory	92**	104**	101*	62**	80**	77**	66**	- ³	93**
Whole of State/Territory	104**	108**	108**	76**	82**	108**	78**	58**	100

¹Includes admissions to public acute hospitals, private hospitals and day surgery facilities, including admissions of same day patients

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

³Data 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 State (Queensland as the Standard)

There were 28,822 admissions of residents of the non-metropolitan areas of Queensland for endoscopies in 1995/96, 6 per cent fewer than expected from the State rates (an SAR of 94**). Females accounted for 51.5 per cent of these admissions.

As can be seen from **Map 6.51** a large number of the SLAs were mapped in the lowest ranges, with only 14 SLAs mapped in the highest (10.8 per cent). SLAs with ratios of admissions for endoscopies elevated by at least ten per cent (the two highest ranges mapped) were recorded:

- in the far north in Etheridge (175**);
- just west of **Brisbane**, in Clifton (162**), Toowoomba (144**), Millmerran (138**), Dalby (127**), Goondiwindi (115), Pittsworth (114), Crows Nest (112) and Cambooya (111);
- just north-west of the city, in Isis (160**) and Gympie (118**);
- further north-west of the city, in Thuringowa [Part B] (157**), Townsville [Part B] (149**), Charters Towers (138**), Mackay [Part A] (136**), Hinchinbrook (136**), Blackall (135*), Mirani (118), Fitzroy [Part A] (113), Broadsound (113) and Burdekin (111*);
- in the south-west, in Paroo (151**), Balonne (130**) and Roma (123**); and
- in the far north-west, in Richmond (120) and Flinders (118).

SLAs with SARs for endoscopies falling within the range of 10 per cent above or below the expected number of admissions were widespread throughout the State, and in no notable pattern. Of the 31 areas in this class interval only Rockhampton, with an SAR of 108**, and Bundaberg, with an SAR of 107* had ratios of statistical significance.

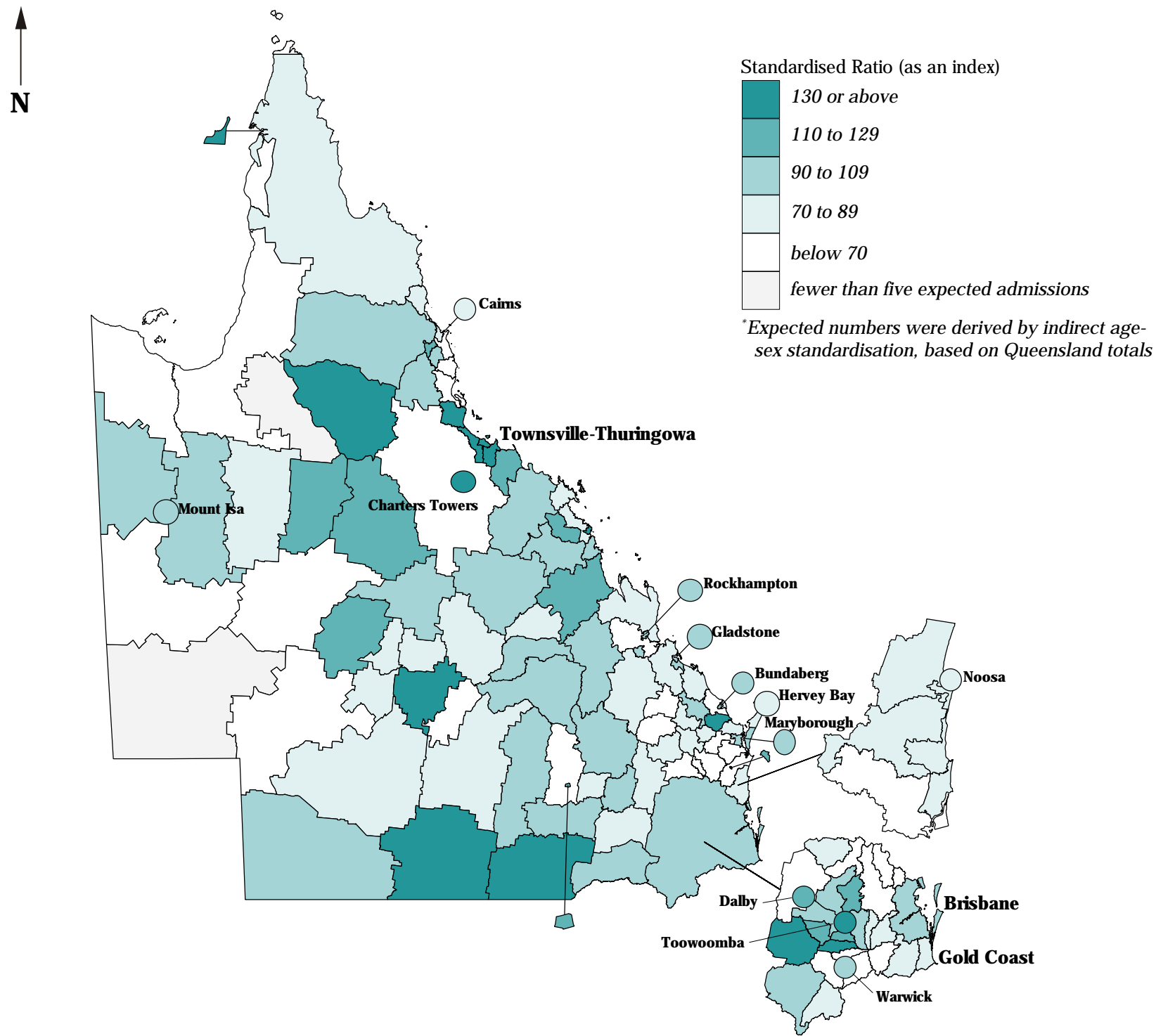
By far the lowest ratio was recorded in Cooloola and Burnett [Part B], with 75 per cent fewer admissions than expected (both with an SAR of 25**). Low ratios in areas with more than 20 admissions were also recorded in Carpentaria (with an SAR of 35**), Torres (36**), Warwick West (36**), Woocoo (42**), Bungil (42**), Wambo (44**) and Kilkivan (44**).

The largest numbers of admissions for endoscopies in rural Queensland were recorded in Toowoomba (2,930 admissions), Maroochy [Part A] (1,782), Mackay [Part A] (1,660), Cairns (1,648), Rockhampton (1,497), Bundaberg (1,196) and Caloundra [Part A] (1,161).

There was some evidence in the correlation analysis for the existence of a weak association at the SLA level between high rates of admissions for an endoscopy and high socioeconomic status.

Map 6.51: Admissions for an endoscopy, Queensland, 1995/96

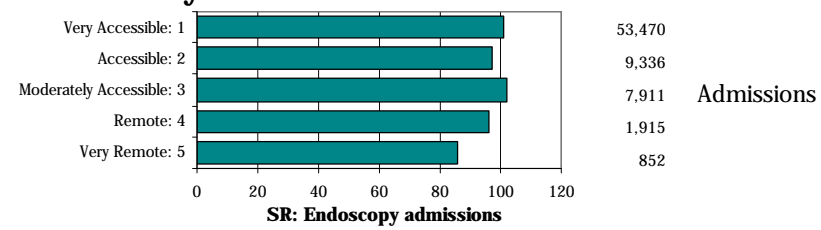
Standardised Ratio: number of admissions in each Statistical Local Area compared with the number expected*



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 admissions involving an endoscopy are close to the level expected from the State rates in first four ARIA categories, varying from an SAR of 102 in the Moderately Accessible areas to 96 in the Remote areas. The lowest SAR (of 86) is in the areas in the Very Remote category.

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

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The information on these three pages provides summary details for variables where it was considered that there were too few cases to map the data at the SLA level. Where SLA data is available it is in the tables in Volume 4.2.

Admissions for lung cancer, 1995/96

State/Territory comparison (Australia as the Standard)

Standardised admission ratios (SARs) for admissions for lung cancer (described on page 226) 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 6.59).

There was relatively little change in the ratios for the non-metropolitan areas between the periods shown in Table 6.59.

Table 6.59: Admissions with a principal diagnosis of lung cancer, State/Territory
Age-sex standardised admission ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1995/96¹									
Capital city	88**	99	121**	121**	89**	95	100	54**	98
Other major urban centres ²	72**	116	92	..	..	..	..	..	83**
Rest of State/Territory	99	105	117**	135**	91	114*	116	- ³	108**
Whole of State/Territory	89**	102	114**	125**	90**	106	108	42**	100
1989⁴									
Rest of State/Territory	94**	..	121**	126**	87*	..	119	..	106**

¹Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

³Data unreliable: included with ACT total

⁴Excludes 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 State (Queensland as the Standard)

There were 1,365 admissions for lung cancer in the non-metropolitan areas of Queensland, 2 per cent more than expected from the State rates (an SAR of 102). Three quarters of the admissions (75.3 per cent) were males.

SLAs with ratios elevated by 30 per cent or more were located:

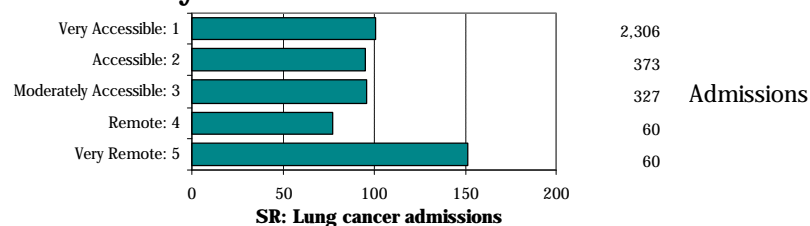
- in the far north in Mulgrave [Part B] (now known as Cairns [Part B]) (an SAR of 293**, 15 admissions) and Atherton (194**, 22 admissions);
- north-west of **Brisbane** in Isis (267**, 18 admissions), Esk (155*, 21 admissions), Maroochy [Part B] (143, 27 admissions), Banana (132, 15 admissions) and Nanango (131, 13 admissions);
- on the coast, north of **Brisbane** - in Noosa [Part B] (201**, 24 admissions), Gympie (175**, 25 admissions), Maroochy [Part A] (147**, 151 admissions) and Mackay [Part A] (135*, 66 admissions); and
- in the south west in Roma (138, 7 admissions).

Of the SLAs with at least 20 admissions, only Rockhampton (with an SAR of 72* and 43 admissions), recorded a ratio of statistical significance in the lowest range mapped. The only other SLA in this range with more than 20 admissions was Maryborough, with 28 per cent fewer admissions than expected from the State rates (an SAR of 72).

In 1995/96, residents of the SLA of Maroochy [Part A] recorded the largest number of admissions for lung cancer in regional Queensland, 151 admissions. A high number of admissions were also recorded for residents of Caloundra [Part A], with 80 admissions, Toowoomba, with 75 admissions, Cairns, with 69 admissions and Mackay [Part A], with 66 admissions.

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

Accessibility/Remoteness Index of Australia



Standardised admission ratios (SARs) for lung cancer are close to the level expected from the State rates in the Very Accessible, Accessible and Moderately Accessible ARIA categories (with SARs of 101, 95 and 96, respectively). The lowest ratio is in the Remote areas (an SAR of 77) and the highest is in the Very Remote areas, an elevated SAR of 151.

Source: Calculated on ARIA classification, DHAC

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 6.60: Admissions of females aged 40 years and over¹ with a principal diagnosis of breast cancer, State/Territory Age-sex standardised admission ratios

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1995/96²									
Capital city	97	125**	93*	94	81**	71**	129	90	102*
Other major urban centres ³	89**	118	95	..	..	..	..	..	93*
Rest of State/Territory	101	101	94	122**	72**	87	81	- ⁴	97
Whole of State/Territory	97*	118**	94**	101	79**	81**	106	89	100
1989⁵									
Rest of State/Territory	115**	..	114**	100	80**	..	65	..	109**

¹Data for '1989' is of females of all ages

²Includes admissions to public acute hospitals and private hospitals, including admissions of same day patients

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

⁴Data unreliable: included with ACT total

⁵Excludes 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 State (Queensland as the Standard)

In 1995/96, there were 1,009 admissions for breast cancer in the non-metropolitan areas of Queensland, marginally more than expected from the State rates (an SAR of 101).

Elevated ratios were found in exactly half of the SLAs, with the highest occurring in Gympie, an SAR of 275** (30 admissions) and Banana, an SAR of 202** (18 admissions). Other statistically significant ratios in this highest range were recorded in Warwick (with an SAR of 195**; 18 admissions) and Johnstone (169*; 23 admissions).

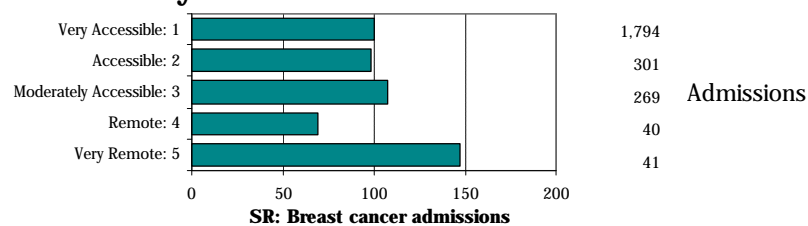
Residents of Burnett [Part B], Bowen, Dalby, Eacham, Esk and Douglas recorded the lowest SARs for breast cancer among females aged 40 years and over. Burnett [Part B] recorded 86

per cent fewer admissions than expected from the State rates, an SAR of 14* (1 admission recorded, when 7.2 were expected from the State rates). Bowen, Dalby, Eacham, Esk and Douglas also recorded fewer than 20 admissions with ratios of 33*, 40, 40, 42 and 48 respectively.

The town of Toowoomba recorded the largest number of hospital admissions of females aged 40 years and over for breast cancer in the non-metropolitan areas of Queensland (77 admissions). A high number of admissions were also recorded in Maroochy [Part A] (72), Bundaberg (51) and Mackay [Part A] (51).

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

Accessibility/Remoteness Index of Australia



Standardised admission ratios (SARs) for cancer of the female breast are close to the level expected from the State rates in the Very Accessible, Accessible and Moderately Accessible ARIA categories (with SARs of 100, 98 and 107, respectively). The lowest ratio is in the Remote areas (an SAR of 69) and the highest is in the Very Remote areas, an elevated SAR of 147.

Source: Calculated on ARIA classification, DHAC

Admissions for a hip replacement, 1995/96

State/Territory Comparison (Australia as the Standard)

There were 4,955 hip replacements (described on page 290) 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 6.61: Admissions¹ 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 ²	96	118	86**	..	..	..	..	..	95
Rest of State/Territory	122**	129**	82**	125**	107	120**	91	- ³	113**
Whole of State/Territory	100	111**	80**	106*	94*	127**	71*	103	100

¹Includes admissions to public acute hospitals, private (acute and psychiatric) hospitals

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

³Data 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 State (Queensland as the Standard)

There were 853 admissions for hip replacement recorded for residents of the non-metropolitan areas of Queensland, 3 per cent more than were expected from the State rates (an SAR of 103). In contrast to **Brisbane**, males accounted for a slightly larger proportion of these admissions, representing 55.3 per cent.

More than half (54.5 per cent) of the SLAs in the non-metropolitan areas of Queensland had average or above average SARs, many of which were highly elevated. Those which were elevated by at least thirty per cent:

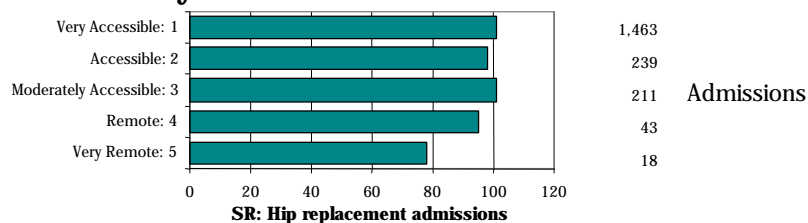
- just north-west of **Brisbane**, in Kingaroy (with an SAR of 215** and 16 admissions) and Gympie (196** and 19 admissions);
- just west of the city, in Dalby (172 and 11 admissions), Jondaryan (163 and nine admissions), Moreton [Part B] (158 and 11 admissions), Esk (150 and 12 admissions), Warwick (150 and 12 admissions) and Laidley (137 and nine admissions);
- further north-west of **Brisbane**, in Charters Towers (163 and nine admissions), Hinchinbrook (147 and 15 admissions) and Whitsunday (130 and eight admissions); and
- in Beaudesert [Part B] (159* and 21 admissions).

The lowest ratio (in areas with at least 20 admissions) was recorded for residents of Rockhampton, with 23 per cent fewer admissions than were expected from the State rates, an SAR of 77. This was the only SLA with more than 20 admissions, and mapped within the two lowest ranges.

By far the largest number of admissions for hip replacements was recorded for residents of Maroochy [Part A], with 71 admissions. More than 30 admissions were recorded in Toowoomba (57 admissions), Cairns (47 admissions), Bundaberg (39 admissions), Caloundra [Part A] (39 admissions) and Hervey Bay (32 admissions).

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

Accessibility/Remoteness Index of Australia



Standardised admission ratios for admissions for a hip replacement are close to the level expected from the State rates in first four ARIA categories, varying from an SAR of 101 in the Very Accessible and Moderately Accessible areas to 95 in the Remote areas. The lowest SAR (of 78) is in the areas in the Very Remote category.

Source: Calculated on ARIA classification, DHAC

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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 18.2 million unreferral attendances (called services in this atlas)⁹ by GPs in Queensland, an average of 5.3 services for each person enrolled with Medicare. Total Medicare payments to GPs for these services were \$412 million (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

Coverage

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).

National data are not available of 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.

⁹At 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 are, on average, 1.1 services per consultation.

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				
Queensland												
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	-	-
Total	53	11,887	19,504	-	-	-	854	3,537	1,196	37,031	11	24
New South Wales												
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	-	-
Total	5	6,741	32,586	5,782	-	506	339	646	917	47,522	5	10
Central Section												
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	-	-
Total	72	8,890	7,234	9,361	3,683	648	2,712	3,523	800	36,923	6	25
Western Operations												
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	-	-
Total	261	11,830	17,029	8,667	3,310	-	948	4,145	1,258	47,448	10	25
Tasmania Section												
Launceston	-	-	-	118	-	-	180	262	-	560	-	-
All Sections	391	39,348	76,353	23,928	6,993	1,154	5,033	12,113	4,171	169,484	32²	84²

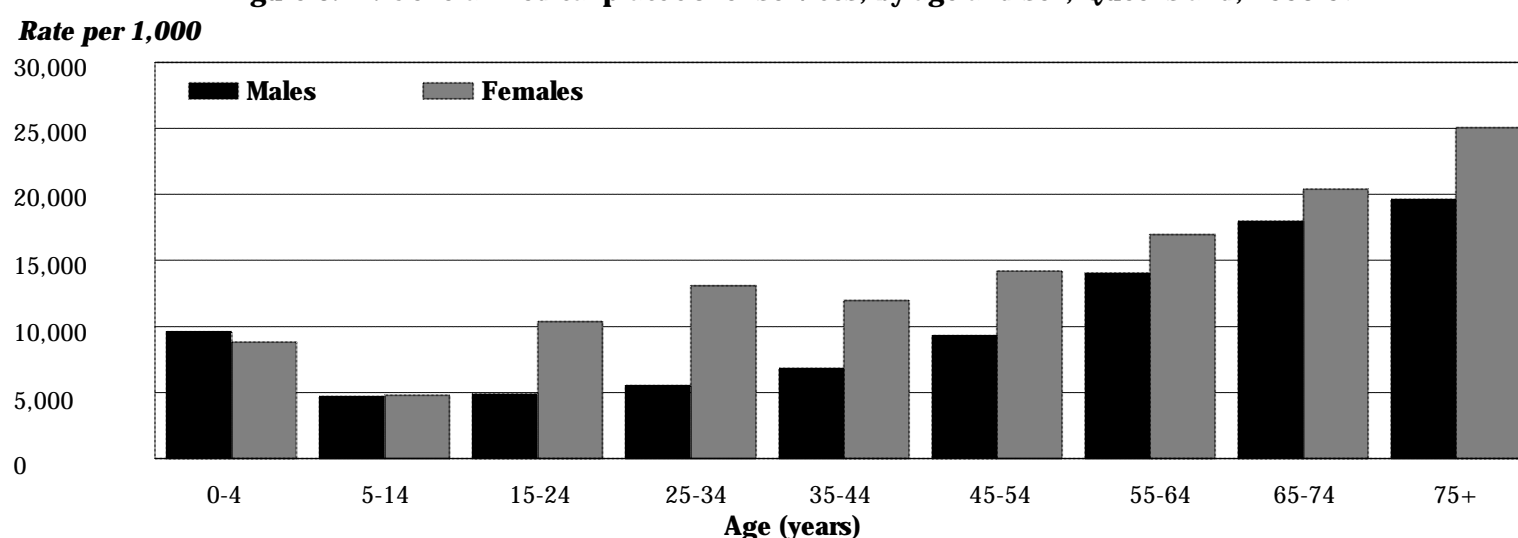
Source: Annual Report 1996, Royal Flying Doctor Service of Australia

GP services by age and sex of patient

Females used GP services more than males, accounting for 58.6 per cent of services in Queensland 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 6.11). Females and males had similar rates in the 5 to 14 year age group.

Figure 6.11: General medical practitioner services, by age and sex, Queensland, 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 ¹	All capitals
1996	125**	113**	106**	107**	101**	90**	80**	87**	113**
1989	124**	99**	111**	106**	91**	101**	84**	86**	108**

¹Includes Queanbeyan (C)

Source: See *Data source*, Appendix 1.3

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

Brisbane (Queensland as the Standard)

Male residents of **Brisbane** received 3,684,943 services from GPs in 1996. This is 14 per cent more than expected from the State rates (a standardised ratio of 114**). The age distribution of males receiving these services is shown in **Figure 6.11** on page 306.

As can be seen from **Map 6.52**, areas with the highest ratios were distributed along the Brisbane River and in the far northern and southern areas, while those with the lowest ratios were located in the inner city region.

Male residents of Berrinba-Karawatha/Kingston recorded the highest ratio for this variable, with 58 per cent more GP services than were expected from the State rates (an SR of 158**). Highly elevated ratios were also recorded in the areas of New Farm (151**), Ipswich-East (136**), Inala/Durack/Doolandella-Forest Lake/Ellen Grove/Richlands (134**), Lota/Manly/Manly West (132**) and Hemmant-Lytton/Wynnum/Wynnum West (131**), all of which are situated along the Brisbane River; and in the northern areas of Bray Park (143**) and Strathpine (140**); and in the southern areas of Marsden (135**), Loganlea and Gold Coast [Part A] (both with 133**).

Just over one third (37.6 per cent) of **Brisbane's** SLAs were mapped in the middle range. Within this class interval, ratios ranged from 90** in Bardon to 109** in Pinkemba-Eagle Farm, Clayfield/Hendra, Milton/Paddington and Tingalpa.

The lowest SR of 8**, was recorded for residents of Moreton Island (101 services), indicating that there were 92 per cent fewer services from GPs than the level expected from the State rates. Relatively low ratios were also recorded in the inner city areas of St Lucia (an SR of 65**), Herston/Newstead (73**), City/Spring Hill (75**) and Nathan (76**).

More than 100,000 GP services were recorded for male residents of Ipswich-Central (166,808 services), Redcliffe (130,188 services), Gold Coast [Part A] (118,157 services), Bridgeman Downs/Boondall (109,928 services), Ipswich-East (108,880 services) and Berrinba-Karawatha/Kingston (107,813 services).

There was a correlation of meaningful significance with the variable for early school leavers (0.54), and of lesser significance with the other indicators of socioeconomic disadvantage, including unskilled and semi-skilled workers (0.46). These results, together with the weak inverse correlation with the IRSD (-0.42), suggest the existence of an association at the small area level between high rates of GP services to males and socioeconomic disadvantage

Gold Coast-Tweed Heads

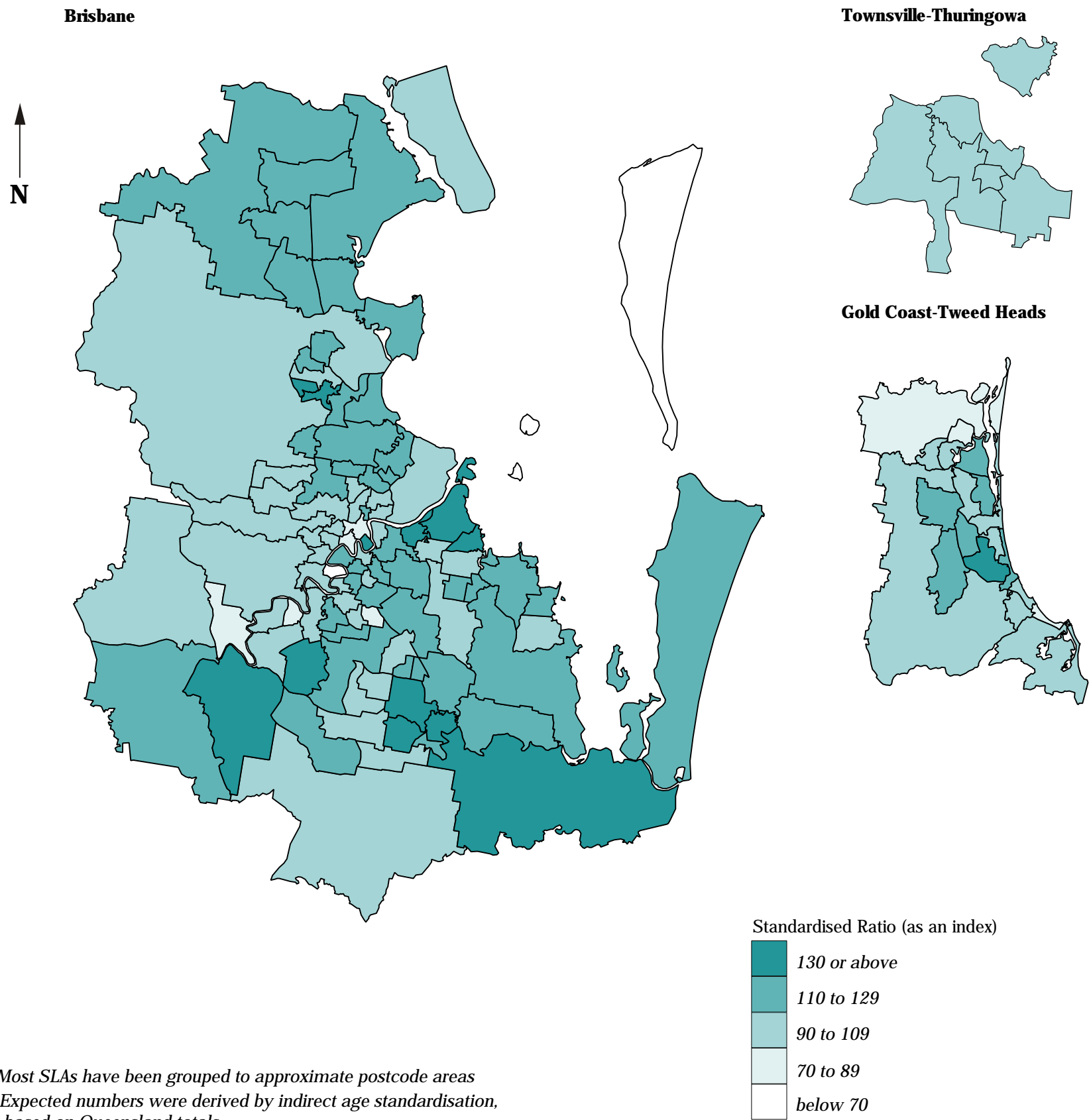
There were 904,386 GP services to males in **Gold Coast-Tweed Heads** in 1996, 7 per cent more than were expected from the State rates (an SR of 107**). Ratios elevated by 15 per cent or more were recorded in Robina-Clear Island Waters/Kerrydale-Stephens/Burleigh Waters (an SR of 133**), Labrador/Southport (126**), Paradise Point/Biggera Waters (117**), Broadbeach/Burleigh Heads and Carrara-Merrimac (both with 116**). At the other end of the scale, 30 per cent fewer GP services were recorded in Coomera-Cedar Creek (an SR of 70**).

Townsville-Thuringowa

Male residents of **Townsville-Thuringowa** had the lowest SR among the major urban centres, with 5 per cent fewer GP services than were expected from the State rates (an SR of 95**). There were 257,370 services overall. Townsville South East had the highest ratio (and SR of 97**), while the areas of Townsville Coastal/Magnetic Island, Gulliver/Hermit Park, Thuringowa [Part A] and Murray/Mt Louisa all had slightly lower SRs, of 95**.

Map 6.52: General medical practitioner services to males, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1996

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age standardisation, based on Queensland totals

Source: Calculated on data from ABS 1996 Census

**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 305, 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
1996									
Capital city	125**	113**	106**	107**	101**	90**	80**	87**	113**
Other major urban centres ¹	99**	90**	97**	..	..	..	..	..	97**
Rest of State/Territory	74**	76**	79**	79**	61**	83**	31**	- ²	74**
Whole of State/Territory	108**	103**	93**	99**	90**	86**	53**	88**	100
1989									
Rest of State/Territory	87**	76**	85**	80**	63**	95**	44**	- ²	81**

¹Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

²Data unreliable: included with ACT total

Source: See *Data source*, Appendix 1.3

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

Rest of State (Queensland as the Standard)

Male residents living in the non-metropolitan areas of Queensland had significantly fewer services from GPs in 1996 than expected from the State rates, an SR of 85**; these low rates of use are in line with the lower levels of access to GPs in the non-metropolitan areas (see Chapter 7 for details of the distribution of GPs). Overall, there were 2,751,571 GP services to males.

The town of Kawana recorded the highest ratio for this variable, with 34 per cent more GP services than were expected from the State rates (an SR of 134**). Elevated ratios were generally distributed in SLAs in the south-east of the State (**Map 6.53**). The highest of these were Mount Morgan (133**), Monto (an SR of 118**), Eidsvold (116**), Hinterland (115**), Biggenden and Maroochydore (both with 114**), Maroochy Balance (113**), Toowoomba (112**), Laidley (110**), Buderim (109**), Caboolture [Part B], Rail Corridor and Mooloolaba (each with 108**), Caloundra (107**) and Noosa Balance (105**).

Most SLAs (84.9 per cent) outside the major urban centres recorded ratios below the level expected for GP services to males, with over one third (36.6 per cent) mapped in the second lowest class interval, ranging from an SR of 71** in Kilkivan to 89** in Cairns and Mundubbera.

Residents of Burke (with an SR of 3** and 103 GP services), Torres (4** and 783), Bulloo (6** and 142) and Diamantina (15** and 163) recorded substantially significant very low ratios for this variable. Relatively low ratios were also recorded in the Far Northern SLAs of Carpentaria (an SR of 20** and 2,034 GP services), Croydon (32** and 309), Etheridge (35** and 1,238) and Cook (40** and 6,924); and in the central western areas of

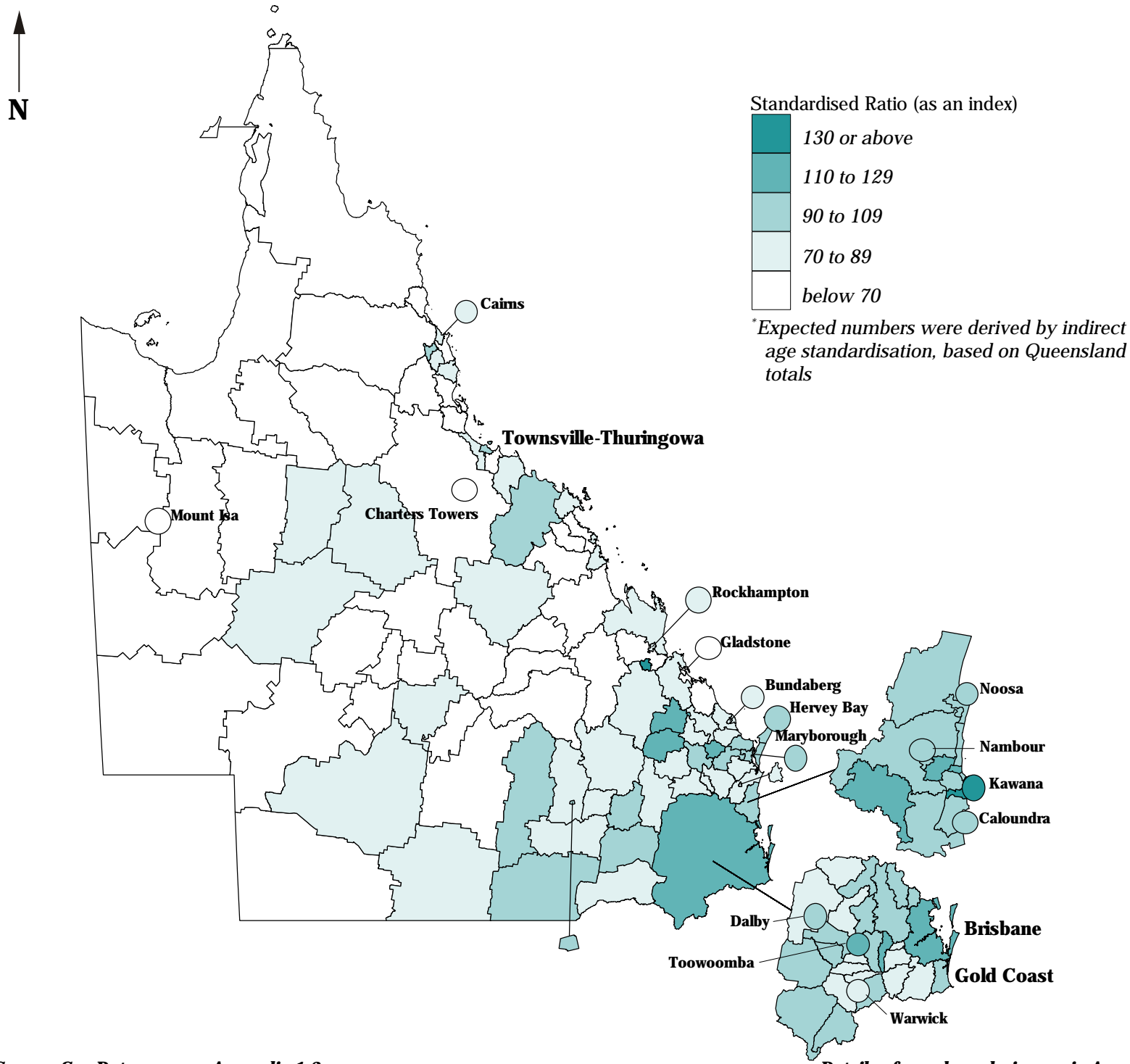
Isisford (25** and 238), Boulia (26** and 376), Ilfracombe (27** and 206), Aramac (28** and 530), McKinlay (35** and 1,354), Barcoo (36** and 438), Cloncurry (37** and 3,789) and Tambo (40** and 586). See Chapter 7 for details of the levels of provisions of GP services in these areas.

In 1996, the largest numbers of GP services were recorded in the towns of Cairns (223,341 services), Toowoomba (200,609 services), Rockhampton (110,350 services), Hervey Bay (92,496 services), Bundaberg (83,941 services) and Caloundra (74,740 services). The SLA of Mackay [Part A] recorded 113,813 GP services to males.

There was no consistent evidence in the correlation analysis of an association at the SLA level between high rates of GP services to males and socioeconomic status.

Map 6.53: General medical practitioner services to males, Queensland, 1996

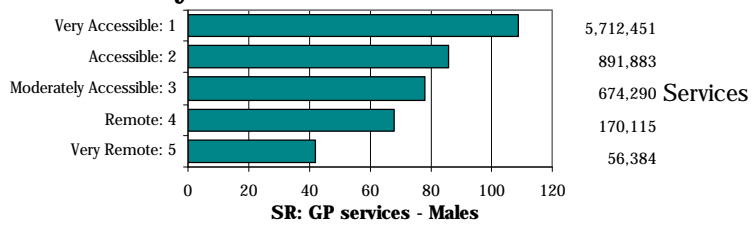
Standardised Ratio: number of services in each Statistical Local Area compared with the number expected*



Source: See Data sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



Males in areas included in the Accessible category had the highest rate of use of general medical practitioner (GP) services, using 9 per cent more GP services than expected from the State rates (an SR of 109). Ratios in the other categories dropped away to SARs of 86, 78 and 68 in the middle categories, before declining to a very low SR of 42 in the Very Remote category (58 per cent fewer GP services to males than were expected from the State 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 ¹	All capitals
1996	117**	110**	107**	105**	102**	96**	81**	88**	110**
1989	120**	99**	110**	103**	92**	102**	88**	89**	107**

¹Includes Queanbeyan (C)

Source: See *Data source*, Appendix 1.3

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

As noted in the introductory text, females use more general medical practitioner (GP) services than males, 6.4 services per female and 4.6 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 6.11** on page 306.

Brisbane (Queensland as the Standard)

Female residents of **Brisbane** received 5,325,317 services from GPs in 1996, 12 per cent more than expected from the State rates (an SR of 112**).

The distribution of SRs for GP services to females across the small areas in **Brisbane** was very similar to that recorded for males, with the highest ratios located in the middle, far northern and far southern areas, while the lowest were recorded in the inner city regions (**Map 6.54**).

The most highly elevated ratio was recorded in Berrinba-Karawatha/Kingston, with 56 per cent more GP services than were expected from the State rates (an SR of 156**). Ratios elevated by at least 30 per cent were also recorded in the northern areas of Bray Park (an SR of 144**) and Strathpine (137**); in the southern areas of Marsden (141**), Thorneside (137**) and Loganlea (133**); and in the middle regions of Pinkenba-Eagle Farm (137**), Ipswich-East (133**), Inala/Durack/Doolandella-Forest Lake/Ellen Grove/Richlands (132**), Murarrie and Lota/Manly/Manly West (both with 130**).

One third of **Brisbane's** SLAs recorded ratios of GP services to females in the middle range mapped (34.7 per cent). Within this class interval, ratios ranged from 90** in Chelmer/Taringa to 109** in Annerley/Fairfield and Bald Hills.

By far, the lowest ratio was recorded for residents of Moreton Island, where there were 91 per cent fewer services from GPs than expected from the State rates (an SR of 9** and 88 services). The inner city areas of Herston/Newstead (an SR of 55**), St Lucia (61**), City/Spring Hill (65**) and Seventeen Mile Rocks (68**) were the remaining SLAs mapped in the lowest range.

The largest number of GP services was recorded for female residents of Ipswich-Central (241,238 services), followed by Redcliffe (197,235 services), Bridgeman Downs/Boondall (165,479 services) and Gold Coast [Part A] (158,948 services).

There were correlations of meaningful significance at the SLA level with the variables for early school leavers (0.64), unskilled and semi-skilled workers (0.58) and children aged from 0 to 4 years (0.51) and an inverse correlation with the variable for managers and administrators, and professionals (-0.60). These results, together with the inverse correlation with the IRSD (-0.48), suggest the existence of an association at the small area level between high rates of GP services to females and socioeconomic disadvantage. Correlations of substantial significance were also recorded with female sole parent pensioners (0.76), dependent children of income support recipients (0.74) and age pensioners (0.71).

Gold Coast-Tweed Heads

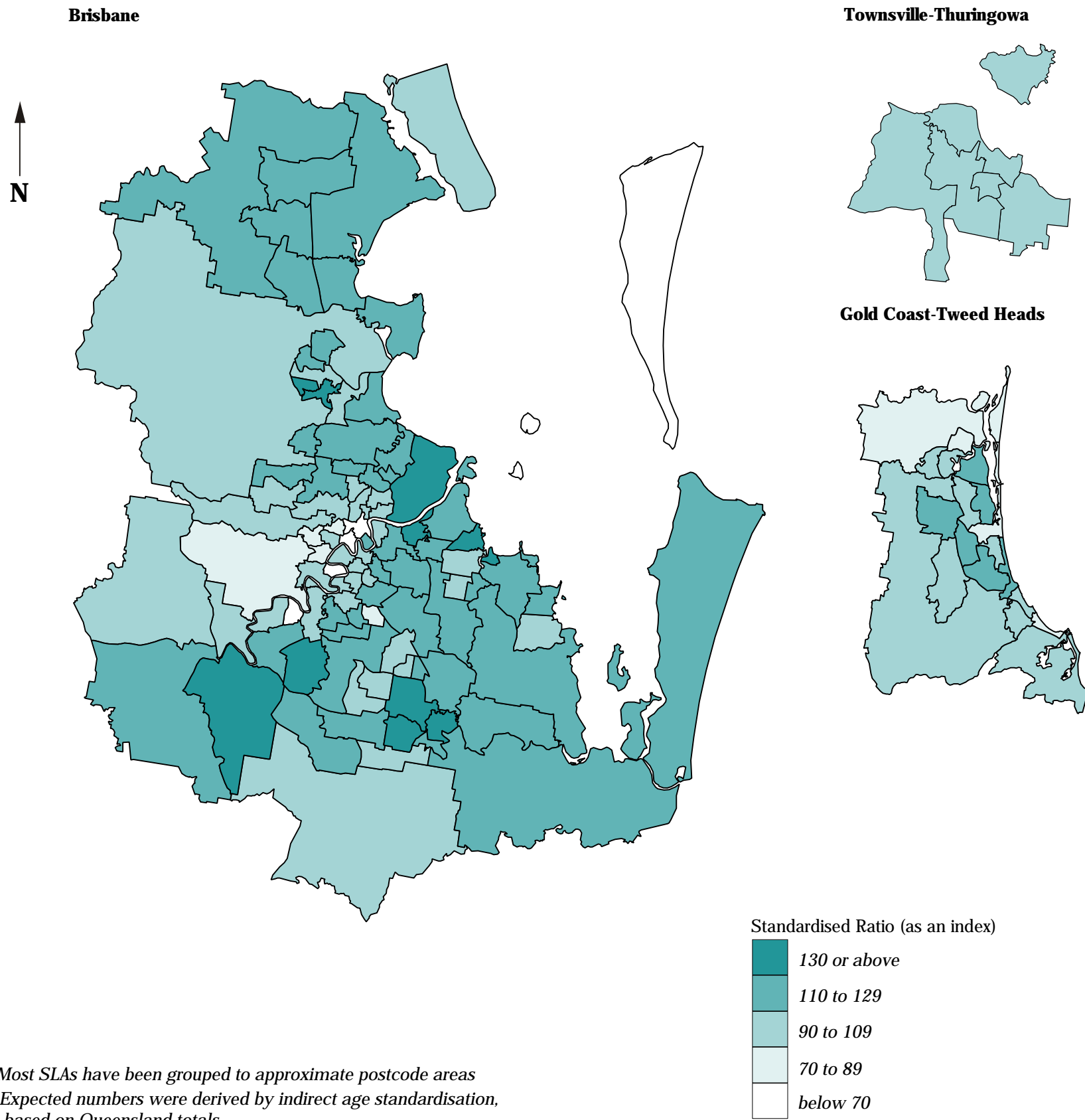
Services from GPs in **Gold Coast-Tweed Heads** (1,290,020 services) were 4 per cent above the level expected from the State rates, an SR of 104**. As with male services, the highest ratios were recorded in Robina-Clear Island Waters/Kerrydale-Stephens/Burleigh Waters (an SR of 126**) and Labrador/Southport (120**), while the lowest ratios were recorded for residents of Coomera-Cedar Creek (71**) and Coolangatta/Tugun (81**).

Townsville-Thuringowa

There were 362,345 GP services delivered in **Townsville-Thuringowa** in 1995/96, 4 per cent fewer than were expected from the State rates (an SR of 96**). The only area to record more GP services than expected was Murray/Mt Louisa (an SR of 101**). Ratios below the level expected from the State rates were recorded in Townsville South East (an SR of 97**), Thuringowa [Part A] (96**), Gulliver/Hermit Park (93**) and Townsville Coastal/Magnetic Island (91**).

Map 6.54: General medical practitioner services to females, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1996

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



*Most SLAs have been grouped to approximate postcode areas
 #Expected numbers were derived by indirect age standardisation, based on Queensland totals

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 305). 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
1996									
Capital city	117**	110**	107**	105**	102**	96**	81**	88**	110**
Other major urban centres ¹	98**	92**	97**	..	..	..	..	..	97**
Rest of State/Territory	78**	81**	82**	82**	70**	89**	33**	- ²	79**
Whole of State/Territory	105**	102**	95**	99**	94**	93**	55**	89**	100
1989									
Rest of State/Territory	88**	79**	100	81**	70**	95**	46**	- ²	87**

¹Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

²Data unreliable: included with ACT total

Source: See *Data source*, Appendix 1.3

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

Rest of State (Queensland as the Standard)

As for male residents living outside of the major urban centres, females had significantly fewer services from GPs in 1996 than were expected from the State rates, an SR of 86**; these low rates of use are in line with the lower levels of access to GPs in the non-metropolitan areas (see Chapter 7 for details of the distribution of GPs). This represented a total of 3,776,243 GP services.

The majority of SLAs (81.4 per cent) had SRs lower than expected from the State rates. However, highly elevated ratios were recorded in the southern areas of Kawana (an SR of 134**), Eidsvold (121**), Mount Morgan (120**), Monto (117**), Hinterland (115**), Maroochy Balance (114**), Laidley (111**), Biggenden and Crow's Nest (both with 110**); Maroochy and Warwick-East (both with 109**); Rail Corridor, Pittsworth and Toowoomba (each with 108**); Inglewood and Noosa Balance (both with 107**); Balonne and Woocoo (both with 106**); and Caboolture [Part B] and Caloundra (both with 105**).

One third of the SLAs in the non-metropolitan areas of Queensland recorded SRs for GP services of between 90 and 109. Within this class interval, the lowest ratios were recorded in Wambo, Hervey Bay, Bendemere and Beaudesert [Part B] (each with an SR of 90**); Warwick-North and Warwick-West (both with an SR of 91**); and Tara, Rosalie, Burnett [Part B] and Atherton (each with an SR of 92**).

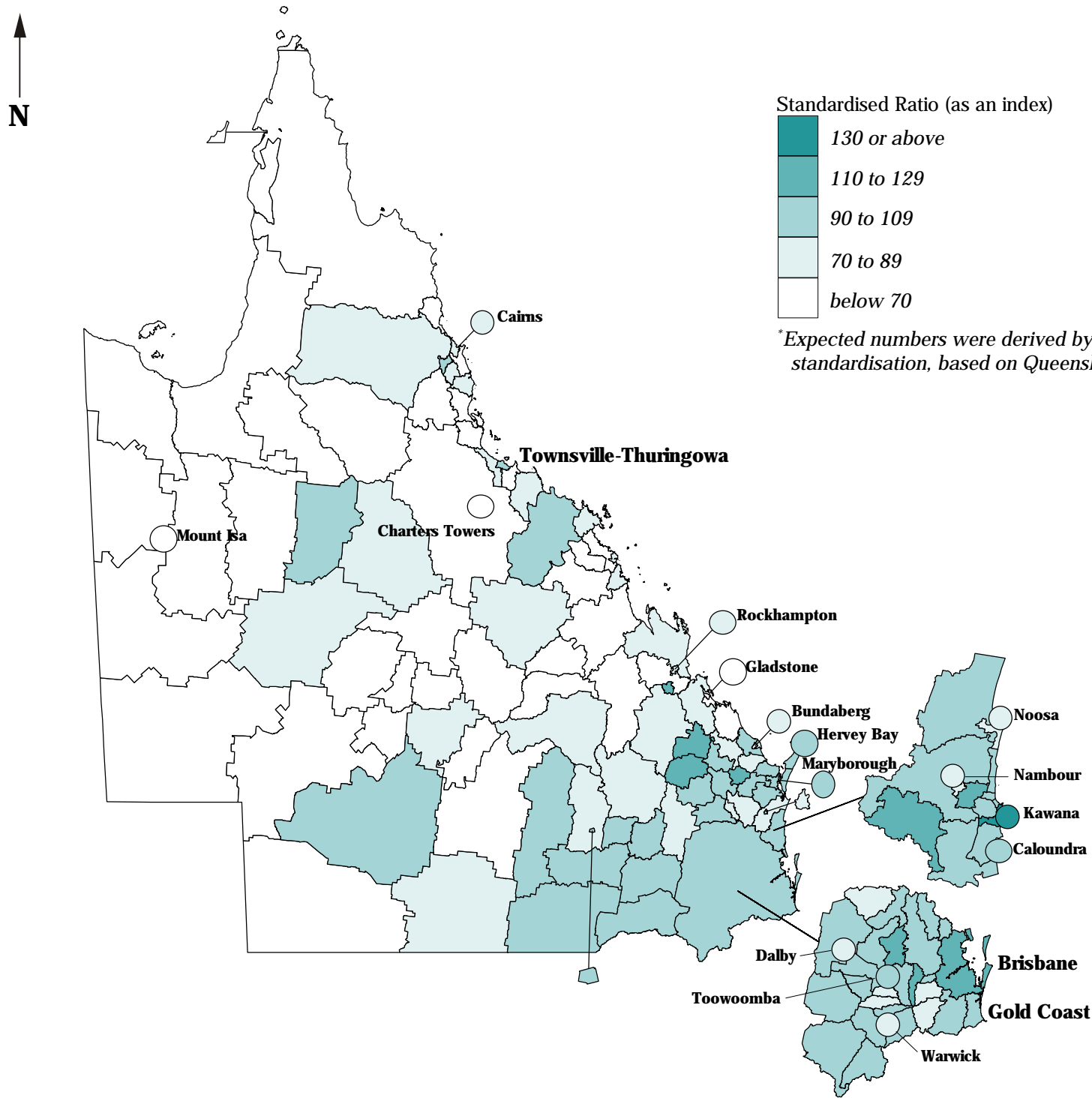
The lowest ratio was recorded in the SLAs of Torres (1,084 services) and Burke (177 services), with 96 per cent fewer GP services than were expected from the State rates (an SR of 4**). Relatively low ratios were also recorded in the central western areas of Diamantina (an SR of 15**), Bulloo (17**), Aramac (25**), Boulia and Barcoo (both with 40**), Ilfracombe (42**), Cloncurry (44**), Isisford (45**) and Mount Isa (50**); and in the far northern SLAs of Carpentaria (21**), Mornington and Aurukun (both with 40**), Etheridge (47**) and Cook (48**). See Chapter 7 for details of the levels of provisions of GP services in these areas.

The largest numbers of GP services were recorded in the towns of Toowoomba (305,870 services), Cairns (291,345 services), Rockhampton (165,540 services), Hervey Bay (127,378 services), Bundaberg (117,334 services) and Caloundra (107,688 services). The SLA of Mackay [Part A] recorded 164,684 GP services to females.

There was no consistent evidence in the correlation analysis of an association at the SLA level between high rates of GP services to males and socioeconomic status.

Map 6.55: General medical practitioner services to females, Queensland, 1996

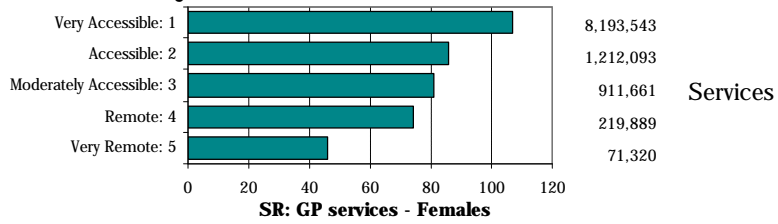
Standardised Ratio: number of services in each Statistical Local Area compared with the number expected*



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 4 per cent more GP services than expected from the State rates (an SR of 107). Ratios in the three middle categories were 86, 81 and 74, respectively, with a lower ratio of 46 in the Very Remote category. 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 ¹	All Capitals
79.7	84.0	85.4	84.5	81.2	84.0	80.0	86.9	82.5

¹Includes Queanbeyan (C)

Source: Data from ACIR, calculations supplied by NCIRS

Brisbane

In 1998, 85.4 per cent of **Brisbane's** population were fully immunised at 12 months of age, a total of 21,258 children.

The highest proportions of fully immunised children were recorded in the combined areas of Gumdale/Ransome/Wakerley (96.2 per cent) and Burbank/Belmont-Mackenzie (92.1 per cent), located in the east; Petrie (95.8 per cent), Albany Creek (91.8 per cent), Bald Hills (91.1 per cent) and Kallangur (90.4 per cent), situated north of the city centre; Jindalee/River Hills (91.0 per cent), Ascot/Hamilton (90.5 per cent) and Archerfield/Coopers Plains (90.3 per cent), in the inner areas; and Ipswich-North (90.1 per cent), located west of the city.

A total of 33 areas had between 80.0 and 85.0 per cent of 12 month old children fully immunised (**Map 6.56**). Within this range, the highest percentages were recorded in Bardon, Bridgeman Downs/Boondall and Ipswich-East (each with 84.7 per cent), while the lowest were recorded in Dutton Park/Woolloongabba (80.0 per cent), Toowong (80.2 per cent) and Milton/Paddington (80.6 per cent).

The area of Redland Balance recorded the lowest proportion of fully immunised children in 1998, with 71.8 per cent of 12 month old children in this category. Proportions of below 78.0 per cent were also recorded in West End/South Brisbane/Highgate Hill (72.9 per cent), Yeronga (74.1 per cent), Pinkenba-Eagle Farm (75.0 per cent), Red Hill/Kelvin Grove (75.8 per cent), Berrinba-Karawatha/Kingston (76.3 per cent), Herston/Newstead (76.4 per cent), Underwood (76.5 per cent) and Greenslopes (77.1 per cent).

The largest numbers of fully immunised children were recorded in Ipswich-Central (1,108 children), Ipswich-East (732 children),

Gold Coast [Part A] (669 children), Inala/Durack/Doolandella-Forest Lake/Ellen Grove and Richlands (635 children), Berrinba-Karawatha/Kingston (621 children) and Birkdale/Ormiston (601 children).

There were weak inverse correlations with the variables for dwellings with no motor vehicle (-0.46), unemployed people (-0.43), Indigenous people (-0.38) and low income families (-0.33). These results, together with the weak positive correlation with the IRSD (0.23), suggest the existence of an association at the small area level between low immunisation rates for infants and socioeconomic disadvantage.

Gold Coast-Tweed Heads

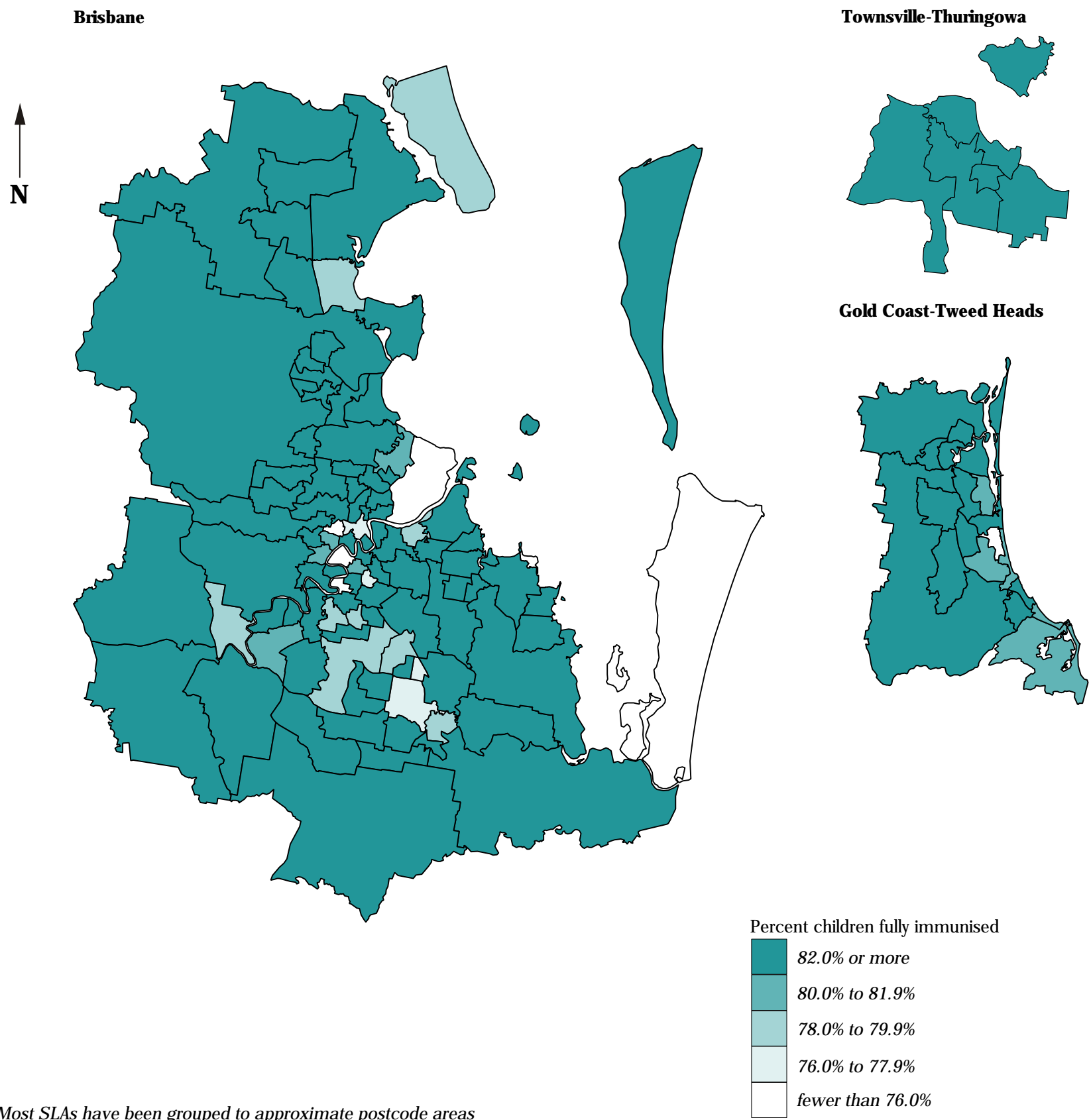
In **Gold Coast-Tweed Heads**, 83.0 per cent of children were fully immunised at 12 months of age, a total of 4,368 children. The highest rates of immunisation were recorded in the inner areas of Helensvale and Oxenford, both with a proportion of 88.9 per cent. Relatively low proportions were recorded in the coastal areas of Broadbeach Waters/Mermaid Waters (75.3 per cent), Broadbeach/Burleigh Heads (80.1 per cent) and Tweed Heads (80.7 per cent).

Townsville-Thuringowa

Townsville-Thuringowa recorded the highest rate of immunisation among the major urban centres, with a total of 1,899 children, 86.2 of the population at 12 months of age. Proportions in the small areas varied little from the **Townsville-Thuringowa** average, ranging from 87.5 per cent in both Townsville South East and Thuringowa to 82.7 per cent in the Townsville Coastal/Magnetic Island.

Map 6.56: Immunisation status of children at 12 months of age, Brisbane, Gold Coast-Tweed Heads and Townsville-Thuringowa, 1998

as a percentage of all children at 12 months of age in each area*



*Most SLAs have been grouped to approximate postcode areas

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. 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 ¹
Capital city	79.7	84.0	85.4	84.5	81.2	84.0	80.0	86.9 ¹	82.5
Other major urban centres ²	86.0	86.9	84.2	..	..	..	..	..³	85.4
Rest of State/Territory	82.2	86.0	86.1	83.6	80.6	84.5	62.8	.. ³	83.6
Whole of State/Territory	81.0	84.6	85.5	84.2	81.0	84.3	70.6	86.8	83.0

¹Includes Queanbeyan (C)

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

³Data included with ACT total

Source: Data from ACIR, calculations supplied by NCIRS

Rest of State

In 1998, 20,279 children in the non-metropolitan areas of Queensland were fully immunised at the age of 12 months, representing 86.1 per cent of the population.

As can be seen from the map (Map 6.57), the highest rates of immunisation were in SLAs distributed throughout the lower half of the State, whereas the lowest rates were located across the State in no notable pattern.

Five SLAs in the non-metropolitan areas recorded proportions of 100.0 per cent, these areas included Bendemere, Ilfracombe, Isisford, Tambo and Winton. Care should be taken in interpreting such high results when the data have been derived from postcode estimates (see pages 81 and 82, Chapter 4 for further details of the limitations of data gained from postcode estimates).

Excluding the SLAs mentioned above, residents of Aramac (99.1 per cent) had the highest proportion of children fully immunised at 12 months of age. Proportions of 95.0 per cent or above were also recorded in Taroom (97.9 per cent), Longreach (97.7 per cent), Barcoo (97.1 per cent), Warwick North (96.9 per cent), Jericho (96.8 per cent), Bauhinia (96.5 per cent), Clifton (95.8 per cent), Murilla (95.4 per cent), Bungil (95.2 per cent) and Monto (95.1 per cent).

There were 27 SLAs mapped in the middle range, with between 80.0 and 85.0 per cent of children immunised at 12 months of age. The highest of these were recorded in Noosa Balance (84.7 per cent) and Calliope [Part B] (84.5 per cent). At the other end of the scale, 80.8 per cent of children were fully immunised in Dalrymple.

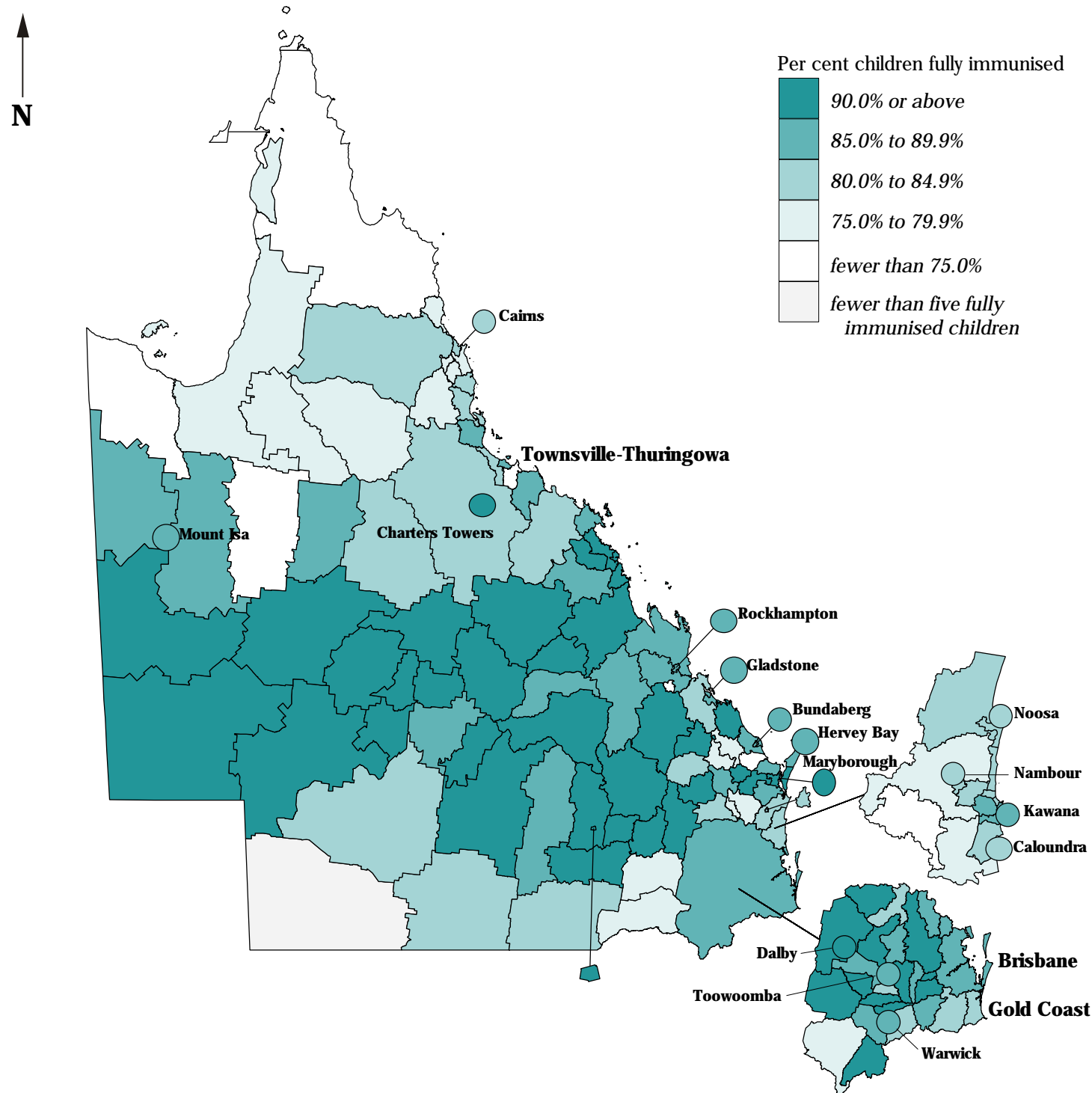
Proportions of less than 75.0 per cent were recorded in the SLAs of McKinlay (64.3 per cent), Townsville [Part B] (64.7 per cent), Torres (66.5 per cent), Burke (70.0 per cent), Weipa (71.4 per cent) and Cook (74.5 per cent), distributed throughout the northern half of the State; and Isis (66.1 per cent), Mount Morgan (68.1 per cent) and Hinterland (70.3 per cent), located in the south-east.

The largest number of fully immunised children in the non-metropolitan areas of Queensland was recorded in Cairns, a total of 1,738 children. More than 400 fully immunised children were also recorded in the towns of Toowoomba (1,133 children), Rockhampton (886 children), Bundaberg (625 children), Hervey Bay (571 children) and Mount Isa (418 children), as well as in the SLAs of Mackay [Part A] (982 children) and Gladstone (412 children).

There were weak correlations with the indicators of high socioeconomic status and weak inverse correlations with the indicators of socioeconomic disadvantage. These results, together with the weak positive correlation with the IRSD (0.23), suggest the existence of an association at the SLA level between low immunisation rates for infants and socioeconomic disadvantage.

Map 6.57: Immunisation status of children at 12 months of age, Queensland, 1998

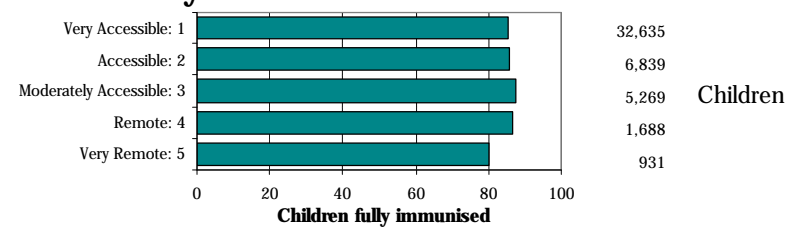
as a percentage of all children at 12 months of age in each Statistical Local Area



Source: See Data Sources, Appendix 1.3

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia



There is little variation in recorded immunisation rates across the first four ARIA categories, with between 85.3 per cent and 87.5 per cent of 12 month old children being fully immunised. A lower rate, of 80.0 per cent was recorded in the Very Remote category.

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

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