

5 Utilisation of health and welfare services

Introduction

The analysis of data concerning the usage of health and welfare services by young South Australians is important for a number of reasons. At a basic level, it provides an indicator of usage rates among this sub-group of the population, highlighting how usage may vary by age, sex and socioeconomic status. Such variations are significant because they raise a number of important questions regarding interpretation of the rates. For instance, variations in usage rates could indicate differences in the need and demand for health services, inequality in geographical or financial access to services or, alternatively, differentials in the quality of information and care provided to the client.

Data analysis by area and over time can also be of significance to health planners and policy makers.

Such information can assist in showing the consequences of the introduction of particular policies and be used to reveal mismatches between service provision and demand. Further, detailed data on health service usage can be used to inform discussion and development of theory concerning the link between health and other social variables, such as education.

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 earliest Australian data are shown in **Table 5.1**.

Table 5.1: 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)	Rate/ratio for quintile of socioeconomic disadvantage of area			
	Males		Females	
	1 st quintile	5 th quintile	1 st quintile	5 th 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

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. 3 and 4, Australian Institute of Health and Welfare, AGPS, Canberra, 1995 and 1996

Data mapped

The health and welfare services described in this chapter include public acute and private hospitals, Family and Youth Services (FAYS), one-to-one community health and community mental health services, services provided by general medical practitioners (GPs) and immunisation of children at 12 months of age. 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 or client.

Measure mapped

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

extent of variation in health service use from State-wide rates. A brief description of the technique of standardisation, its purposes, and method of calculation, is in Appendix 1.3. For immunisation rates, the measure mapped is the proportion of children at one year of age who are fully immunised.

Variables mapped

The variables mapped represent only a selection of the full range of variables that could potentially be mapped from each data set. Many potentially useful variables have been excluded due to the relatively small numbers of cases available for analysis at the small area level. Additionally, there is a range of services for which data are not available in a form suitable to be mapped. These

services include, among others, information on dental service usage and dispensing of prescribed pharmaceutical items by type of medication.

Therefore, the variables mapped are those for which an area dimension (eg. postcode) is available and that:

- have a sufficient number of cases for analysis at the small area level;
- represent a significant proportion of the activity for the topic;
- are more prevalent among a particular population group;
- have a distribution which varies regionally; or
- for which occurrences (admissions to hospital, use of services) are known to be associated with socioeconomic status.

Gaps and deficiencies in the data Data collections

A major gap in the available data is that only the age and sex of patients of GPs are available at the small area level. There is, for example, no information at a small area level for consultations with GPs as to 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 health advice given), 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 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 those describing:

- services provided to those using public acute hospital outpatient clinics and accident and emergency departments (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, disability support 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; and

- the dispensing of prescribed pharmaceutical items, especially by type of medication.

Other data issues

Due to inadequate identification of Indigenous people in the hospital inpatient collection, admissions to hospital of Indigenous people remain understated and have not been mapped separately. Some information as to the number and rate of episodes of hospitalisation for Indigenous children is available in the *Statistical Profile of Children & Young People* (DHS 2001b).

As discussed in Chapter 2, the lack of data items such as education or income in health and welfare statistics collections and the consequent inability to identify and analyse socioeconomic status directly is a major deficiency in the Australian data. Thus, 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 Major limitations, 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 hospital

Introduction

Information available for admissions (see box) 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.

The maps in this chapter show the spatial patterns of admissions for a range of conditions, diseases and procedures. The time period of the data in the analysis is the aggregate of the three years from 1996/97 to 1998/99. Analyses at the small area level can benefit from the aggregation of data over a number of years, by reducing the chance of abnormally low or high numbers of events occurring when using data for a single year. The following text describes some of the differences evident in hospitalisation rates for specific population groups.

Recording details for a hospital episode (admissions)

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

At the time of admission, the age, sex, address of usual residence and other personal details of the patient are recorded. At the end of the episode, at the time of separation from hospital, details of the episode itself are recorded, including the principal diagnosis (and other diagnoses), principal procedure (and other procedures), and the date, time and method of separation (discharge, transfer or death). 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.

Differences in admission rates for specific population groups

Differences related to socioeconomic status

Those who are socioeconomically disadvantaged have higher admission rates than the population in general. Esterman et al. (1990) examined admissions in Adelaide by postcode of usual residence, and compared standardised admission rates of residents of postcodes categorised as low, medium and high income (based on household income). They found that when Adelaide postcodes were divided into three categories according to household income, hospital admissions were found to be 34% 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.

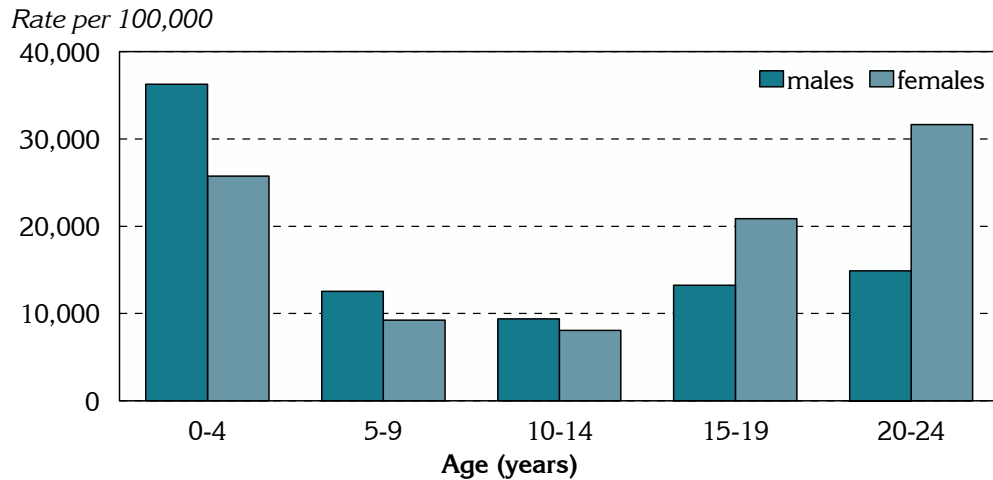
Differences related to age, sex and hospital type

Figures 5.1 to 5.6 show, for a selection of the variables mapped, the admission rates for each five year age group (in the range 0 to 24 years) per 100,000 population for residents of South Australia admitted to a hospital.

The highest admission rates for children and young people admitted to public acute and private hospitals (Figure 5.1) are in the 0 to 4 year age group for males and the 20 to 24 year age group for females. Admission rates for males are higher than for females at ages 0 to 4, 5 to 9 and 10 to 14 years; this pattern is reversed in the 15 to 24 year age groups. The largest differential in admission rates for males and females is in the 20 to 24 year age group, with the female rate just over twice (2.1 times) that for males.

More than two thirds (70.0%) of the State's admissions of children and young people are of residents of Adelaide; this is slightly lower than Adelaide's share of the State's population (73.2%).

Figure 5.1: Admissions to public acute and private hospitals, by age and sex, South Australia, 1996/97-1998/99

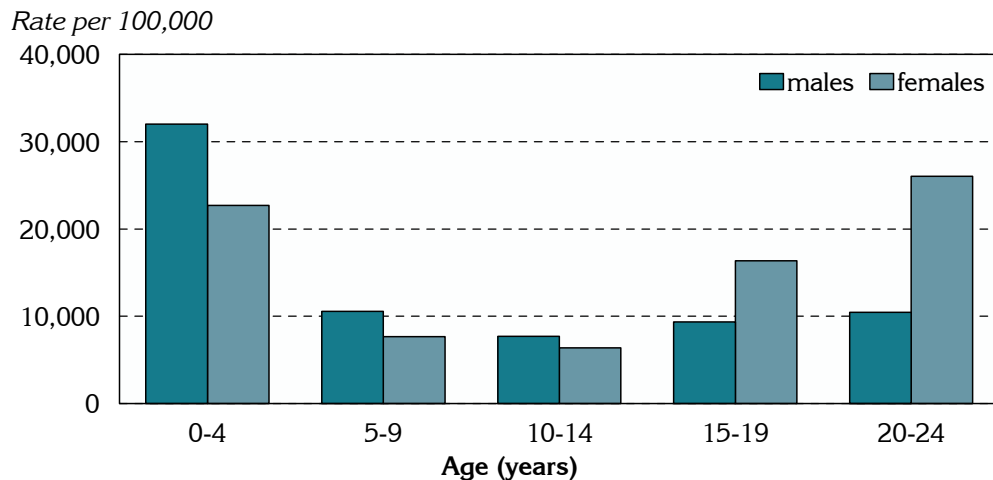


Source: Compiled in HealthWIZ from data supplied by DHS

The age profile for admissions to public acute hospitals (Figure 5.2) is strikingly similar to that for all admissions (Figure 5.1). Male admission rates are higher than those for females in the younger

age groups, but are lower at ages 15 to 24 years. Again, the largest differential in the male and female rates is in the 20 to 24 year age group, with female rates 2.5 times those for males.

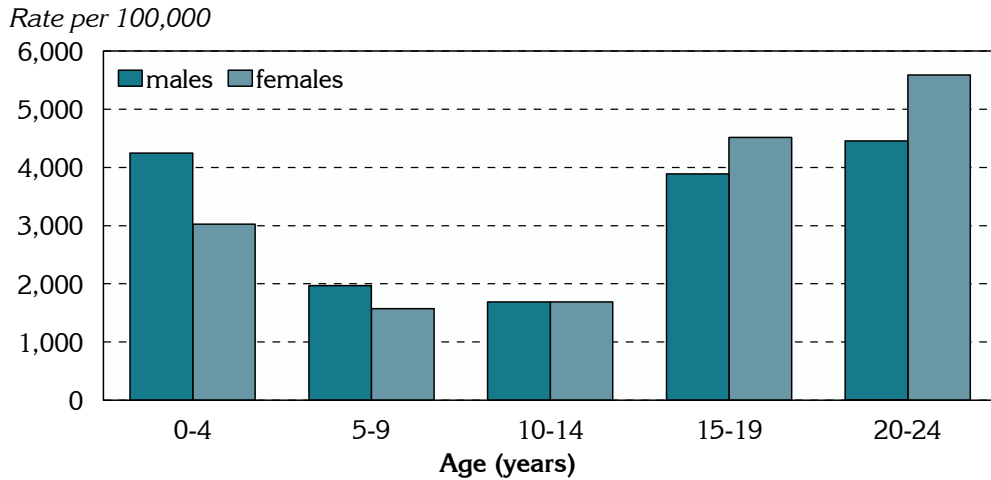
Figure 5.2: Admissions to public acute hospitals, by age and sex, South Australia, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Overall, private hospital admissions account for 18.1% of all admissions of people aged 0 to 24 years in South Australia. The age-specific admission rates are lower than those for public acute hospitals (Figure 5.3), with relatively higher rates in the 15 to 19 and 20 to 24 year age groups.

Figure 5.3: Admissions to private hospitals, by age and sex, South Australia, 1996/97-1998/99

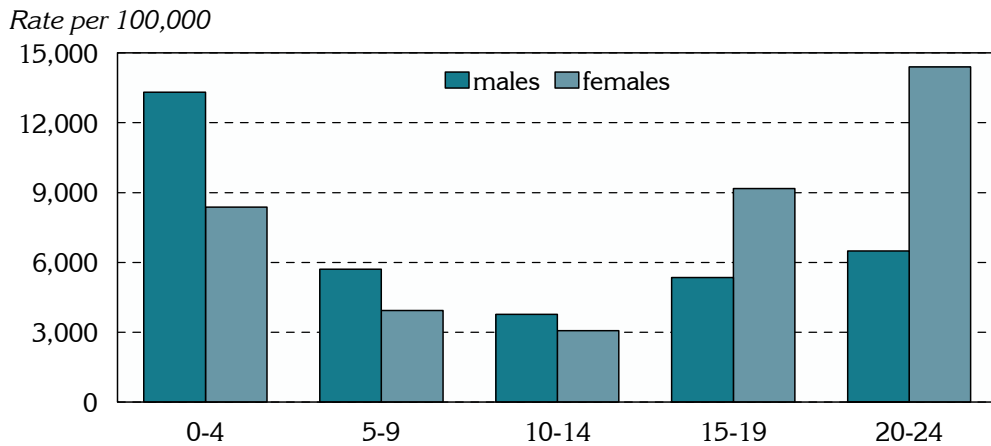


Source: Compiled in HealthWIZ from data supplied by DHS

The pattern of higher admission rates among males aged 0 to 14 years and females aged 15 to

24 years is also evident for same day admissions (Figure 5.4).

Figure 5.4: Same day admissions, by age and sex, South Australia, 1996/97-1998/99

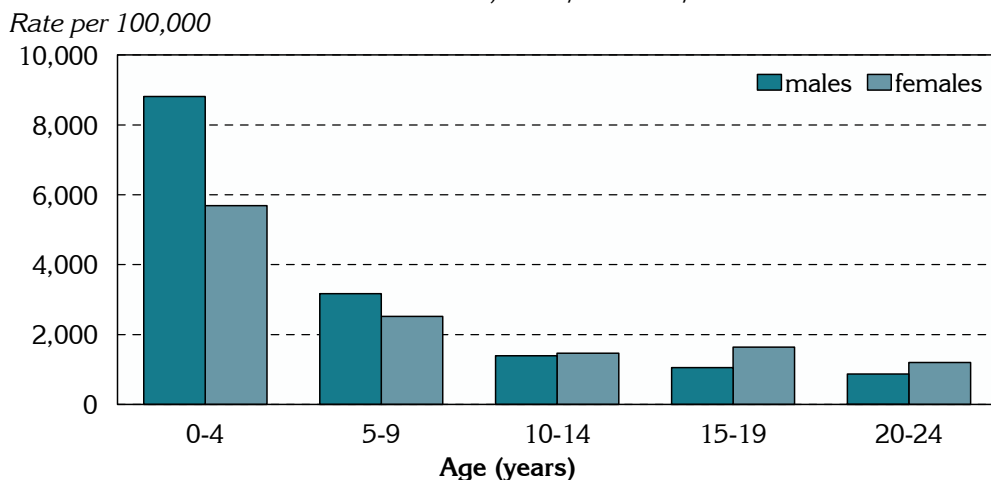


Source: Compiled in HealthWIZ from data supplied by DHS

Admission rates for respiratory system diseases are highest at ages 0 to 4 years, after which the rates begin to decline markedly (Figure 5.5). The largest

differential in admission rates between males and females is in the 0 to 4 year age group, with male rates 1.6 times higher than female rates.

Figure 5.5: Admissions to hospital for respiratory system diseases, by age and sex, South Australia, 1996/97-1998/99

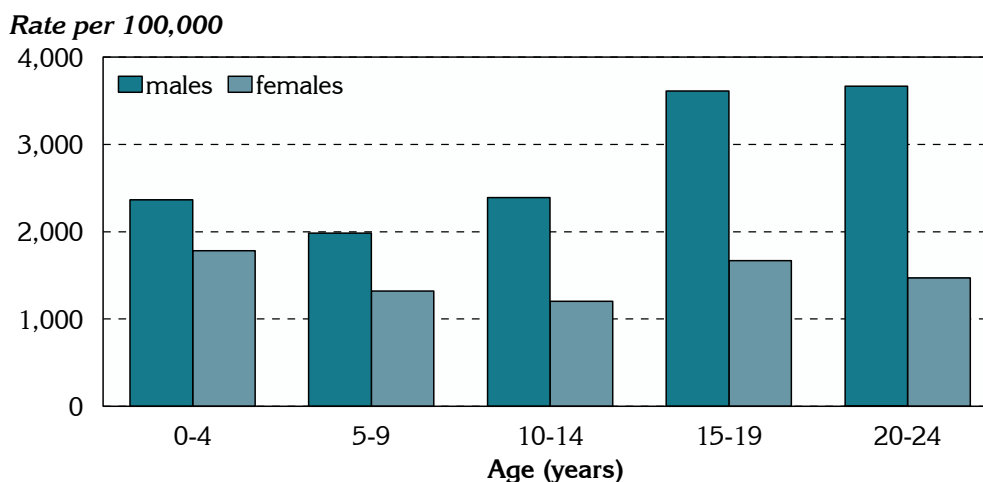


Source: Compiled in HealthWIZ from data supplied by DHS

Admission rates of males and females from injury and poisoning (Figure 5.6) reveal a pattern across the age groups which is in direct contrast with the pattern evident for the other categories of

admissions described above. Males predominate in each age group, with the largest differentials at ages 15 to 19 and 20 to 24 years (differentials of 2.16 and 2.49, respectively).

Figure 5.6: Admissions to hospital from injury and poisoning, by age and sex, South Australia, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Differences related to area of residence

In addition to the differences noted above in relation to variations in admission rates by age, there are notable variations in admission rates between residents of Adelaide and the non-metropolitan area of South Australia. In many instances, admission rates are considerably higher for country residents than they are for city residents. Some suggested reasons for the higher rates of admissions of residents of the non-metropolitan areas are given below.

Some suggested reasons for the higher admission rates of residents of the non-metropolitan area of South Australia:

Isolation and distance

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

Lack of, or inadequate, alternative options/services such as community based care

In the absence of community-based care, 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 young 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, per head of population.

Higher rates of admission of Aboriginal people and Torres Strait Islanders

In addition to the greater burden of ill health among Indigenous people noted in Chapter 4, higher rates of hospitalisation for Aboriginal people and Torres Strait Islanders in some non-metropolitan areas are also likely to have an influence on non-metropolitan rates.

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'.

Coverage

Hospital admissions' data presented in this atlas include episodes of hospitalisation in public acute and private (acute and psychiatric) hospitals. All admissions, including admissions of same day patients, have been included.

Data issues

Data mapped

Analysis of admissions has been restricted to examining admissions for total admissions (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). The particular diagnoses and procedures selected are those which make a major contribution to variations in the pattern of distribution of hospitalisation at the regional and small level, and for which admissions are known to be associated with socioeconomic status.

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.

Deficiencies in the admissions data

Admissions and individuals admitted

The lack of a unique patient identifier is 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 hospitals¹. Thus the data include repeat admissions and may, therefore, be of limited value in describing patterns of hospitalisation for individuals. These issues also apply to many other collections of service utilisation data.

An analysis of data in the Western Australian Data Linkage System – where data are available of the number of admissions per individual, over time – can assist in determining if area based analyses using data of admissions (rather than individuals) provide valid results. The analysis showed there to be both more people admitted from Perth's most disadvantaged areas (13% more), and more admissions of people from these areas (47% more) (Glover et al. 2002). The situation in Adelaide is likely to be similar: that is, if data as to admissions of individuals were available, the relationship between admission rates and socioeconomic status would most likely be stronger than is the case with the available admissions data.

Admissions and individuals admitted

Areas with high proportions of Indigenous children generally have high rates of admission: however, this is not the case for Unincorporated Far North. The low rates found for most variable mapped for this large, remote area are likely to reflect, at least in part, the quality of the data. Children from this area who are hospitalised may be admitted to a hospital in Alice Springs, or in Adelaide, and may not be recorded to their true area of residence in the hospital statistics. To the extent that this occurs, rates in the Unincorporated Far North will understate the true situation.

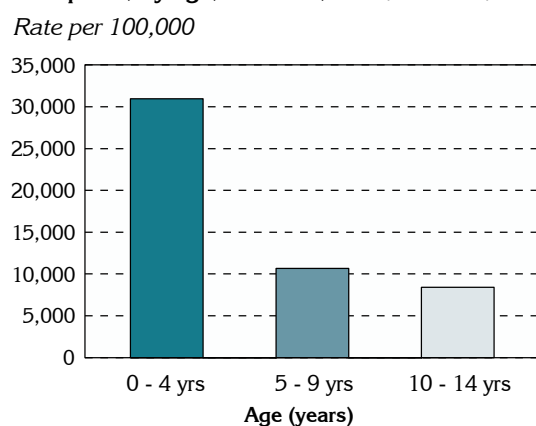
¹ Although potentially useful as an identifier, the Medicare number is not always included on inpatient records. Nor is it a unique identifier, with some individuals having more than one number.

Admissions to public acute and private hospitals, children aged 0 to 14 years, 1996/97-1998/99

Adelaide

Admission rates over the three years from 1996/97 to 1998/99 for children living in Adelaide vary substantially within the 0 to 14 year age category (Figure 5.7). Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 30,941 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (8,392 admissions per 100,000).

Figure 5.7: Admissions to public acute and private hospitals, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the three years 1996/97 to 1998/99, there were 102,394 admissions to public acute and private hospitals of children living in Adelaide aged 0 to 14 years, two per cent fewer admissions than were expected from the State rates (a standardised admission ratio (SAR) of 98^{**}). Males accounted for over half (58.8%) of the admissions.

The highest admission rates were recorded in Adelaide's inner northern and north-western suburbs, with the lowest rates in the eastern and south-eastern suburbs and in a number of coastal areas (Map 5.1).

The highest SAR (160^{**}) was recorded in *Prospect*, indicating that there were 60% more admissions of 0 to 14 year olds than were expected from the State rates. The next highest ratios were in the postcode areas of *Blair Athol* (an SAR of 159^{**}), *Gepps Cross* (153^{**}), *Ferryden Park* (149^{**}), *North Adelaide* (133^{**}), *Upper Sturt* (125^{**}), *Rosewater East* (123^{**}), *Thebarton* (121^{**}), *Parafield Gardens* (120^{**}), *Elizabeth North* (120^{**}), *Klemzig* (119^{**}), *Osborne* (118^{**}), *Adelaide* (117^{**}), *Woodville North* (117^{**}), *Elizabeth* (117^{**}), *Virginia* (117^{**}) and *Wynn Vale* (115^{**}).

The postcode area of *Carey Gully* had the lowest SAR for this variable, with 74% fewer admissions than were expected from the State rates (an SAR of 26^{**}). Relatively low ratios were also recorded in the eastern areas of *Montacute* (37^{**}), *Basket Range* (49^{**}), *Stirling Forward* (56^{**}), *Norton Summit* (57^{**}), *Greenhill* (63^{**}) and *Stirling* (67^{*}); in the south-eastern coastal areas of *Maslin Beach* (63^{**}), *Aldinga* (64^{**}) and *Sellicks Beach* (65^{**}); and in the far north in *MacDonald Park* (65^{**}).

Salisbury had the largest number of admissions (5,639) to public acute and private hospitals over the period from 1996/97 to 1998/99. High numbers of admissions were also recorded for children resident in *Morphett Vale* (with 3,715 admissions), *Smithfield* (3,285 admissions), *Happy Valley* (3,122 admissions), *Elizabeth North* (2,972 admissions), *Elizabeth* (2,723 admissions) and *Salisbury East* (2,503 admissions).

There were correlations of meaningful significance at the postcode level with the variables for children aged 0 to 14 years living in dwellings rented from the SA Housing Trust (0.55) and dwellings with no motor vehicles (0.54); and Indigenous people aged 15 to 24 years (0.52).

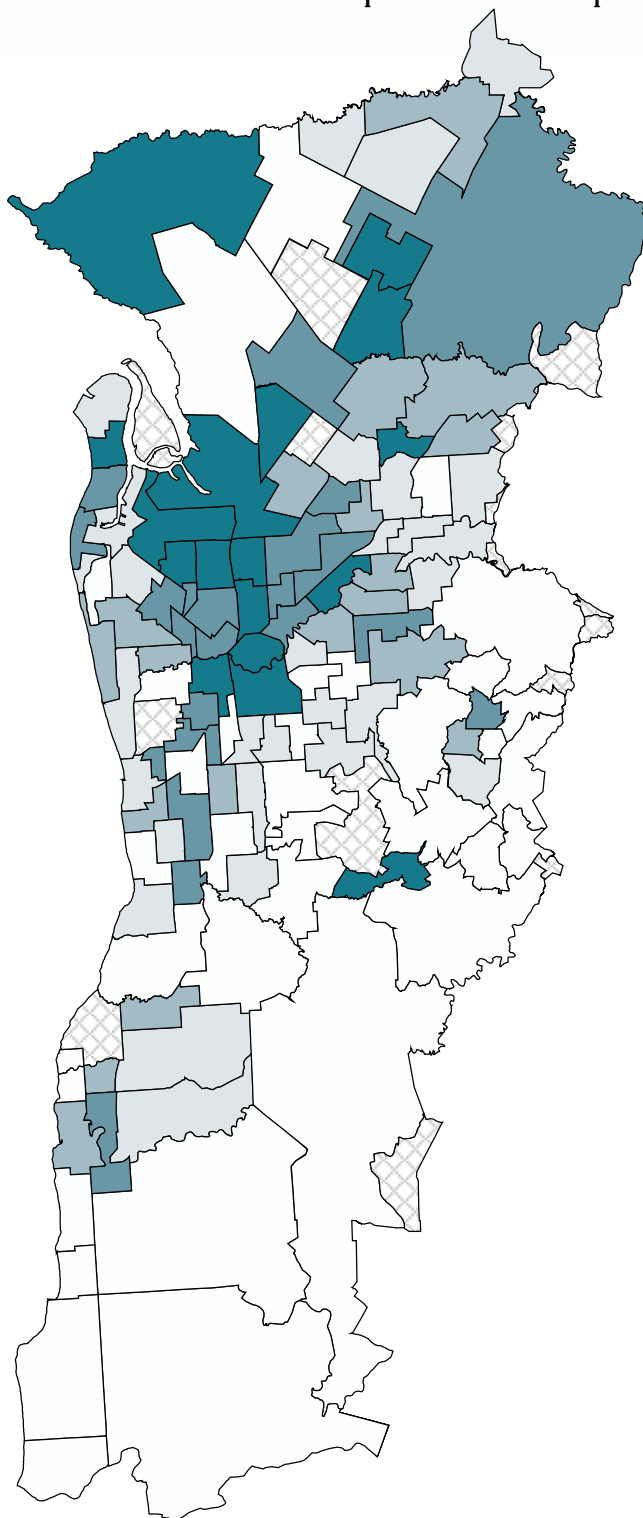
When the data were aggregated to the SLA level, correlations of meaningful significance were found with the variables for children aged 0 to 14 years living in dwellings with no motor vehicles (0.62) and dwellings rented from the SA Housing Trust (0.53); Indigenous people aged 0 to 14 years (0.67) and 15 to 24 years (0.61); and unemployed females (0.58) and males (0.50) aged 15 to 24 years.

These results, together with the inverse correlation with the IRSD (-0.54), indicate an association at the SLA level between high rates of hospital admission at ages 0 to 14 years and socioeconomic disadvantage.

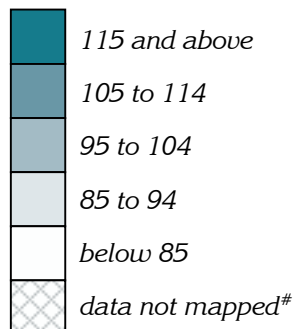
Map 5.1

Admissions to public acute and private hospitals, children aged 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

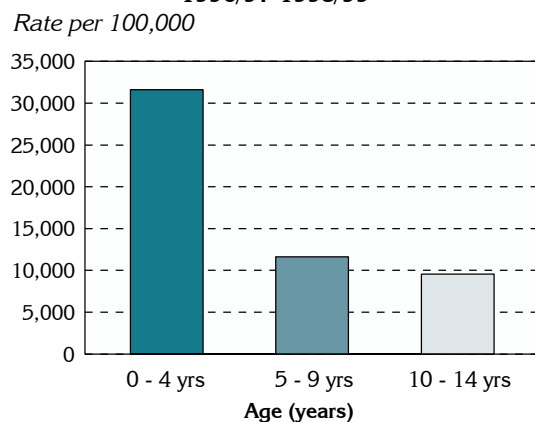
Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Admissions to public acute and private hospitals, children aged 0 to 14 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates over the three years from 1996/97 to 1998/99 of non-metropolitan South Australians vary substantially (Figure 5.8) between the five year age groups in the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 31,602 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (9,567 admissions per 100,000).

Figure 5.8: Admissions to public acute and private hospitals, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 46,644 admissions of children living in the non-metropolitan area of South Australia to public acute and private hospitals over the period 1996/97 to 1998/99 four per cent more than were expected from the State rates (a standardised admission ratio (SAR) of 104^{**}). The elevated ratio is in contrast to the below average rate of admissions of children at these ages in Adelaide.

SLAs with ratios elevated by 30% or more were mainly located in the north and west of the State (Map 5.2), with a cluster south-east of Murray Bridge. Just under half (44.2%) of the State's SLAs had more admissions than were expected, with almost one fifth (20 SLAs) recording ratios in the lowest range mapped.

The most highly elevated SAR was recorded in Unincorporated West Coast, with just over nine times the number of admissions expected from the State rates (a ratio of 903^{**} and 693 admissions). Relatively high ratios were recorded in the mid northern areas of Port Broughton (199^{**}), Burra Burra (145^{**}) and Crystal Brook/Red Hill (140^{**}); in

the far north in Carrieton and Unincorporated Flinders Ranges (both 177^{**}), Coober Pedy (172^{**}) and Port Augusta (141^{**}); in the western area of Ceduna (an SAR of 171^{**}); on the Yorke Peninsula in Warooka (170^{**}) and Wallaroo (147^{**}); in the south-east in Meningie (167^{**}), Tatiara (164^{**}) and Lameroo (151^{**}); and in Dudley (164^{**}) and Unincorporated Whyalla (140^{*}).

Children in Pirie, Naracoorte (DC) and Browns Well had the lowest standardised admission ratios for this variable, with SARs of 16^{**}, 29^{**}, and 31^{**} respectively. Other low ratios were recorded in Lucindale (an SAR of 46^{**}), Mount Gambier (DC) (50^{**}), Unincorporated Far North (51^{**}), Karoonda-East Murray (52^{**}), Robe (54^{**}), Beachport (56^{**}), Yankalilla (57^{**}) and Light (58^{**}). There were 58% fewer admissions than expected in Unincorporated Riverland, although this was calculated on only nine admissions.

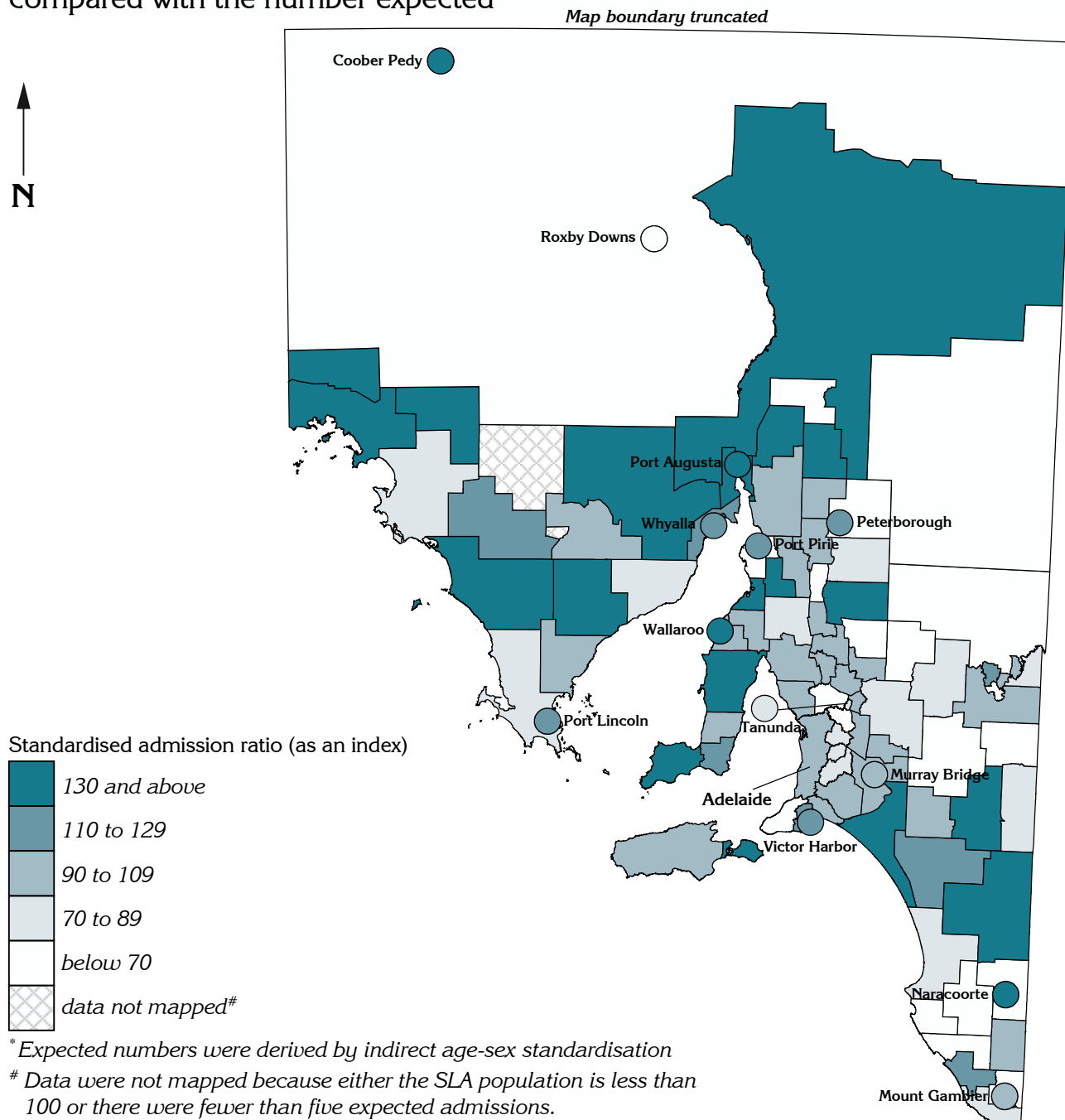
The largest numbers of admissions were recorded for young residents of the towns of Whyalla (with 3,647 admissions), Mount Gambier (2,491 admissions), Port Augusta (2,442 admissions), Murray Bridge (2,089 admissions), Port Lincoln (1,796 admissions) and Port Pirie (1,766 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia of an association between admissions to hospital at ages 0 to 14 years and socioeconomic status.

Map 5.2

Admissions to public acute and private hospitals, children aged 0 to 14 years, South Australia, 1996/97-1998/99

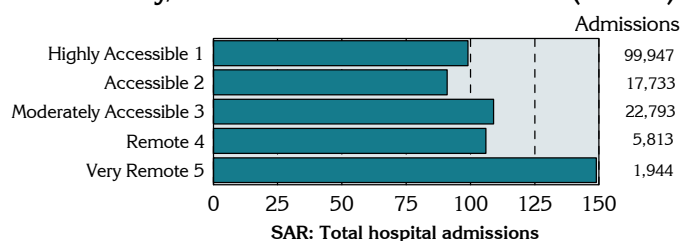
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for admissions to public acute and private hospitals decrease from an SAR of 99 in the Highly Accessible ARIA+ class to a low of 91 in the Accessible class, before increasing to a high of 149 in the Very Remote areas.

Source: Calculated on ARIA+ classification

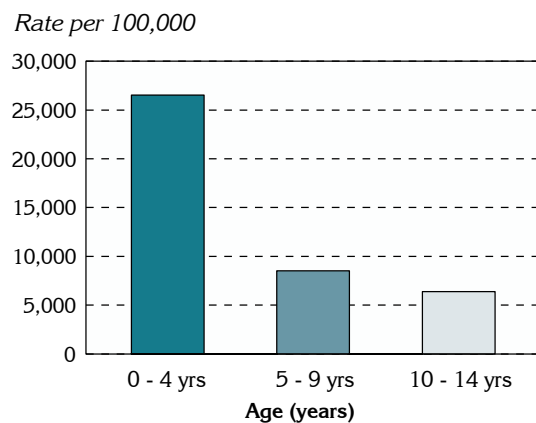
A Social Health Atlas of Young South Australians, 2003

Admissions to public acute hospitals, children aged 0 to 14 years, 1996/97-1998/99

Adelaide

Admission rates to public acute hospitals of children living in Adelaide vary substantially (Figure 5.9) within the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 26,515 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (6,385 admissions per 100,000).

Figure 5.9: Admissions to public acute hospitals, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 84,772 admissions to public acute hospitals of children aged 0 to 14 years living in Adelaide, five per cent fewer than were expected from the State rates (a standardised admission ratio (SAR) of 95^{**}). This reflects a number of factors, including the greater availability in Adelaide of private hospitals, which reduces the demand for public hospital beds, as well as a higher overall hospital use by children resident in non-metropolitan areas.

Admissions to public acute hospitals accounted for 82.8% of Adelaide's admissions: the remaining 17.2% were to private hospitals. Males living in Adelaide had more admissions to public acute hospitals than females, accounting for 59.2% of all such admissions. The pattern of distribution of admission rates at the postcode level is strongly associated with socioeconomic disadvantage, with the highest ratios in the inner north, north-western and outer northern suburbs and the lowest across a broad area to the east and south-east of the city (Map 5.3).

The highest ratios were recorded in the inner northern areas of *Blair Athol* (with an SAR of 176^{**}), *Gepps Cross* (166^{**}), *Prospect* (159^{**}), *North*

Adelaide (134^{**}), *Parafield Gardens* (128^{**}) and *Klemzig* (126^{**}); in the north-western suburbs of *Ferryden Park* (170^{**}), *Rosewater* (134^{**}), *Woodville North* (132^{**}) and *Osborne* (128^{**}); in the outer northern areas of *Elizabeth North* (134^{**}) and *Elizabeth* (125^{**}); and in the south at *Old Noarlunga* (121^{**}).

In contrast, postcodes with fewer admissions than expected were located in the south-eastern and Hills areas of Adelaide, in the southern middle suburbs and in selected pockets along the coast. The lowest ratios (in areas with more than 20 admissions) were recorded in *Norton Summit* (an SAR of 48^{**} and 23 admissions), *Stirling Forward* (50^{**} and 297), *Uraidla* (50^{**} and 29), *Stirling* (51^{**} and 306), *Belair* (52^{**} and 227), *Greenhill* (53^{**} and 23) and *Kingswood* (55^{**} and 539).

Postcode areas recording the largest number of admissions were predominantly located in the outer northern areas, and to a lesser extent in the southern suburbs. These areas included *Salisbury* (5,149 admissions), *Morphett Vale* (3,075 admissions), *Smithfield* (2,915 admissions), *Elizabeth North* (2,865 admissions) and *Elizabeth* (2,511 admissions).

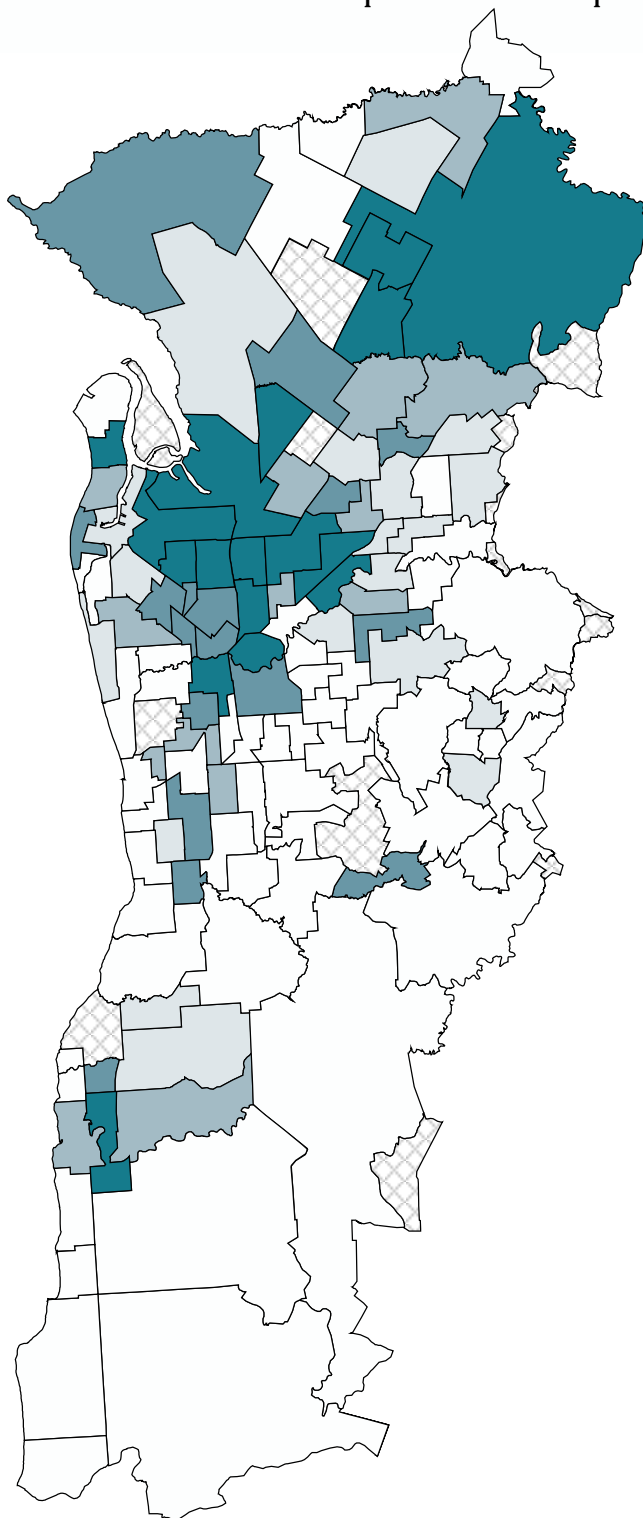
There were correlations of meaningful significance with the variables for children aged 0 to 14 years living in dwellings rented from the SA Housing Trust (0.69), dwellings with no motor vehicles (0.68), single parent families (0.65) and low income families (0.65). Correlations of meaningful significance were also recorded with the variables for Indigenous people (a correlation of 0.65 at ages 15 to 24 years and 0.62 at ages 0 to 14 years), dependent children in low income families (0.53) and unemployed females aged 15 to 24 years (0.52). The correlation analysis also revealed a strong inverse association with indicators of high socioeconomic status, with inverse correlations of meaningful significance recorded with the variables for female labour force participation (-0.60), managers and administrators, and professionals (-0.55) and high income families (-0.55).

These results, together with the inverse correlation of meaningful significance with the IRSD (-0.69), indicate an association at the postcode level between high rates of admissions to public acute hospitals at ages 0 to 14 years and socioeconomic disadvantage.

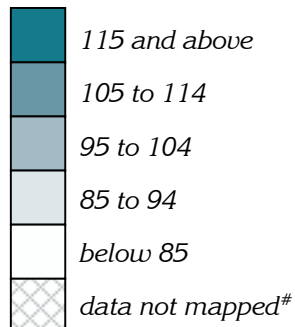
Map 5.3

Admissions to public acute hospitals, children aged 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

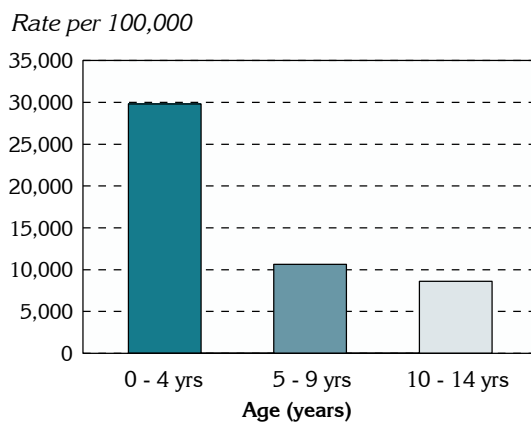
A Social Health Atlas of Young South Australians, 2003

Admissions to public acute hospitals, children aged 0 to 14 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates to public acute hospitals of non-metropolitan South Australians vary substantially (Figure 5.10) between the five year age groups in the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 29,787 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (8,598 admissions per 100,000).

Figure 5.10: Admissions to public acute hospitals, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over three years 1996/97 to 1998/99, there were 43,292 admissions to public acute hospitals of 0 to 14 year olds living in the non-metropolitan area of South Australia, 12% more than were expected from the State rates (a standardised admission ratio (SAR) of 112^{**}). Admissions to public acute hospitals accounted for 92.8% of all admissions in non-metropolitan areas: the remaining 7.2% were to private hospitals.

The high rate of public compared with private hospital (see page 202) usage in the non-metropolitan areas of South Australia is largely due to the relative availability of public acute hospitals and the lack of private hospitals in these areas. Note, however, that the figures shown here include admissions of children regardless of whether the admission was to a hospital in the non-metropolitan area or in Adelaide.

Reflecting the high overall standardised admission ratio for the non-metropolitan area of South Australia, more than half (51.0%) of the SLAs had admission rates above those expected from the State rates (Map 5.4).

The highest ratio was recorded for children resident in Unincorporated West Coast, with more than ten times the number of admissions expected from the State rates (an SAR of 1051^{**} and 690 admissions). Highly elevated ratios were also recorded in Port Broughton (203^{**}), Unincorporated Flinders Ranges (196^{**}), Coober Pedy and Ceduna (both 194^{**}), Meningie (187^{**}), Dudley (184^{**}), Carrieton (182^{**}), Warooka (181^{**}), Burra Burra (163^{**}), Wallaroo (160^{**}), Port Augusta (159^{**}) and Kanyaka and Quorn (158^{**}).

SLAs (with more than 20 admissions) in the lowest range mapped included Naracoorte (DC) (with an SAR of 32^{**}), Lucindale (53^{**}), Mount Gambier (DC) (57^{**}), Robe (60^{**}) and Beachport (62^{**}), located in the south-east; Unincorporated Far North (51^{**}) and Roxby Downs (67^{**}) in the State's far north; and Karoonda-East Murray (52^{**}), Yankalilla (54^{**}), Light (57^{**}), Barossa (60^{**}).

Areas with high proportions of Indigenous children generally have high rates of admission: however, this is not the case for Unincorporated Far North. The low rate in this large, remote area is likely to reflect, at least in part, the quality of the data. Children from this area who are hospitalised may be admitted to a hospital in Alice Springs, or in Adelaide, and may not be recorded to their true area of residence in the hospital statistics. To the extent that this occurs, rates in the Unincorporated Far North will understate the true situation.

The largest numbers of admissions were recorded in the towns of Whyalla (with 3,573 admissions), Mount Gambier (2,435 admissions), Port Augusta (2,362 admissions), Murray Bridge (2,024 admissions), Port Lincoln (1,775 admissions) and Port Pirie (1,710 admissions).

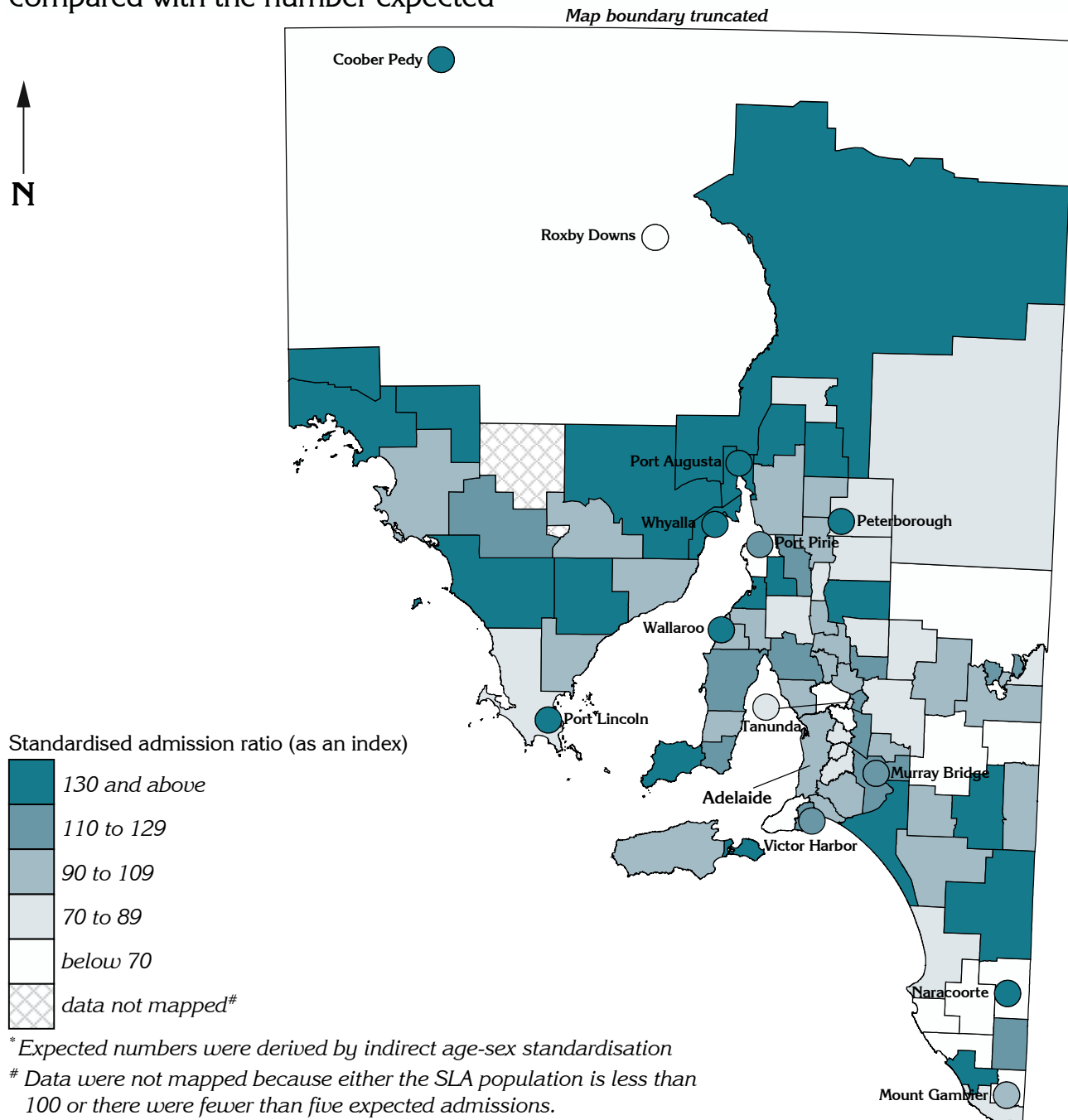
There were correlations of meaningful significance at the SLA level in the non-metropolitan area of South Australia with the variables for children aged 0 to 14 living in SAHT rented dwellings (0.63), single parent families (0.60) and dwellings without a motor vehicle (0.53).

These results, together with the inverse correlation of meaningful significance with the IRSD (-0.50), indicate an association at the SLA level between high rates of admissions to public acute hospitals at ages 0 to 14 years and socioeconomic disadvantage.

Map 5.4

Admissions to public acute hospitals, children aged 0 to 14 years, South Australia, 1996/97-1998/99

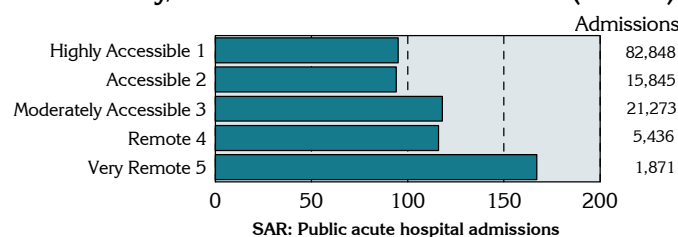
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for admissions to public acute hospitals increase markedly across the ARIA+ classes, from an SAR of 95 in the Highly Accessible areas to an SAR of 167 in the Very Remote areas.

Source: Calculated on ARIA+ classification

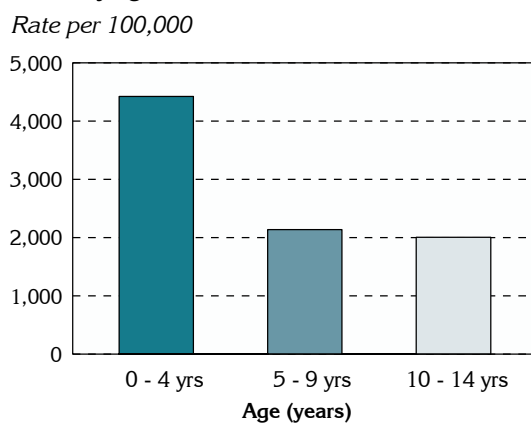
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Admissions to private hospitals, children aged 0 to 14 years, 1996/97-1998/99

Adelaide

Admission rates to private hospitals of children living in Adelaide vary substantially (Figure 5.11) within the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 4,426 admissions per 100,000 population aged 0 to 4 years), with the lowest admission rate in the 10 to 14 year age group (2,008 admissions per 100,000).

Figure 5.11: Admissions to private hospitals, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 17,622 admissions to private hospitals of children aged 0 to 14 years living in Adelaide, twenty per cent more admissions than were expected from the State rates (a standardised admission ratio (SAR) of 120^{**}). Males accounted for over half (56.4%) of the admissions.

Admissions to private hospitals comprise 17.2% of admissions of children in Adelaide, with the remaining 82.8% being admissions to public acute hospitals. Just as the use of public hospitals had a distribution strongly associated with the location of residents in lower socioeconomic status postcodes, so admission rates to private hospitals are generally higher in areas of high socioeconomic status; these are also areas in which families are more likely to have private health insurance, and therefore to use private hospitals.

Ratios with more than twice the number of admissions to private hospitals expected from the State rates were recorded in *Ashton* (with an SAR of 261^{**}), *Uraidla* (255^{**}), *Summertown* (220^{**}) and *Upper Sturt* (215^{**}), situated in the Adelaide Hills;

Glen Osmond (254^{**}), *Unley* (249^{**}), *Burnside* (246^{**}), *Walkerville* (240^{**}) and *Kingswood* (234^{**}), located in the inner areas of Adelaide; and *Seacliff* (221^{**}) and *Somerton Park* (218^{**}), on the coast.

The lowest SARs were mainly found in two locations: to the north-west of the city in *Ferryden Park* (an SAR of 19^{**} and 14 admissions), *Woodville North* (28^{**} and 35), *Osborne* (57^{**} and 46), *Rosewater* (58^{**} and 78); in the outer southern suburbs of *Maslin Beach* (26^{**} and 5), *O'Sullivan Beach* and *Sellicks Beach* (both 32^{**} and 9), *Old Noarlunga* (45^{**} and 29), *Aldinga* (49^{**} and 65) and *Christies Beach* (52^{**} and 30); to the north in *Blair Athol* (51^{**} and 66), *Holden Hill* (52^{**} and 40); and further north in *Elizabeth North* (31^{**} and 107), *Burton* (49^{**} and 54), *Ingle Farm* (56^{**} and 68) and *Munno Para* (57^{**} and 38).

The largest numbers of private hospital admissions of 0 to 14 year olds were, however, recorded in outer suburban *Happy Valley* (with 895 admissions), *Morphett Vale* (640 admissions), *O'Halloran Hill* (627 admissions) and *Salisbury* (490 admissions).

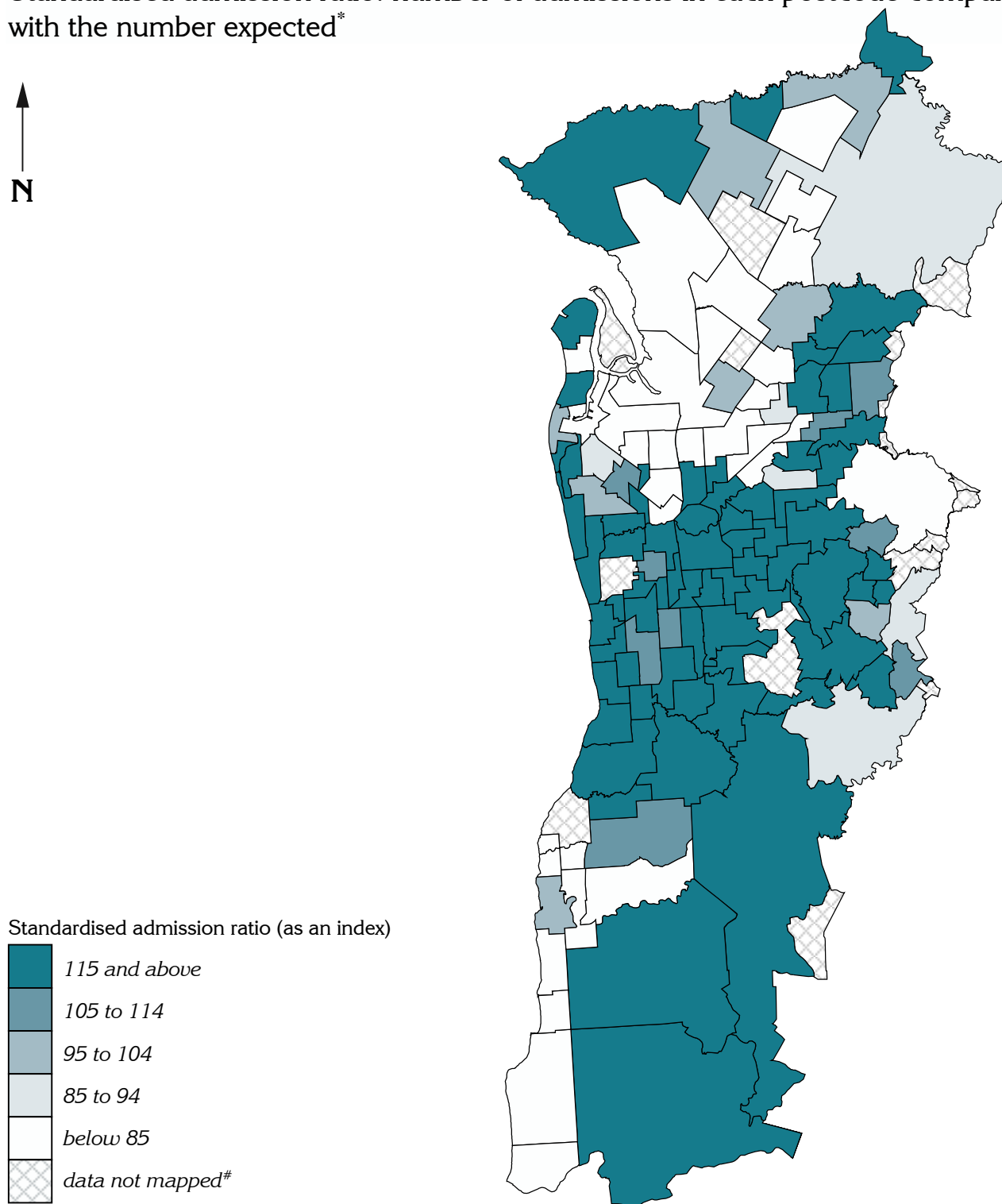
As would be expected, the correlation analysis revealed an inverse association with socioeconomic disadvantage, with inverse correlations of substantial significance between admissions to private hospitals and the variables for children aged 0 to 14 years living in low income families (-0.73) and people who left school at age 15 years or earlier (-0.71). Correlations of meaningful significance were recorded with the variables for full-time students (0.63), high publicly assessed achievement scores (0.68) and managers and administrators, and professionals (0.69); and of substantial significance with high school assessed achievement scores (0.77), high publicly examined achievement scores (0.72), high income families (0.76) and female labour force participation (0.72).

These results, together with the correlation of substantial significance with the IRSD (0.74), indicate an association at the postcode level between high rates of admissions to private hospitals at ages 0 to 14 years and high socioeconomic status.

Map 5.5

Admissions to private hospitals, children aged 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

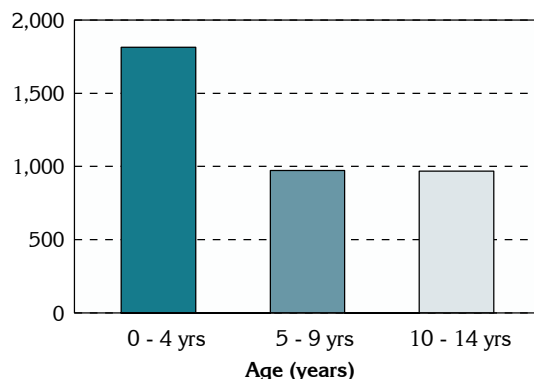
A Social Health Atlas of Young South Australians, 2003

Admissions to private hospitals, children aged 0 to 14 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates to private hospitals of non-metropolitan South Australians vary substantially (Figure 5.12) between the five year age groups in the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 1,815 admissions per 100,000 population aged 0 to 4 years), with the lowest admission rate in the 10 to 14 year age group (a trend which declines with age (969 admissions per 100,000).

Figure 5.12: Admissions to private hospitals, by age, non-metropolitan areas, 1996/97-1998/99
Rate per 100,000



Source: Compiled in HealthWIZ from data supplied by DHS

The lack of private hospitals and the relative availability of public hospitals throughout the non-metropolitan area of South Australia are evident from the low rate of use of private compared with public hospitals. Children in these areas had 47% fewer admissions (a standardised admission ratio (SAR) of 53**) to private hospitals than would be expected if the State-wide rates had applied across these areas. As noted above there were 12% more public hospital admissions and four per cent more total (public acute and private) admissions in these non-metropolitan areas. Of the 3,352 admissions of children aged 0 to 14 years to private hospitals, over half (58.5%) were admissions of males.

Note, however, that the figures shown here include admissions of children to private hospitals in Adelaide.

Only twelve SLAs in the non-metropolitan area of South Australia had elevated SARs for admissions of children at these ages to a private hospital.

By far the most highly elevated of these ratios was recorded for children in Coonalpyn Downs, with more than twice the number of admissions expected from the State rates (an SAR of 232** and 55 admissions over the three years). The remaining elevated ratios (with at least 20 admissions) were recorded in Lameroo (229**), and Tatiara (224**), in the south-east; Central Yorke Peninsula (191**), Port Broughton (172**), Bute (143) and Northern Yorke Peninsula (110), on Yorke Peninsula; and Onkaparinga (137**), Mallala (126**), located on the outskirts of Adelaide; and Riverton (118).

More than half of the non-metropolitan SLAs had much lower than the expected numbers of admissions; however the number of admissions in each of these SLAs were quite small. Of areas with more than 20 admissions, those with the lowest SARs were Port Lincoln (an SAR of 10** and 21 admissions), Mount Gambier (C) (15** and 56), Millicent (17** and 21), Whyalla (18** and 74), Renmark (21** and 27), Murray Bridge (24** and 65), Port Pirie (25** and 56), Loxton (32** and 37), Port Augusta (33** and 80) and Waikerie (39** and 29).

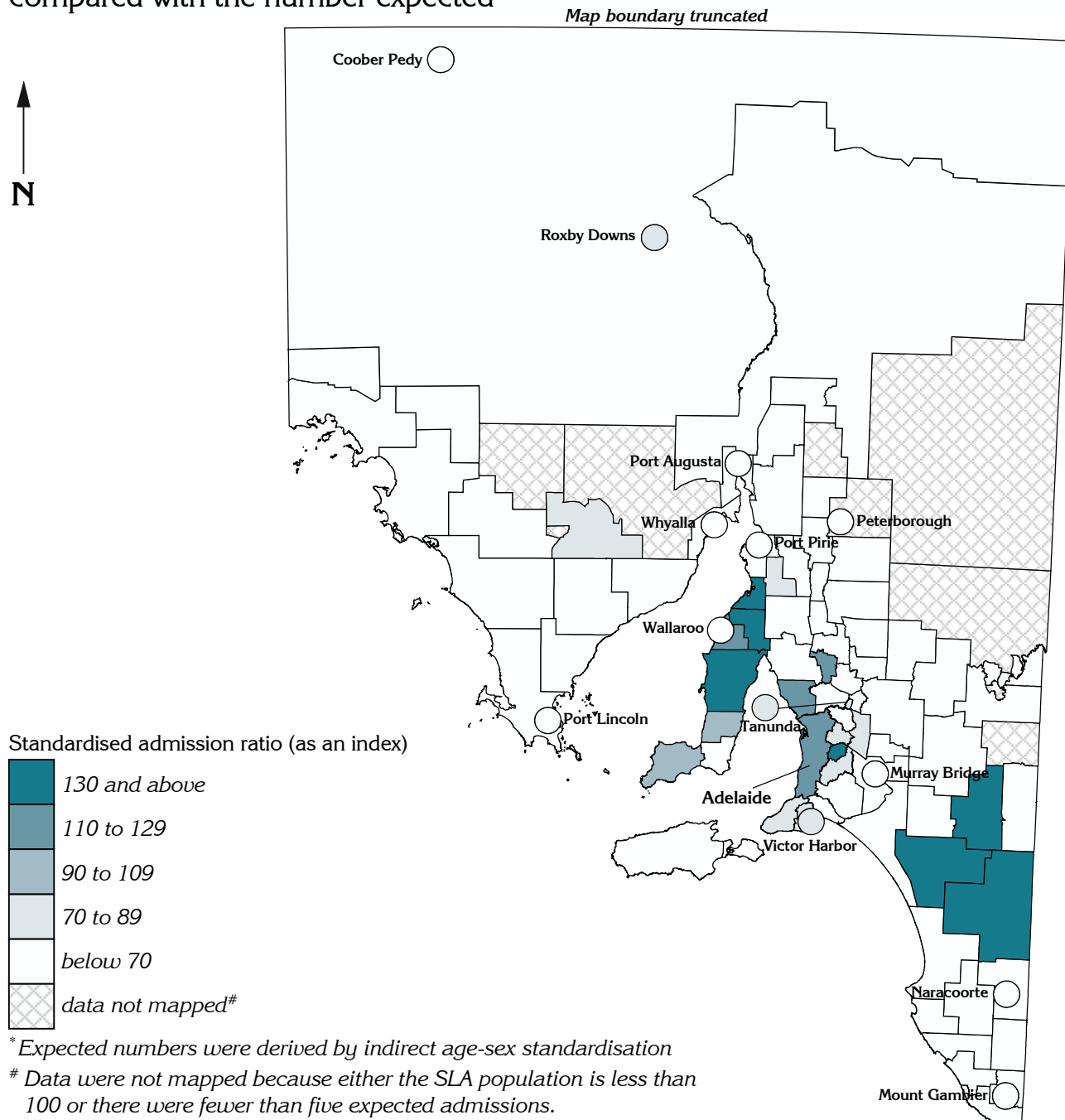
The largest number of admissions to a private hospital was of children living in Mount Barker, with 286 admissions. More than 100 admissions were recorded for children in Tatiara (274 admissions), Onkaparinga (178 admissions), Mallala (162 admissions), Central Yorke Peninsula (144 admissions), Northern Yorke Peninsula (124 admissions) and Victor Harbor (101 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia of an association between admissions to private hospitals at ages 0 to 14 years and socioeconomic status.

Map 5.6

Admissions to private hospitals, children aged 0 to 14 years, South Australia, 1996/97-1998/99

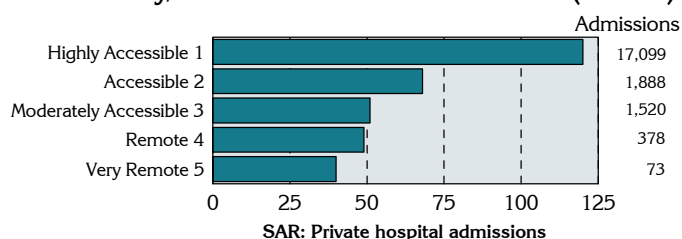
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Children in the Highly Accessible areas under the ARIA+ classification accounted for the majority of admissions to private hospitals and had the only elevated standardised admission ratio (an SAR of 120). Ratios in the other classes were all lower, dropping to a very low SAR of 40 in the Very Remote ARIA+ class.

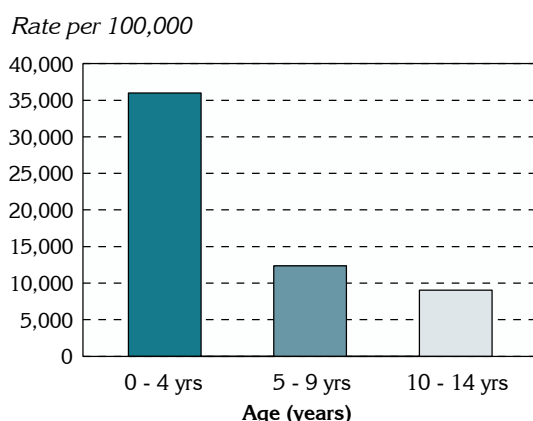
Source: Calculated on ARIA+ classification

Admissions of males, 0 to 14 years, 1996/97-1998/99

Adelaide

Admission rates of males living in Adelaide vary substantially (**Figure 5.13**) within the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 35,981 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (a trend which declines with age (9,017 admissions per 100,000).

Figure 5.13: Admissions of males, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 60,177 admissions of males aged 0 to 14 years living in Adelaide, one per cent fewer than expected from the State rates (a standardised admission ratio (SAR) of 99^{**}). Males account for over half (58.8%) of all admissions in the metropolitan area.

The distribution of standardised admission ratios for males (**Map 5.7**) produces a pattern consistent with that of many measures of low socioeconomic status (Chapter 3).

The highest standardised admission ratios were recorded for male children living in *Prospect* (an SAR of 183^{**}), *Blair Athol* (180^{**}) and *Ferryden Park* (161^{**}). Ratios elevated by fifteen per cent or more were recorded in the postcode areas of *Gepps Cross* (an SAR of 150^{**}), *Upper Sturt* (149^{**}), *Wynn Vale* (131^{**}), *Woodville North* (128^{**}), *Virginia* (127^{**}), *Woodville* (123^{**}), *Novar Gardens* (121), *Nailsworth* (121^{**}), *North Adelaide* and *Kilkenny* (both 119^{**}), *Osborne* and *Elizabeth* (both 118^{**}), *Rosewater*, *Parafield Gardens* and *Elizabeth North* (each 117^{**}) and *Ashton* (115).

Generally, the lowest ratios were recorded in eastern and south-eastern postcode areas. The lowest ratios (in areas with more than 20 admissions) were in the Hills postcodes of *Uraidla* (with an SAR of 51^{**} and 21 admissions), *Stirling Forward* (58^{**} and 234), *Norton Summit* (62^{*} and 22), *Stirling* (64^{**} and 272), *Bridgewater* (65^{**} and 178), *Piccadilly* (65^{*} and 23) and *Belair* (66^{**} and 199); on the coast at *O'Sullivan Beach* (53^{**} and 65), *Sellicks Beach* (57^{**} and 65) and *Aldinga* (60^{**} and 352); and elsewhere at *MacDonald Park* (47^{**} and 32).

The largest numbers of admissions were recorded for males from the outer postcode areas of *Salisbury* (3,402 admissions), *Morphett Vale* (2,208 admissions), *Smithfield* (1,905 admissions), *Happy Valley* (1,872 admissions), *Elizabeth North* (1,655 admissions) and *Elizabeth* (1,637 admissions).

There were correlations of meaningful significance at the postcode level with the variables for children aged 0 to 14 years living in dwellings rented from the SA Housing Trust (0.54) and dwellings with no motor vehicles (0.52).

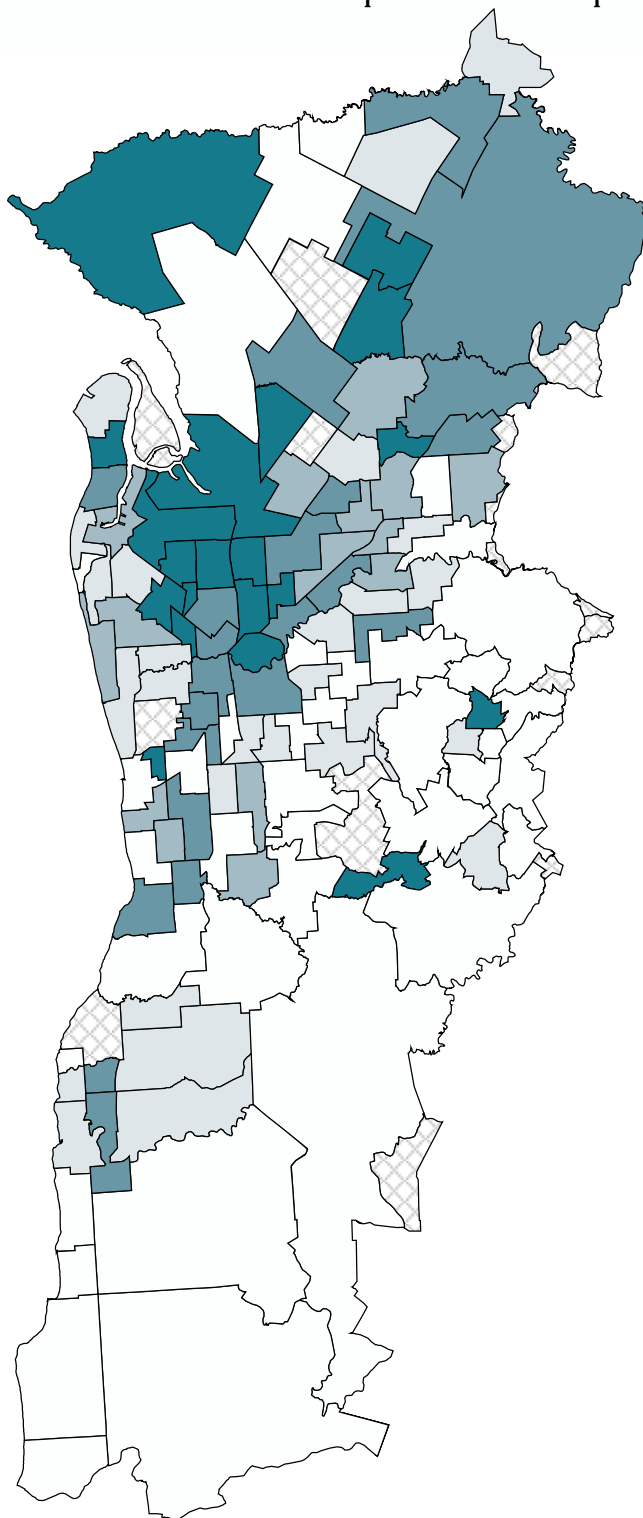
When the data were aggregated to the SLA level, correlations of meaningful significance were found with the variables for Indigenous people aged 0 to 14 years (0.64) and 15 to 24 years (0.61); and children aged 0 to 14 years living in dwellings with no motor vehicles (0.58) and dwellings rented from the SA Housing Trust (0.57).

These results, together with the inverse correlation with the IRSD (-0.54), indicate an association at the SLA level between high rates of admissions of males aged 0 to 14 years and socioeconomic disadvantage.

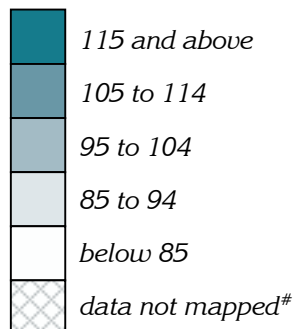
Map 5.7

Admissions of males, 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

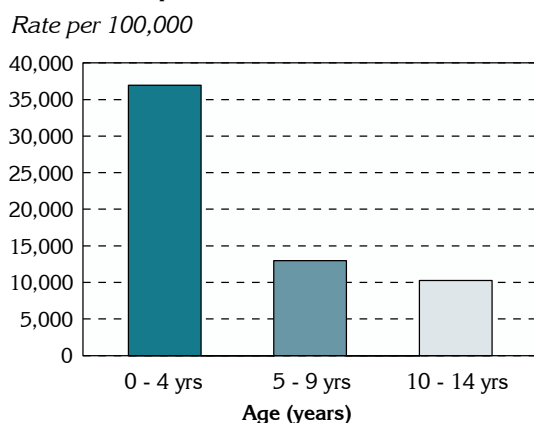
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Admissions of males, 0 to 14 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates for males in non-metropolitan South Australia vary substantially (Figure 5.14) between the five year age groups in the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 36,943 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (10,265 admissions per 100,000).

Figure 5.14: Admissions of males, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the three years 1996/97 to 1998/99, there were 27,327 admissions of males aged 0 to 14 years living in the non-metropolitan area of South Australia, three per cent more admissions than were expected from the State rates (a standardised admission ratio (SAR) of 103^{**}). The elevated ratio is in contrast to the lower than expected ratio for city residents.

Several SLAs had standardised admission ratios in the highest range mapped, ranging from an SAR of 728^{**} (and 329 admissions) in Unincorporated West Coast to an SAR of 130^{*} (and 89 admissions) in Warooka and 130^{**} (and 151 admissions) in Le Hunte. The highly elevated ratio in Unincorporated West Coast indicates that there were more than seven times the number of admissions of males expected from the State rates. Ratios elevated by 50% or more were recorded for children in Unincorporated Whyalla (with an SAR of 246^{**}), Dudley (195^{**}), Port Broughton (194^{**}), Burra Burra (169^{**}), Unincorporated Flinders Ranges (166^{**}), Meningie (165^{**}), Ceduna, Wallaroo and Tatiara (each 163^{**}), Elliston (157^{**}), Coober Pedy (156^{**}), Lameroo (152^{**}) and Crystal Brook/Red Hill (150^{**}).

Excluding SLAs with fewer than 20 admissions, the lowest ratios were in Naracoorte (DC) (with an SAR of 30^{**}), Beachport (45^{**}), Mount Gambier (50^{**}) and Lucindale (52^{**}), situated in the south-east; Unincorporated Far North (50^{**}), in the far north; and elsewhere in the SLAs of Karoonda-East Murray (49^{**}) and Light (55^{**}).

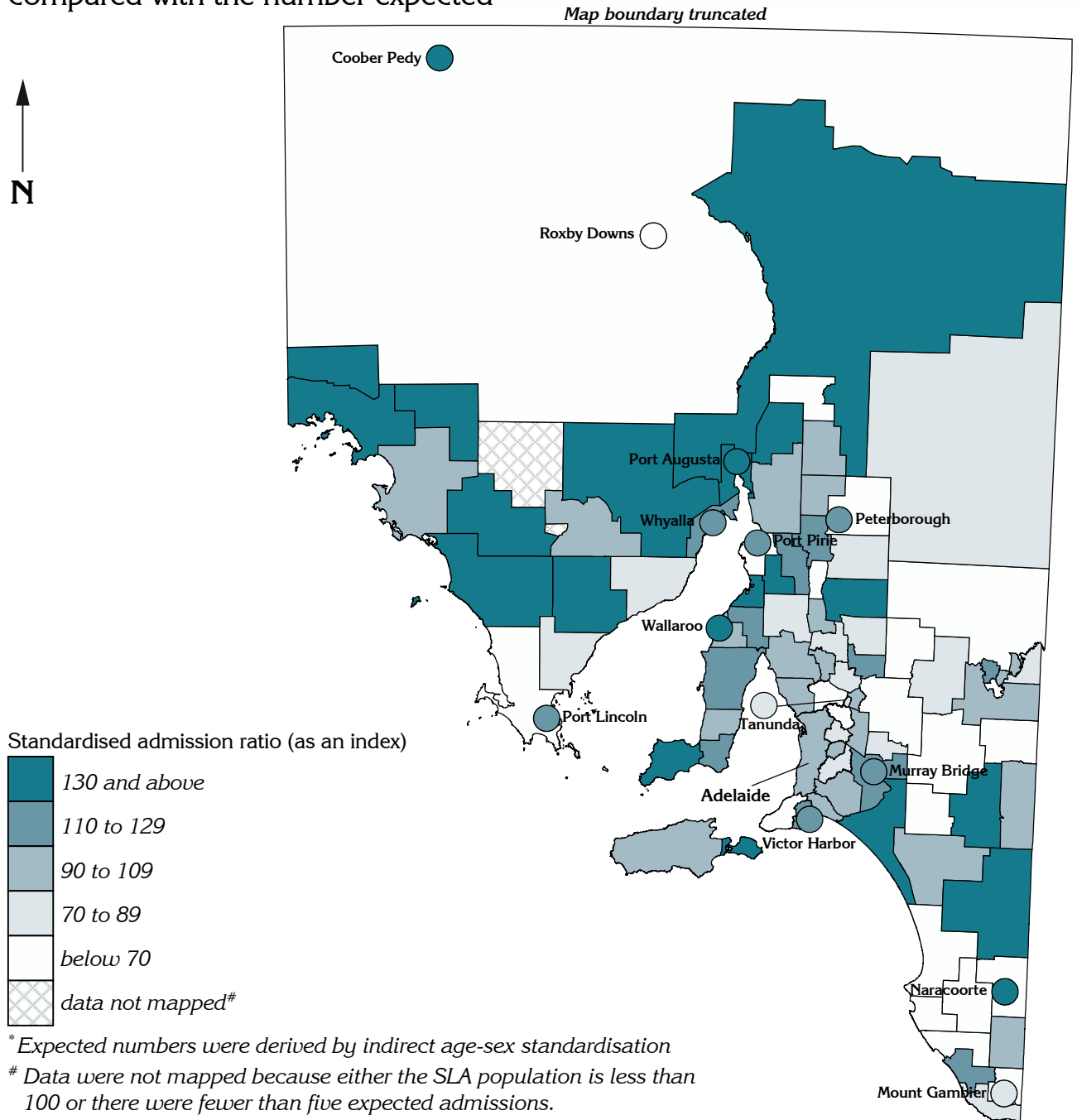
The largest numbers of admissions of male children resident in the non-metropolitan area of South Australia were in the towns of Whyalla (2,119 admissions), Mount Gambier (1,412 admissions), Port Augusta (1,340 admissions), Murray Bridge (1,289 admissions), Port Pirie (1,102 admissions) and Port Lincoln (1,083 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia of an association between admissions of males aged 0 to 14 years and socioeconomic status.

Map 5.8

Admissions of males, 0 to 14 years, South Australia, 1996/97-1998/99

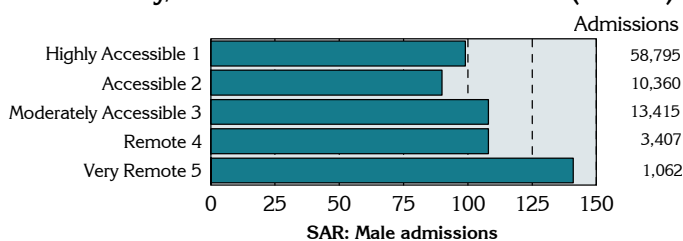
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for males closely follow the pattern evident for total admissions, with a ratio of 99 in the Highly Accessible ARIA+ class; ratios of 90, 108 and 108 in the three middle classes; and the highest SAR, of 141, in the Very Remote areas.

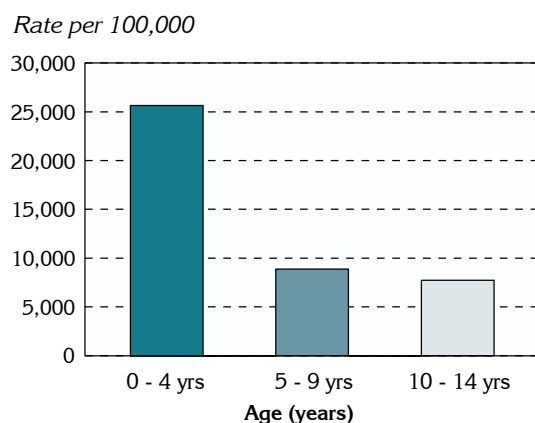
Source: Calculated on ARIA+ classification

Admissions of females, 0 to 14 years, 1996/97-1998/99

Adelaide

Admission rates of females living in Adelaide vary substantially (**Figure 5.15**) within the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 25,640 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (7,738 admissions per 100,000).

Figure 5.15: Admissions of females, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 42,217 admissions of female residents of Adelaide aged 0 to 14 years, two per cent fewer than expected from the State rates (a standardised admission ratio (SAR) of 98^{**}). Females accounted for 41.2% of all admissions in Adelaide.

The highest SARs were generally found in the inner northern and north-western suburbs of Adelaide, as well as in the outer north (**Map 5.9**). The highest ratio was recorded in the postcode areas of *Gepps Cross* and *North Adelaide*, both with 56% more admissions than were expected from the State rates (an SAR of 156^{**}). Other areas with relatively high ratios included *Klemzig* (140^{**}), *Semaphore* (137^{**}), *Adelaide* and *Thebarton* (both 134^{**}), *Rosewater* (133^{**}), *Ferryden Park* (132^{**}), *Piccadilly* (132), *Blair Athol* (131^{**}) and *Greenacres* (126^{**}).

Standardised admission ratios were more than 35% lower than expected in *Maslin Beach* (with an SAR of 51^{**}), *Stirling Forward* (52^{**}), *Christies Beach* (54^{**}), *Holden Hill* (65^{**}), *Aldgate* and *Aldinga* (both 69^{**}), *Norwood* and *Stirling* (both 72^{**}), *Willunga* and *Kensington Park* (both 73^{**}), *Sellicks Beach* (75^{*}) and *Eden Hills* (75^{**}).

The largest number of admissions was recorded for female children in *Salisbury*, with 2,237 admissions. More than 1,000 admissions were also recorded in *Morphett Vale* (1,507 admissions), *Smithfield* (1,380 admissions), *Elizabeth North* (1,317 admissions), *Happy Valley* (1,250 admissions), *Elizabeth* (1,086 admissions), *Salisbury East* (1,038 admissions) and *O'Halloran Hill* (1,004 admissions).

There were correlations of weak significance at the postcode level with the variables for children aged 0 to 14 years living in dwellings with no motor vehicles (0.43) and dwellings rented from the SA Housing Trust (0.42); and Indigenous children aged 0 to 14 years (0.44).

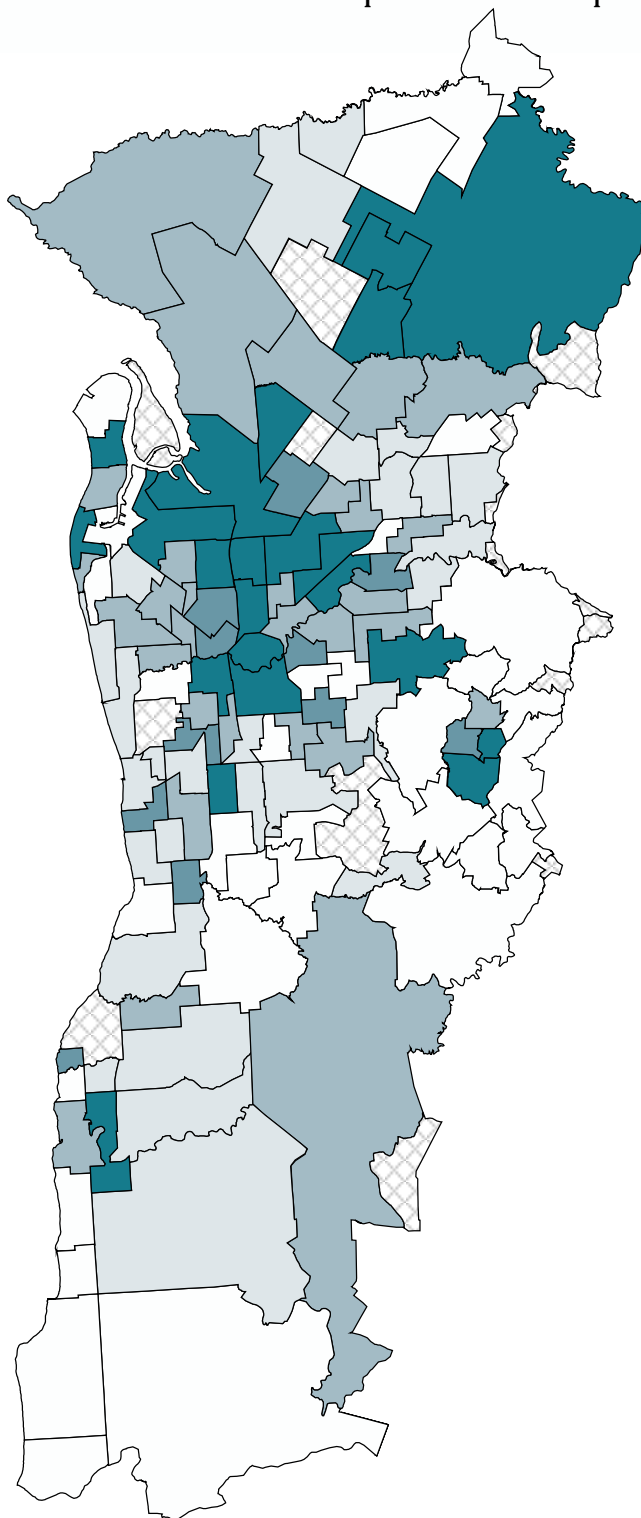
When the data were aggregated to the SLA level, correlations of meaningful significance were also recorded with the variables for Indigenous people aged 0 to 14 years (0.61) and 15 to 24 years (0.52); children aged 0 to 14 years living in dwellings with no vehicles (0.58); and unemployed females (0.56) and males (0.52) aged 15 to 24 years.

These results, together with the weak inverse correlation with the IRSD (-0.46), indicate an association at the SLA level between high rates of admissions of females aged 0 to 14 years and socioeconomic disadvantage.

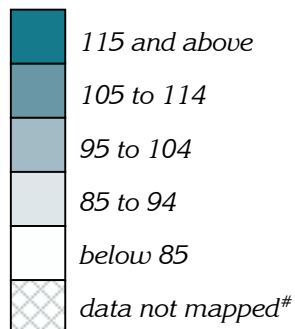
Map 5.9

Admissions of females, 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

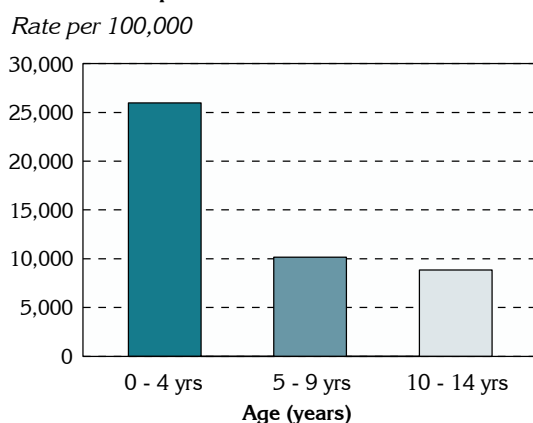
A Social Health Atlas of Young South Australians, 2003

Admissions of females, 0 to 14 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates for females in non-metropolitan South Australia vary substantially (Figure 5.16) between the five year age groups in the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 25,984 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (8,835 admissions per 100,000).

Figure 5.16: Admissions of females, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 19,317 admissions of female children resident in the non-metropolitan area of South Australia, five per cent more than expected from the State rates (a standardised admission ratio (SAR) of 105**).

As was the case for males, the highest standardised admission ratio for females was recorded in Unincorporated West Coast, with 364 admissions and an SAR of 1153**, more than ten times the number of admissions expected from the State rates. The next highest ratios were recorded in the SLAs of Carrieton (with an SAR of 325**), Warooka (224**) and Port Broughton (205**). Coober Pedy (197**), Unincorporated Flinders Ranges (191**) and Port Augusta (156**) in the far north, Ceduna (181**) in the far west, and Meningie (171**), Tatiara (166**) and Lameroo (150**) in the south-east, also had similarly highly elevated ratios.

Naracoorte (DC) and Lucindale, in the south-east of the State, had the lowest SARs (in SLAs with more than 20 admissions), of 28** and 39** respectively. Low ratios were also recorded in Robe (41**), Mount Gambier (DC) (49**), Unincorporated Far North (51**), Karoonda-East Murray (56**),

Yankalilla (58**), Light (63**), Barossa (64**), Roxby Downs (67**) and Port MacDonnell (68**).

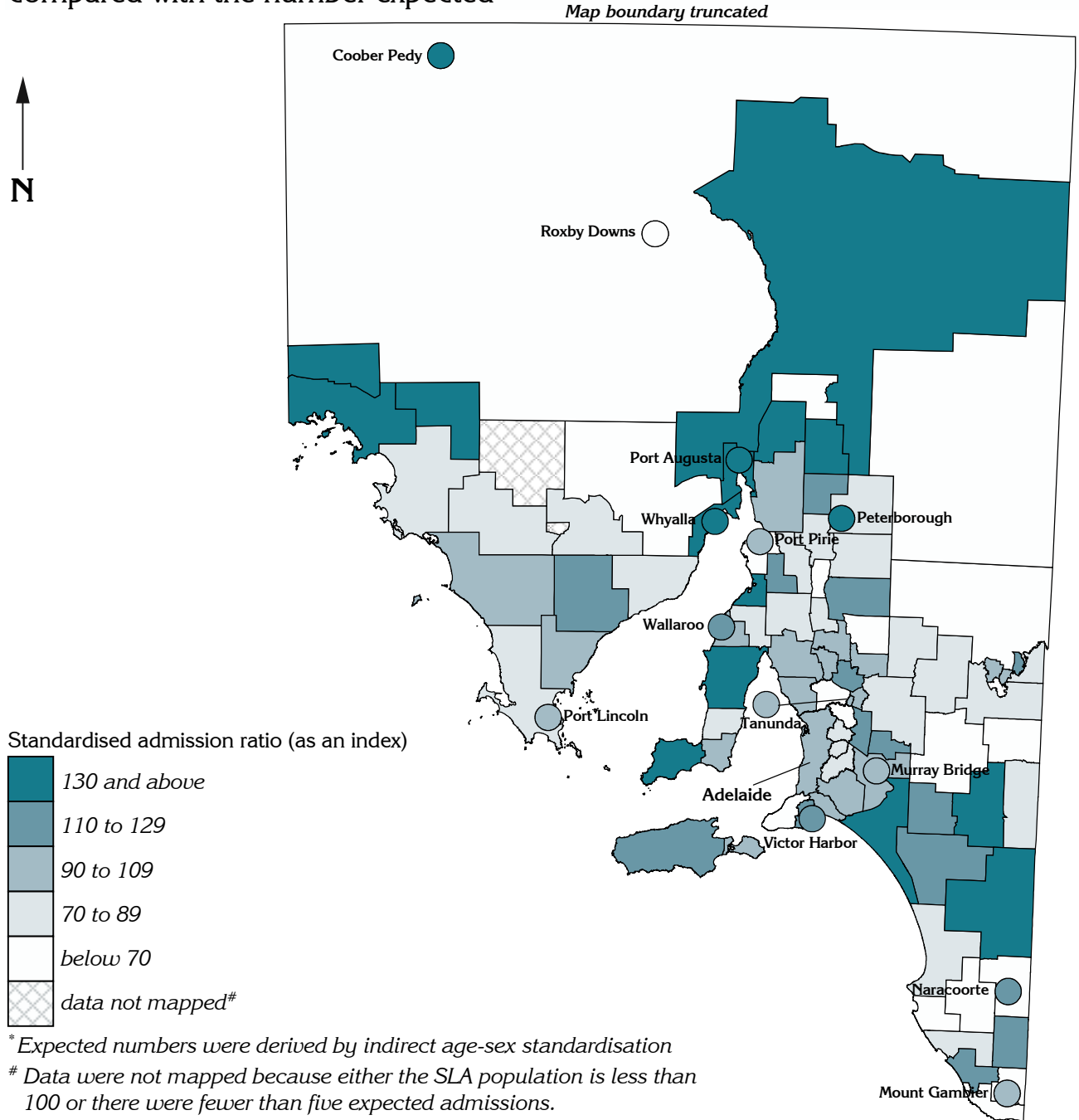
The towns of Whyalla and Port Augusta had the largest number of admissions of females at these ages, with 1,528 and 1,102 admissions respectively. More than 500 admissions were also recorded for females resident in Mount Gambier (1,079 admissions), Mount Barker (976 admissions), Murray Bridge (800 admissions), Port Lincoln (713 admissions), Port Pirie (664 admissions) and Tatiara (593 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia of an association between admissions of females aged 0 to 14 years and socioeconomic status.

Map 5.10

Admissions of females, 0 to 14 years, South Australia, 1996/97-1998/99

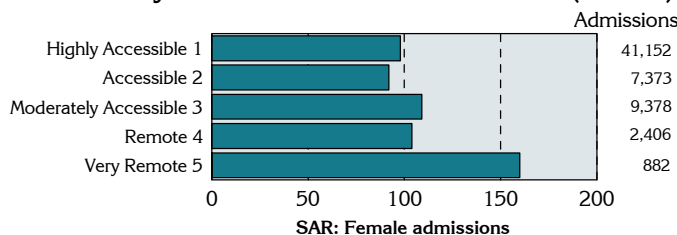
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



The pattern of admissions for females by the ARIA+ remoteness classification also closely follows the pattern evident for total admissions, with an SAR of 98 in the Highly Accessible ARIA+ class; ratios of 92, 109 and 104 in the middle classes; and the highest SAR (160) in the Very Remote areas.

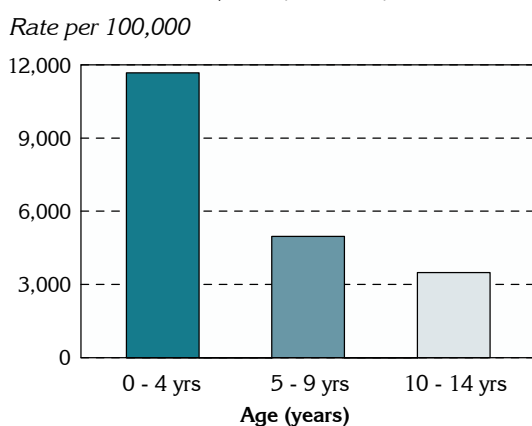
Source: Calculated on ARIA+ classification

Same day admissions, children aged 0 to 14 years, 1996/97-1998/99

Adelaide

Same day admission rates for children living in Adelaide vary substantially within the 0 to 14 year age category (Figure 5.17). Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 11,869 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (3,486 admissions per 100,000).

Figure 5.17: Same day admissions, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the three years 1996/97 to 1998/99, there were 41,244 same day admissions of children aged 0 to 14 years living in Adelaide. This was five per cent higher than expected from the State rates, a standardised admission ratio (SAR) of 105**. The total of same day admissions was comprised of 25,009 males (60.6%) and 16,235 females (39.4%).

Children in *Prospect* (with an SAR of 237**) and *Upper Sturt* (214**) had the highest standardised admission ratio for this variable, with more than twice the number of admissions than were expected from the State rates. Ratios elevated by fifty per cent or more were also recorded in the postcode areas of *Gepps Cross* (166**), *Nailsworth* (163**), *Ferryden Park* and *North Adelaide* (both 161**), *Wynn Vale* (158**), *Blair Athol* (156**) and *Osborne* (153**).

In areas with more than 20 admissions, the lowest ratios were recorded in the southern postcode areas of *Sellicks Beach* (with 63% fewer same day admissions than were expected from the State

rates, an SAR of 37**), *Maslin Beach* (47**), *O'Sullivan Beach* (48**), *Christies Beach* and *Aldinga* (both 51**), *McLaren Vale* and *Willunga* (both 62**). Relatively low ratios were also recorded for children in *MacDonald Park* (60**) and *Stirling Forward* (63**).

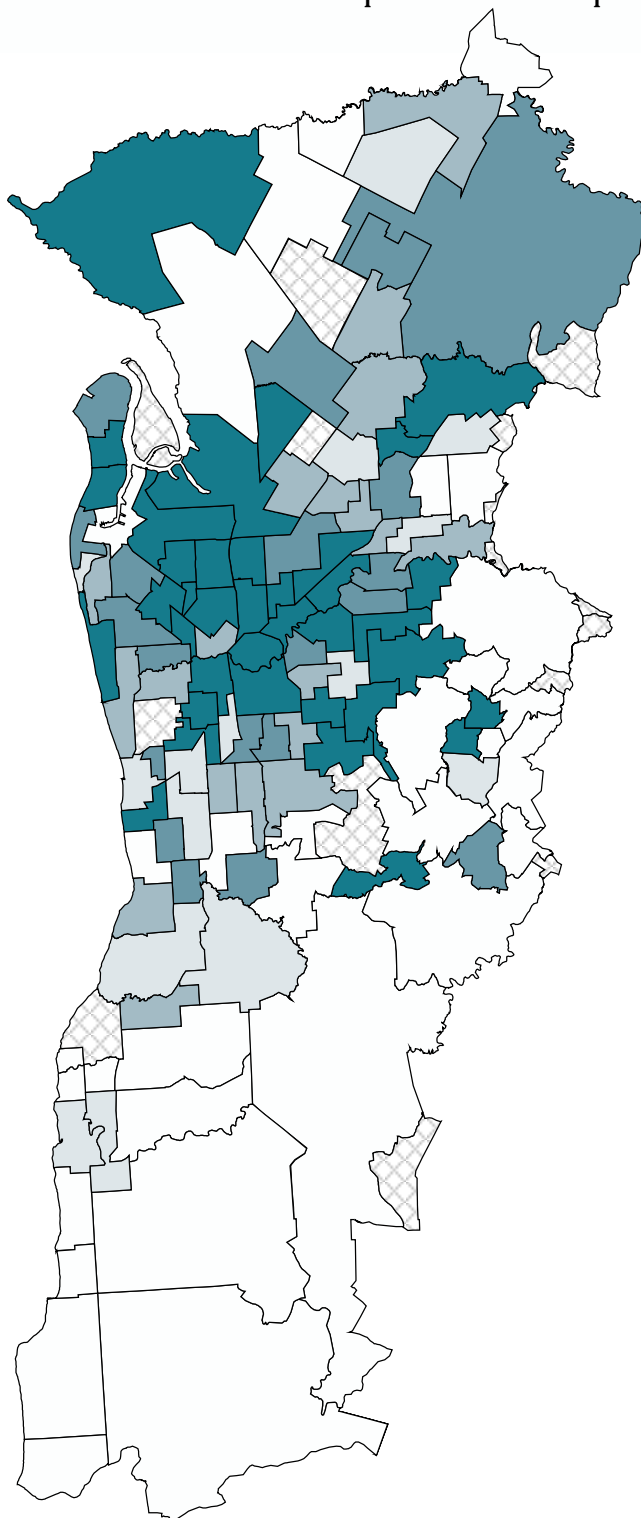
The largest number of same day admissions of children aged 0 to 14 years was recorded for residents of *Salisbury* (2,100 admissions), *Morphett Vale* (1,297 admissions), *Happy Valley* (1,260 admissions), *Smithfield* (1,175 admissions), *Elizabeth North* (985 admissions), *Prospect* (977 admissions), *Salisbury East* (961 admissions) and *O'Halloran Hill* (936 admissions).

There was no consistent evidence in the correlation analysis at the postcode or SLA level between same day admissions at ages 0 to 14 years and socioeconomic status.

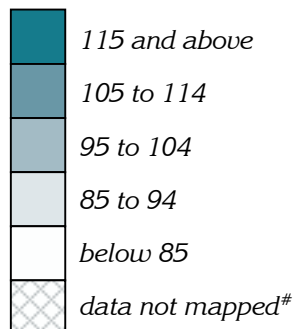
Map 5.11

Same day admissions, children aged 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

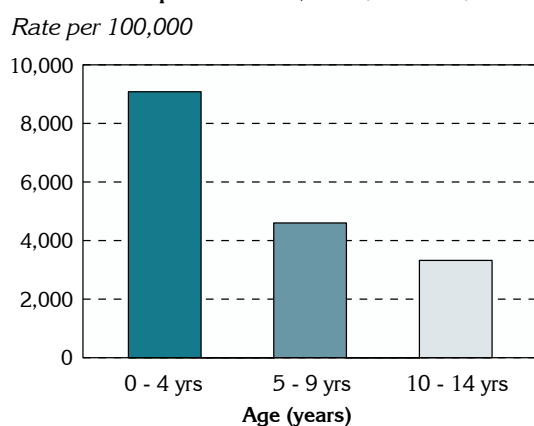
A Social Health Atlas of Young South Australians, 2003

Same day admissions, children aged 0 to 14 years, 1996/97-1998/99

Non-metropolitan South Australia

Same day admission rates in non-metropolitan South Australia vary substantially (Figure 5.18) between the five year age groups in the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 9,085 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (3,322 admissions per 100,000).

Figure 5.18: Same day admissions, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were eleven per cent fewer same day admissions at ages 0 to 14 years in the non-metropolitan area of South Australia than were expected from the State rates, a standardised admission ratio (SAR) of 89^{**}. Males accounted for 61.7% of the total 15,116 admissions, and females accounted for 38.3%.

There is no clear pattern in the distribution of standardised admission ratios for same day admissions (Map 5.12).

Warooka, located on the Yorke Peninsula, had the highest SAR, of 286^{**}, indicating that there were more than two and a half times the number of admissions than expected from the State rates (a total of 127 admissions over this three year period). Highly elevated ratios were also recorded for children living in the SLAs of Dudley (with an SAR of 273^{**}), Baramera (164^{**}), Burra Burra (158^{**}), Lameroo (154^{**}), Port Broughton (149^{**}), Elliston (130^{*}), Ceduna (129^{**}), Kingscote and Loxton (both 123^{**}).

Excluding SLAs with fewer than 20 admissions, the SLAs of Naracoorte (DC) (with a ratio of 28^{**}), Lucindale (38^{**}), Robe (45^{**}), Unincorporated Far North (47^{**}), Yankalilla, Mount Gambier (DC) and Karoonda-East Murray (each 48^{**}), Lacedpede (49^{**}) and Beachport (50^{**}) had the lowest standardised admission ratios for this variable. Ratios of below 60 were also recorded in Port Pirie (52^{**}), Mount Remarkable and Light (both 55^{**}), Orroroo and Franklin Harbor (both 57^{**}), Ridley-Truro and Lower Eyre Peninsula (both 59^{**}).

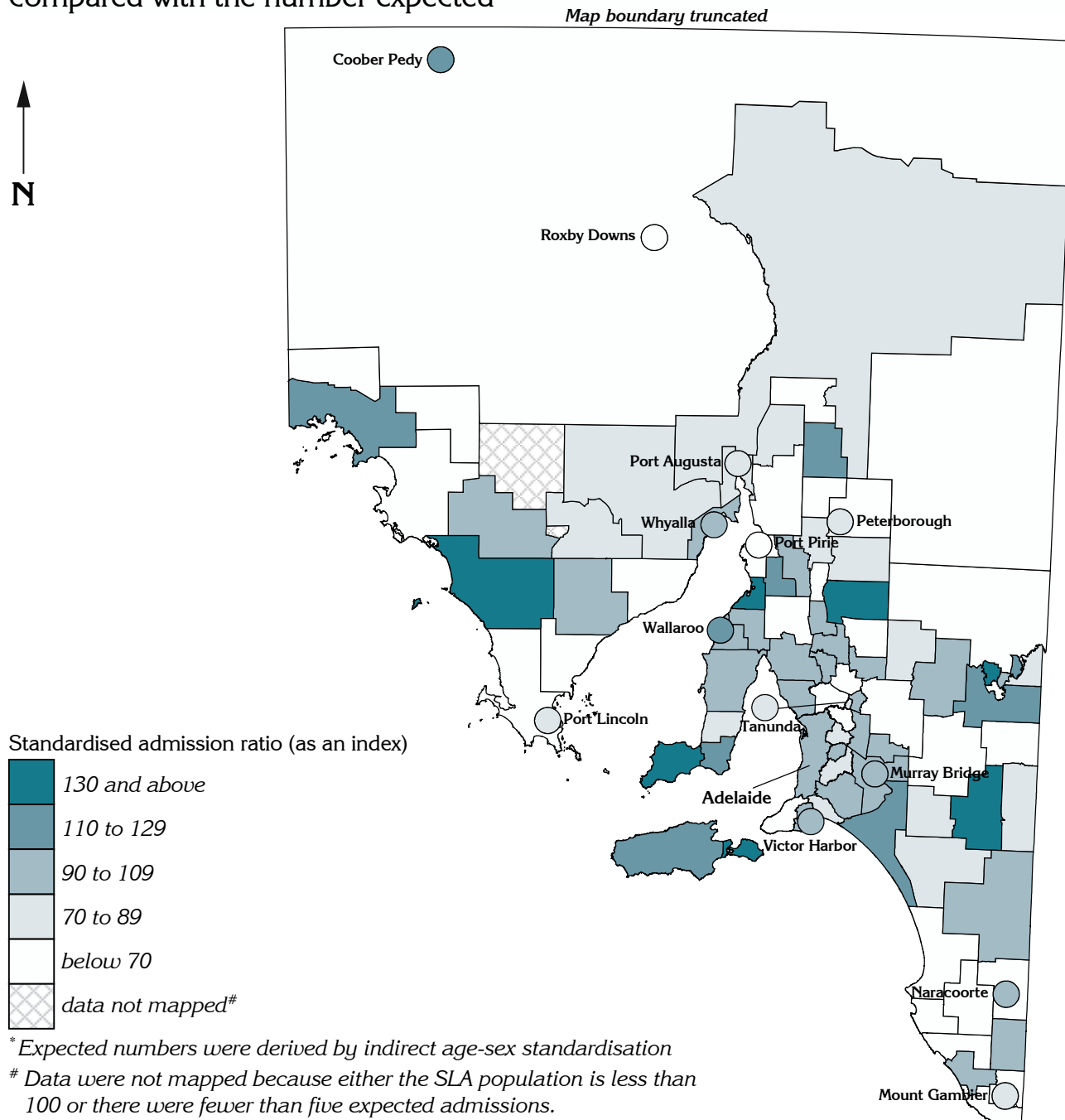
The largest number of same day admissions of children aged 0 to 14 years was recorded for residents of Whyalla, with 1,172 admissions. More than 400 admissions were also recorded in the SLAs of Mount Gambier (C) (872 admissions), Mount Barker (848), Murray Bridge (651), Port Lincoln (502), Port Augusta (495) and Renmark (409).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia between high rates of same day admissions at ages 0 to 14 years and socioeconomic status.

Map 5.12

Same day admissions, children aged 0 to 14 years, South Australia, 1996/97-1998/99

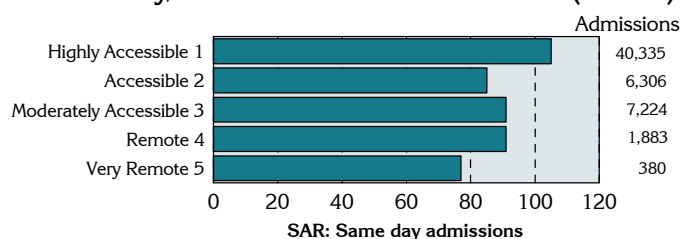
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios for same day admissions at ages 0 to 14 years were highest in the Highly Accessible areas, with five per cent more admissions than were expected from the State rates. Areas in the Very Remote class had the lowest ratio (77), with SARs of around 90 in the middle three ARIA+ classes.

Source: Calculated on ARIA+ classification

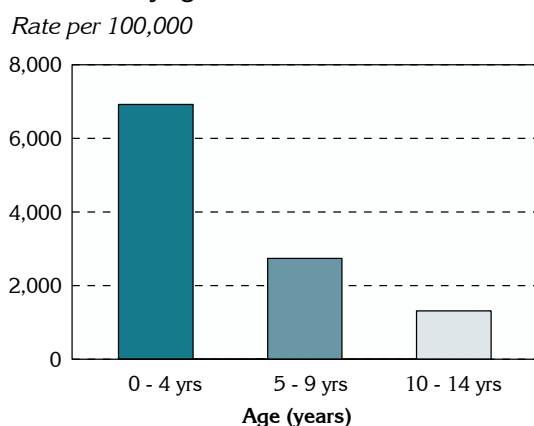
Admissions for respiratory system diseases, children aged 0 to 14 years, 1996/97-1998/99

Adelaide

Respiratory system diseases include the diseases of pneumonia, influenza, bronchitis, emphysema and asthma. This category includes people with chronic obstructive pulmonary disease – defined as a persistent obstruction of bronchial airflow, manifesting as asthma, chronic bronchitis, and chronic emphysema – as well as acute respiratory infections.

Admission rates for respiratory system diseases of children living in Adelaide vary substantially (Figure 5.19) within the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 6,924 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (1,308 admissions per 100,000).

Figure 5.19: Admissions for respiratory system diseases, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 22,427 admissions to hospital of children aged 0 to 14 years living in Adelaide with respiratory system diseases, five per cent fewer than were expected from the State rates (a standardised admission ratio (SAR) of 95^{**}). Males comprised 59.8% of these admissions.

There was a strong concentration of postcode areas with high standardised admission ratios in the outer northern suburbs and in the middle northern and north-western areas (Map 5.13). These areas included *Gepps Cross* (with an SAR of 203^{**}), *Woodville North* (146^{**}), *Pooraka* (141^{**}), *Rosewater* (141^{**}), *Ferryden Park* (140^{**}), *Blair*

Athol (139^{**}), *Klemzig* (124^{**}), *Ingle Farm* (124^{**}) and *Croydon* (121^{**}), in the mid northern and north-western suburbs; and *Parafield Gardens* (133^{**}), *Elizabeth North* (130^{**}) and *Elizabeth* (126^{**}), in the outer north.

Areas with relatively low ratios were located primarily to the east, south and south-east of the city. Although the lowest ratios were in the postcode areas of *Montacute* (with an SAR of 14^{**}) and *Carey Gully* (27^{**}), these areas had just two and five admissions, respectively. In postcode areas where there were more than 20 admissions, the lowest ratios were recorded in *Stirling Forward* (an SAR of 38^{**} and 60 admissions), *Belair* (43^{**} and 50), *Aldinga* (53^{**} and 115), *Stirling* (53^{**} and 84), *Eden Hills* (53^{**} and 47), *Moana* (60^{**} and 144), *Norwood* (60^{**} and 77) and *Blackwood Forward* (60^{**} and 39).

Salisbury had the largest number of admissions at these ages for respiratory system diseases, with 1,423 admissions. Other postcode areas with large numbers of admissions included *Smithfield* (766 admissions), *Morphett Vale* (760 admissions), *Elizabeth North* (737 admissions) and *Elizabeth* (671 admissions).

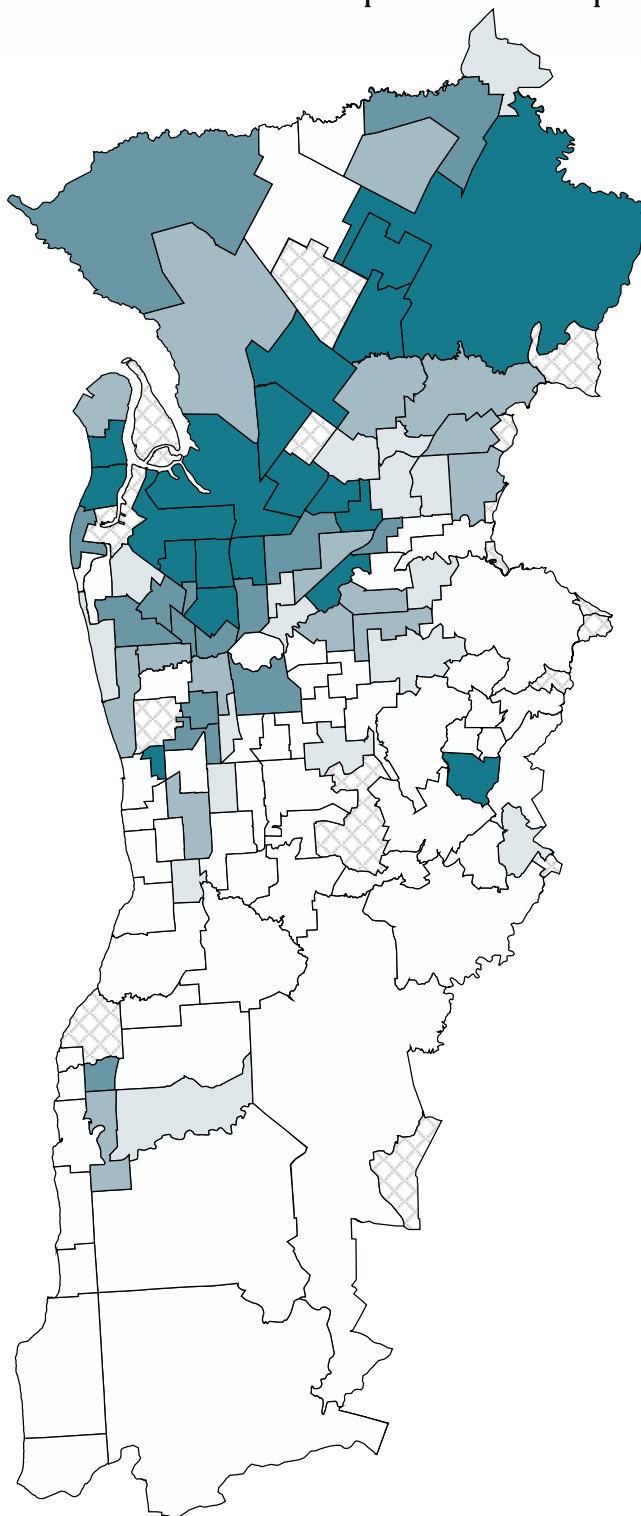
There were correlations of meaningful significance with the variables for Indigenous people aged 0 to 14 years (0.65) and 15 to 24 years (0.60); children aged 0 to 14 years living in dwellings with no motor vehicles (0.59), dwellings rented from the SA Housing Trust (0.59), single parent families (0.58) and low income families (0.56); and the high socioeconomic status indicators of managers and administrators, and professionals (-0.56), female labour force participation (-0.51) and high income families (-0.51). Inverse correlations were also recorded with the variables for full-time students (-0.50) and publicly assessed achievement scores (-0.53).

These results, together with the inverse correlation with the IRSD (-0.65), indicate an association at the postcode level between high rates of admissions for respiratory system diseases at ages 0 to 14 years and socioeconomic disadvantage.

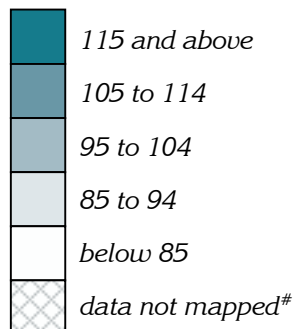
Map 5.13

Admissions for respiratory system diseases, children aged 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

Admissions for respiratory diseases, children aged 0 to 14 years, 1996/97-1998/99

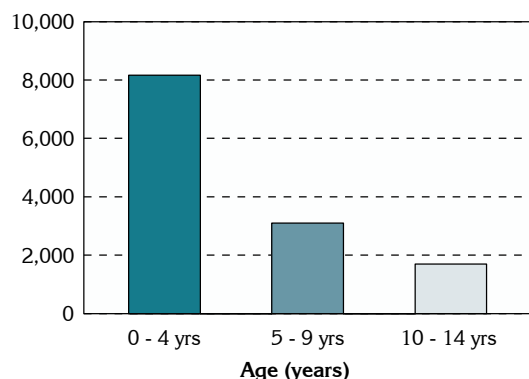
Non-metropolitan South Australia

Respiratory system diseases include the diseases of pneumonia, influenza, bronchitis, emphysema and asthma. This category includes 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.

Admission rates for non-metropolitan South Australians with respiratory system diseases vary substantially (Figure 5.20) between the five year age groups in the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 8,165 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (1,695 admissions per 100,000).

Figure 5.20: Admissions for respiratory system diseases, by age, non-metropolitan areas, 1996/97-1998/99

Rate per 100,000



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 11,418 admissions of children aged 0 to 14 years resident in the non-metropolitan area of South Australia. This is 12% more admissions than were expected from the State rates, a standardised admission ratio (SAR) of 112**. Males accounted for 58.0% of these admissions.

Less than half (46.2%) of the SLAs for which data were mapped had elevated standardised admission ratios. The most highly elevated of these was recorded for children in Unincorporated West Coast, with more than eight times the number of

admissions expected from the State rates (an SAR of 832** and 141 admissions over the three years).

The next highest ratios were recorded in the SLAs of Port Broughton (with an SAR of 261**), Unincorporated Flinders Ranges (251**), Wallaroo (227**), Tatiara (225**), Coober Pedy (181**), Meningie (175**), Peterborough (173**), Kanyaka and Quorn (172**), Port Augusta (170**), Ceduna (166**), Port Pirie (165**), Naracoorte (M) (162**) and Millicent (160**).

Excluding SLAs with fewer than 20 admissions, the lowest standardised admission ratio was recorded in the SLA of Unincorporated Far North, with an SAR of 39**. Low ratios were also recorded in Mount Gambier (43**) and Lacedpede (60**), in the south-east; Barossa (47**), Yankalilla (51**) and Light (55**) situated in the areas surrounding Adelaide; and Paringa (54**) and Mannum (57**).

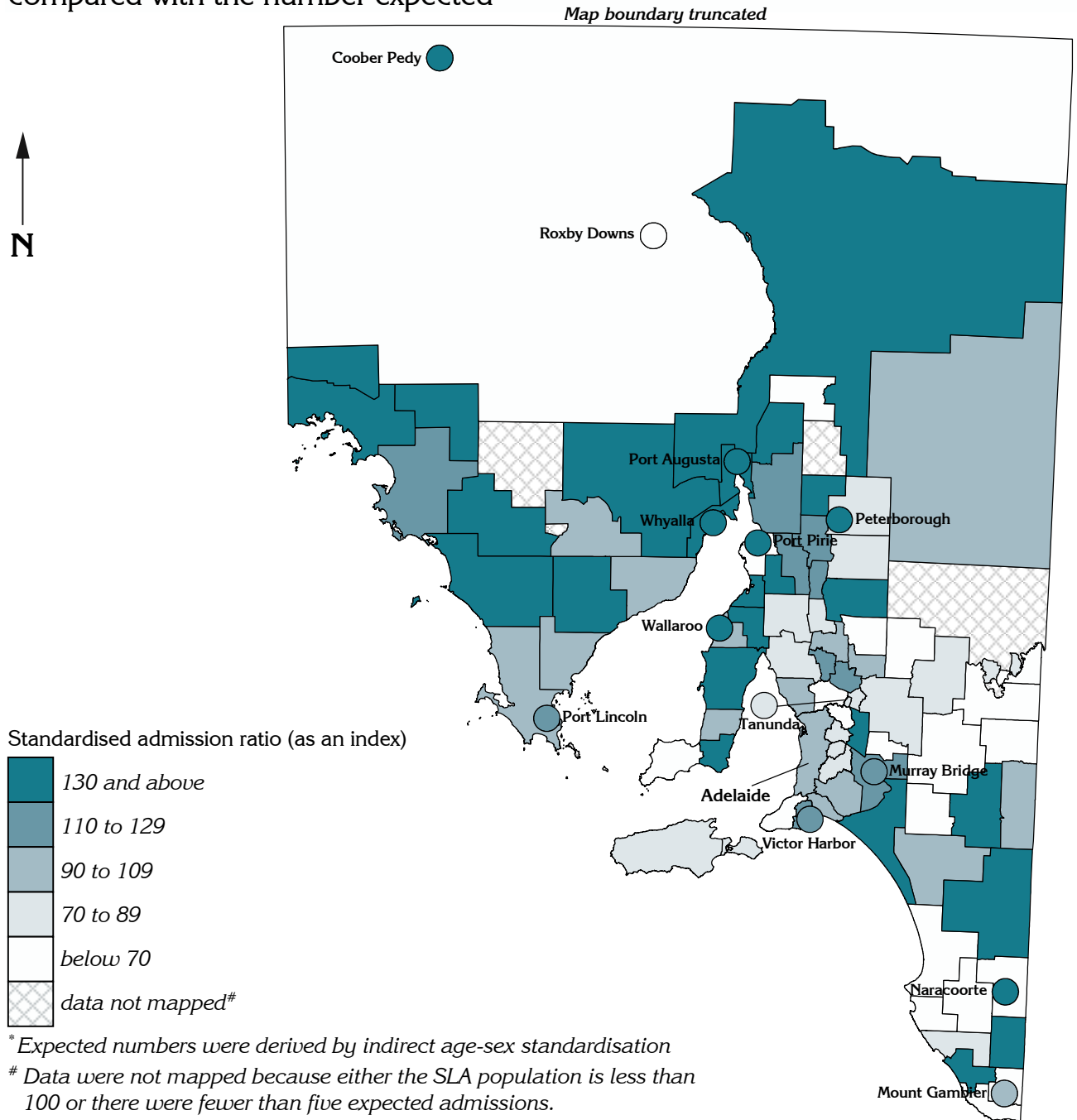
The largest numbers of admissions of children aged 0 to 14 years for respiratory system diseases were recorded in Whyalla (1,027 admissions), Port Augusta (668 admissions), Mount Gambier (622 admissions), Port Pirie (593 admissions), Mount Barker (508) and Murray Bridge (503 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia between high rates of admissions at ages 0 to 14 years for respiratory system diseases and socioeconomic status.

Map 5.14

Admissions for respiratory diseases, children aged 0 to 14 years, South Australia, 1996/97-1998/99

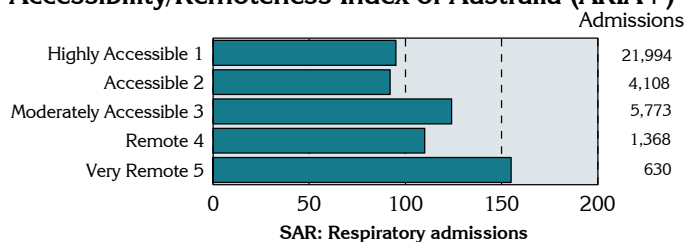
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for respiratory system diseases show a strong relationship with remoteness. Ratios increase by almost two thirds (63.0%), from SARs of 95 in the Highly Accessible areas to 155 in the Very Remote areas. The lowest ratio was recorded in the Accessible areas, an SAR of 92.

Source: Calculated on ARIA+ classification

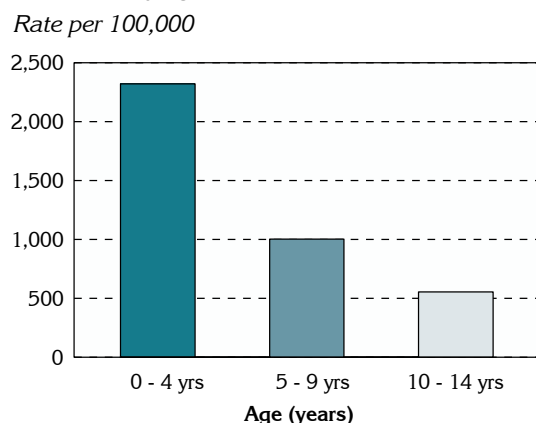
Admissions for bronchitis, emphysema and asthma, children aged 0 to 14 years, 1996/97-1998/99

Adelaide

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.

Admission rates for bronchitis, emphysema and asthma of children living in Adelaide vary substantially (**Figure 5.21**) within the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 2,320 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (553 admissions per 100,000).

Figure 5.21: Admissions for bronchitis, emphysema or asthma, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 7,932 admissions of children aged 0 to 14 years living in Adelaide for bronchitis, emphysema and asthma, three per cent more admissions than expected from the State rates (a standardised admission ratio (SAR) of 103^{**}). Males accounted for almost two thirds of these admissions (64.4%).

As can be seen from **Map 5.15**, high rates of admission for bronchitis, emphysema and asthma were recorded over a continuous area to the west, north-west and north of the city centre.

Several postcode areas in the Adelaide Hills were not mapped for this variable as there were too few cases to produce reliable results.

The highest standardised admission ratio was in *Woodville North*, with more than twice the number of admissions expected from the State rates (with an SAR of 212^{**} and 140 admissions). Relatively high ratios were also recorded for children in *Ferryden Park* (with an SAR of 195^{**}), *Blair Athol* (177^{**}), *Klemzig* (176^{**}), *Parafield Gardens* (173^{**}), *Rosewater East* (169^{**}), *Croydon* (166^{**}) and *Pooraka* (161^{**}). In *Port Adelaide*, *Largs Bay*, *Woodville*, *Ingle Farm*, *Para Vista*, *Semaphore* and *Elizabeth*, ratios were elevated by between 40% and 60%.

The lowest ratios for admissions from bronchitis, emphysema and asthma were spread over a wide area to the south and east of Adelaide. Excluding areas with fewer than 20 admissions, *Aldinga* recorded the lowest ratio for this variable, with 55% fewer admissions than expected (an SAR of 45^{**} and 32 admissions). Other low ratios were recorded in the postcode areas of *O'Halloran Hill* (with an SAR of 53^{**} and 112 admissions), *Stirling* (56^{**} and 29), *Goodwood* (58^{**} and 31), *Walkerville* (59^{**} and 26), *Highbury* (61^{*} and 25), *Moana* (62^{**} and 48), *Oaklands Park* (63^{*} and 29) and *St Marys* (64^{**} and 35).

The largest number of admissions was recorded for residents of *Salisbury* (with 520 admissions), followed by *Elizabeth* (240 admissions), *Elizabeth North* (230 admissions), *Parafield Gardens* (229 admissions), *Morphett Vale* (225 admissions) and *Smithfield* (221 admissions).

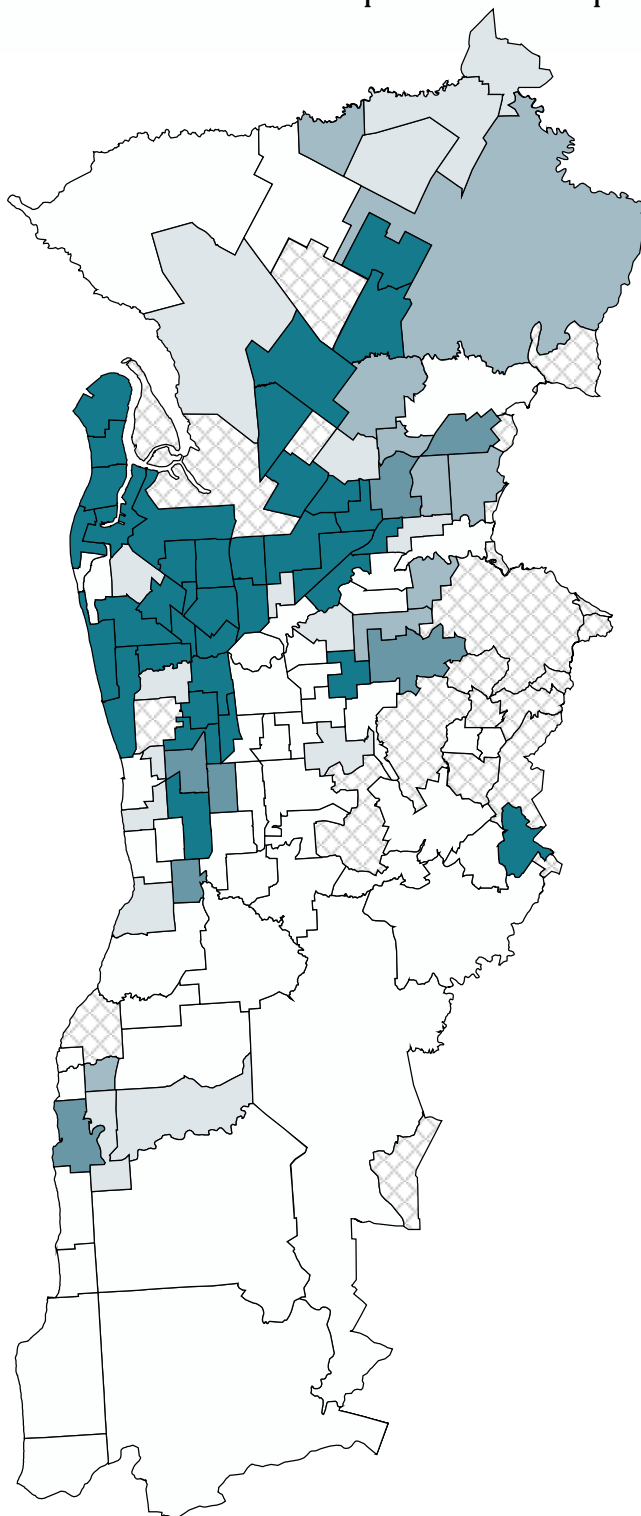
There were correlations of meaningful significance with the variables for children aged 0 to 14 years living in dwellings with no motor vehicles (0.60), single parent families (0.59), dwellings rented from the SA Housing Trust (0.58) and low income families (0.58); Indigenous people aged 15 to 24 years (0.51); and people aged 15 to 24 years from non-English speaking countries (0.50).

These results, together with the inverse correlation with the IRSD (-0.63), indicate an association at the postcode level between high rates of admission for bronchitis, emphysema and asthma at ages 0 to 14 years and socioeconomic disadvantage.

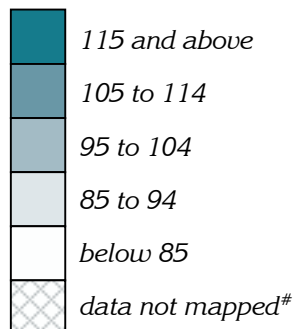
Map 5.15

Admissions for bronchitis, emphysema and asthma, children aged 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

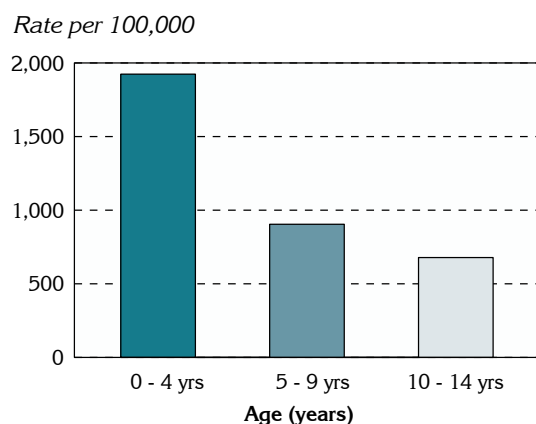
Admissions for bronchitis, emphysema and asthma, children aged 0 to 14 years, 1996/97-1998/99

Non-metropolitan South Australia

As noted on the previous text page, bronchitis, emphysema and asthma are grouped together when coding 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.

Admission rates for non-metropolitan South Australians with bronchitis, emphysema and asthma vary substantially (Figure 5.22) between the five year age groups in the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 1,924 admissions per 100,000 population aged 0 to 4 years), with the lowest rate in the 10 to 14 year age group (678 admissions per 100,000).

Figure 5.22: Admissions for bronchitis, emphysema or asthma, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 3,111 admissions for bronchitis, emphysema and asthma of children aged 0 to 14 years living in Adelaide, seven per cent fewer than expected from the State rates (a standardised admission ratio (SAR) of 93^{**}). Males accounted for almost two thirds of these admissions (62.1%).

Areas with relatively high standardised admission ratios were scattered throughout the State in no notable pattern (Map 5.16).

SLAs with more than twice the number of admissions expected from the State rates were Port Broughton (with an SAR of 258^{**} and 23 admissions over the three years), Burra Burra (249^{**} and 37 admissions), Streaky Bay (211^{**} and 39 admissions), Wallaroo (209^{**} and 32 admissions) and Le Hunte (201^{**} and 29 admissions). Other SLAs mapped in the highest range included Elliston (with an SAR of 190^{**}), Port Lincoln (142^{**}), Whyalla (137^{**}) and Cleve (131), on the Eyre Peninsula; Bute (179^{*}) and Crystal Brook/Red Hill (179^{**}), on or near the Yorke Peninsula; Meningie (174^{**}), Millicent and, Penola (both 172^{**}), Tatiara (139^{**}) and Lameroo (131), in the south-east; Mount Pleasant (148^{*}) and Kapunda (133), in the areas surrounding Adelaide; and in Kanyaka and Quorn (158^{*}) in the far north.

Light, on the outskirts of Adelaide, had the lowest ratio in SLAs with more than 20 admissions, with 51% fewer admissions than were expected from the State rates (an SAR of 49^{**}). Onkaparinga (with 39 admissions), Mallala (40 admissions) and Barossa (28 admissions) also recorded relatively low ratios, with SARs of 57^{**}, 60^{**} and 60^{**} respectively.

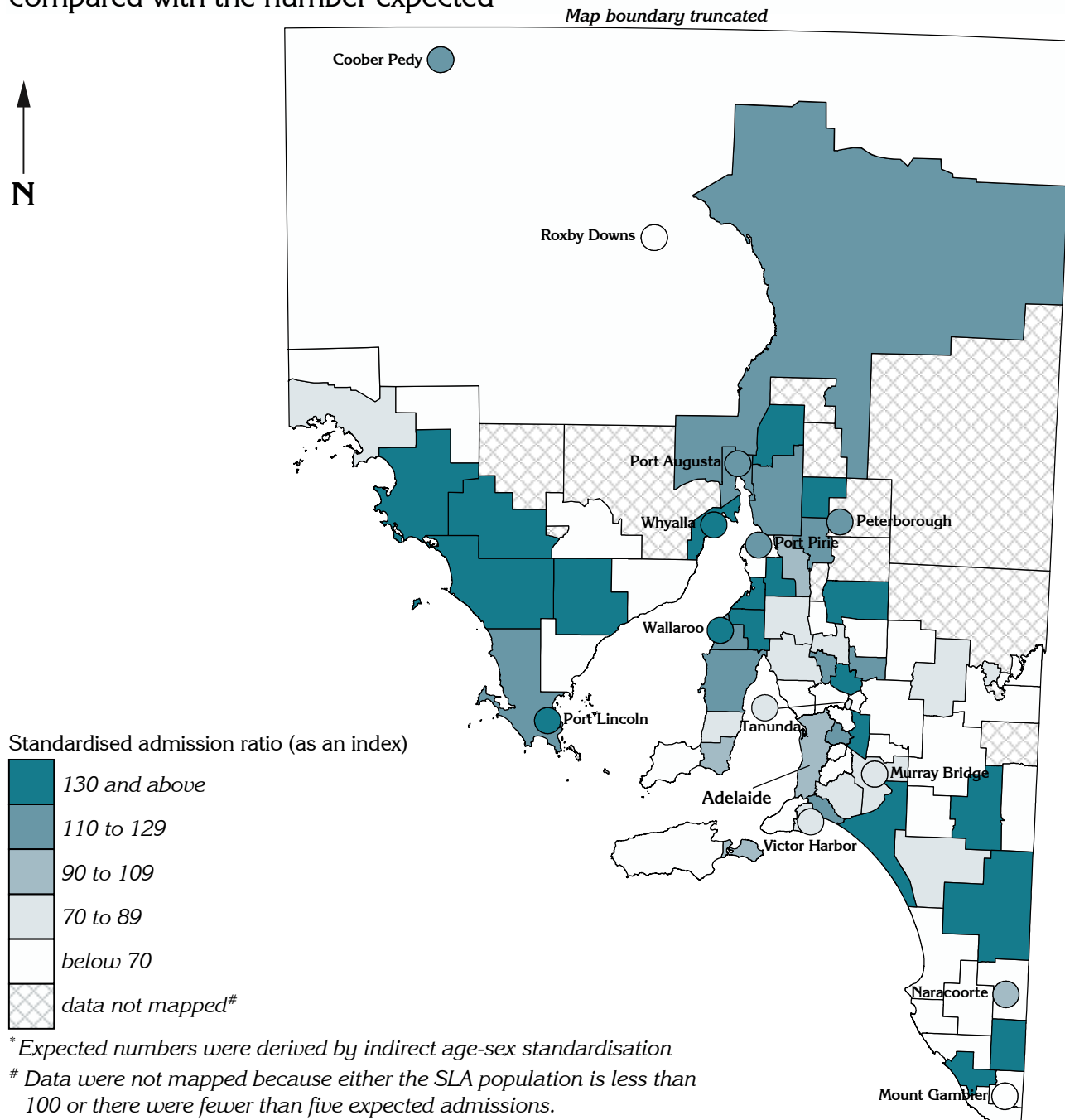
Residents of Whyalla had the largest number of admissions for these causes (298 admissions), followed by Port Lincoln (160 admissions), Port Augusta (152 admissions), Port Pirie (144 admissions), Mount Gambier (136 admissions), Mount Barker (132 admissions), Millicent (110 admissions) and Murray Bridge (104 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia between high rates of admissions at ages 0 to 14 years for bronchitis, emphysema and asthma and socioeconomic status.

Map 5.16

Admissions for bronchitis, emphysema and asthma, children aged 0 to 14 years, South Australia, 1996/97-1998/99

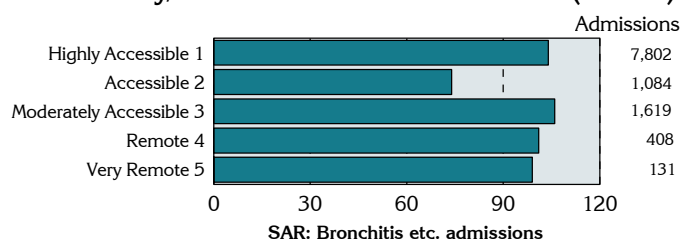
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for bronchitis, emphysema and asthma vary across the ARIA+ classes, from the lowest ratio in the Accessible areas (an SAR of 74), to elevated ratios of 106 and 104 in the Moderately Accessible and Highly Accessible areas.

Source: Calculated on ARIA+ classification

Admissions from injury and poisoning, children aged 0 to 14 years, 1996/97-1998/99

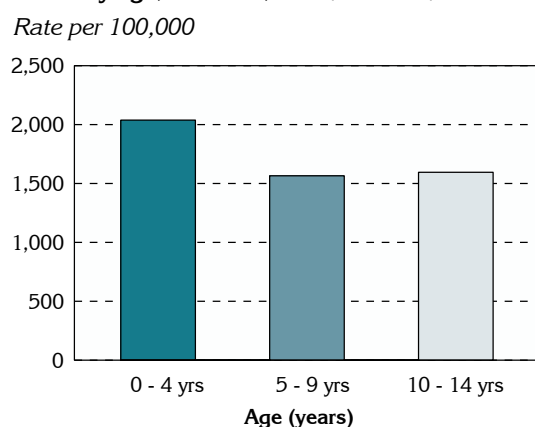
Injury continues to be the leading cause of death among children, and one of the main causes of illness. For every child who dies from injury, many more are admitted to hospital and others are treated in accident and emergency departments, and GP surgeries. Injuries can have long term effects, such as disability or disfigurement, which can impair a child's development and future wellbeing (AIHW 2002). In addition, disability or death from injury significantly impacts on a child's family.

Adelaide

The risk of injury and types of injury suffered are strongly associated with sex and age of the child, the area of residence, and the socioeconomic status of the family. For most types of childhood injury, and for every age after infancy, males are at higher risk of injury than females. The most common reason for injury admissions is falls, followed by pedal cyclist injuries and accidental poisoning. However, deaths of children from injuries, including motor vehicle accidents and accidental drowning, have declined over the last decade (AIHW 2002).

Admission rates from the external causes of injury and poisoning of children living in Adelaide vary substantially (Figure 5.23) within the 0 to 14 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 2,039 admissions per 100,000 population aged 0 to 4 years), with the lowest rate recorded in the 5 to 9 year age group (1,565 admissions per 100,000).

Figure 5.23: Admissions from injury and poisoning, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the three years from 1996/97 to 1998/99, there were 10,726 admissions from the combined causes of injury and poisoning of children aged 0 to 14 years living in Adelaide. This was six per cent fewer admissions than expected from the State rates, a standardised admission ratio (SAR) of 94**. Males accounted for 61.8% of these admissions.

Postcode areas with high admission rates from injury and poisoning in this age group were highly concentrated in the city's inner northern and north-western postcodes as well as in the outer northern and eastern postcode areas (Map 5.17).

Excluding areas with fewer than 20 admissions, the highest ratio was recorded for children in *Adelaide*, with an SAR of 157*. *North Adelaide* (152**), *Blair Athol* (147**), *Enfield* and *Prospect* (both 142**), *Hindmarsh* (135*), *Ferryden Park* (128*), *Thebarton* (122), *Klemzig* (122*), *Osborne* (120) and *Nailsworth* (120), situated in the inner northern and north-western areas; *Angle Vale* (130), *Elizabeth North* (122**) and *Smithfield* (121**), located in the outer northern suburbs; and *Old Noarlunga* (126) in the south, all recorded at least 20% more admissions than expected from the State rates.

In contrast, relatively low ratios were recorded in the north-eastern, southern and coastal suburbs. Of areas with more than 20 admissions, *Holden Hill* had the lowest ratio for this variable, with an SAR of 56**. Low ratios were also recorded in the postcode areas of *Eden Hills* (with an SAR of 58**), *Aldinga* and *Fairview Park* (both 61**), *Blackwood*, *Brighton* and *Glenelg* (each 63**), *Christies Beach* (63*) and *Willunga* (65*).

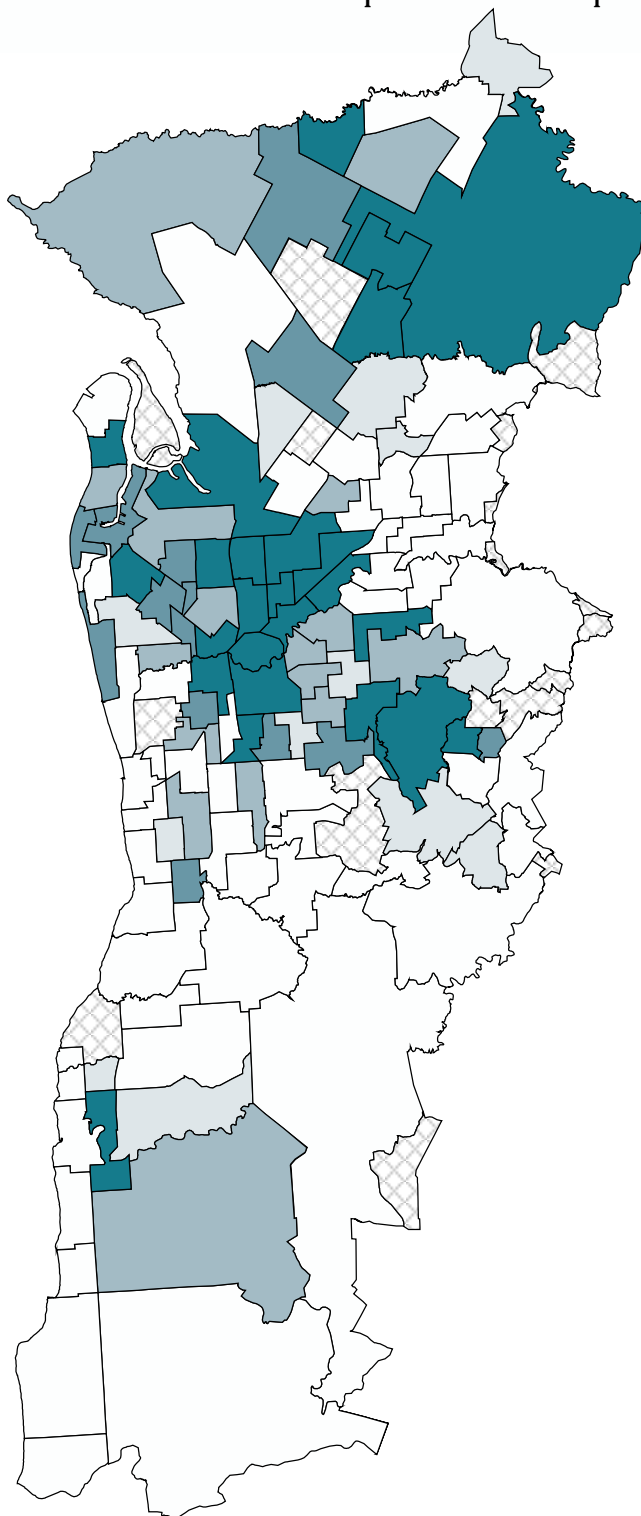
Children in *Salisbury* had the largest number of admissions from the combined causes of injury and poisoning, with 591 admissions. More than 250 admissions were also recorded for residents of *Smithfield* (with 382 admissions), *Morphett Vale* (359 admissions), *Happy Valley* (344 admissions), *Elizabeth North* (322 admissions), *Elizabeth* (282 admissions) and *Salisbury East* (251 admissions).

There was a correlation of meaningful significance at the postcode level with the variable for Indigenous children aged 0 to 14 years (0.54). There was no other evidence in the correlation analysis of an association between admissions at ages 0 to 14 years from injury and poisoning and socioeconomic status.

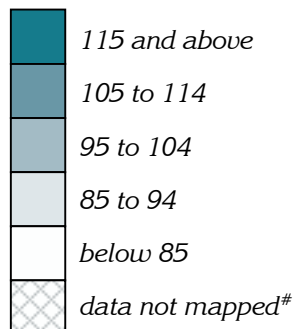
Map 5.17

Admissions from injury and poisoning, children aged 0 to 14 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

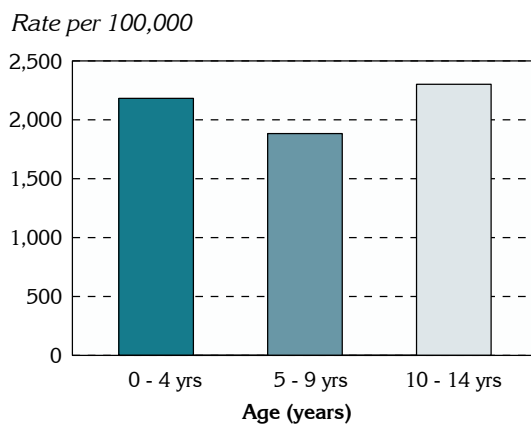
Admissions from injury and poisoning, children aged 0 to 14 years, 1996/97-1998/99

Some general comments on injury are on page 224.

Non-metropolitan South Australia

Admission rates of non-metropolitan South Australians from the external causes of injury and poisoning vary (Figure 5.24) between the five year age groups in the 0 to 14 year age category. Children in the 10 to 14 year age group have the highest hospitalisation rates (an average rate of 2,302 admissions per 100,000 population aged 10 to 4 years), with the lowest rate recorded in the 5 to 9 year age group (1,883 admissions per 100,000).

Figure 5.24: Admissions from injury and poisoning, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 5,751 admissions of residents aged 0 to 14 years of the non-metropolitan area of South Australia from the combined causes of injury and poisoning over the period from 1996/97 to 1998/99. This was 15% more admissions than were expected from the State rates (a standardised admission ratio (SAR) of 115**). Males comprised almost two thirds (63.3%) of these admissions.

High standardised admission ratios were recorded in SLAs scattered throughout much of the State (Map 5.18). The highest ratios were recorded for children in Unincorporated West Coast (with an SAR of 276** and 26 admissions), Port Broughton (253** and 34 admissions), Meningie (229** and 116 admissions), Coonalpyn Downs (219** and 41 admissions) and Unincorporated Flinders Ranges (206** and 53 admissions), all of which had more than twice the number of admissions than were expected from the State rates. Ratios elevated by more than 70% were also recorded in the SLAs of

Tatiara (193**), Kingscote (186**), Crystal Brook-Redhill (185**), Central Yorke Peninsula (185**), Elliston (179**), Burra Burra (178**), Peake (173*) and Mount Pleasant (173**).

In contrast, the lowest standardised admission ratios (in SLAs with more than 20 admissions) for children at these ages were recorded in the SLAs of Unincorporated Far North (with an SAR of 61** and 50 admissions), Mount Gambier (DC) (61** and 41 admissions), Yankalilla (67* and 27 admissions), Blyth-Snowtown (72 and 21 admissions) and Northern Yorke Peninsula (75* and 68 admissions).

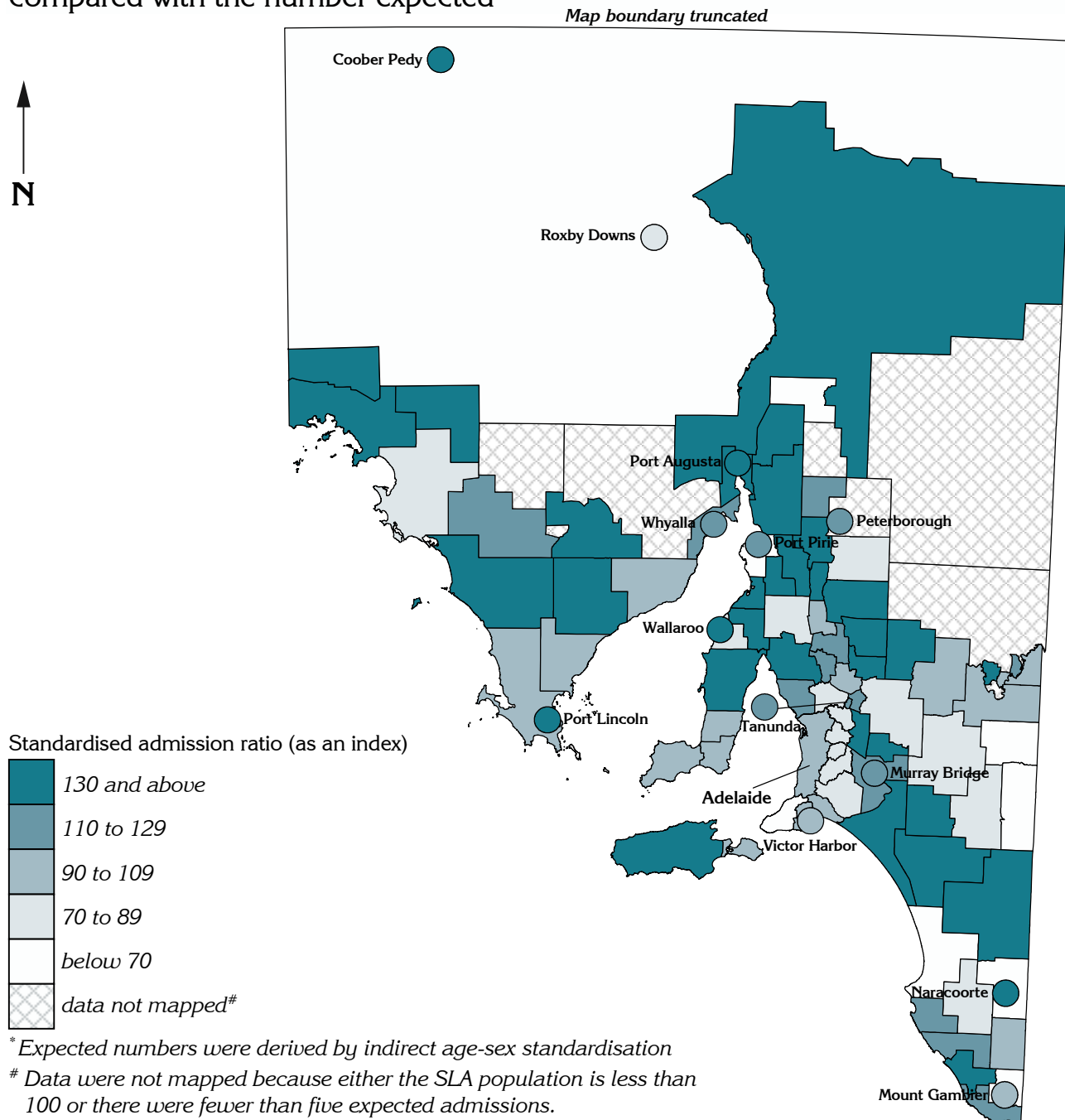
The largest numbers of admissions for this variable were recorded in the towns of Whyalla (with 363 admissions), Mount Gambier (299 admissions), Port Augusta (264 admissions), Port Lincoln (243 admissions) and Murray Bridge (230 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia between high rates of admissions at ages 0 to 14 years from the external causes of injury and poisoning and socioeconomic status.

Map 5.18

Admissions from injury and poisoning, children aged 0 to 14 years, South Australia, 1996/97-1998/99

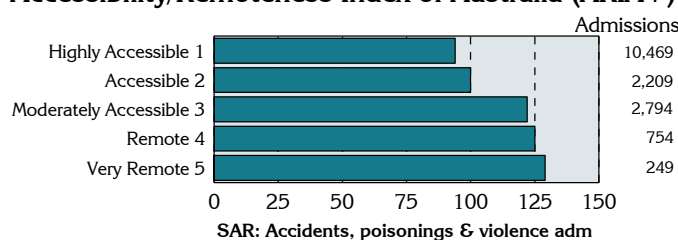
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for admissions from the external causes of injury and poisoning increase steadily across the ARIA+ classes. Ratios increase from an SAR of 94 in the Highly Accessible areas to 125 and 129 in the Remote and Very Remote areas, respectively.

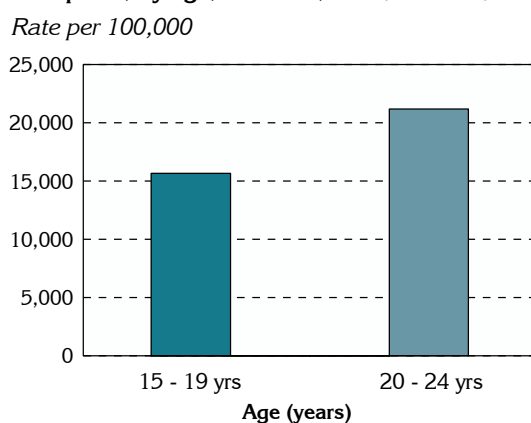
Source: Calculated on ARIA+ classification

Admissions to public acute and private hospitals, people aged 15 to 24 years, 1996/97-1998/99

Adelaide

Admission rates of young people living in Adelaide vary substantially (Figure 5.25) within the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rate (an average rate of 15,665 admissions per 100,000 population aged 15 to 19 years), with a rate of 21,181 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.25: Admissions to public acute and private hospitals, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were eight per cent fewer admissions to public acute and private hospitals of young people aged 15 to 24 years than were expected from the State rates, a standardised admission ratio (SAR) of 92^{**}. Females comprised almost two thirds of the 86,503 admissions (64.6%).

Postcode areas in Adelaide with high standardised admission ratios for admissions to public acute and private hospitals were generally located in the north-western and outer northern and southern suburbs (Map 5.19).

The highest SARs within this group were in *Elizabeth North* (with an SAR of 148^{**}), *Virginia* (138^{**}), *Elizabeth* (130^{**}), *Evanston* (121^{**}), *Parafield Gardens* and *Smithfield* (both 117^{**}) and *Salisbury* (116^{**}), situated in the outer north; and *Osborne* (139^{**}), *Ferryden Park* (137^{**}), *Port Adelaide* (117^{**}) and *Woodville North* (117^{**}), located in the north-west. High ratios were also recorded for young people in *Old Noarlunga* (with an SAR of 149^{**}), *Uraidla* (126), *Brighton* (125^{**}), *Adelaide* (124^{**}), *Christie Downs* (120^{**}), *Largs Bay* (116^{**}) and *Brooklyn Park* (115^{**}).

Typically, low ratios were recorded in higher socioeconomic areas. The lowest ratios in areas with more than 20 admissions were in the postcode areas of *North Adelaide* (with an SAR of 53^{**}), *Stirling Forward* (58^{**}), *Norwood* and *Eden Hills* (both 61^{**}), *Novar Gardens* and *MacDonald Park* (both 62^{**}), *Aldgate* (63^{**}), *Eastwood* (64^{**}) and *Basket Range* (65).

There were more than 2,000 admissions of residents aged 15 to 24 years in the postcode areas of *Salisbury* (4,089 admissions), *Morphett Vale* (3,137 admissions), *Elizabeth North* (2,506 admissions), *Happy Valley* (2,359 admissions) and *Elizabeth* (2,081).

Correlations of meaningful significance were recorded with the variables for people who left school at age 15 years or earlier (0.63); and children aged 0 to 14 years living in dwellings rented from the SA Housing Trust (0.61), dwellings with no motor vehicles (0.60), low income families (0.60) and single parent families (0.57).

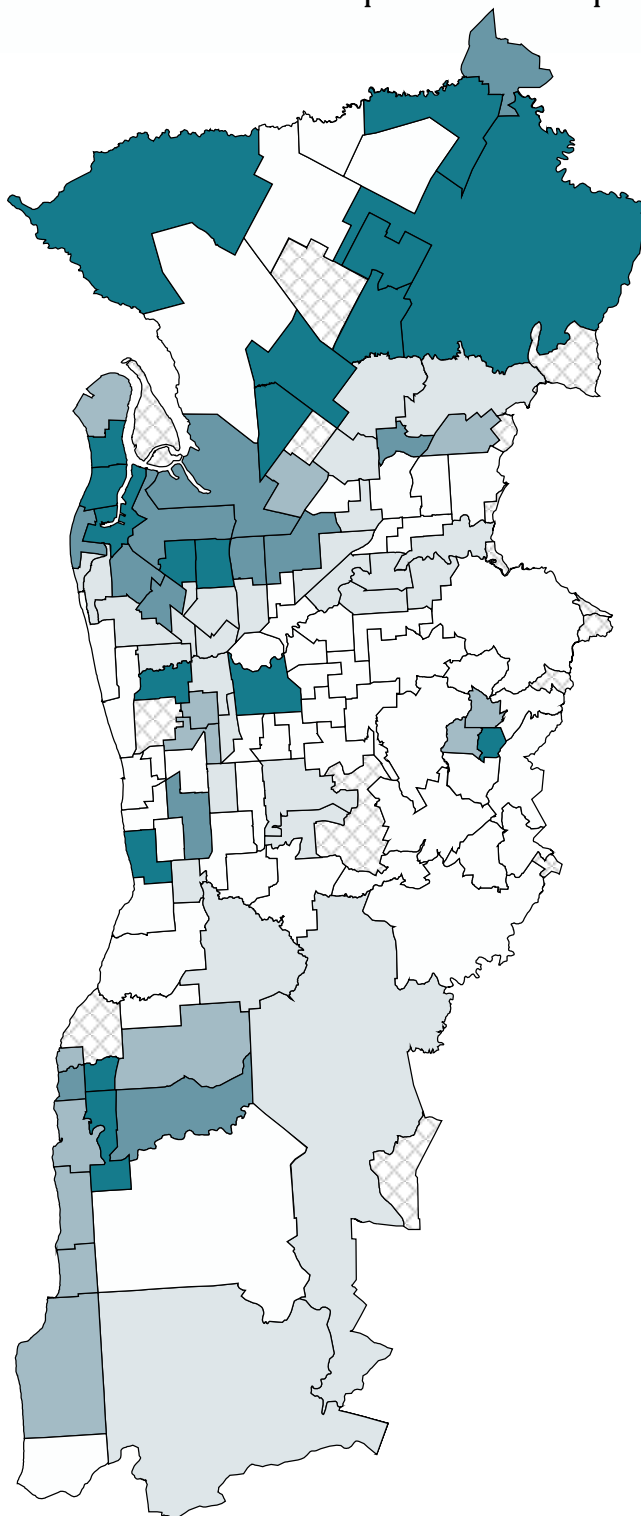
Inverse correlations of meaningful significance were recorded with the variables for publicly assessed achievement scores (-0.62), female labour force participation (-0.62), high income families (-0.59), publicly examined achievement scores (-0.59), managers and administrators, and professionals (-0.56) and school assessed achievement scores (-0.52).

These results, together with the inverse correlation with the IRSD (-0.65), indicate an association at the postcode level between high rates of hospital admissions at ages 15 to 24 years, and socioeconomic disadvantage.

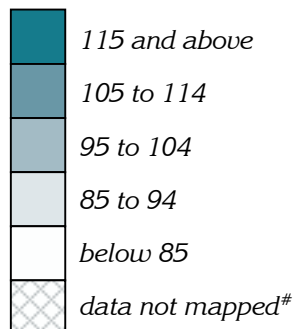
Map 5.19

Admissions to public acute and private hospitals, people aged 15 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

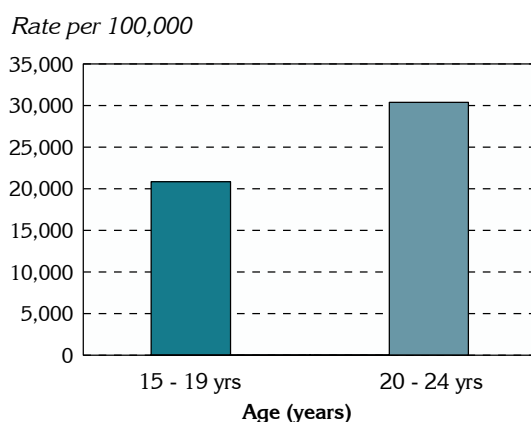
A Social Health Atlas of Young South Australians, 2003

Admissions to public acute and private hospitals, people aged 15 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates in non-metropolitan South Australia vary substantially (Figure 5.26) between the five year age groups in the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rate (an average rate of 20,856 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 30,409 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.26: Admissions to public acute and private hospitals, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 34,489 admissions of non-metropolitan residents aged 15 to 24 years over the period from 1996/97 to 1998/99, 28% more admissions than were expected from the State rates (a standardised admission ratio (SAR) of 128^{**}). Females accounted for almost two thirds of these admissions (62.5%).

Elevated ratios were recorded in almost three quarters (74.7%) of the SLAs in the non-metropolitan area of South Australia (Map 5.20).

The most highly elevated ratios were in Unincorporated West Coast (with an SAR of 394^{**} and 263 admissions over the three years), Coober Pedy (230^{**} and 367 admissions) and Port Augusta (219^{**} and 2,415 admissions), with over twice the number of admissions than expected from the State rates. Similarly highly elevated ratios were also recorded for young people in Ceduna (an SAR of 196^{**}), Robertstown (191^{**}), Peterborough (188^{**}), Unincorporated Whyalla (187^{**}) and Eudunda (186^{**}). Ratios were elevated by at least 30% in a further 33 SLAs.

The lowest ratios (in SLAs with more than 20 admissions) were recorded in Pirie (with an SAR of 22^{**}, 78% fewer admissions than expected from the State rates), Mount Gambier (DC) (52^{**}), Bute (57^{**}), Naracoorte (DC) and Light (58^{**}) and Unincorporated Far North (62^{**}).

The largest numbers of admissions in the non-metropolitan area of South Australia were recorded in the towns of Whyalla with 2,854 admissions, and Port Augusta with 2,415 admissions. Relatively large numbers of admissions were also recorded in Mount Gambier (2,241 admissions), Port Pirie (1,683), Murray Bridge (1,637), Mount Barker (1,476) and Port Lincoln (1,453).

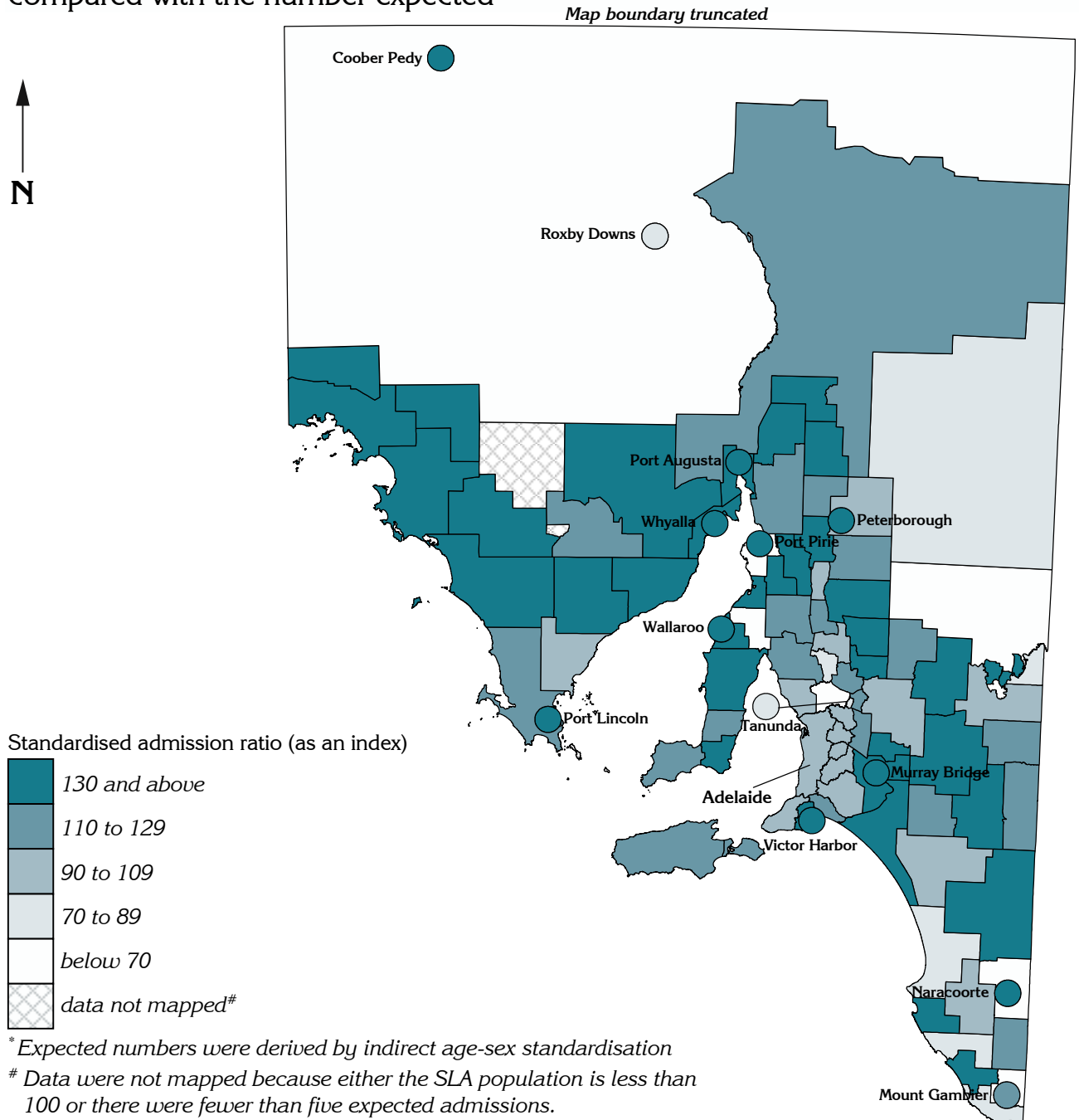
There were correlations of meaningful significance with the variables for children aged 0 to 14 years living in single parent families (0.64), low income families (0.61), SA Housing Trust dwellings (0.67), dwellings with no motor vehicle (0.62), dependent children (0.58) and clients of Family and Youth Services (0.57) and Child and Adolescent Mental Health Services (0.55).

These results, together with the inverse correlation with the IRSD (-0.59), indicate an association at the SLA level between high rates of hospital admissions at ages 15 to 24 years and socioeconomic disadvantage.

Map 5.20

Admissions to public acute and private hospitals, people aged 15 to 24 years, South Australia, 1996/97-1998/99

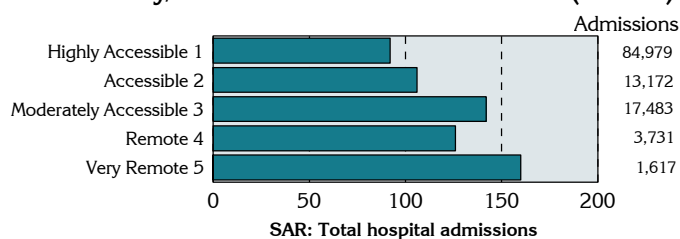
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for admissions to public acute and private hospitals at ages 15 to 24 years show a strong relationship with remoteness. Ratios increase from an SAR of 92 in the Highly Accessible areas to SARs of 126 in the Remote and 160 in the Very Remote areas.

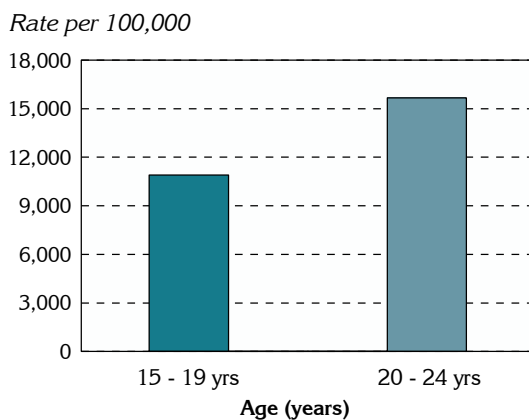
Source: Calculated on ARIA+ classification

Admissions to public acute hospitals, people aged 15 to 24 years, 1996/97-1998/99

Adelaide

Admission rates to public acute hospitals of young people living in Adelaide vary substantially (Figure 5.27) within the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rate (an average rate of 10,902 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 15,672 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.27: Admissions to public acute hospitals, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 62,509 admissions of young people in Adelaide to public acute hospitals over the period from 1996/97 to 1998/99, 14% fewer admissions than were expected from the State rates (a standardised admission ratio (SAR) of 86^{**}). Females accounted for more than two thirds of these admissions (68.5%).

The spatial distribution of standardised admission ratios at the postcode level (Map 5.21) shows the highest ratios to be located in a contiguous area extending from the north-west to the outer northern suburbs. High ratios were also recorded in a number of outer southern postcode areas.

The most highly elevated ratio was recorded for young people in *Elizabeth North* (an SAR of 181^{**}), with 81% more admissions than expected from the State rates. Standardised admission ratios elevated by 30% or more were also recorded in *Old Noarlunga* (with an SAR of 173^{**}), *Ferryden Park* (165^{**}), *Osborne* (154^{**}), *Elizabeth* (150^{**}), *Christie Downs* (140^{**}), *Woodville North* (139^{**}), *Evanston* (136^{**}), *Adelaide* (132^{**}) and *Blair Athol* (130^{**}).

Excluding areas with fewer than 20 admissions, *Novar Gardens* (with an SAR of 30^{**}) and *Glen Osmond* (31^{**}) had the lowest ratios for this variable. *Aldgate* (with an SAR of 34^{**}), *Stirling Forward* (47^{**}) and *Stirling* (48^{**}), located in the Adelaide Hills; and *Burnside* (35^{**}), *North Adelaide* (37^{**}), *Walkerville* (40^{**}), *Unley* (43^{**}), *Glenside* (44^{**}), *Norwood* (49^{**}) and *Eastwood* (50^{**}), in areas surrounding Adelaide, also recorded relatively low ratios.

The largest number of admissions for people aged 15 to 24 years were recorded for residents of *Salisbury* (3,500 admissions), *Morphett Vale* (2,467 admissions), *Elizabeth North* (2,360 admissions), *Elizabeth* (1,851 admissions) and *Smithfield* (1,534 admissions). There were also more than 1,000 admissions from *Happy Valley*, *Hackham*, *Salisbury East*, *Park Holme* and *Parafield Gardens*.

There were correlations of substantial significance with the variables for children aged 0 to 14 years living in low income families (0.80), single parent families (0.77), dwellings with no motor vehicles (0.76) and dwellings rented from the SA Housing Trust (0.72); and people who left school at age 15 years or earlier (0.78).

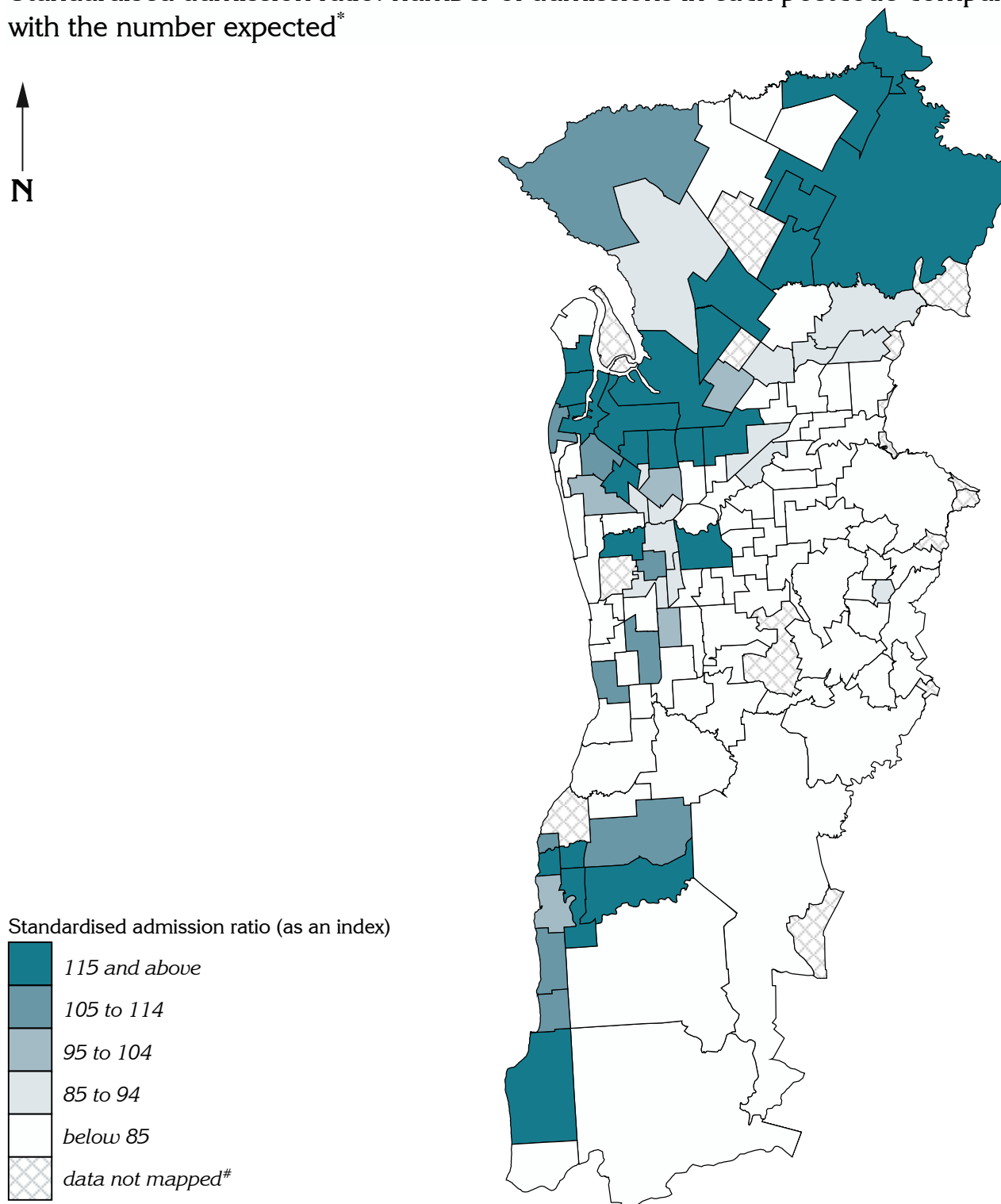
Inverse correlations of substantial significance were recorded with the variables for female labour force participation (-0.79), high income families (-0.79), publicly assessed achievement scores (-0.74), and managers and administrators, and professionals (-0.73); and of meaningful significance with publicly examined achievement scores (-0.70) and school assessed achievement scores (-0.68).

These results, together with the inverse correlation with the IRSD (-0.85), indicate an association at the postcode level between high rates of admissions to public acute hospitals of people aged 15 to 24 years, and socioeconomic disadvantage.

Map 5.21

Admissions to public acute hospitals, people aged 15 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

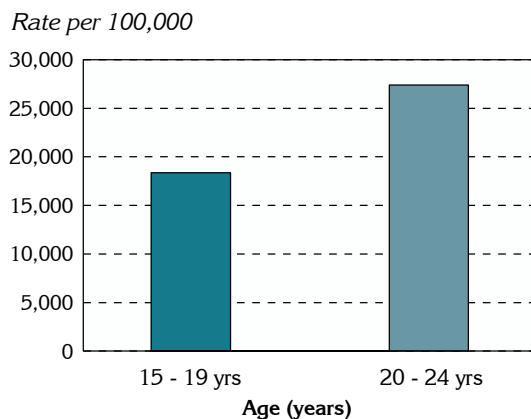
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Admissions to public acute hospitals, people aged 15 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates of non-metropolitan South Australians to public acute hospitals vary substantially (Figure 5.28) between the five year age groups in the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rate (an average rate of 18,362 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 27,400 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.28: Admissions to public acute hospitals, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 30,702 admissions to public acute hospitals of people aged from 15 to 24 years living in the non-metropolitan area of South Australia. This was 48% more admissions than were expected from the State rates, a standardised admission ratio (SAR) of 148**. Females accounted for almost two thirds (64.5%) of these admissions.

The high rate of public compared with private hospital (see page 238) usage in the non-metropolitan areas of South Australia is largely due to the relative availability of public acute hospitals and the lack of private hospitals in these areas. Note, however, that the figures shown here include admissions of young people regardless of whether the admission was to a hospital in the non-metropolitan area or in Adelaide.

Elevated ratios were recorded in a majority of the State's SLAs, with low ratios scattered throughout the State (Map 5.22).

The most highly elevated ratio was recorded for young people in Unincorporated West Coast, with more than five times the number of admissions to a public hospital than were expected from the State rates (an SAR of 507**). More than twice the number of admissions expected from the State rates were recorded in Coober Pedy (with an SAR of 285**), Port Augusta (274**), Carrieton (270**), Ceduna (252**), Peterborough (236**), Eudunda (218**), Robertstown (213**), Kanyaka and Quorn (209**), Unincorporated Whyalla (208**), Renmark (205**), Port Broughton (204**) and Burra Burra (201**). There were a further 47 SLAs with ratios elevated by over 30%.

The lowest ratio (in areas with more than 20 admissions) was recorded for people aged from 15 to 24 years from Light (an SAR of 60** and 236 admissions). Low ratios were also recorded in Mount Gambier (DC) (with an SAR of 65**), Naracoorte (DC) (66**), Unincorporated Pirie (66) and Unincorporated Far North (73**).

The largest numbers of admissions were recorded in the towns of Whyalla (2,771 admissions) and Port Augusta (2,334 admissions). Relatively large numbers of admissions were also recorded in Mount Gambier (2,132 admissions), Port Pirie (1,561 admissions), Murray Bridge (1,471 admissions), Port Lincoln (1,407 admissions) and Mount Barker (1,167 admissions).

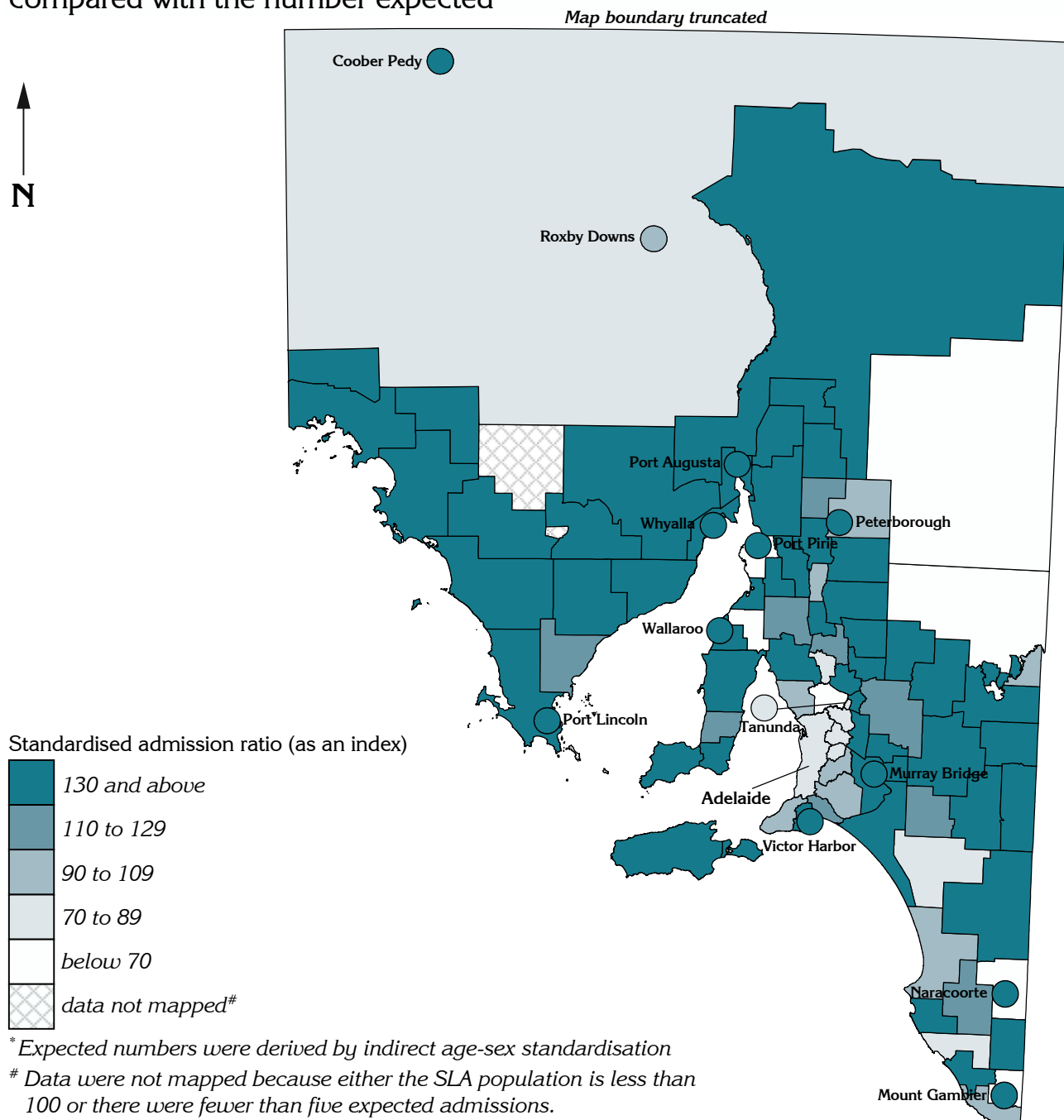
There were weak correlations with the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status.

These results, together with the weak inverse correlation with the IRSD (-0.43), suggest an association at the SLA level between high rates of public acute hospital admissions at ages 15 to 24 years and socioeconomic disadvantage.

Map 5.22

Admissions to public acute hospitals, people aged 15 to 24 years, South Australia, 1996/97-1998/99

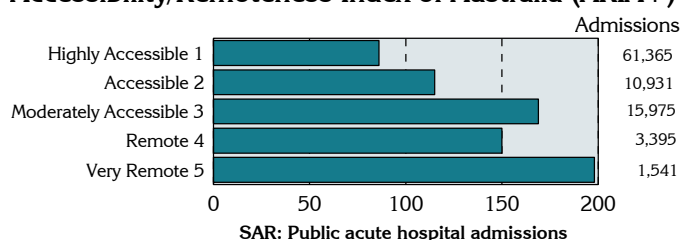
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for admissions to public acute hospitals at ages 15 to 24 years increase markedly across the ARIA+ classes. The highest ratio in the Very Remote areas (an SAR of 198) is more than double the ratio in the Highly Accessible areas (an SAR of 86).

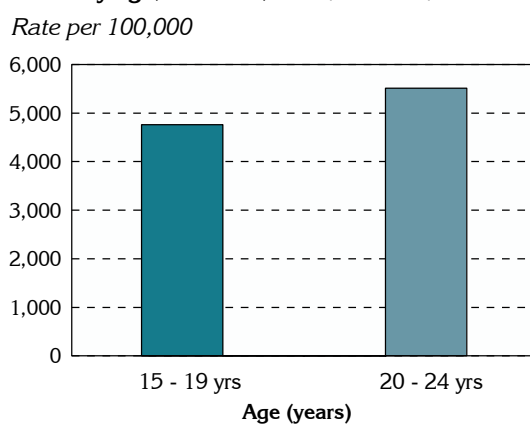
Source: Calculated on ARIA+ classification

Admissions to private hospitals, people aged 15 to 24 years, 1996/97-1998/99

Adelaide

Admission rates to private hospitals of young people living in Adelaide vary (Figure 5.29) within the 15 to 24 year age category. Those in the 15 to 19 year age group have the lowest hospitalisation rate (an average rate of 4,764 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 5,511 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.29: Admissions to private hospitals, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 23,994 admissions of people aged 15 to 24 years to private hospitals in Adelaide over the period 1996/97 to 1998/99. This was 12% more admissions than expected from the State rates (an a standardised admission ratio (SAR) of 112^{**}). Females accounted for just over half of these admissions (54.7%).

Postcode areas with elevated ratios cover a broad area of Adelaide, including the eastern, north-eastern and south-eastern suburbs, as well as much of the coastline (Map 5.23).

There were at least twice the number of admissions expected in the postcode areas of *Uraidla* (with an SAR of 257^{**}), *Glen Osmond* (235^{**}), *Burnside* (221^{**}), *Virginia* (218^{**}), *West Lakes* (216^{**}), *Outer Harbor* (202^{**}), *West Lakes Shores* (201^{**}) and *Kingswood* (200^{**}). Relatively high ratios (in areas with more than 20 admissions) were also recorded in *Belair* (with an SAR of 189^{**}), *Brighton* (187^{**}), *Highbury* (179^{**}) and *Athelstone* (173^{**}).

Excluding areas with fewer than 20 admissions, young people in *Elizabeth North* had the lowest standardised admission ratio for this variable (with an SAR of 38^{**}, 62% fewer admissions than expected from the State rates). Less than half the number of admissions expected were also recorded in *Ferryden Park* (with an SAR of 39^{**}), *Woodville North* and *Blair Athol* (both 40^{**}), *Aldinga* and *Munno Para* (both 43^{**}) and *Rosewater* (47^{**}).

The largest numbers of admissions to private hospitals of people aged 15 to 24 years were recorded in the postcode areas of *Happy Valley* (872 admissions) and *Morphett Vale* (670 admissions). There were more than 400 admissions from *Salisbury* (589 admissions), *Salisbury East* (563 admissions), *Kingswood* (536 admissions), *Modbury North* (491), *Burnside* (445 admissions), *O'Halloran Hill* (431 admissions) and *Fulham* (410 admissions).

The correlation analysis revealed an inverse association with socioeconomic disadvantage, with inverse correlations of meaningful significance with the variables of unemployed females (-0.70) and unemployed males (-0.69) aged 15 to 24 years; children aged 0 to 14 years living in low income families (-0.69), single parent families (-0.67) and dwellings with no motor vehicles (-0.60); people who left school at age 15 years or earlier (-0.61); and Indigenous people aged 15 to 24 years (-0.50).

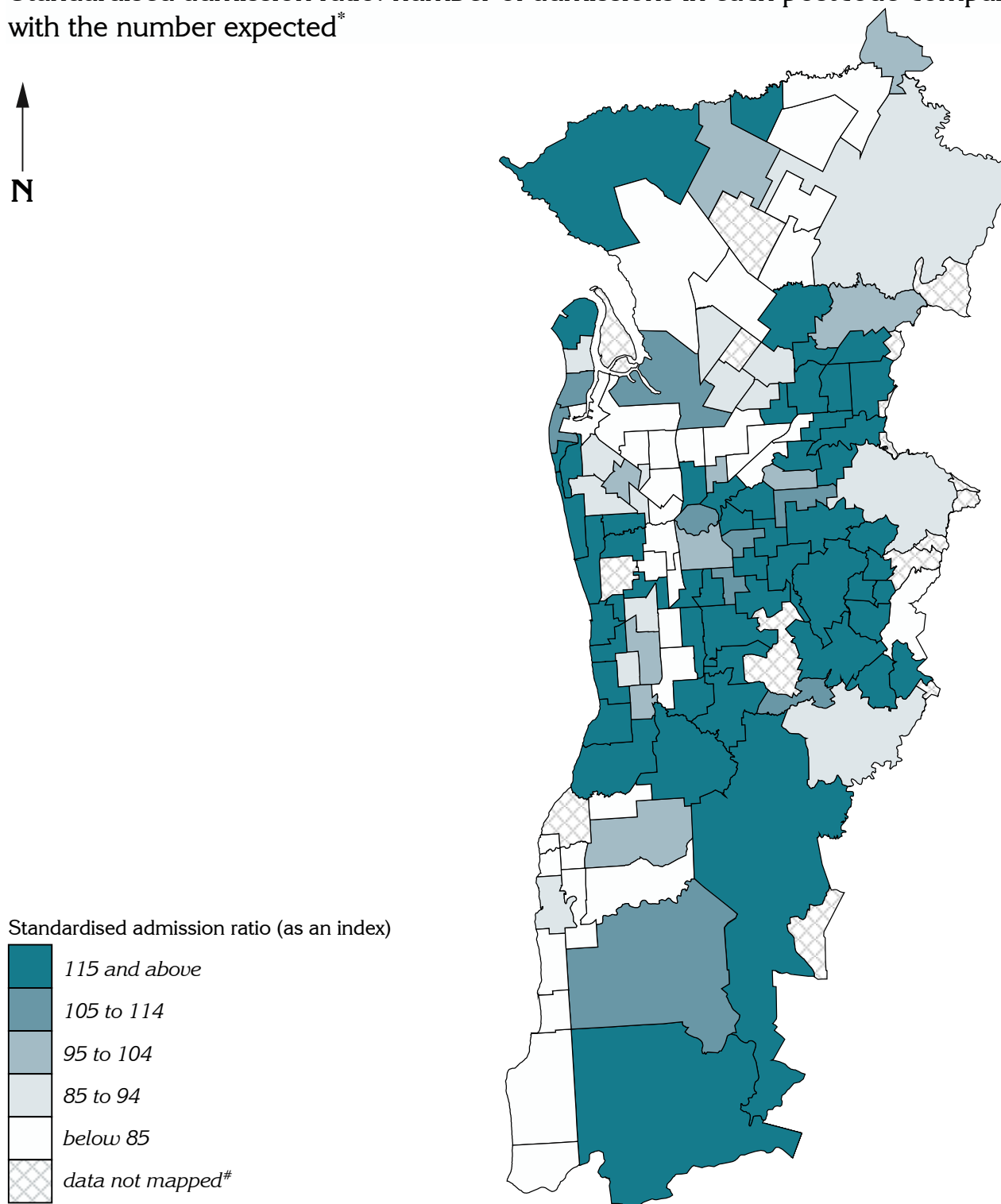
Correlations of meaningful significance were recorded with the variables for high income families (0.68), school assessed achievement scores (0.68), female labour force participation (0.63), publicly assessed achievement scores (0.62), publicly examined achievement scores (0.59) and managers and administrators, and professionals (0.58).

These results, together with the correlation of meaningful significance with the IRSD (0.69), indicate a strong association at the postcode level between high rates of admissions to private hospitals of people aged 15 to 24 years and high socioeconomic status.

Map 5.23

Admissions to private hospitals, people aged 15 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

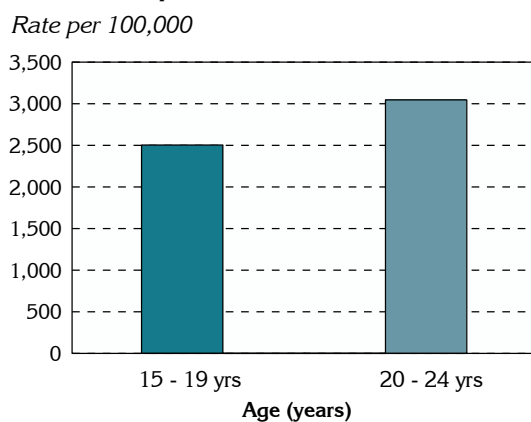
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Admissions to private hospitals, people aged 15 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates of non-metropolitan South Australians to private hospitals vary (Figure 5.30) between the five year age groups in the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rates (an average rate of 2,506 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 3,046 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.30: Admissions to private hospitals, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

The lack of private hospitals and the relative availability of public hospitals throughout the non-metropolitan area of South Australia are evident from the low rate of use of private compared with public hospitals. Note that the figures shown here include admissions of young people to private hospitals in Adelaide.

Young people in the non-metropolitan area had 3,787 admissions to private hospitals, 40% fewer admissions (a standardised admission ratio (SAR) of 60**) to private hospitals than expected from the State rates (and 12% more admissions to public acute hospitals). Overall, there were 3,787 admissions to private hospitals of people aged 15 to 24 years. Males accounted for just over half of these admissions (53.5%).

Only 16 SLAs had elevated standardised admission ratios (Map 5.24). Of these, five had at least 30% more admissions than expected from the State rates, with the highest ratios recorded for young people in Onkaparinga (with an SAR of 187**), Tatiara (165**), Crystal Brook/Red Hill (152**), Peake (135) and Bute (132).

In more one third of SLAs, rates of admission to private hospitals were at least 50% lower than expected from the State rates. Excluding SLAs with fewer than 20 admissions, the lowest ratios were recorded in the towns of Whyalla (with an SAR of 19**), Port Lincoln (20**), Mount Gambier (24**) and Port Augusta (32**). The SLAs of Unincorporated Far North (with an SAR of 26**), Millicent and Loxton (both 30**) and Renmark (38**) also had very low ratios.

Only Mount Barker (309 admissions), Onkaparinga (279 admissions), Tatiara (190 admissions) and Murray Bridge (166 admissions) had more than 150 admissions over the period from 1996/97 to 1998/99.

There were inverse correlations of meaningful significance between private hospital admissions of people aged 15 to 24 years and the variables for children aged 0 to 14 years living in SA Housing Trust dwellings (-0.53), dwellings with no motor vehicle (-0.49) and clients of Family and Youth Services (-0.50).

These results, together with the inverse correlation with the IRSD (0.51), indicate an association at the SLA level between high rates of private hospital admissions at ages 15 to 24 years and socioeconomic advantage.

Map 5.24

Admissions to private hospitals, people aged 15 to 24 years, South Australia, 1996/97-1998/99

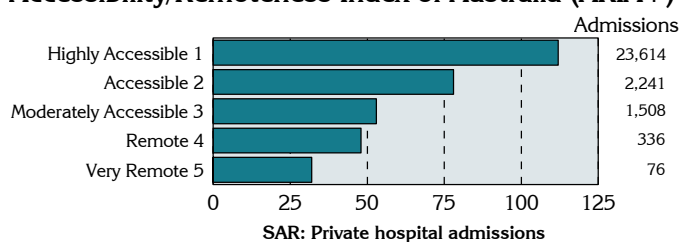
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Young people in the Highly Accessible areas accounted for 85.0% of admissions to private hospitals and the only elevated standardised admission ratio (112). Ratios in the other categories fell to an SAR of 32 in the Very Remote ARIA+ class.

Source: Calculated on ARIA+ classification

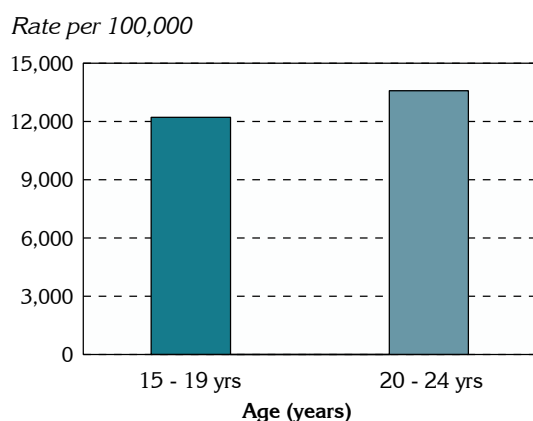
A Social Health Atlas of Young South Australians, 2003

Admissions of males, 15 to 24 years, 1996/97-1998/99

Adelaide

Admission rates of young males living in Adelaide vary (Figure 5.31) within the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rates (an average rate of 12,221 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 13,591 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.31: Admissions of males, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 30,566 admissions of males aged 15 to 24 years in Adelaide. This was eight per cent fewer than expected from the State rates, a standardised admission ratio (SAR) of 92**.

Postcode areas with elevated ratios were scattered throughout Adelaide in no notable pattern (Map 5.25).

Excluding postcode areas with fewer than 20 admissions, the most highly elevated ratios were recorded in *Brighton* (with an SAR of 165**), *Adelaide* (147**), *Wynn Vale* (134**), *Fairview Park* (131**), *Largs Bay* (130**), *Keswick* (128**) and *Old Noarlunga* (123*).

Male residents of *Burton* (with an SAR of 47**), had 53% fewer admissions than expected from the State rates, while relatively low ratios were also recorded in *Munno Para* (an SAR of 51**), *North Adelaide* (56**), *Eden Hills* (58**), *Novar Gardens* (58**), *Sellicks Beach* (63*) and *MacDonald Park* (65).

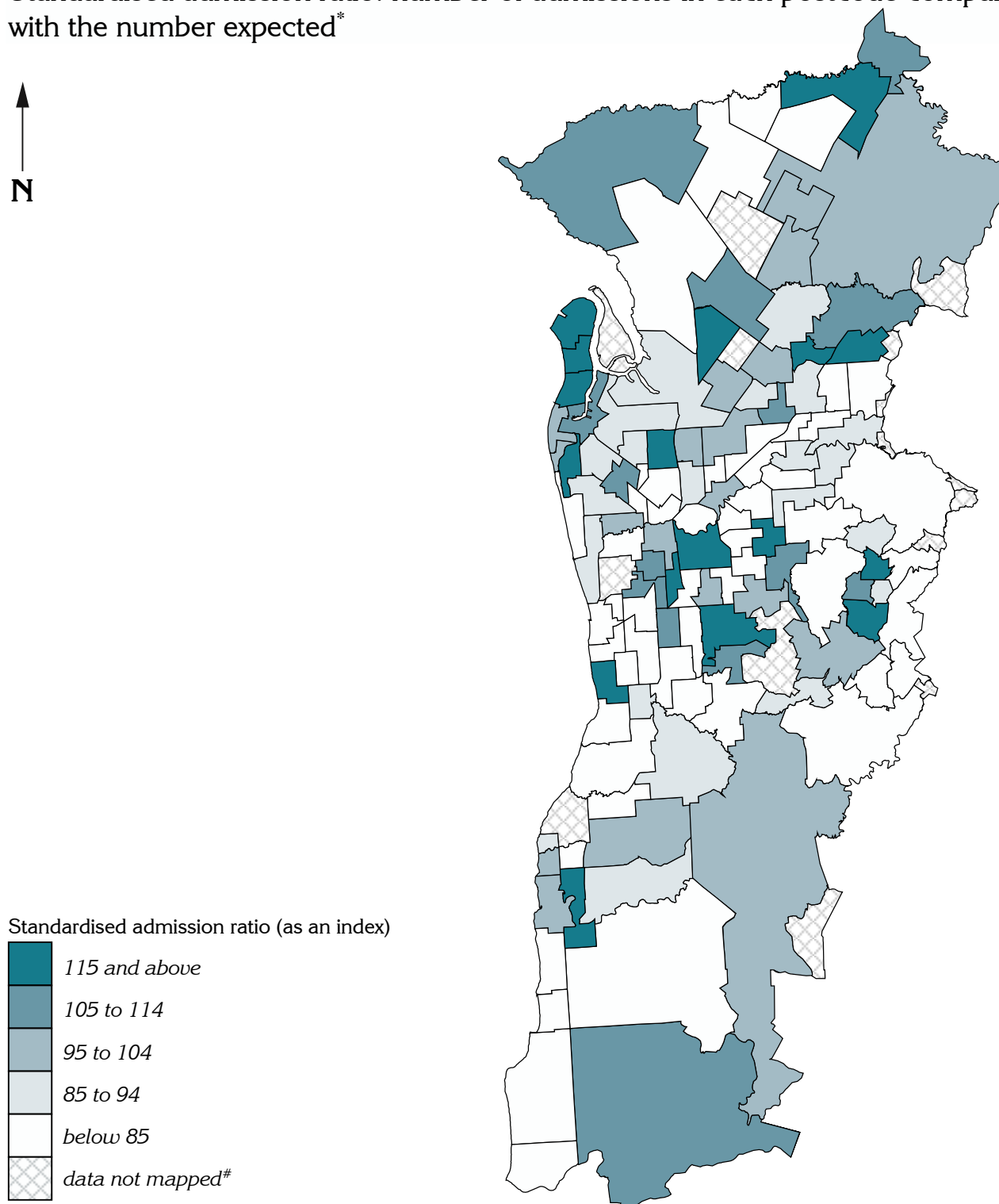
The largest numbers of admissions of males aged 15 to 24 years were in *Salisbury* (1,276 admissions), *Morphett Vale* (1,024 admissions), *Happy Valley* (919 admissions), *Salisbury East* (655 admissions), *Elizabeth North* (572 admissions) and *Brighton* (563 admissions).

There was no consistent evidence in the correlation analysis at the postcode or SLA level of an association between admissions of males aged 15 to 24 years and socioeconomic status.

Map 5.25

Admissions of males, 15 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

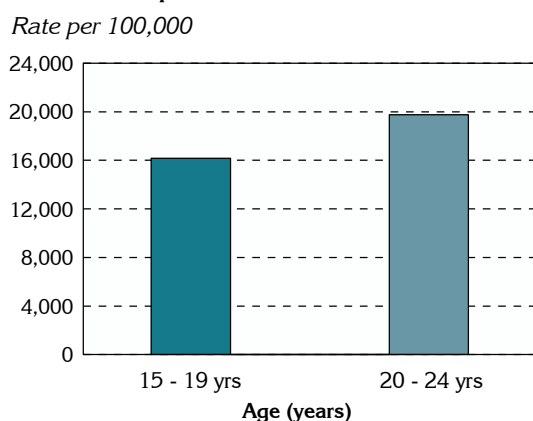
A Social Health Atlas of Young South Australians, 2003

Admissions of males, 15 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates for males in the non-metropolitan area vary (Figure 5.32) between the five year age groups in the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rates (an average rate of 16,172 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 19,765 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.32: Admissions of males, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 12,920 male admissions in the non-metropolitan area of South Australia, 27% more admissions than expected from the State rates (a standardised admission ratio of 127^{**}). That is, males in non-metropolitan areas have a much higher rate of admissions (19,163 admissions per 100,000 population at these ages) than males in Adelaide (13,293 admissions per 100,000 population).

Elevated standardised admission ratios (SARs) were recorded in almost two thirds (69.8%) of the SLAs in the non-metropolitan area of South Australia (Map 5.26).

Ratios elevated by more than twice the level expected from the State rates were recorded in Port Augusta (an SAR of 261^{**}), Jamestown (218^{**}), Port Broughton and Eudunda (both 209^{**}). Ratios elevated by at least 30% were recorded in a further 37 SLAs. Among these SLAs, the highest ratios were in Coober Pedy (an SAR of 199^{**}; 114 admissions), Peterborough (M) (188^{**}; 74 admissions), Burra Burra (183^{**}; 85 admissions), Lucindale (182^{**}; 55 admissions), Robertstown (180^{**}; 42 admissions), Naracoorte (M) (178^{**}; 238

admissions), Unincorporated West Coast (177^{**}; 36 admissions), Orroroo (174^{**}; 34 admissions), Victor Harbor (172^{**}; 322 admissions) and Meningie (171^{**}; 158 admissions).

Only seven SLAs had ratios in the lowest range mapped, with more than 30% fewer admissions than were expected from the State rates. Excluding areas with fewer than 20 admissions, the lowest ratios were recorded in Unincorporated Far North (with an SAR of 39^{**}) and Roxby Downs (64^{**}), located in the far north; Mount Gambier (DC) (61^{**}) in the south-east; and Riverton (62^{*}) and Light (66^{**}).

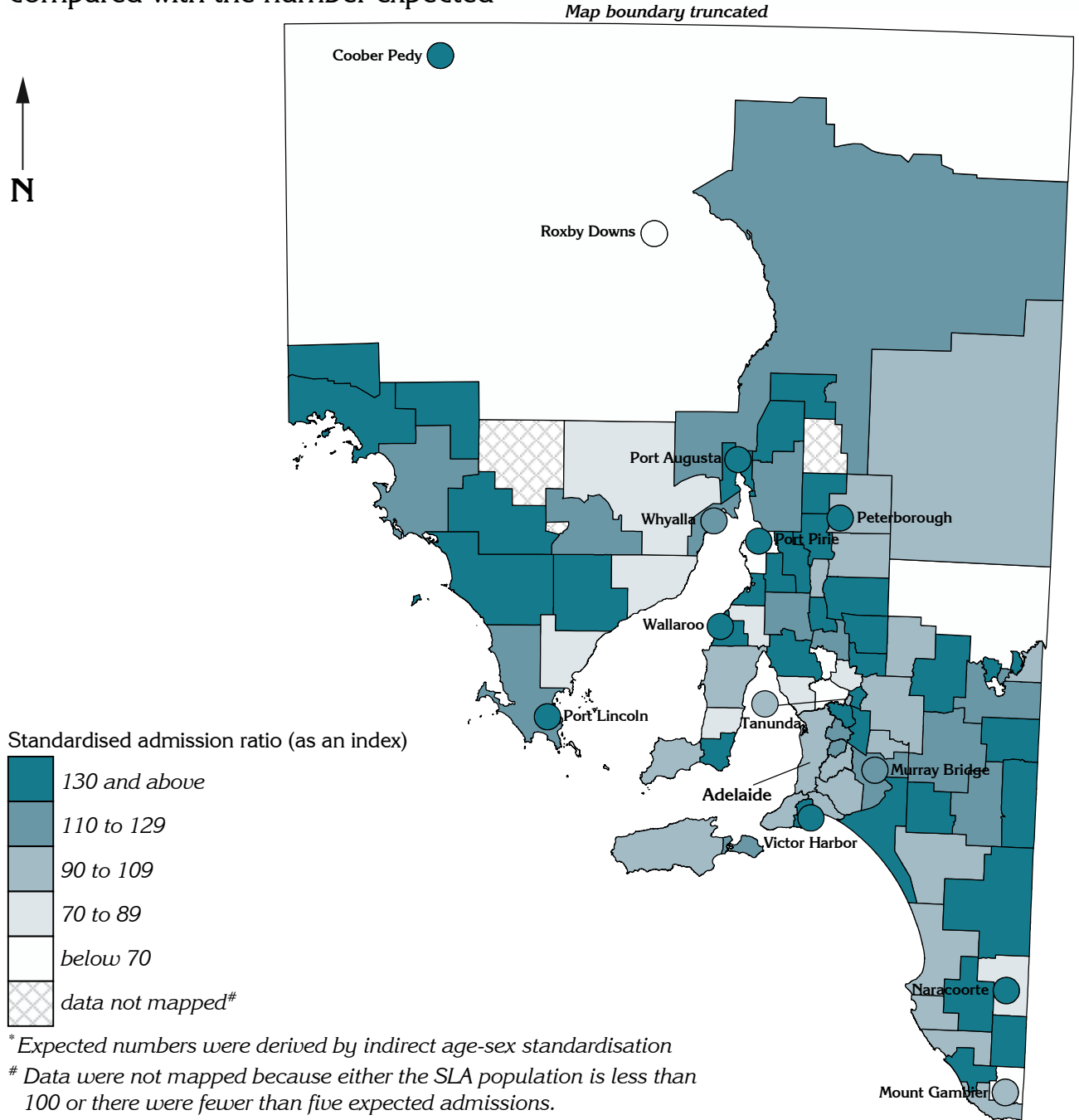
The largest numbers of admissions of males aged 15 to 24 years were recorded in the towns of Port Augusta (with 1,013 admissions), Whyalla (828 admissions), Mount Gambier (740 admissions), Port Pirie (606 admissions), Port Lincoln (542 admissions) and Murray Bridge (515 admissions).

There was a correlation of meaningful significance with the variable for children aged 0 to 14 years living in SA Housing Trust dwellings (0.53). There were also correlations of substantial significance between hospital admissions of males aged 15 to 24 years and the variable for injuries and poisoning (0.76), and of meaningful significance with children aged 0 to 14 years admitted for injuries and poisoning (0.50). These latter correlations indicate an association between high rates of admissions of males and hospitalisation from injuries.

Map 5.26

Admissions of males, 15 to 24 years, South Australia, 1996/97-1998/99

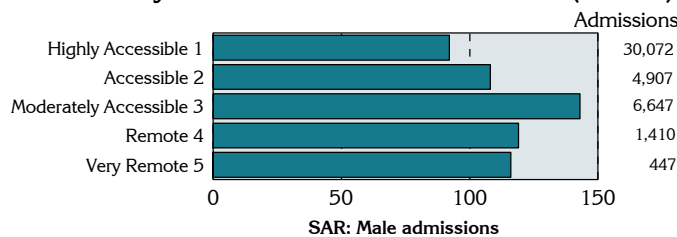
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation
[#] Data were not mapped because either the SLA population is less than 100 or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for males vary considerably across the ARIA+ classes. They are lowest in the Highly Accessible class (92), then increase to the highest ratio (an SAR of 143) in the Moderately Accessible areas, before decreasing to a lower, but still elevated, SAR of 116 in the Very Remote areas.

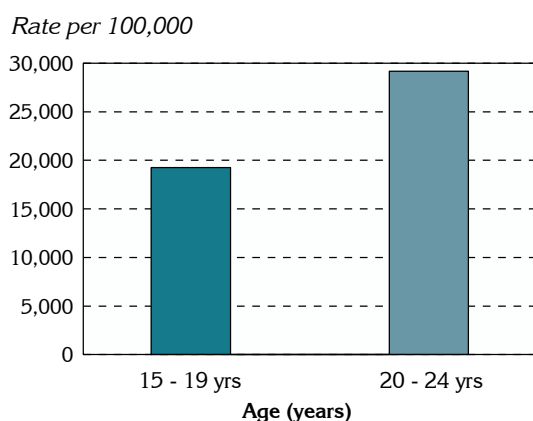
Source: Calculated on ARIA+ classification

Admissions of females, 15 to 24 years, 1996/97-1998/99

Adelaide

Admission rates of young females living in Adelaide vary substantially (Figure 5.33) within the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rates (an average rate of 19,264 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 29,171 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.33: Admissions of females, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 55,937 admissions of females aged from 15 to 24 years in Adelaide. This was eight per cent fewer admissions than were expected from the State rates, a standardised admission ratio (SAR) of 92**.

Approximately half of the postcode areas had ratios in the lowest range, with only 21 (17.0%) mapped in the highest class interval. Generally, above average ratios for this variable were found in postcodes in the inner north and north-western suburbs, and the outer northern suburbs, while lower ratios were predominantly located in a broad area across Adelaide from the north-east to the south-west.

Young women in *Elizabeth North* had 75% more admissions than expected from the State rates (an SAR of 175**). Other highly elevated ratios were recorded in *Old Noarlunga* (with an SAR of 164**), *Virginia* (154**), *Uraidla* (152*), *Osborne* and *Christies Downs* (both 152**), *Ferryden Park* (147**), *Elizabeth* (146**), *Gepps Cross* (143**), *Woodville North* (135**) and *Brooklyn Park* (133**).

There were 63 postcode areas in which ratios were at least 15% lower than expected. Excluding areas

with fewer than 20 admissions, the lowest ratios were recorded in *Stirling Forward* (with an SAR of 48** and 119 admissions), *Upper Sturt* (56**; 22 admissions), *Aldgate* (61**; 102 admissions) and *Stirling* (64**; 207 admissions), located in the Adelaide Hills; and *North Adelaide* (52**; 359 admissions), *Walkerville* (53**; 274 admissions), *Kensington Park* (54**; 465 admissions), *Norwood* (56**; 456 admissions), *Unley* (57**; 362 admissions), *Eastwood* (62**; 539 admissions), *Burnside* (63**; 353 admissions), and *Marden* (65**; 509 admissions), surrounding the city centre.

The largest numbers of admissions were recorded for young women in *Salisbury* (with 2,813 admissions), *Morphett Vale* (2,113), *Elizabeth North* (1,934), *Elizabeth* (1,570), *Happy Valley* (1,440), *Smithfield* (1,331), *Salisbury East* (1,199), *Hackham* (1,090) and *Park Holme* (1,071).

A correlation of substantial significance was recorded with the variable for people who left school at age 15 years or earlier (0.74). Correlations of meaningful significance were also recorded with the variables for children aged 0 to 14 years living in low income families (0.69), dwellings with no motor vehicles (0.66), single parent families (0.65) and dwellings rented from the SA Housing Trust (0.65); unemployed females aged 15 to 24 years (0.63); and Indigenous people aged 15 to 24 years (0.55).

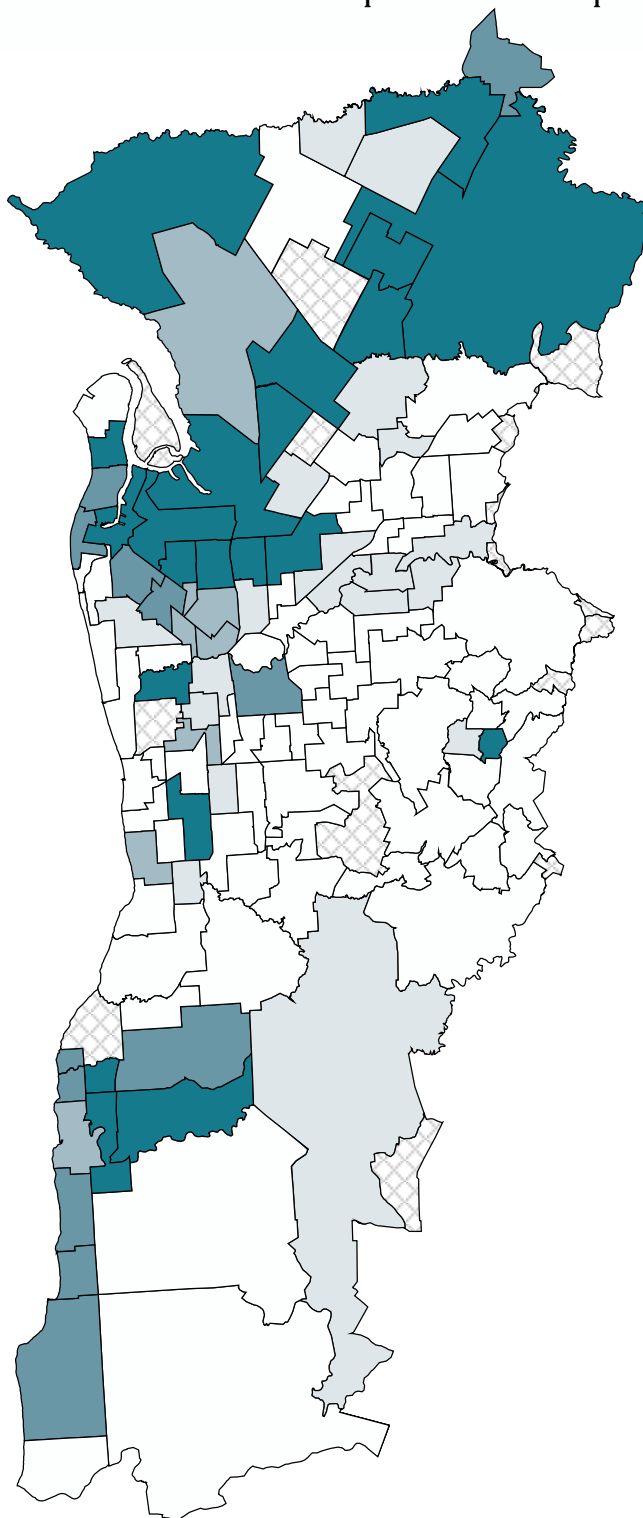
The correlation analysis also revealed an inverse association with indicators of high socioeconomic status, with correlations of statistical significance recorded with the variables for female labour force participation (-0.71), high income families (-0.69) and managers and administrators, and professionals (-0.64).

These results, together with the inverse correlation with the IRSD (-0.75), indicate an association at the postcode level between high rates of admissions of females aged 15 to 24 years and socioeconomic disadvantage.

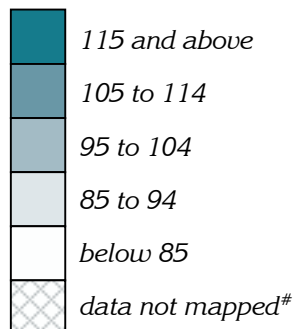
Map 5.27

Admissions of females, 15 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

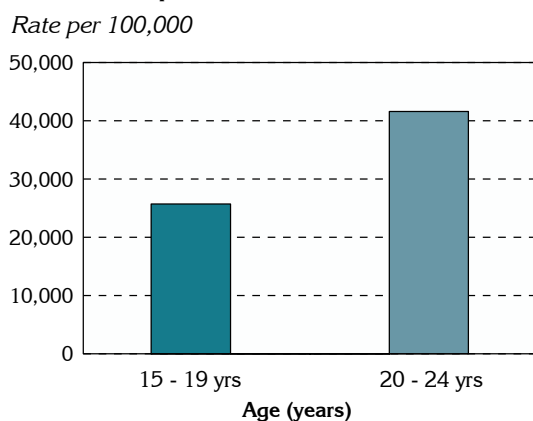
A Social Health Atlas of Young South Australians, 2003

Admissions of females, 15 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates for non-metropolitan females vary substantially (**Figure 5.34**) between the five year age groups in the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rates (an average rate of 25,755 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 41,608 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.34: Admissions of females, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 21,569 admissions of female residents aged 15 to 24 years of the non-metropolitan area of South Australia over the period from 1996/97 to 1998/99, 28% more than expected from the State rates (a standardised admission ratio (SAR) of 128**).

As was the case for males, almost half the SLAs (43.7%) had highly elevated ratios (**Map 5.28**).

There were at least twice the expected number of admissions of females in Unincorporated West Coast (with an SAR of 490** and 227 admissions), Unincorporated Whyalla (258**; 29 admissions), Coober Pedy (247**; 253 admissions), Ceduna (233**; 392 admissions), Robertstown (203**; 42 admissions) and Franklin Harbor (200**; 76 admissions). Other highly elevated ratios were recorded in Port Augusta (with an SAR of 196**), Peterborough (M) and Crystal Brook/Red Hill (both 187**), Hawker (173**) and Kanyaka and Quorn (171**).

Excluding SLAs in which there were fewer than 20 admissions, the lowest ratios were recorded in

Mount Gambier (DC) and Naracoorte (DC) (both with an SAR of 45**), Lucindale (52**), Light (54**) and Beachport (60**).

The largest numbers of female admissions in the non-metropolitan area of South Australia were recorded in the towns of Whyalla (2,026 admissions), Mount Gambier (1,501 admissions), Port Augusta (1,402 admissions), Murray Bridge (1,122 admissions) and Port Pirie (1,077 admissions).

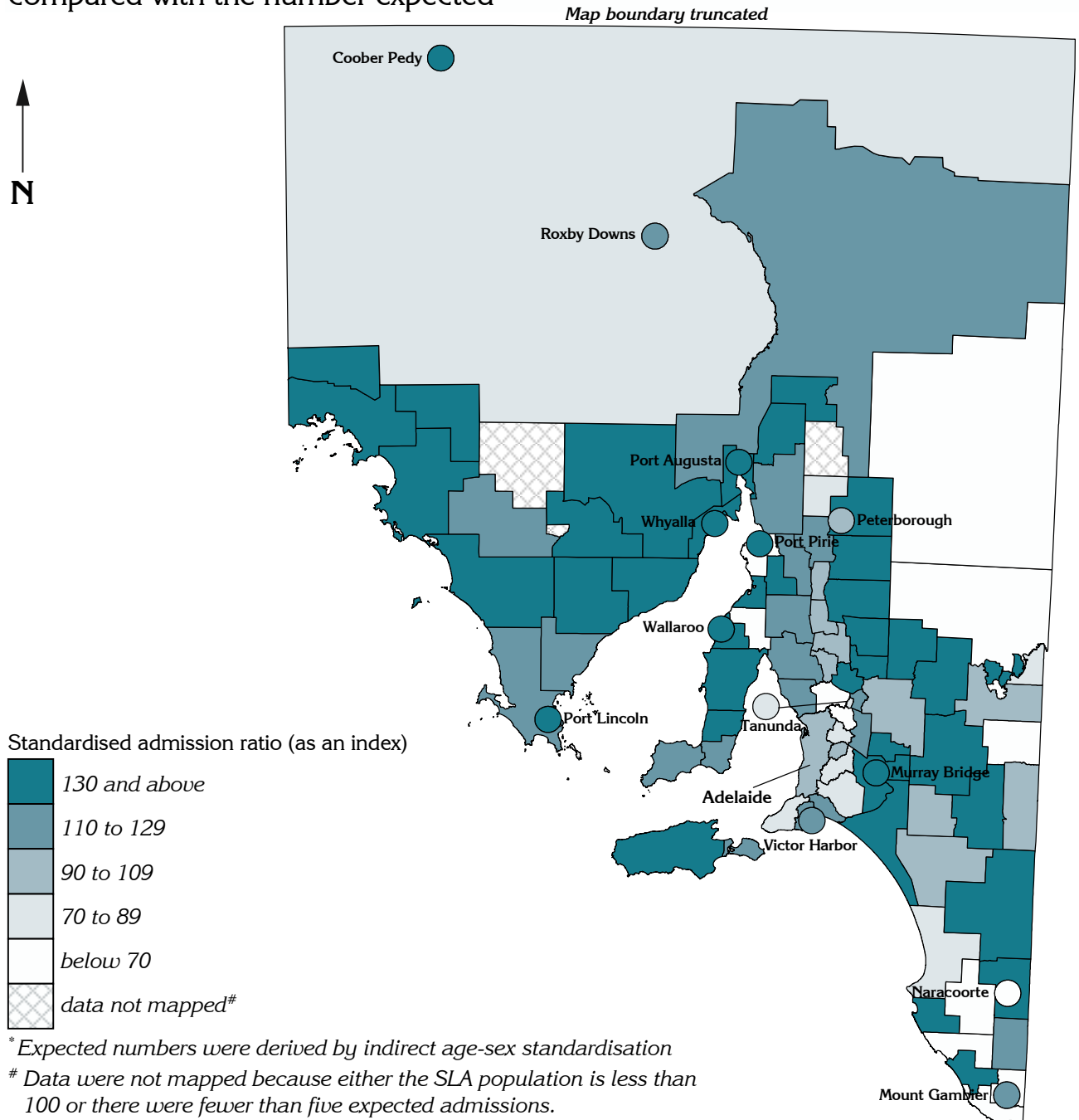
There were correlations of meaningful significance with many of the indicators of socioeconomic disadvantage including children aged 0 to 14 years living in single parent families (0.59), low income families (0.68), SA Housing Trust dwellings (0.62) and dwellings with no motor vehicle (0.62); dependent children (0.59) and substantiated reports of child abuse (0.53).

These results, together with the inverse correlation of meaningful significance with the IRSD (-0.69), suggest an association at the SLA level between high rates of admissions of females aged 15 to 24 years and socioeconomic disadvantage.

Map 5.28

Admissions of females, 15 to 24 years, South Australia, 1996/97-1998/99

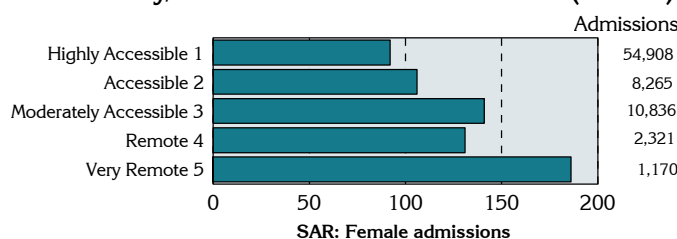
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



The distribution of admissions for females by ARIA+ also closely follows the pattern evident for admissions at ages 15 to 24 years, with a ratio of 92 in the Highly Accessible areas; ratios of 106, 141 and 131 in the three middle classes; and the highest SAR of 186 in the Very Remote ARIA+ class.

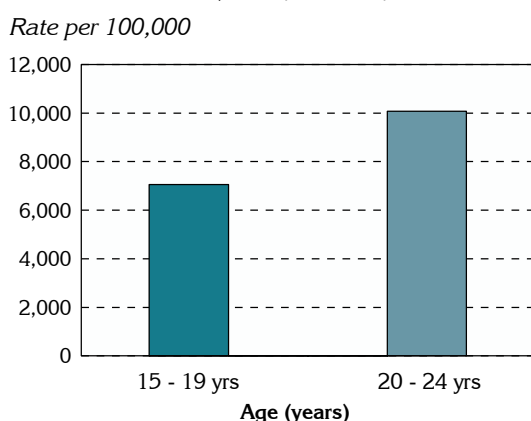
Source: Calculated on ARIA+ classification

Same day admissions, people aged 15 to 24 years, 1996/97-1998/99

Adelaide

Same day admission rates of young people living in Adelaide vary substantially (Figure 5.35) within the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rates (an average rate of 7,056 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 10,077 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.35: Same day admissions, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 40,284 same day admissions of residents of the non-metropolitan area of South Australia aged 15 to 24 years over the period 1997/97 to 1998/99. This was marginally fewer than expected from the State rates, a standardised admission ratio (SAR) of 98^{**}. More than two thirds (67.5%) of these admissions were recorded for females, a total of 27,189 admissions.

The highest ratios were recorded for people in *Brighton* (with an SAR of 181^{**}) and *Brooklyn Park* (168^{**}), with 81% and 68%, respectively, more same day admissions than expected from the State rates. Ratios were also elevated by more than 25% in the postcode areas of *Osborne* (144^{**}), *Ferryden Park* and *Wynn Vale* (both 138^{**}), *Woodville* (137^{**}), *Park Holme* (133^{**}), *Elizabeth North* (131^{**}), *Netley* (130^{**}), *Port Adelaide* and *Parafield Gardens* (both 129^{**}), *Old Noarlunga* (128^{**}) and *Virginia* (127^{*}).

Excluding postcode areas with fewer than 20 admissions, the lowest ratios were recorded for young people in *Stirling Forward* (an SAR of 52^{**}), *Novar Gardens* (52^{**}), *Munno Para* (59^{**}), *Aldgate* (60^{**}), *North Adelaide* (62^{**}), *MacDonald Park* (63^{*}),

Eden Hills (64^{**}), *Sellicks Beach* (67^{*}), *Walkerville* (67^{**}), *Angle Vale* (69^{*}) and *Holden Hill* (69^{**}).

Only *Salisbury* (1,837 admissions), *Morphett Vale* (1,325) and *Happy Valley* (1,161) had more than 1,000 same day admissions. Relatively high numbers were also recorded in the postcode areas of *Elizabeth North* (973 admissions), *Elizabeth* (792), *Park Holme* (783), *Salisbury East* (769), *Brooklyn Park* (739), *Brighton* (725) and *Smithfield* (716).

There were weak correlations at the postcode level with the indicators of socioeconomic disadvantage.

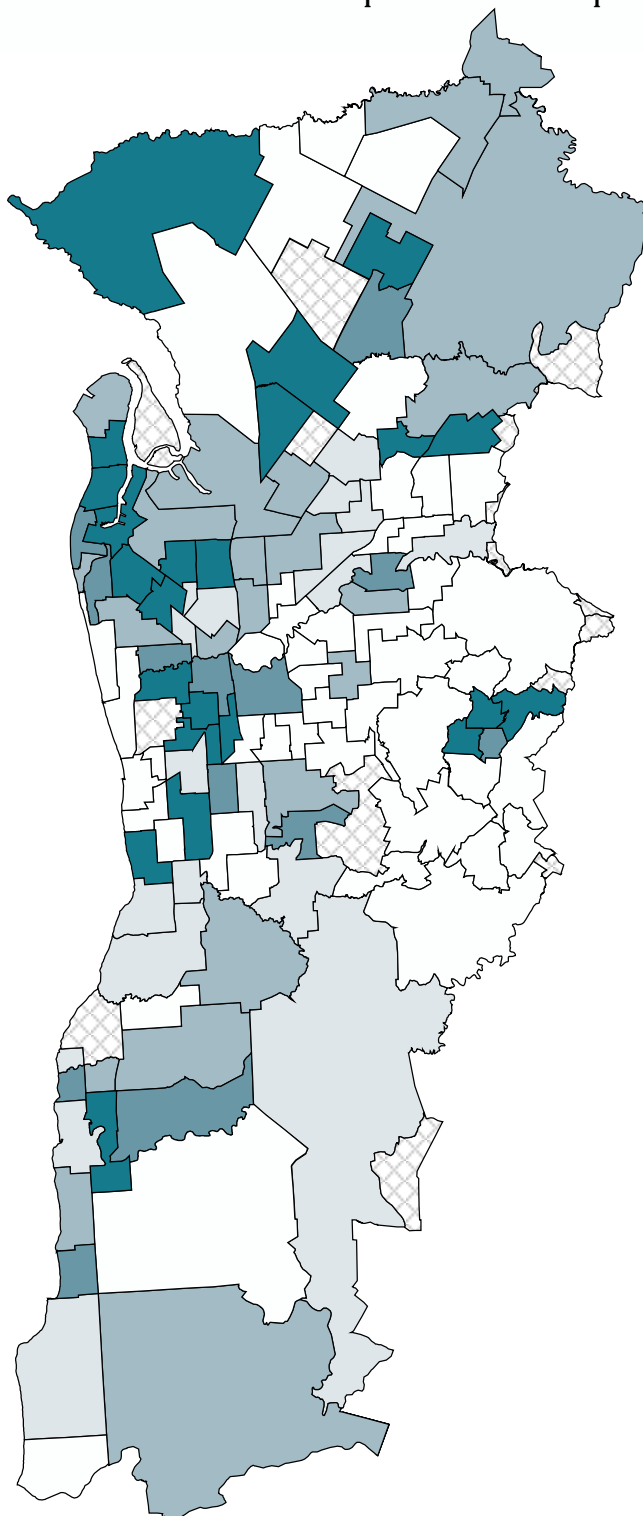
However, when the data were aggregated to the SLA level, correlations of meaningful significance were recorded with the variables for dependent children living in low income families (0.56); children aged 0 to 14 years living in single parent families (0.54) and low income families (0.53); and people aged 15 to 24 years who left school at 15 years of age or earlier (0.51).

These results, together with the inverse correlation of meaningful significance with the IRSD (-0.56), suggest an association at the SLA level in Adelaide between high rates of same day admissions and socioeconomic disadvantage.

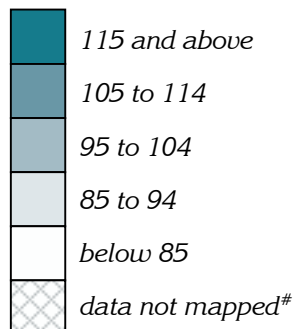
Map 5.29

Same day admissions, people aged 15 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

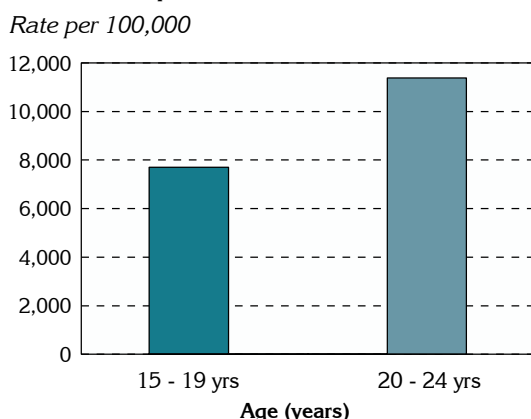
A Social Health Atlas of Young South Australians, 2003

Same day admissions, people aged 15 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Same day admission rates in non-metropolitan South Australia vary substantially (**Figure 5.36**) between the five year age groups in the 15 to 24 year age category. People in the 15 to 19 year age group have the lowest hospitalisation rates (an average rate of 7,706 admissions per 100,000 population aged 15 to 19 years), with a higher rate of 11,375 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.36: Same day admissions, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Residents of the non-metropolitan area of South Australia aged from 15 to 24 years had 12,820 same day admissions; 7,609 of these were admissions of females (59.4%) and 5,211 were males (40.6%). This was nine per cent more than was expected from the State rates, a standardised admission ratio of 109**.

Standardised admission ratios were generally low throughout the State, with patches of higher ratios in the mid north and in several of the larger towns, where such services are more easily accessed (**Map 5.30**).

Young people in Port Augusta had the highest admission rate for this variable, with more than twice the number of same day admissions expected from the State rates, a standardised admission ratio (SAR) of 207**. SARs mapped in the highest range were also recorded in Robertstown (with an SAR of 180**) and Eudunda (163**), located in the lower north; Crystal Brook-Redhill (165**), Hawker (157), Kanyaka and Quorn (155**), Peterborough (DC) (147) and Whyalla (134**), in the mid north; Renmark (162**) and Baramera (138**), in the

Riverland; Naracoorte (M) (150**) and Robe (134), in the south-east; and elsewhere in the SLAs of Yorketown (139**), Ceduna (134**) and Port Lincoln (130**).

Excluding SLAs with fewer than 20 admissions, the lowest ratio was recorded in Unincorporated Far North, with just under half the number of admissions expected from the State rates (an SAR of 49**). Relatively low ratios were also recorded in Mount Gambier (DC) (an SAR of 52**), Light (61**), Coonalpyn Downs (64*), Unincorporated Flinders Ranges (65**), Naracoorte (DC) (67*), Morgan (68), Riverton and Blyth-Snowtown (both 68*), Roxby Downs (69**) and Beachport (69*).

The towns of Whyalla, Port Augusta and Mount Gambier had the largest number of same day admissions of people aged 15 to 24 years, with 1,120, 1,000 and 926 admissions, respectively.

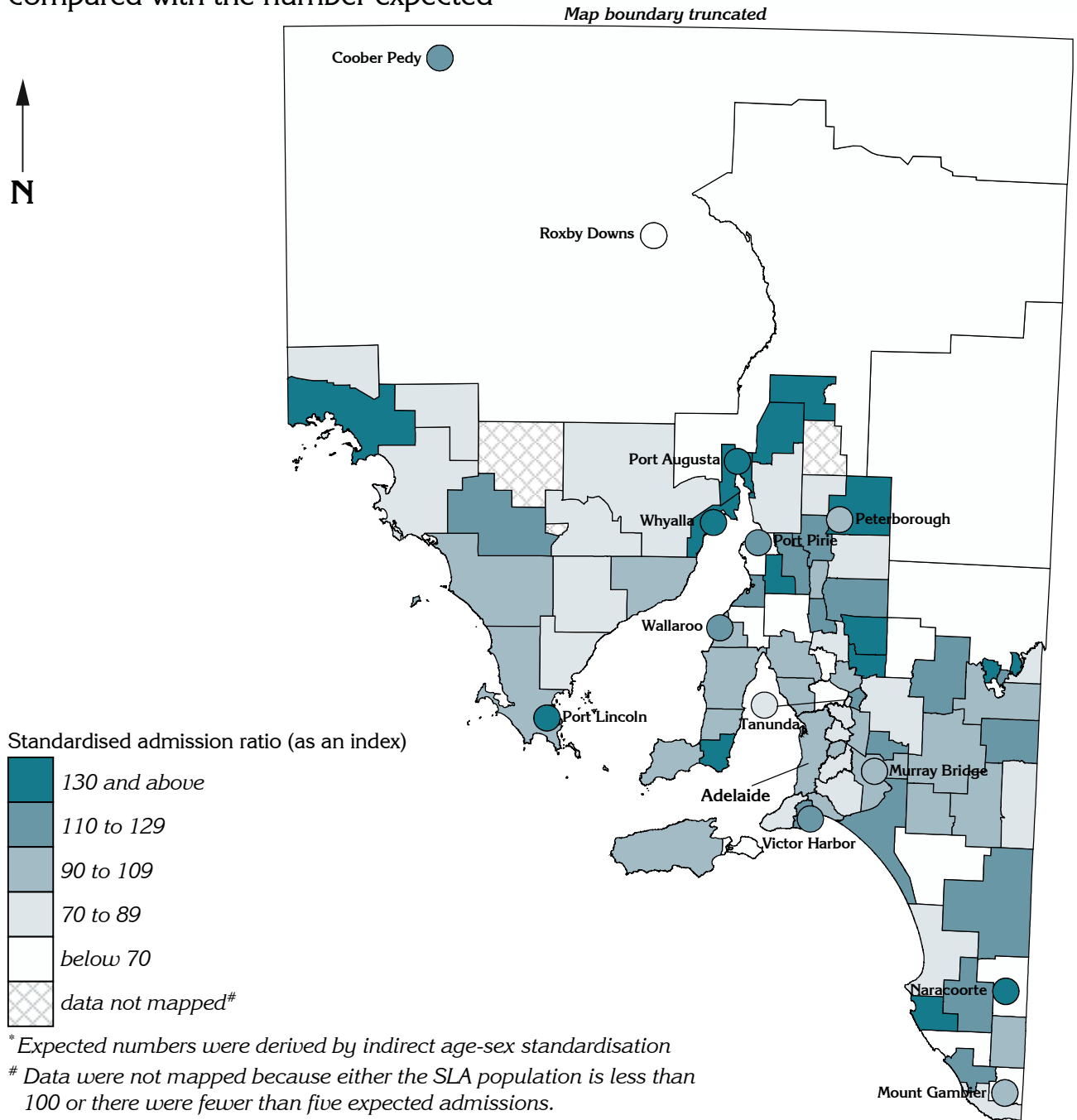
There were correlations of meaningful significance with many of the indicators of socioeconomic disadvantage including children aged 0 to 14 years living in low income families (0.52), single parent families (0.61), SA Housing Trust dwellings (0.70) and dwellings with no motor vehicle (0.58); and clients of Family and Youth Services (0.56), Child and Adolescent Mental Health Services (0.54).

These results, together with the inverse correlation of meaningful significance with the IRSD (-0.53), suggest an association at the SLA level between high rates of same day admissions of people aged 15 to 24 years and socioeconomic disadvantage.

Map 5.30

Same day admissions, people aged 15 to 24 years, South Australia, 1996/97-1998/99

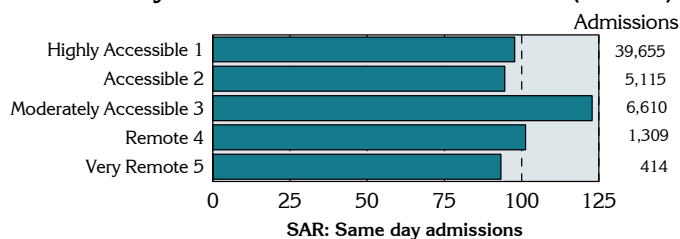
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for same day admissions at ages 15 to 24 years show two distinct patterns across the ARIA+ classes. The first is from an SAR of 98 in the Highly Accessible areas to 94 in the Accessible areas; and the second is from an SAR of 123 in the Moderately Accessible class to a low 93 in the Very Remote class.

Source: Calculated on ARIA+ classification

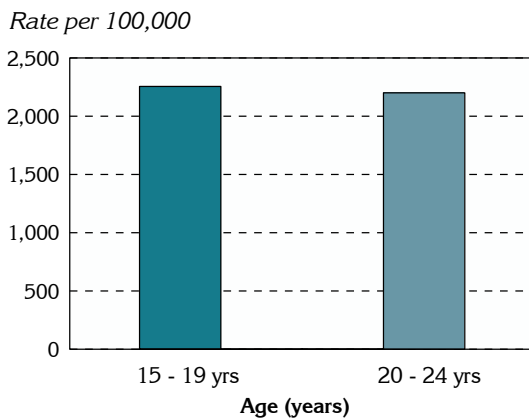
Admissions from injury and poisoning, people aged 15 to 24 years, 1996/97-1998/99

Some general comments on injury are on page 224.

Adelaide

Admission rates from the external causes of injury and poisoning of young people living in Adelaide are similar (Figure 5.37) within the 15 to 24 year age category. People in the 20 to 24 year age group a marginally lower hospitalisation rate (an average rate of 2,202 admissions per 100,000 population aged 20 to 24 years), compared with a rate of 2,257 admissions per 100,000 in the 15 to 19 year age group.

Figure 5.37: Admissions from injury and poisoning, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 10,328 admissions of people aged 15 to 24 years from injury and poisoning in Adelaide. This was 15% fewer admissions than were expected from the State rates, a standardised admission ratio (SAR) of 85**. Males accounted for almost three quarters of these admissions (70.0%).

The small number of postcode areas with SARs from injury and poisoning in this age group elevated by 15% or more were scattered throughout the metropolitan areas (Map 5.31).

The highest standardised admission ratio was recorded in the postcode area of Adelaide, with 94% more admissions than were expected from the State rates (an SAR of 194**).

Relatively high ratios were also recorded for young people in Blackwood Forward (with an SAR of 161**), Old Noarlunga (145**), Virginia (142), Port

Adelaide (142**), Woodville (141**), West Lakes (131**), Osborne (129*), Largs Bay (123) and Evanston (121).

In contrast, relatively low ratios were recorded across much of Adelaide, in particular in the eastern, southern and Hills regions. Excluding areas with fewer than 20 admissions, the lowest ratios were recorded in Eden Hills (an SAR of 46**; and 34 admissions), Plympton (55**; 84 admissions), Eastwood (55**; 81 admissions), Paradise (56**; 74 admissions), St Marys (58**; 85 admissions), North Adelaide (60**; 76 admissions), Outer Harbor (60**; 38 admissions) and Stirling Forward (60**; 31 admissions).

Postcode areas recording in excess of 200 admissions for this variable included Salisbury (425 admissions), Morphett Vale (371 admissions), Happy Valley (290 admissions), Elizabeth North (246 admissions), Salisbury East (239 admissions) and Elizabeth (232 admissions).

There were weak correlations at the postcode level with the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status.

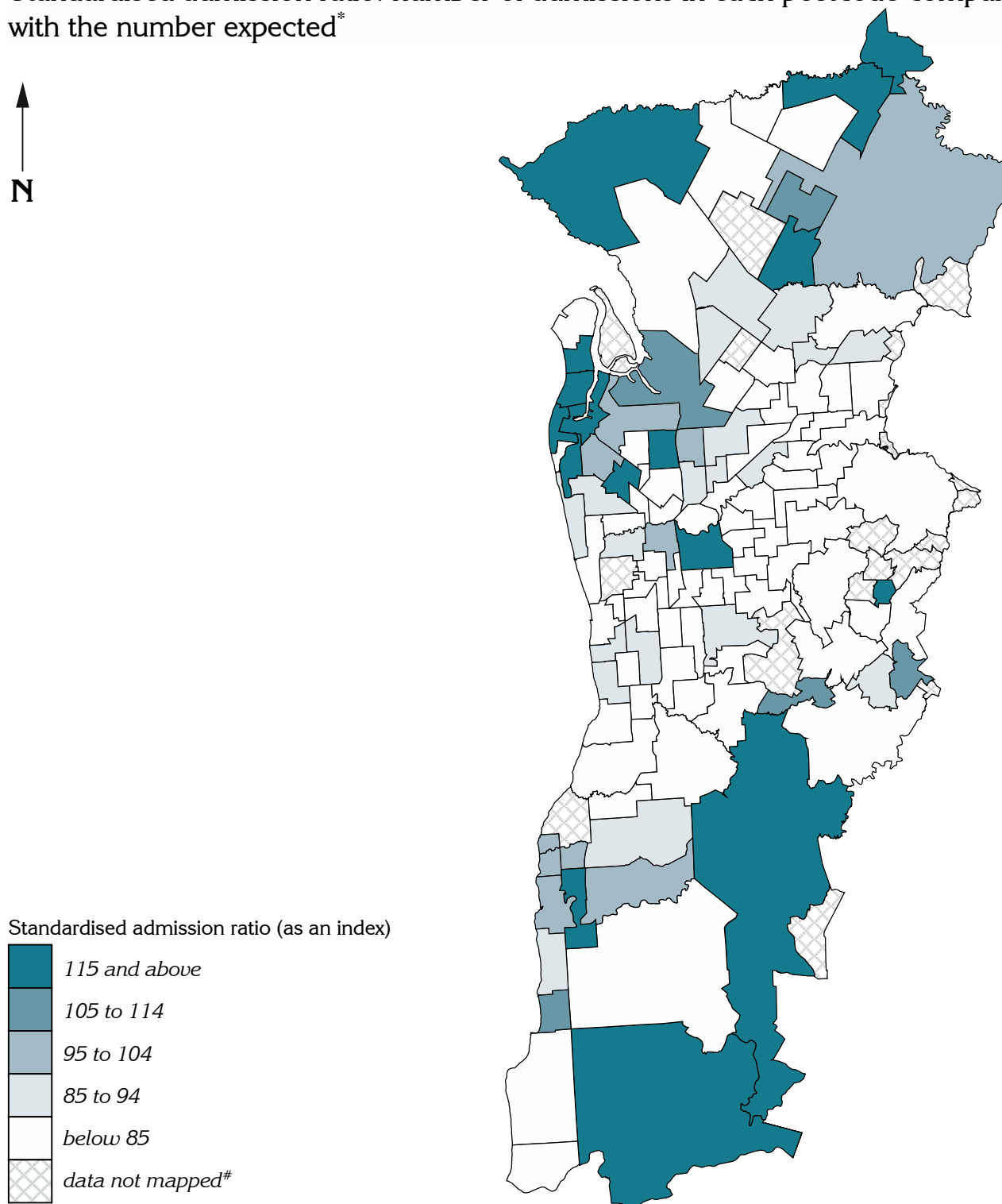
However, when the data were aggregated to the SLA level, correlations of meaningful significance were recorded with the variables for unemployed females (0.61) and unemployed males (0.53) aged 15 to 24 years; people aged 15 to 24 years who left school at 15 years of age or earlier (0.59); Indigenous people aged 0 to 14 years (0.53); and children aged 0 to 14 years living in families with no vehicles (0.52).

These results, together with the inverse correlation with the IRSD (-0.53), suggest an association at the SLA level in Adelaide between high rates of admissions from injury and poisoning of people aged 15 to 24 years and socioeconomic disadvantage.

Map 5.31

Admissions from injury and poisoning, people aged 15 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

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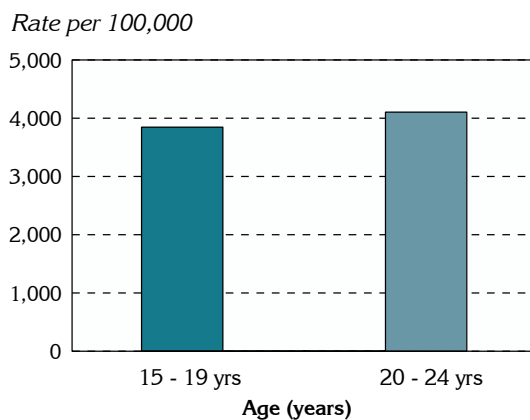
Admissions from injury and poisoning, people aged 15 to 24 years, 1996/97-1998/99

Some general comments on injury are on page 224.

Non-metropolitan South Australia

Admission rates of non-metropolitan South Australians from the external causes of injury and poisoning are similar (**Figure 5.38**) for the five year age groups in the 15 to 24 year age category. People in the 15 to 19 year age group have a lower hospitalisation rate (an average rate of 3,849 admissions per 100,000 population aged 15 to 19 years), compared with a rate of 4,105 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.38: Admissions from injury and poisoning, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 51% more admissions of people aged 15 to 24 years from injury and poisoning over the period 1996/97 to 1998/99 in the non-metropolitan area of South Australia than were expected from the State rates, a standardised admission ratio (SAR) of 151^{**}. Males accounted for almost three quarters (72.5%) of the 5,531 admissions.

Almost two thirds of the SLAs (65.6%) in the non-metropolitan area of South Australia had ratios in the highest range mapped (**Map 5.32**). Data for a number of areas were not mapped as there were too few cases to produce reliable results.

A number of areas had at least two and a half times the number of admissions expected; they were Coober Pedy (with an SAR of 315^{**}), Meningie (314^{**}), Eudunda (312^{**}), Lameroo (296^{**}), Elliston (290^{**}), Port Broughton (279^{**}), Jamestown (274^{**}),

Kanyaka and Quorn (258^{**}), Le Hunte (258^{**}) and Unincorporated West Coast (257^{**}). Highly elevated ratios were also recorded in Ceduna (247^{**}) and Kimba (202^{**}), located in the west; Peterborough (DC) (239^{**}), Crystal Brook-Redhill (203^{**}) and Rocky River (201^{**}), situated in the mid north; Mount Pleasant (228^{**}), on the outskirts of Adelaide; Tatiara (218^{**}) and Naracoorte (DC) (214^{**}), in the south-east; and elsewhere in Karoonda-East Murray (217^{**}), Unincorporated Flinders Ranges and Port Augusta (both 201^{**}).

With almost two thirds of the SLAs recording ratios in the highest class interval, very few had ratios lower than expected. The lowest of these (in SLAs with more than 20 admissions) was recorded for young people in Light, with 31% fewer admissions than expected (an SAR of 69^{**}). The next lowest ratios were recorded in Mount Gambier (DC) (with an SAR of 75 and 41 admissions), Minlaton (86; 14 admissions), Mount Barker (90; 193 admissions), Saddleworth and Auburn (91; 15 admissions) and Unincorporated Far North (92; 58 admissions).

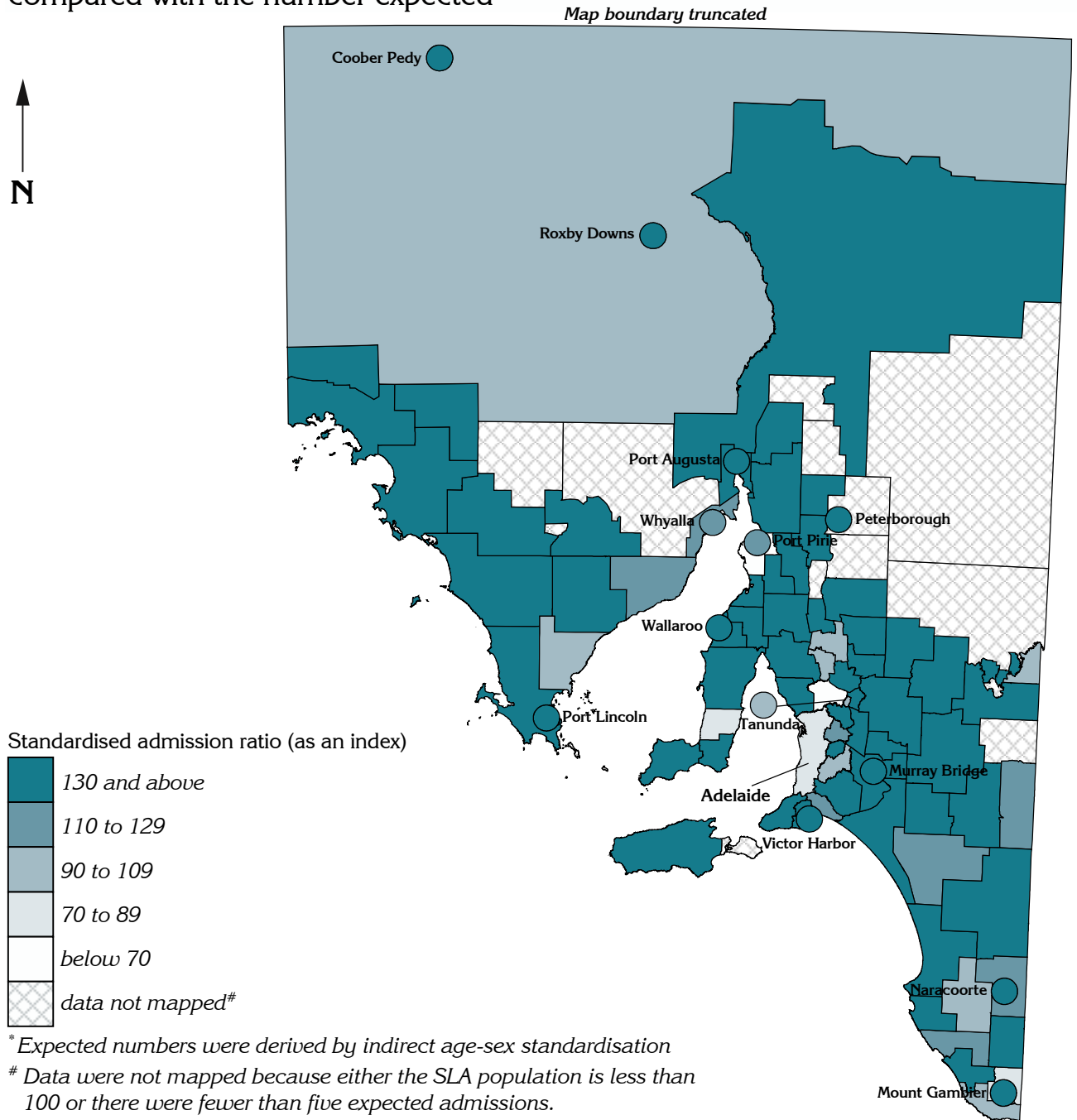
More than 200 admissions from injury and poisoning of people aged 15 to 24 years were recorded in the towns of Mount Gambier (with 346 admissions), Whyalla (310 admissions), Port Augusta (289 admissions), Port Lincoln (254 admissions) and Murray Bridge (226 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia of an association between admissions from injury and poisoning of people aged 15 to 24 years and socioeconomic status.

Map 5.32

Admissions from injury and poisoning, people aged 15 to 24 years, South Australia, 1996/97-1998/99

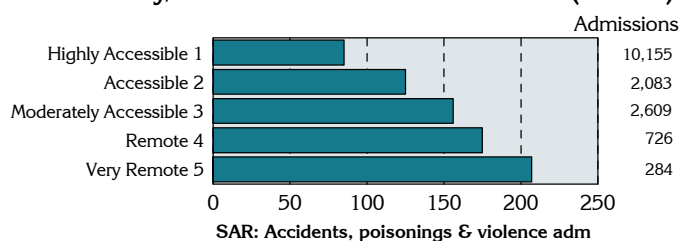
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios for the external causes of injury and poisoning rise across the ARIA+ classes with increasing remoteness, from the lowest ratio in the Highly Accessible areas (an SAR of 85, the only ratio below the level expected), to an elevated ratio of 207 in the Very Remote areas.

Source: Calculated on ARIA+ classification

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Principal procedures for admitted patients

Introduction

There are variations in the rates at which particular procedures are undertaken at a regional level within South Australia. 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.

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

Data mapped

Details are presented in the following pages for the total of all procedures and, separately, for two procedures which are generally regarded 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).

In most cases, the procedure is the principal procedure; that is, the most significant procedure for treatment of the principal diagnosis.

South Australia has a higher standardised admission rate than the average of the other States for both tonsillectomy (18% higher) and myringotomy (28% higher) (Table 5.2).

The high rate of tonsillectomy in South Australia is long standing. Renwick and Sadkowsky (1991) reported that in 1986 the age-sex standardised ratio for tonsillectomy in South Australia was a statistically significant 159.0*. That is, there were 59% more tonsillectomies performed (as the principal procedure during a hospital episode) on South Australian residents compared with the number that would be expected if the Australia-wide rates had applied in this state. The next highest ratios were in the Australian Capital Territory (108.6*) and in Western Australia (107.4*).

Table 5.2: Admission rates¹ of children aged 0 to 24 years for selected sentinel procedures, public and private hospitals, 1998/1999

Sentinel procedure	Standardised admission ratio		Difference
	South Australia	Other States/Territories	
Myringotomy	128	98	30.6%
Tonsillectomy	118	99	20.3%

¹Admission rates have been produced by indirect standardisation

Source: Compiled from data supplied by States and Territories/AIHW?

Context

There were 132,691 admissions of people aged 0 to 24 years to public acute and private hospitals (including day surgery facilities) in South Australia at which at least one surgical procedure was performed. These 132,691 admissions accounted for almost half (43.6%) of all admissions studied. More than three quarters (85.8%) of the admissions involving a procedure were of residents of Adelaide, which comprises almost three quarters (72.6%) of South Australia's young population.

Females accounted for 55.4% of admissions involving a surgical procedure in this age group, varying from 56.7% of admissions of children and young people in Adelaide to 52.0% in the non-metropolitan area of the State.

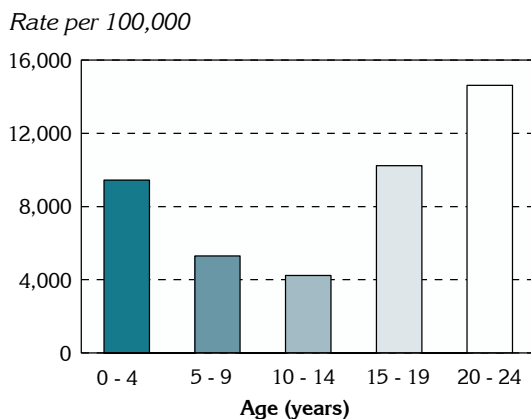
More than half (54.4%) of these principal procedures were performed on a same day basis, with males having slightly more procedures on a same day basis (55.0% of all male principal procedures, compared with 54.0% for females).

Admissions for surgical procedures, people aged 0 to 24 years, 1996/97-1998/99

Adelaide

Admission rates for surgical procedures of children living in Adelaide vary substantially (Figure 5.39) within the 0 to 24 year age category. Children in the 0 to 4 year age group have an average rate of 9,448 admissions per 100,000 population, declining to a low of 4,243 per 100,000 in the 10 to 14 year age group. Hospitalisation rates then increase over the next two age groups, to a high of 14,618 admissions per 100,000 population aged 20 to 24 years.

Figure 5.39: Admissions for surgical procedures, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 97,452 admissions for surgical procedures of residents of Adelaide aged 0 to 24 years. This was marginally lower than expected from the State rates, a standardised admission ratio (SAR) of 99**. Females accounted for over half (56.7%) of the admissions.

The most highly elevated ratios were in postcodes scattered across Adelaide, with the main concentration in the north-western suburbs; lower ratios were recorded in the Adelaide Hills and in a number of outer southern suburbs (Map 5.33).

The most highly elevated ratio was recorded for children and young people in *Brighton*, an SAR of 142**, indicating that there were 42% more admissions for surgical procedures than the level expected from the State rates. Highly elevated ratios were recorded to the north of the city in *Virginia* (with an SAR of 142**), *Blair Athol* (141**) and *Gepps Cross* (141**). The suburbs of *Ferryden*

Park (135**), *Brooklyn Park* (133**), *Adelaide* (130), *Wynn Vale* (129**), *Old Noarlunga* (128**), *Osborne* (127**) and *Ashton* (126) also recorded ratios in the highest range mapped.

Excluding areas with fewer than 20 admissions, *Carey Gully* had the lowest ratio for this variable, with 75% fewer admissions than expected from the State rates (an SAR of 25**). Areas with ratios of 30% or more lower than expected included *Montacute* (41**), *Sellicks Beach* (55**), *Greenhill* (61*), *Stirling Forward* (62**), *MacDonald Park* (63**), *Piccadilly* (64), *Norton Summit* (67), *Aldinga* (69**), *McLaren Vale* (69**) and *Maslin Beach* (70*).

The largest numbers of admissions involving a surgical procedure were of children living in the postcode areas of *Salisbury* (with 4,669 admissions), *Morphett Vale* (3,584 admissions), *Happy Valley* (2,999 admissions), *Smithfield* (2,387 admissions), *Elizabeth North* (2,364 admissions), *Salisbury East* (2,139 admissions) and *O'Halloran Hill* (2,008 admissions).

There was no consistent evidence in the correlation analysis at the postcode level of an association between admissions for surgical procedures of people aged 0 to 24 years and socioeconomic status.

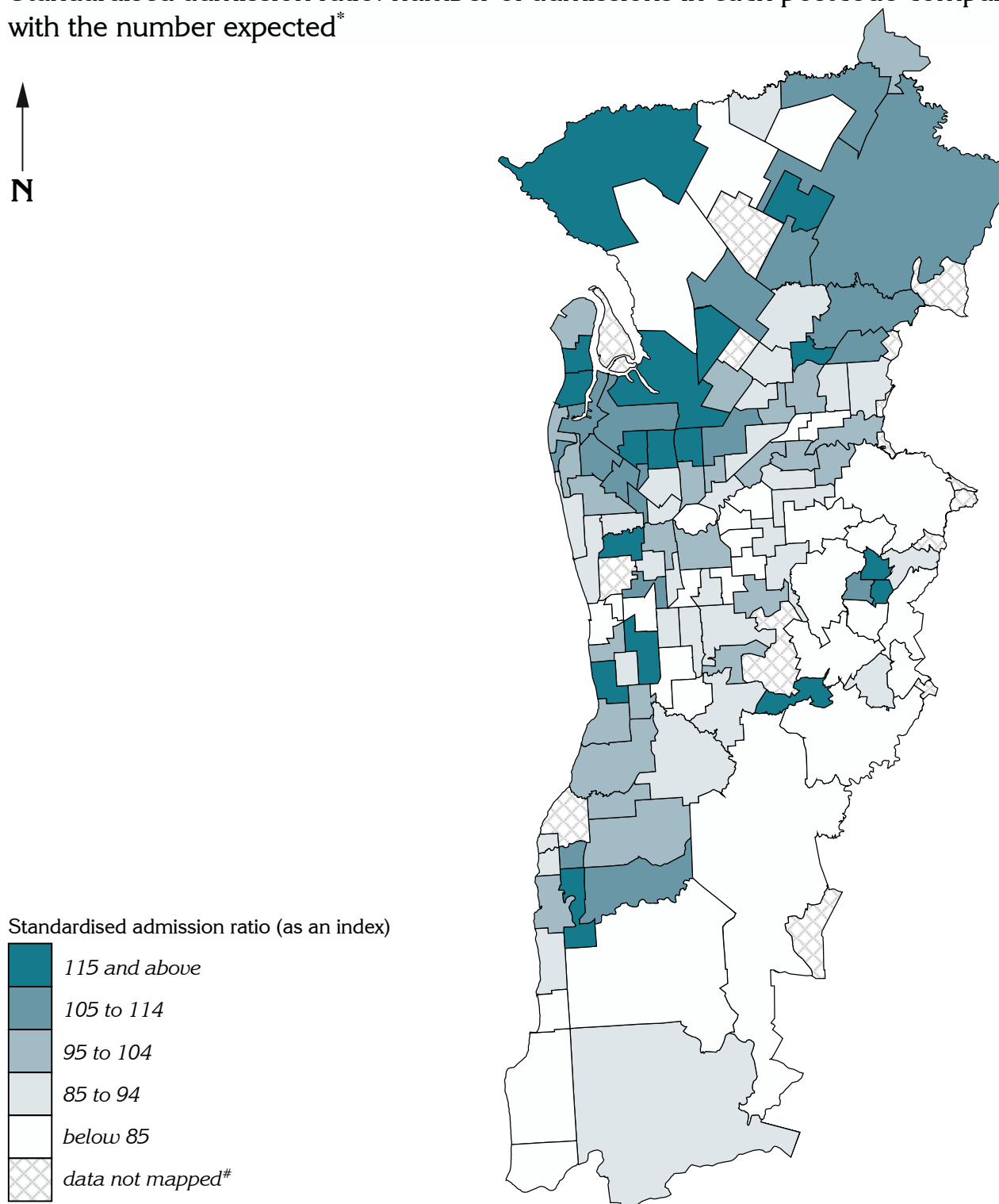
However, when the data were aggregated to the SLA level, correlations of meaningful significance were found with the variables for people aged 15 to 24 years who left school at 15 years of age or earlier (0.59); dependent children living in low income families (0.58); and children aged 0 to 14 years living in dwellings rented from the SA Housing Trust (0.54), single parent families (0.50) and low income families (0.50).

These results, together with the inverse correlation with the IRSD (-0.54), suggest an association at the SLA level in Adelaide between high rates of admissions for a surgical procedure of people aged 0 to 24 years and socioeconomic disadvantage.

Map 5.33

Admissions for surgical procedures, people aged 0 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

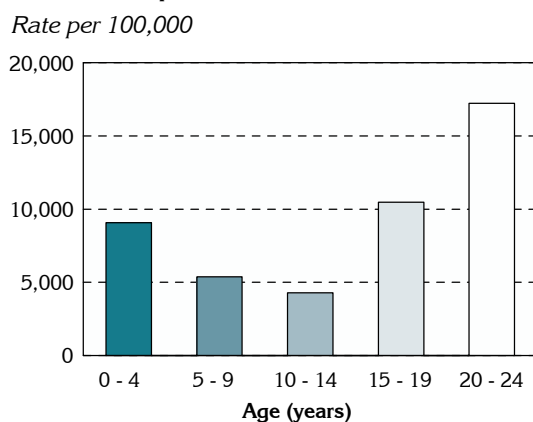
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Admissions for surgical procedures, people aged 0 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Admission rates of non-metropolitan South Australians for surgical procedures vary substantially (Figure 5.40) between the five year age groups in the 0 to 24 year age category. Children in the 0 to 4 year age group have an average rate of 9,083 admissions per 100,000 population, declining to a low of 4,286 per 100,000 in the 10 to 14 year age group. Hospitalisation rates then increase over the next two age groups, to a high of 17,227 admissions per 100,000 population aged 20 to 24 years.

Figure 5.40: Admissions for surgical procedures, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the three years 1996/97 to 1998/99, there were 35,239 admissions for surgical procedures of children aged 0 to 24 years living in the non-metropolitan area of South Australia. This was 4% above the level expected from the State rates, a standardised admission ratio (SAR) of 104**. Females accounted for just over half (52.0%) of these admissions.

There is no identifiable pattern in the distribution of standardised admission ratios (Map 5.34).

Ratios elevated by 30% or more were recorded for children and young people in Unincorporated West Coast (with an SAR of 241**), Carrieton (163**), Port Augusta (161**), Lameroo (148**), Ceduna (143**), Naracoorte (M) (142**), Unincorporated Whyalla (137**), Wallaroo (135**) and Renmark (132**).

Excluding SLAs with fewer than 20 admissions, the lowest SARs were recorded in Pirie and Naracoorte (DC), with ratios of 21** and 48** respectively.

Low ratios were also recorded in the SLAs of Browns Well (with an SAR of 49*), Mount Gambier (DC) (50**), Unincorporated Far North (54**), Light (56**), Beachport (61**), Tumby Bay (65**) and Lucindale (65**).

The largest number of admissions for surgical procedures at these ages were recorded for children and young people in Whyalla (with 2,904 admissions), Mount Gambier (2,242 admissions), Port Augusta (2,174 admissions), Mount Barker (1,875 admissions), Murray Bridge (1,500 admissions), Port Pirie (1,444 admissions) and Port Lincoln (1,403 admissions).

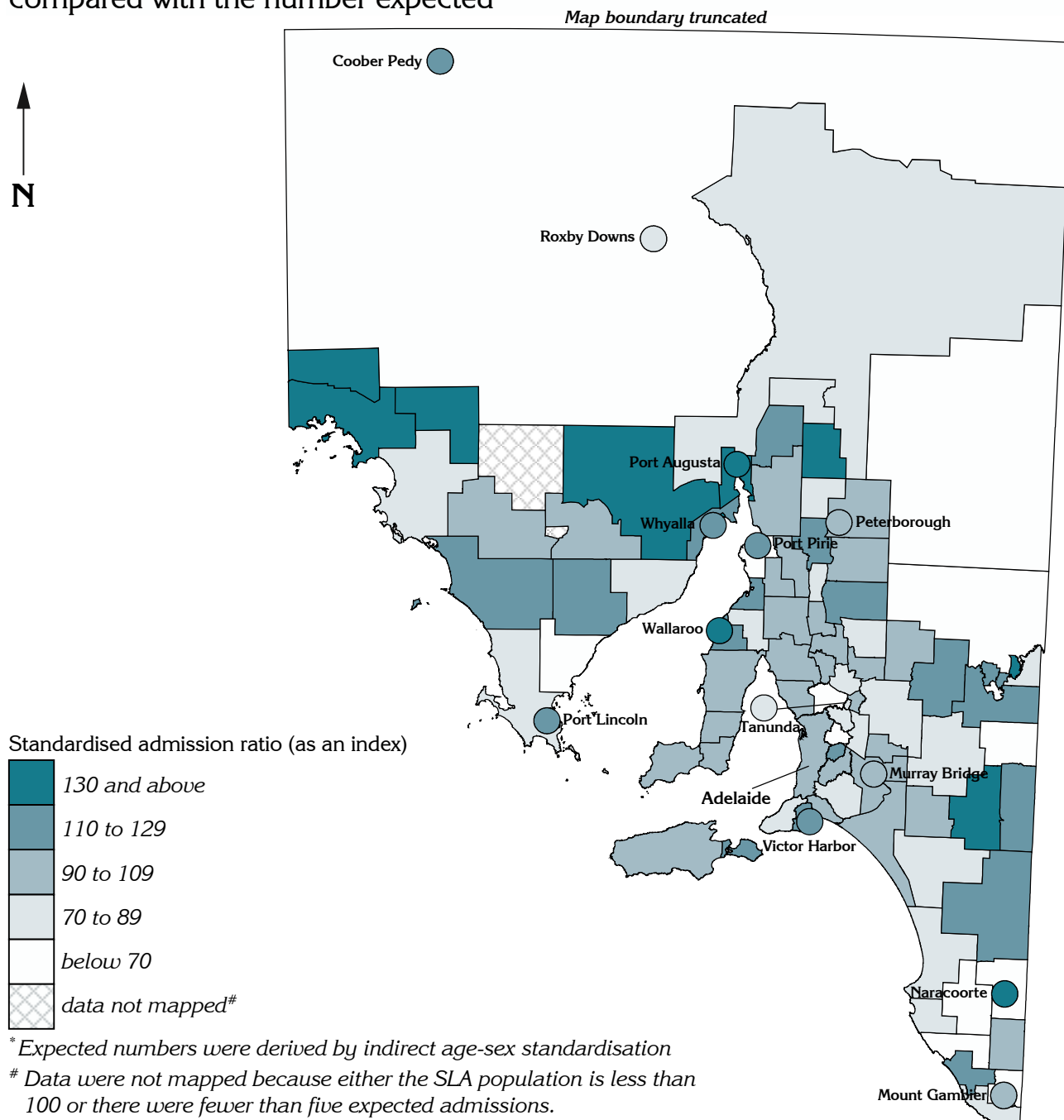
There were correlations of meaningful significance with a number of the indicators of socioeconomic disadvantage including children aged 0 to 14 years living in SA Housing Trust dwellings (0.63), single parent families (0.61) and low income families (0.52); and dependent children living in families receiving income support payments (0.54).

These results, together with the meaningful inverse correlation with the IRSD (-0.51), suggest an association at the SLA level between high rates of admissions for surgical procedures of people aged 0 to 24 years and socioeconomic disadvantage.

Map 5.34

Admissions for surgical procedures, people aged 0 to 24 years, South Australia, 1996/97-1998/99

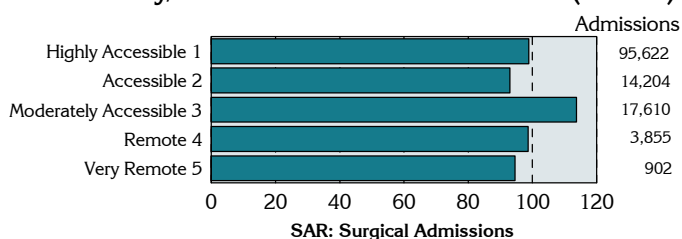
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios for surgical procedures show no particular relationship with remoteness under the ARIA+ classes. They are lowest in the Accessible (93) and Very Remote (95) classes, and highest in the Moderately Accessible (114) class. There were around the expected number of admissions in the Highly Accessible and Remote classes (both with SARs of 99).

Source: Calculated on ARIA+ classification

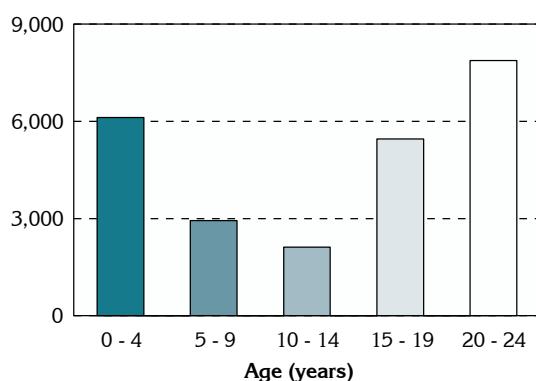
Same day admissions for surgical procedures, people aged 0 to 24 years, 1996/97-1998/99

Adelaide

Same day admission rates for surgical procedures of children living in Adelaide vary substantially (Figure 5.41) within the 0 to 24 year age category. Children in the 0 to 4 year age group have an average rate of 6,116 admissions per 100,000 population, declining to a low of 2,122 per 100,000 in the 10 to 14 year age group. Hospitalisation rates then increase over the next two age groups, to a high of 7,875 admissions per 100,000 population aged 20 to 24 years.

Figure 5.41: Same day admissions for surgical procedures, by age, Adelaide, 1996/97-1998/99

Rate per 100,000



Source: Compiled in HealthWIZ from data supplied by DHS

There were 54,276 same day admissions for a surgical procedure over the period 1996/97 to 1998/99 of children aged 0 to 24 years living in Adelaide; this was marginally higher than expected from the State rates (a standardised admission ratio (SAR) of 101**). Females accounted for 30,886 of these same day admissions (56.9%), while 23,390 were males.

The highest standardised admission ratios for same day surgical procedures tend to be in postcodes lying in a band to the west of the city, and the lowest, to be scattered throughout Adelaide (Map 5.35).

The most highly elevated ratio, of 184**, was recorded for children and young people in *Brighton*, indicating that there were 84% more admissions than were expected from the State rates. Other postcode areas with ratios elevated by 30% or more included *Wynn Vale* (with an SAR of 166**), *Brooklyn Park* (158**), *Upper Sturt* (142**), *Summertown* (135), *Ashton* (133), *Virginia* (132**) and *Park Holme* (131**).

Sellicks Beach had the lowest ratio for this variable (of areas with more than 20 admissions), with 47% fewer admissions than expected, an SAR of 53**. To the north of the city, *MacDonald Park*, *Holden Hill* and *Munno Para* recorded low ratios of 67*, 68** and 70** respectively.

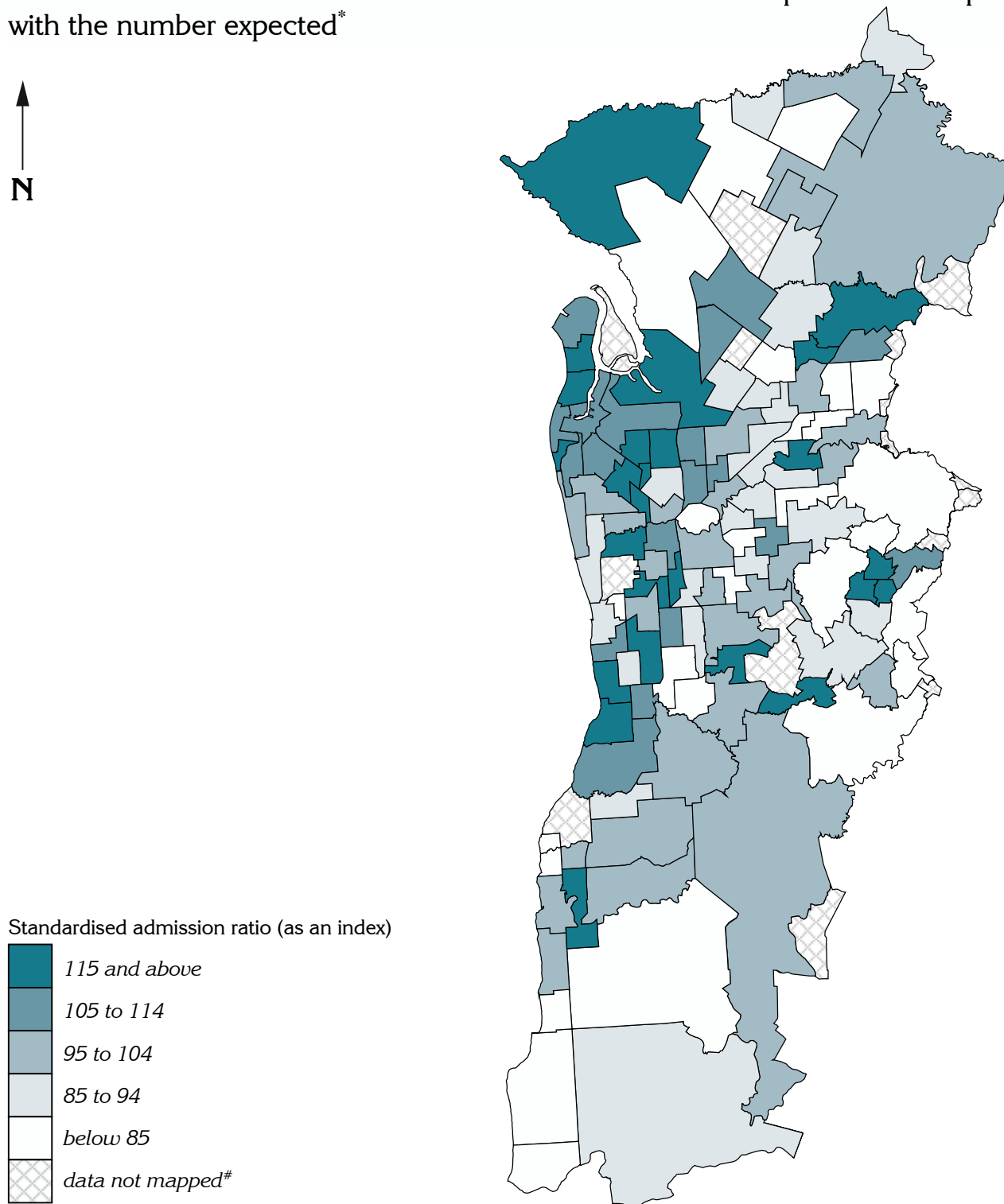
The largest number of same day surgical procedures was recorded in the northern postcode area of *Salisbury*, with 2,488 admissions. More than 1,000 admissions were also recorded for children and young people in *Morphett Vale* (with 1,930 admissions), *Happy Valley* (1,783), *O'Halloran Hill* (1,207), *Elizabeth North* (1,129), *Smithfield* (1,123) and *Salisbury East* (1,048).

There was no consistent evidence in the correlation analysis at the postcode or SLA level between admissions for same day surgical procedures at ages 0 to 24 years and socioeconomic status.

Map 5.35

Same day admissions for surgical procedures, people aged from 0 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

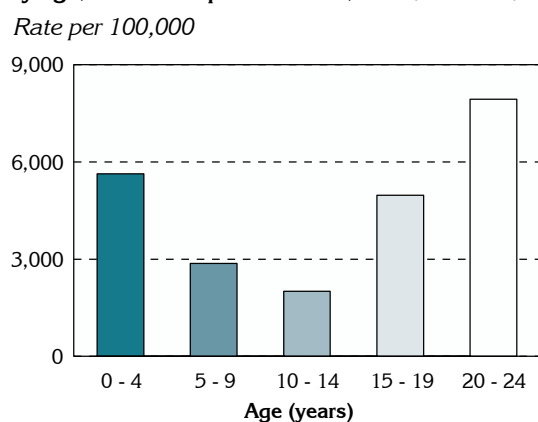
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Same day admissions for surgical procedures, people aged from 0 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Same day admission rates of non-metropolitan South Australians for surgical procedures vary substantially (Figure 5.42) between the five year age groups in the 0 to 24 year age category. Children in the 0 to 4 year age group had an average rate of 5,636 admissions per 100,000 population, declining to a low of 2,012 per 100,000 in the 10 to 14 year age group. Hospitalisation rates then increase over the next two age groups, to a high of 7,940 admissions per 100,000 population aged 20 to 24 years.

Figure 5.42: Same day admissions for surgical procedures, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 17,966 same day admissions for a surgical procedure of residents aged 0 to 24 years of the non-metropolitan area of South Australia. This was three per cent fewer admissions than were expected from the State rates, a standardised admission ratio (SAR) of 97**. Males and females comprised almost equal shares of same day surgical procedures with 50.7% and 49.3%, respectively.

Areas with highly elevated ratios were scattered throughout the State in no notable pattern (Map 5.36). The highest standardised admission ratio was recorded for children in Lameroo, with an SAR of 154**, indicating that there 54% more admissions than were expected from the State rates. Ratios mapped in the highest class interval were also recorded in the SLAs of Port Augusta (147**), Barmera and Renmark (both 135**), Whyalla (134**) and Port Broughton (131*).

Areas with low ratios were also widespread throughout South Australia, with the lowest ratio (of areas where more than 20 same day surgical procedures were recorded) occurring in Peterborough (M) (with an SAR of 42**). Unincorporated Far North (with an SAR of 45**), Naracoorte (DC) (51**), Beachport (54**), Light (56**), Mount Gambier (DC) (57**), Streaky Bay, Mount Remarkable and Lucindale (each with 58**), Unincorporated West Coast (59*) and Orroroo (60**) also recorded relatively low ratios for this variable.

The largest numbers of same day admissions for a surgical procedure in the non-metropolitan area of South Australia were recorded in Whyalla (with 1,694 admissions), Mount Gambier (1,262), Port Augusta (1,088), Mount Barker (969), Murray Bridge (755), Port Lincoln (719), Port Pirie (593) and Renmark (522).

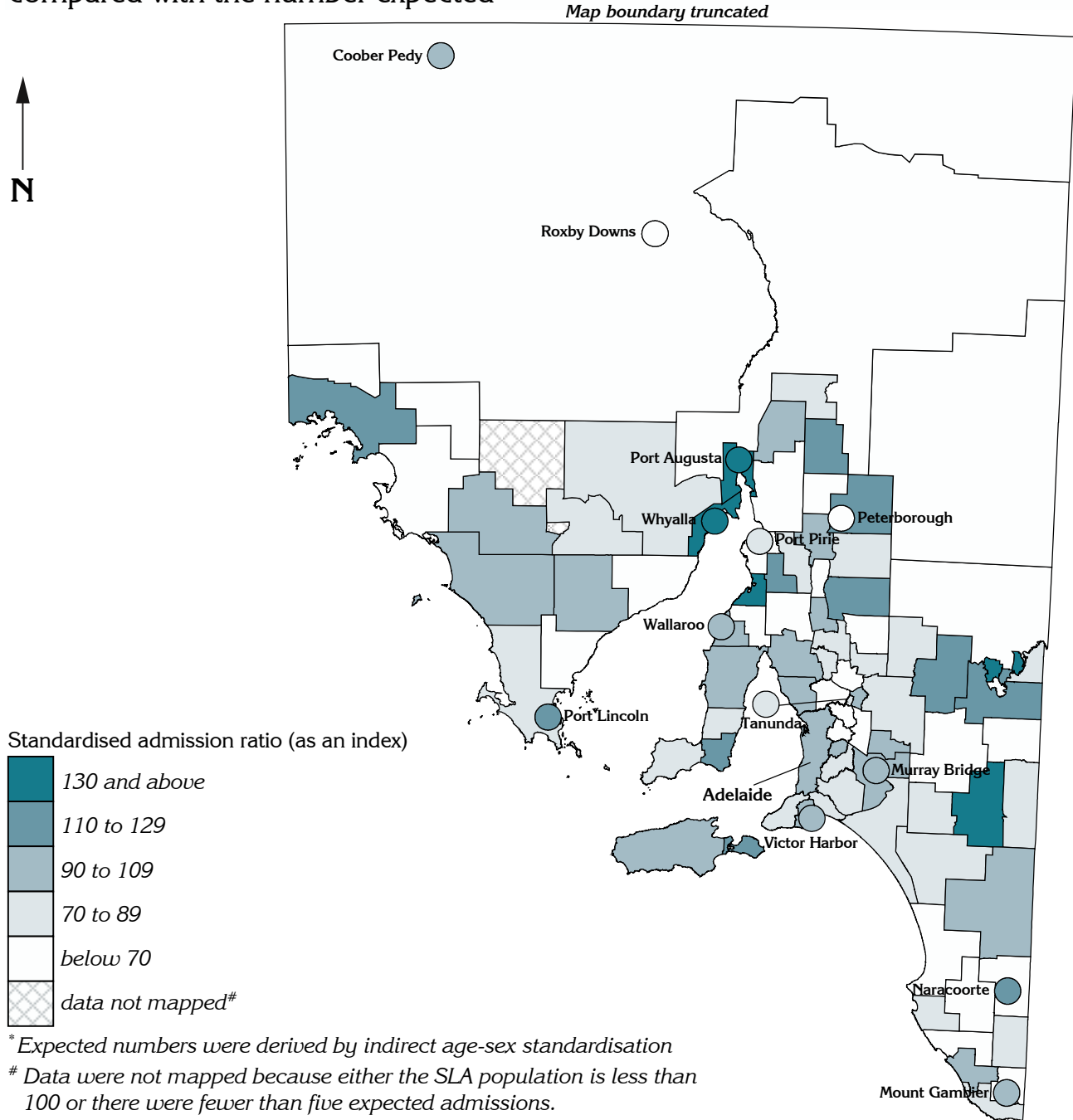
There were correlations of meaningful significance with the variables for children aged 0 to 14 years living in SA Housing Trust rented dwellings (0.65) and single parent families (0.54).

These results, together with the weak inverse correlation with the IRSD (-0.44), indicate an association at the SLA level between high rates of same day admissions for a surgical procedure at ages 0 to 24 years and socioeconomic disadvantage.

Map 5.36

Same day admissions for surgical procedures, people aged from 0 to 24 years, South Australia, 1996/97-1998/99

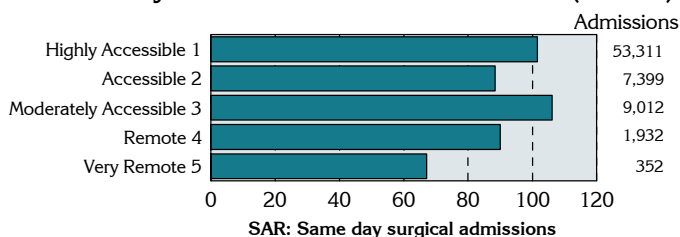
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for same day admissions involving a surgical procedure were highest in the Highly Accessible and Moderately Accessible areas, with an SAR of 102 and 106 respectively. SARs were similar in the Accessible and Remote classes, with the lowest ratio recorded in the Remote areas (with an SAR of 67).

Source: Calculated on ARIA+ classification

Admissions for a tonsillectomy and/or adenoidectomy, people aged from 0 to 24 years, 1996/97-1998/99

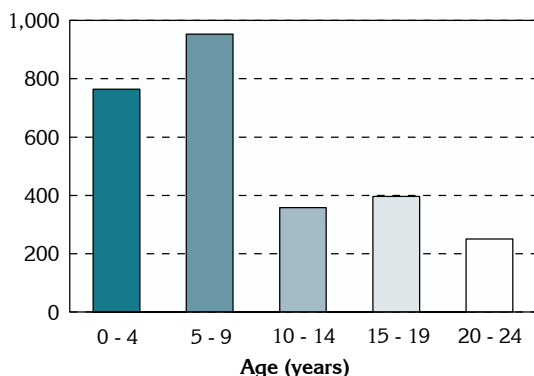
Adelaide

Tonsillectomy involves the surgical removal of a person's tonsils where, for example, there has been repeated infection of the tonsils over an extended period of time. Adenoidectomy is the surgical removal of adenoid tissue from the nasal part of the throat above the soft palate (the nasopharynx).

Admission rates for a tonsillectomy with or without adenoidectomy of people living in Adelaide vary substantially (**Figure 5.43**) within the 0 to 24 year age category. Children in the 5 to 9 year age group have the highest hospitalisation rates (an average rate of 953 admissions per 100,000 population aged 5 to 9 years), with substantially lower rates in the next three age groups (down to 251 admissions per 100,000 in the 20 to 24 year age group).

Figure 5.43: Admissions for a tonsillectomy &/or an adenoidectomy, by age, Adelaide, 1996/97-1998/99

Rate per 100,000



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1996/97 to 1998/99, there were 5,765 admissions for tonsillectomy with or without adenoidectomy in Adelaide, marginally fewer than expected from the State rates (a standardised admission ratio (SAR) of 98). The numbers of female and male admissions were similar, at 3,220 and 2,545 admissions respectively.

The distribution of SARs across Adelaide is striking, with highly elevated ratios across the northern and north-western suburbs, and generally low ratios in the southern, eastern and inner areas of Adelaide (**Map 5.37**).

Just under a quarter (23.8%) of the postcode areas had ratios elevated by 15% or more. The most highly elevated of these was recorded for children and young people in *Virginia*, with an SAR of 164**.

Highly elevated ratios were also recorded to the north of the city in the postcode areas of *Smithfield* (an SAR of 152**), *Evanston* (144*), *Pooraka* (139**), *Golden Grove* (133**), *Munno Para* (131), *Elizabeth* (130**), *Para Vista* (123), *Wynn Vale* (122), *Parafield Gardens* (118), *Campbelltown* (117), *Enfield* (116), *Salisbury* (116**) and *Tea Tree Gully* (115).

The only suburbs with low standardised admission ratios of statistical significance and more than 20 admissions were *Unley* (with an SAR of 54**), *Aldinga* and *Eastwood* (both 56**), *Goodwood* (57**), *Glenelg* (58**), *Belair* (60*), *Magill* (64**), *Norwood* (66*) *O'Halloran Hill* (70**), *Plympton* (71*), *Happy Valley* (72**), *Blackwood* (72*), *Hackham* (73**) and *Henley Beach* (74*). Other areas with ratios of 15% or more lower than expected from the State rates (and with more than 20 admissions) were *Keswick* (66), *Walkerville* (70), *St Peters* and *Burnside* (both 72), and *Stirling*, *Nailsworth* and *Glenside* (each 74).

Children and young people in *Salisbury* had the largest number of admissions for a tonsillectomy with or without an adenoidectomy over the three years from 1996/97 to 1998/99, with 314 admissions. The next largest numbers were recorded in *Smithfield* (225 admissions), *Morphett Vale* (213 admissions), *Happy Valley* (155 admissions), *Elizabeth* (155 admissions), *Salisbury East* (151 admissions), *Elizabeth North* (148 admissions), *Golden Grove* (133 admissions), *Parafield Gardens* (111 admissions) and *O'Halloran Hill* (106 admissions).

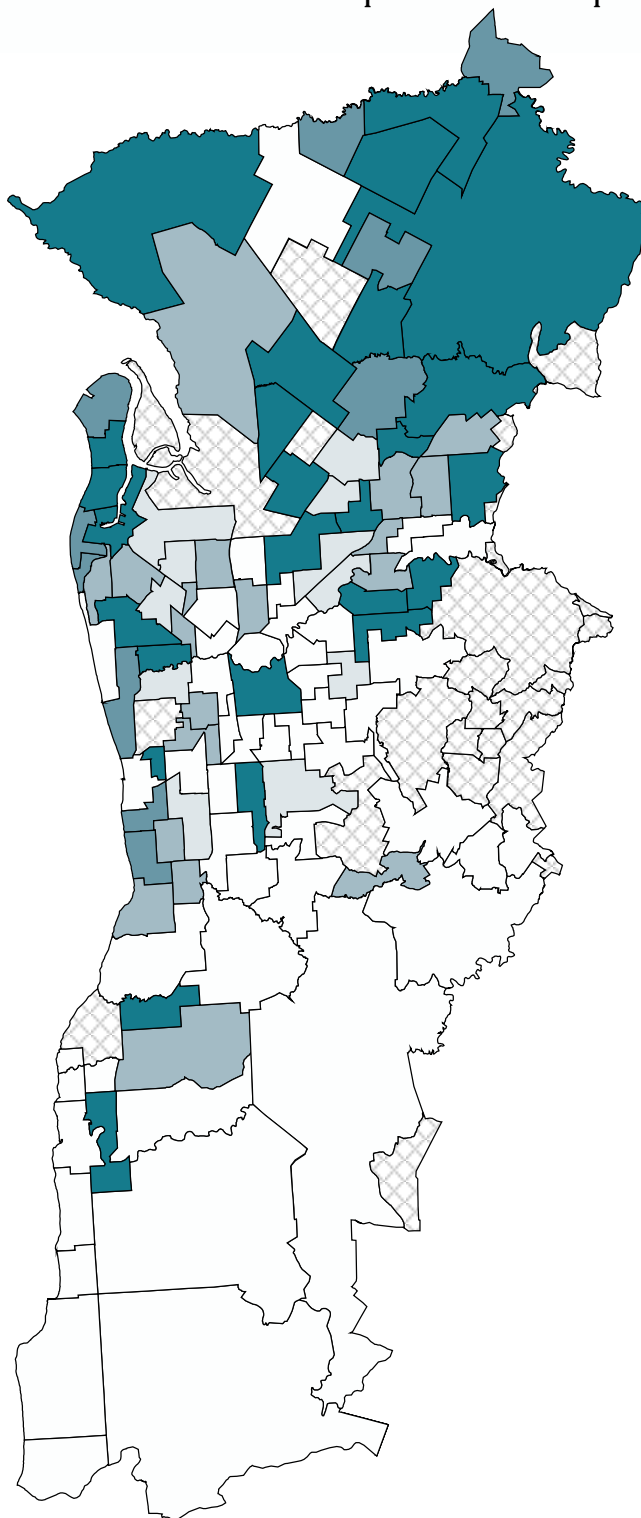
There was no consistent evidence in the correlation analysis at the postcode level of an association between admissions for a tonsillectomy and/or adenoidectomy and socioeconomic status.

However, when the data were aggregated to the SLA level, a correlation of meaningful significance was recorded with the variable for people aged 15 to 24 years who left school at 15 years of age or earlier (0.59). This result, together with the weak inverse correlation with the IRSD (-0.42), suggest an association at the SLA level between high rates of tonsillectomy and/or adenoidectomy at ages 0 to 24 years and socioeconomic disadvantage.

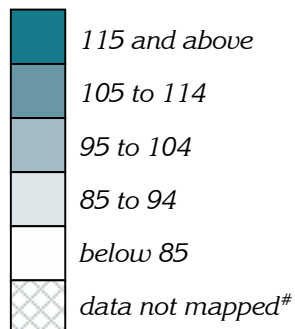
Map 5.37

Admissions for a tonsillectomy and/or adenoidectomy, people aged from 0 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



Standardised admission ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

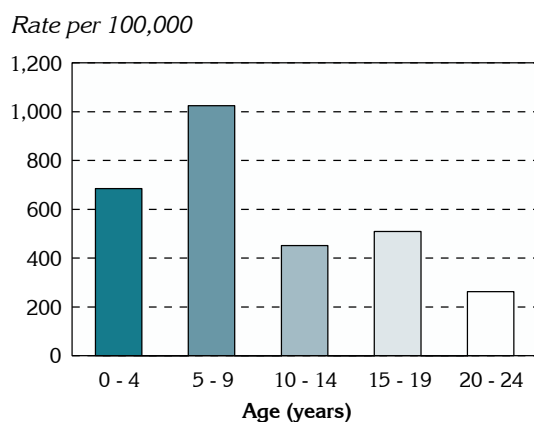
Admissions for a tonsillectomy and/or adenoidectomy, people aged from 0 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

Tonsillectomy involves the surgical removal of a person's tonsils where, for example, there has been repeated infection of the tonsils over an extended period of time. Adenoidectomy is the surgical removal of adenoid tissue from the nasal part of the throat above the soft palate (the nasopharynx).

Admission rates of non-metropolitan South Australians for tonsillectomy with or without adenoidectomy vary substantially (Figure 5.44) between the five-year age groups in the 0 to 24 year age category. Children in the 5 to 9 year age group have the highest hospitalisation rates (an average rate of 1,025 admissions per 100,000 population aged 5 to 9 years), with substantially lower rates in the next three age groups (down to 263 per 100,000 in the 20 to 24 year age group).

Figure 5.44: Admissions for a tonsillectomy &/or an adenoidectomy, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

The standardised admission ratio (SAR) recorded for the non-metropolitan area of South Australia was 105**, indicating that there were five per cent more admissions than expected from the State rates. With only 2,493 admissions for a tonsillectomy with or without adenoidectomy over the period from 1996/97 to 1998/99, the numbers for many non-metropolitan SLAs were quite small. The numbers of female and male admissions were similar, at 1,361 and 1,132 admissions respectively.

Despite this relatively low overall rate of admissions, the distribution across SLAs was quite differentiated, with a number of SLAs recording highly elevated ratios (Map 5.38).

Ratios elevated by at least 30% (in areas with more than 20 admissions) were recorded for children and young people in Peterborough (with an SAR of 260**), Wallaroo (210**), Jamestown (202**), Mount Remarkable (159*), Port Pirie (150**), Port Augusta (146**), Naracoorte (M) (143*), Victor Harbor (143**), Onkaparinga (142**), Kapunda (141), Lacedpede (140), Tatiara (134*) and Mount Barker (133**).

The only SLAs with a ratio lower than expected (and recording at least 20 admissions) were Unincorporated Far North (with an SAR of 50**), Light (61*), Loxton (67*), Berri (68*), Wakefield Plains and Waikerie (both 77), Roxby Downs (81), Meningie (82), Gumeracha (85), Murray Bridge (88) and Lower Eyre Peninsula (92).

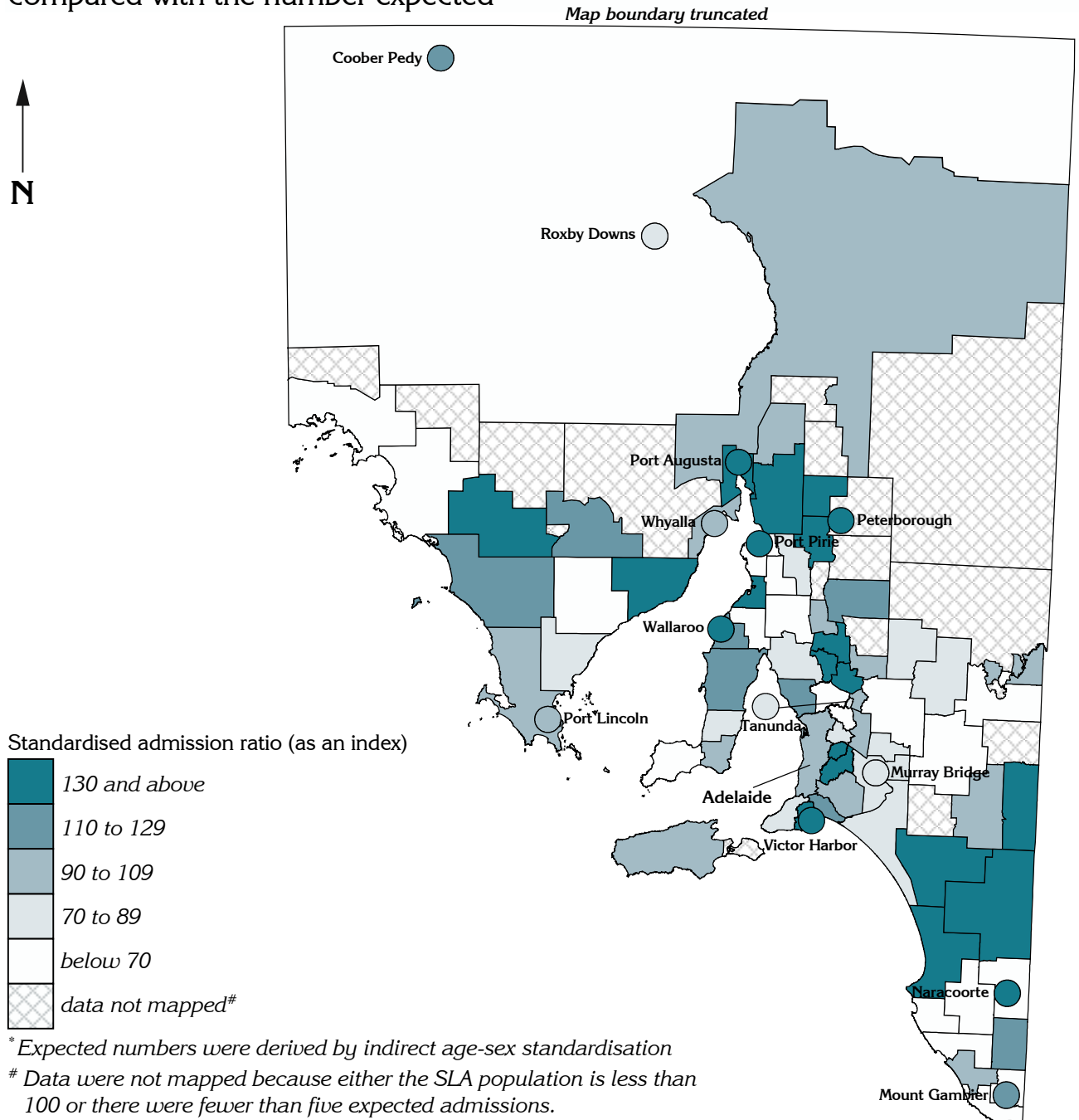
None of the SLAs had more than 200 admissions for a tonsillectomy with or without adenoidectomy over this three year period: the largest numbers were recorded in Mount Barker, with 192 admissions; Mount Gambier, with 171 admissions; Whyalla, with 161 admissions; Port Augusta, with 133 admissions; and Port Pirie, with 127 admissions.

There was a correlation of meaningful significance between admissions for a tonsillectomy with or without adenoidectomy and the variable for children aged 0 to 14 years living in single parent families (0.53).

Map 5.38

Admissions for a tonsillectomy and/or adenoidectomy, aged from 0 to 24 years, South Australia, 1996/97-1998/99

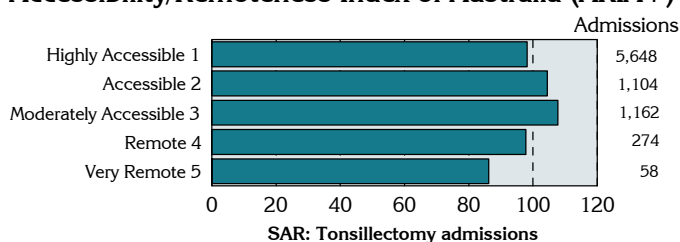
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for admissions involving a tonsillectomy with or without adenoidectomy increase over the first three ARIA+ classes (to an SAR of 108 in the Moderately Accessible areas), before declining to a notably lower ratio of 86 in the Very Remote areas.

Source: Calculated on ARIA+ classification

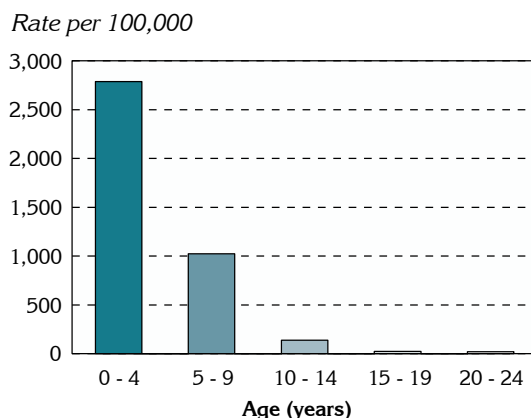
Admissions for a myringotomy, people aged from 0 to 24 years, 1996/97-1998/99

Adelaide

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.

Admission rates for a myringotomy of children living in Adelaide vary substantially (**Figure 5.45**) within the 0 to 24 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rates (an average rate of 2,788 admissions per 100,000 population aged 0 to 4 years), dropping markedly with age to 18 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.45: Admissions for a myringotomy, by age, Adelaide, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 8,140 admissions over the three years from 1996/97 to 1998/99 for a myringotomy of children and young people in Adelaide. This was four per cent more admissions than expected from the State rates (a standardised admission ratio (SAR) of 104**). Males accounted for over half (58.5%) of these admissions. The large majority (92.3%) of these admissions were performed on a same day basis.

Postcode areas with the most highly elevated ratios were clustered in three distinct areas: in the north-east, in the middle south and coastal areas, and in a number of inner suburbs (**Map 5.39**). Those in the inner areas (in postcode areas with more than 20 admissions) were *Nailsworth* (with an SAR of 150**), *Unley* (149**), *Thebarton* (130*), *Glen Osmond* (128), *Eastwood* (125*) and *Burnside*

(125); those in the middle southern and coastal areas were *Seacliff* (149**), *Blackwood* (135**), *Somerton Park* (134*), *St Marys* (131*) and *Happy Valley* (125**); and those situated in the north-east were *Evanston* (146**), *Fairview Park* (144**), *Modbury North* (130**) and *Wynn Vale* (127*).

Excluding areas with fewer than 20 admissions, the lowest ratio was recorded for children and young people in *Port Adelaide*, with 46% fewer admissions than were expected from the State rates (an SAR of 54**). Low ratios were also recorded in the postcode areas of *Burton* (61**), *Holden Hill* (63*), *Woodville North* (63**), *Christies Beach* (64*), *Ferryden Park* (70), *Stirling Forward* (72*), *Aldinga* (74*), *Henley Beach* and *Woodville* (both 75*) and *Brooklyn Park* (79).

The largest numbers of admissions for a myringotomy were from the postcode areas of *Salisbury*, with 373 admissions; *Happy Valley*, 350 admissions; *Morphett Vale*, 338 admissions; *Smithfield*, 265 admissions; and *O'Halloran Hill*, 244 admissions.

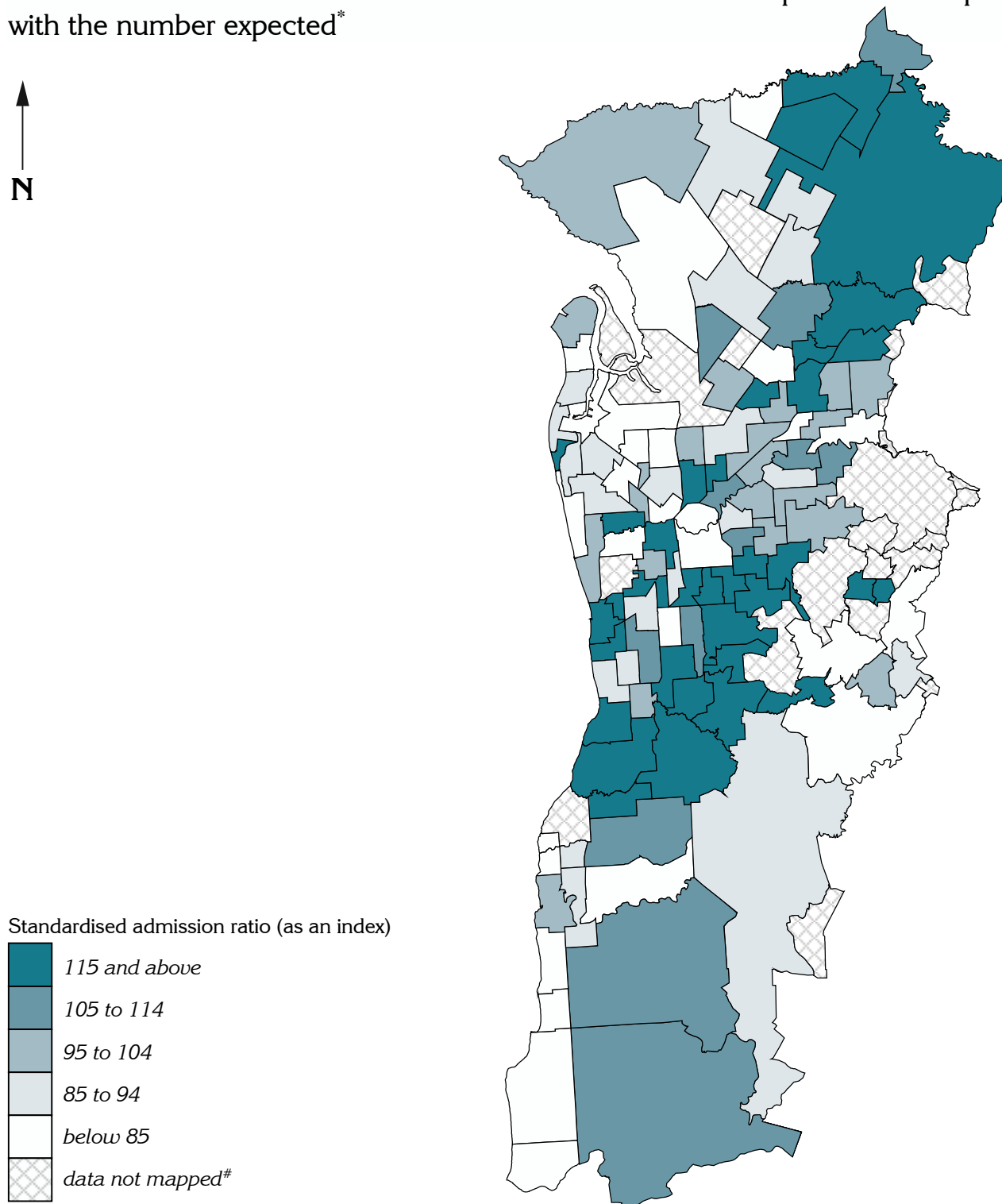
There was an inverse correlation of meaningful significance at the postcode between admissions for a myringotomy and the variable for unemployed males aged 15 to 24 years (-0.55).

There was no consistent evidence in the correlation analysis at either the postcode or SLA level of an association between admissions for a myringotomy and socioeconomic status.

Map 5.39

Admissions for a myringotomy, people aged from 0 to 24 years, Adelaide, 1996/97-1998/99

Standardised admission ratio: number of admissions in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected admissions.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

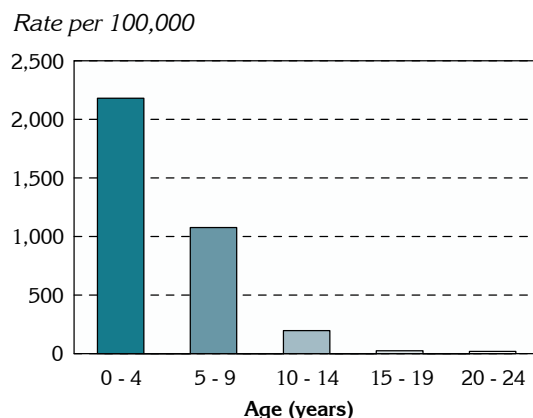
Admissions for a myringotomy, people aged from 0 to 24 years, 1996/97-1998/99

Non-metropolitan South Australia

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.

Admission rates of non-metropolitan South Australians for a myringotomy vary substantially (**Figure 5.46**) between the five year age groups in the 0 to 24 year age category. Children in the 0 to 4 year age group have the highest hospitalisation rate (an average rate of 2,181 admissions per 100,000 population aged 0 to 4 years), dropping markedly with age to 19 admissions per 100,000 in the 20 to 24 year age group.

Figure 5.46: Admissions for a myringotomy, by age, non-metropolitan areas, 1996/97-1998/99



Source: Compiled in HealthWIZ from data supplied by DHS

There were 3,074 admissions of children aged 0 to 24 years resident in the non-metropolitan area of South Australia for a myringotomy, nine per cent fewer than expected from the State rates (a standardised admission ratio (SAR) of 91^{**}). More than half of these admissions were males (58.0%, 2,784 admissions); females accounted for 42.0% (1,290 admissions). The majority (89.7%) of the admissions (2,758 admissions) were performed on a same day basis.

Data have not been mapped for a number of SLAs, as there were considered to be too few cases to produce reliable results (**Map 5.40**). Of SLAs that did record data for this variable, only 30% had higher than expected standardised admission ratio.

By far the highest ratio was recorded for children in Unincorporated West Coast, with seven times more admissions than expected, an SAR of 712^{**}. The remaining SLAs mapped in the highest range (with more than 20 admissions) included Lameroo (with an SAR of 261^{**}), Port Broughton (254^{**}), Burra Burra (228^{**}), Loxton (198^{**}), Riverton (151), Cleve (147), Coober Pedy (138), Clare (138^{*}), Renmark (135^{**}), Tatiara (131^{**}) and Mallala (130^{*}).

A large number of SLAs (39.9% of SLAs) were mapped in the lowest range, with SARs of less than 70. However, only four of these SLAs recorded more than twenty admissions. These areas included Port Pirie (with an SAR of 35^{**}), Gumeracha (52^{**}), Mount Gambier (DC) (55^{**}) and Unincorporated Far North (62^{**}).

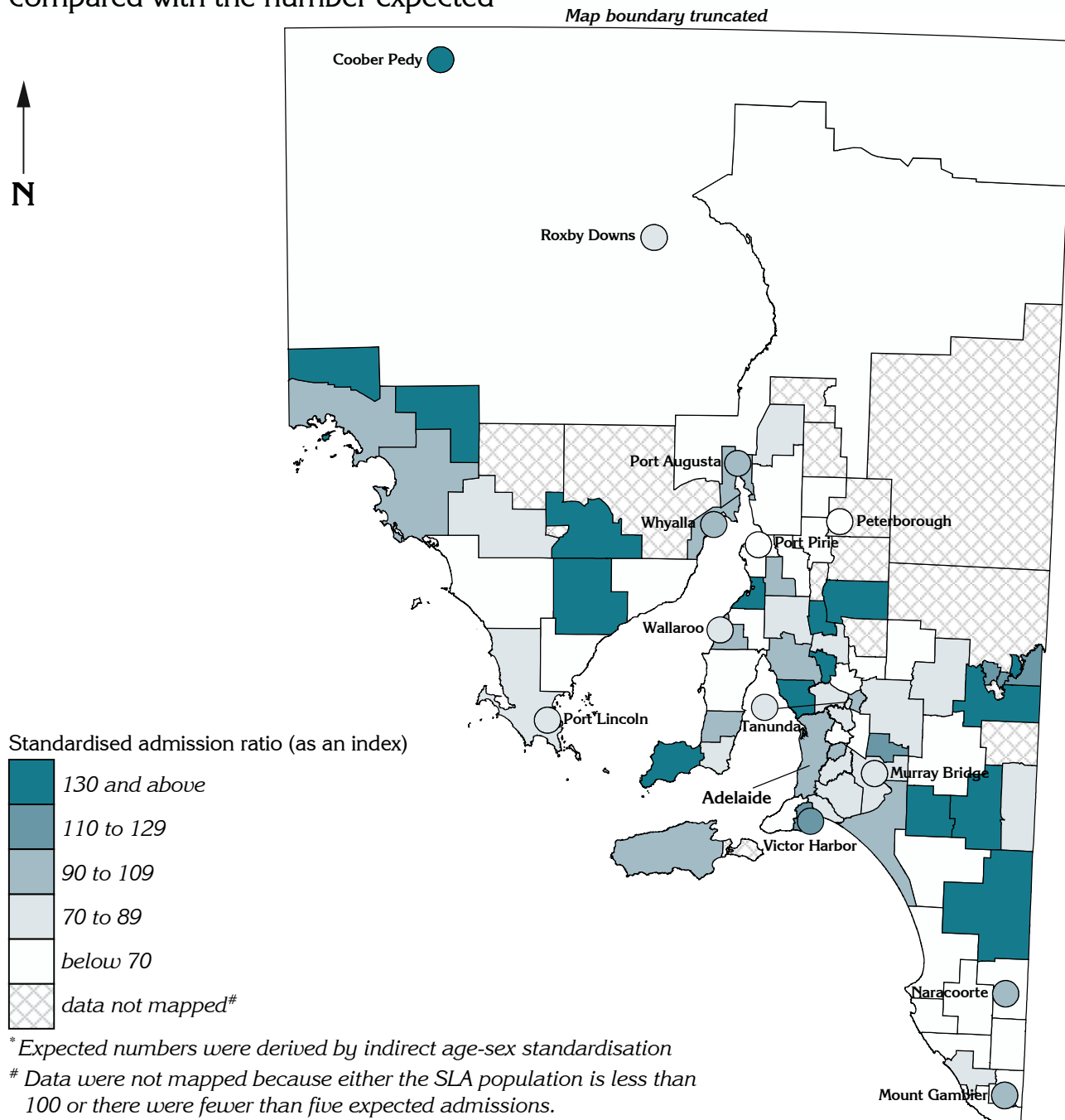
Children and young people in Whyalla had the largest number of admissions in the non-metropolitan area of South Australia for a myringotomy, with 242 admissions. More than 100 admissions were also recorded for children and young people in Mount Gambier (C) (200 admissions), Mount Barker (162 admissions), Port Augusta (143 admissions), Loxton (124 admissions) and Murray Bridge (118 admissions).

There was no consistent evidence in the correlation analysis at the SLA level in the non-metropolitan area of South Australia of an association between admissions for a myringotomy and socioeconomic status.

Map 5.40

Admissions for a myringotomy, people aged 0 to 24 years, South Australia, 1996/97-1998/99

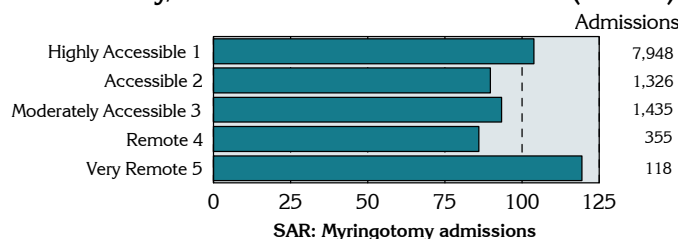
Standardised admission ratio: number of admissions in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised admission ratios (SARs) for admissions involving a myringotomy were above the level expected in the Highly Accessible (an SAR of 104) and Very Remote (119) areas. SARs of 90, 93 and 86 were recorded in the middle three ARIA+ classes.

Source: Calculated on ARIA+ classification

Hospital inpatient booking lists for elective (non-urgent) surgical procedures, people aged 0 to 24 years, 30 June 2001

The major metropolitan public hospitals each maintain a list of people who have been assessed as needing elective (ie. non-urgent) surgery: these lists are referred to as 'booking lists'. Those requiring urgent treatment for life-threatening conditions are not placed on a booking list but are admitted for treatment. Where the condition of a person on a booking list deteriorates to the extent that their condition becomes life-threatening, they are admitted for treatment, regardless of their position (relative to others) on the booking list. Hospitals with inpatient booking lists are Flinders Medical Centre, Lyell McEwin Health Service, Modbury Hospital, Royal Adelaide Hospital and The Queen Elizabeth Hospital. Summary details of specialties included on the booking lists and time on the list are in **Table A18** in **Appendix 1.7**.

At 30 June 2001, there were 1,481 people² aged 0 to 24 years on a booking list, 258 who had been on a list for between 6 and 12 months and a further 440 who had been on a list for in excess of 12 months. More than one third (36.7%) of people on the booking list were waiting for surgical procedures involving the ears, nose and throat (E.N.T.), in particular for tonsillectomies (15.6%). Relatively large numbers of people were also on a booking list for orthopaedic surgery (12.2%) or for plastic surgery (10.1%).

Children and young people in Adelaide's poorest areas are over-represented on the booking lists, reflecting their poorer access to these services. For example, children and young people in the most disadvantaged areas have 22% more admissions to a hospital for a surgical procedure than those in the most advantaged areas, with 43% more admissions overall. However, they are on a booking list more than two and a half times (2.52) the rate of those in the most well off areas.

Adelaide

The data mapped are of people aged 0 to 24 years who have waited more than six months for an elective surgical procedure. The data have been mapped at the SLA level as there were too few cases in each postcode from which to calculate

reliable rates. Nine SLAs had at least 15% more residents on a booking list for six months or more than expected from the metropolitan rate. These were mainly located in the outer northern, inner northern and north-western suburbs, and in the south (**Map 5.41**).

The most highly elevated ratio was recorded in the SLA of Elizabeth, with 81% more residents on a booking list than expected (SR of 181**). Other highly elevated ratios were recorded in the inner northern and north-western areas of Enfield [Part B] (with an SR of 163), Enfield [Part A] (125) and Hindmarsh and Woodville (123); in the southern coastal areas of Brighton (158), Noarlunga (142**) and Marion (135*); and in the outer northern areas of Munno Para (144*) and Salisbury (115).

In areas where there were more than five expected cases, the lowest ratios were recorded in Unley and Burnside with SRs of 24** and 44* respectively. Tea Tree Gully (with an SR of 52**), Payneham (58), Gawler (61), Stirling (65), Happy Valley (68), Prospect (78), West Torrens (80) and Campbelltown (81) all had ratios of 15% fewer than expected.

Residents of Salisbury and Noarlunga recorded the largest number of 0 to 24 year old on a booking list (both with 62 people), followed by Marion (42 people), Hindmarsh and Woodville (41 people), Munno Para (29 people) and Mitcham (25 people).

There were correlations of meaningful significance with the variables for people aged 0 to 24 years living in single parent families (0.67), dwellings rented from the State Housing Trust (0.67), dwellings with no vehicle (0.66) and low income families (0.64); Indigenous people aged 0 to 14 years (0.60) and 15 to 24 years (0.57); unemployed females (0.60) and males (0.57) aged 15 to 24 years; and people who left school at age 15 years or earlier (0.55). These results, together with the inverse correlation of meaningful significance with the IRSD (-0.64), indicate an association at the SLA level between high rates of people on a booking list and socioeconomic disadvantage.

Non-metropolitan areas

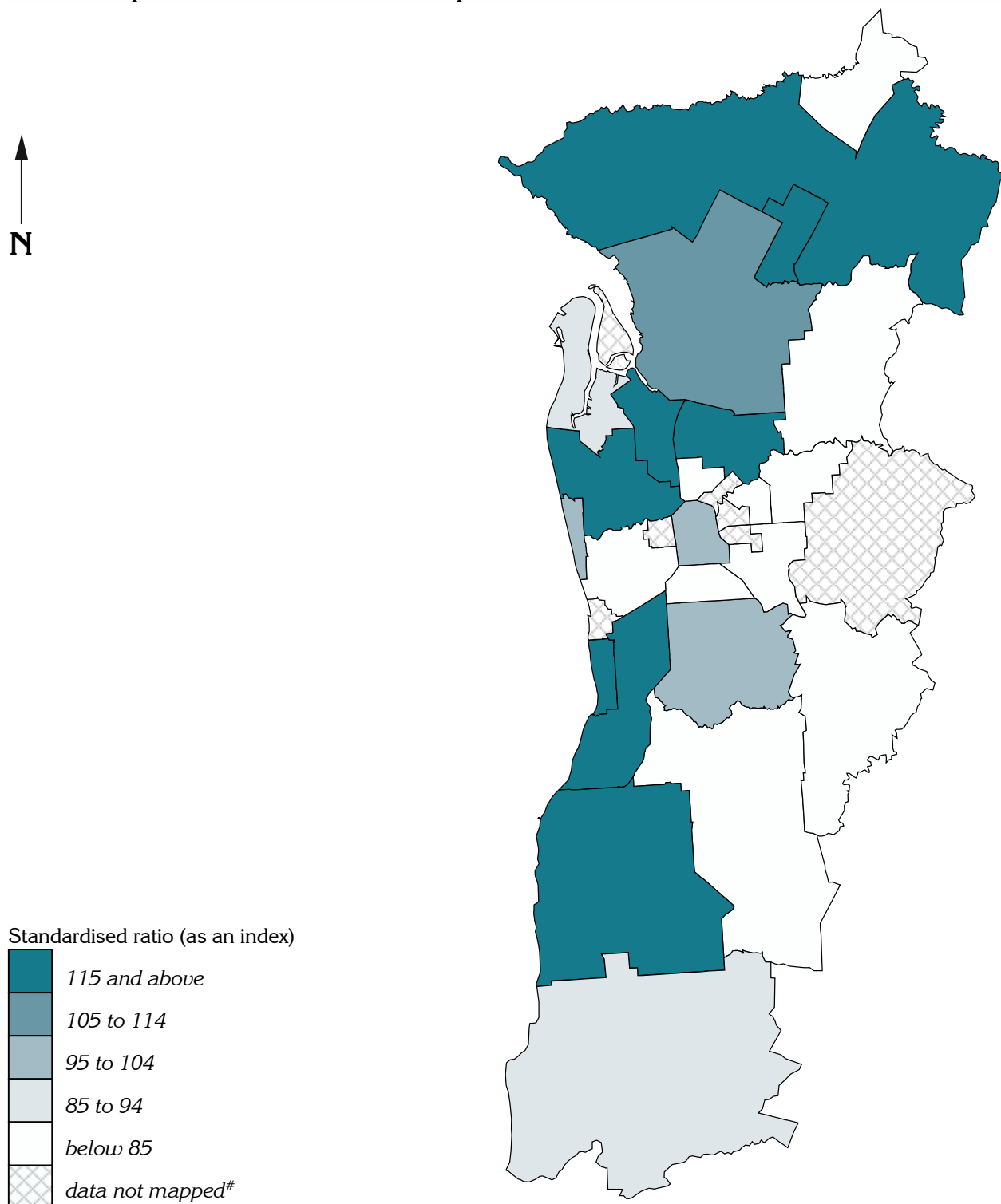
Hospitals in non-metropolitan areas do not maintain these lists. It is therefore unclear whether or not non-metropolitan residents are waiting for elective procedures; and, if they are, what the length of wait and the socioeconomic status of those waiting might be.

² Although referred to as the number of 'people' on a booking list, the data discussed here may count some people more than once, if they are on more than one list at a hospital, or on a list at more than one hospital. An investigation of booking lists has shown that these are rare occurrences.

Map 5.41

Hospital inpatient booking lists for elective (non-urgent) surgical procedures, Adelaide, 30 June 2001

Standardised ratio: number of people on a booking list in each Statistical Local Area compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because there were fewer than five expected people on a booking list.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

Terminations of pregnancy of women aged 15 to 24 years, 1997 to 1999

Termination of pregnancy can be undertaken at prescribed hospitals in South Australia on certain specified grounds. These grounds mainly apply where continuance of the pregnancy would have involved greater risk to the life, or of injury to the physical or mental health, of the pregnant woman than if the pregnancy had been terminated; or where there is substantial risk that, if the child were born, it would suffer from such physical or mental abnormalities as to be seriously handicapped.

Terminations of pregnancy for women aged 15 to 24 years represent 50.0% of all terminations in South Australia. The highest rate of terminations is for women aged 20 to 24 years (32.6 per 1,000 women of that age), followed by those aged 15 to 19 years (24.5 per 1,000) and 25 to 29 years (22.9 per 1,000).

The proportion of teenage pregnancies terminated in Australia (54%) is higher than in New Zealand (40%) or the USA (35%), but lower than in the Scandinavian countries and Japan (59%-70%) (Singh & Darroch 2000).

Adelaide

Over the three year period 1997 to 1999, there were 6,966 terminations recorded for women aged 15 to 24 years resident in Adelaide, 83.0% of all terminations for South Australian women at these ages. This is five per cent more terminations than expected from the State rates (an SR of 105^{**}).

The distribution of postcodes with elevated standardised ratios of terminations of pregnancy in Adelaide is similar to the pattern of socioeconomic disadvantage evident in many of the maps in Chapter 3. The most highly elevated rates are in postcode areas in the inner western and north-western suburbs, in the outer north and in some southern suburbs (**Map 5.42**). This distribution is similar to that mapped for terminations at all ages for the period 1990 to 1992. The major difference evident in the later distribution is the higher rate in a number of outer northern (and, to a lesser extent, outer southern) postcode areas, reflecting the higher rate of terminations among younger women (ie. under 25 years of age and, in particular, under 20 years of age) in these areas.

The postcode area of *Ferryden Park* had the highest ratio for this variable with more than twice the number of terminations among women aged 15 to 24 years than were expected from the State

rates (an SR of 215^{**}). More than fifty per cent more terminations than expected were also recorded for young women in *Adelaide* (with an SR of 198^{**}); in the inner northern and western areas of *Hindmarsh* (193^{**}), *Woodville North* (182^{**}), *Enfield* and *Semaphore* (both 174^{**}), *Alberton* (166^{**}), *Blair Athol* (157^{**}), *Prospect* (154^{**}) and *Thebarton* (151^{**}); in the southern coastal areas of *Old Noarlunga* (181^{**}) and *Christie Downs* (176^{**}); and in the outer north in *Virginia* (172^{*}).

Less than half of the postcode areas in Adelaide had ratios lower than expected. The majority of these were mapped in the lowest range, and were generally located in the north-eastern, southern and Hills regions. In postcode areas where there were more than ten terminations in this age group, the lowest ratios were recorded for residents of *Stirling Forward* (an SR of 44^{**}), *Glen Osmond* (51^{**}), *Kingswood* (58^{**}), *Magill* (60^{**}), *Tea Tree Gully* (63^{**}), *Burnside* (64^{**}), *Paradise* and *St Marys* (both 65^{**}) and *Flinders Park* (65^{*}).

The outer postcode areas of *Salisbury* (with 309 terminations), *Morphett Vale* (236 terminations), *Elizabeth* (163 terminations), *Elizabeth North* (159 terminations), *Salisbury East* (152 terminations) and *Happy Valley* (134 terminations) had the largest numbers of women aged 15 to 24 years undergoing a termination of pregnancy.

The difference in information provided by the standardised ratio and the number illustrates the need to use data appropriate to the purpose. The latter (absolute) measure is more appropriate to an examination of service location issues, while the former (relative) measure has a role in developing an understanding as to which group(s) of women is more likely to undergo a termination.

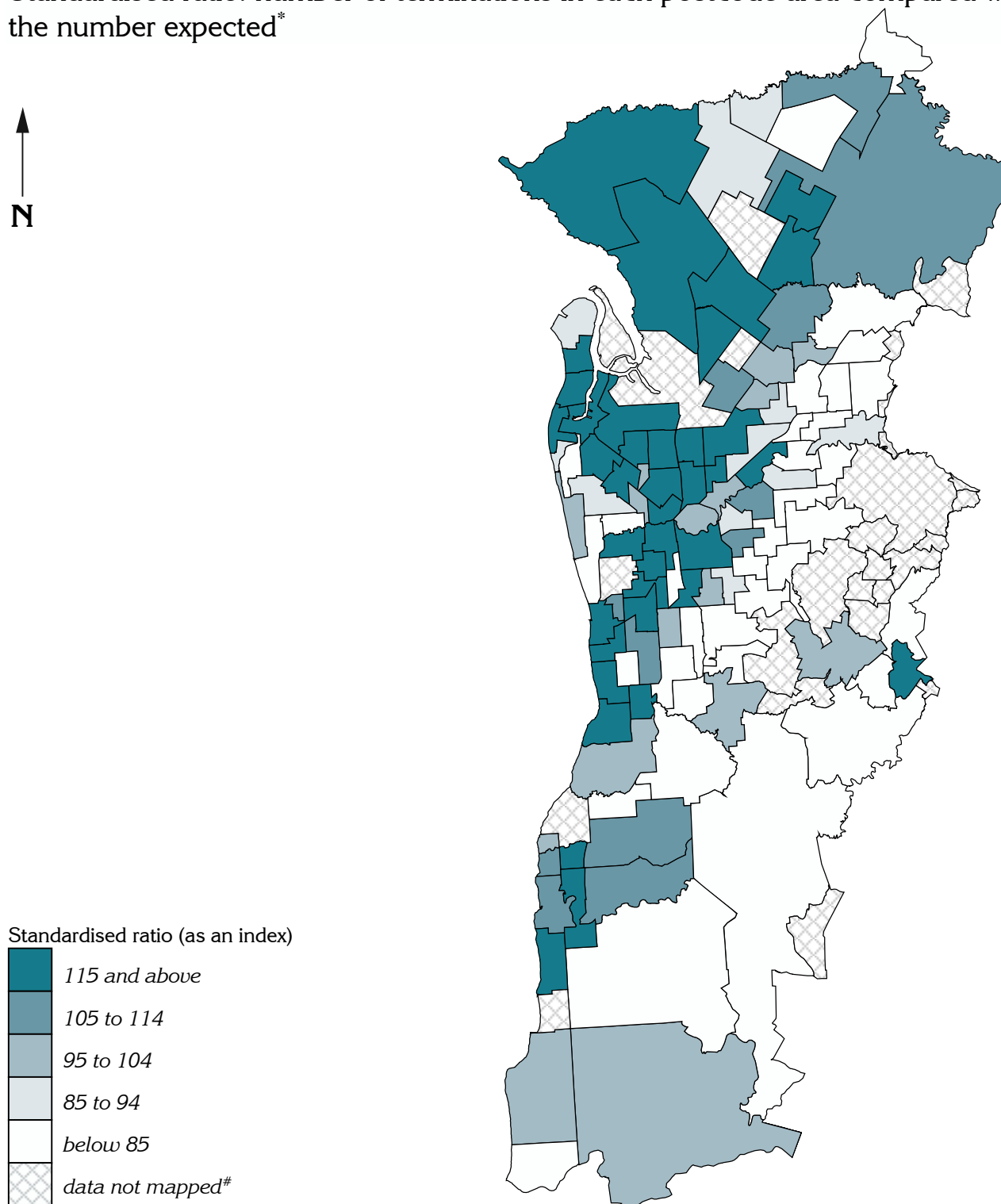
There were correlations of meaningful significance with the variables for children aged 0 to 14 years living in dwellings with no motor vehicles (0.64), low income families (0.61), single parent families (0.59) and dwellings rented from the SA Housing Trust (0.56); unemployed males (0.55) and females (0.53) aged 15 to 24 years; and people aged 15 to 24 years who were full-time students (-0.50).

These results, together with the inverse correlation with the IRSD (-0.63), indicate an association at the postcode level in Adelaide between high rates of termination of pregnancy at ages 15 to 24 years and socioeconomic disadvantage.

Map 5.42

Terminations of pregnancy of women aged 15 to 24 years, Adelaide, 1997 to 1999

Standardised ratio: number of terminations in each postcode area compared with the number expected*



*Expected numbers were derived by indirect age-sex standardisation

[#]Data were not mapped because either, the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected terminations.

Source: Compiled from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

Terminations of pregnancy of women aged 15 to 24 years, 1997 to 1999

Non-metropolitan South Australia

Female residents in the non-metropolitan areas of South Australia had 23% fewer terminations of pregnancy among women aged 15 to 24 years than were expected from the State rates (an SR of 77** and 1,415 terminations). This lower rate may reflect the true situation in these areas: it may also occur, in part, because country residents having a termination of pregnancy in Adelaide may seek to enhance anonymity by not reporting the postcode of their usual (country) residential address.

None of the Health Regions had ratios above the level expected, with the highest ratios recorded for female residents in the *Whyalla, Flinders and Far North* (an SR of 89), *Eyre Peninsula* (83*) and *Hills, Mallee and Southern* (80**) regions. The lowest standardised ratios were in the *Mid North* (56**) and *Riverland* (68**) Health Regions.

The highest standardised ratio in the towns mapped was recorded for young females in Wallaroo, with 71% more terminations than were expected from the State rate (a SR of 171*). Elevated ratios were also recorded in Victor Harbor (129), Naracoorte (113), Port Lincoln and Whyalla (both 108) and Roxby Downs (104). Excluding areas with fewer than 10 terminations, Tanunda had the lowest ratio for this variable, with an SR of 44*. Relatively low ratios were also recorded in the towns of Port Pirie (65**) and Port Augusta (77*).

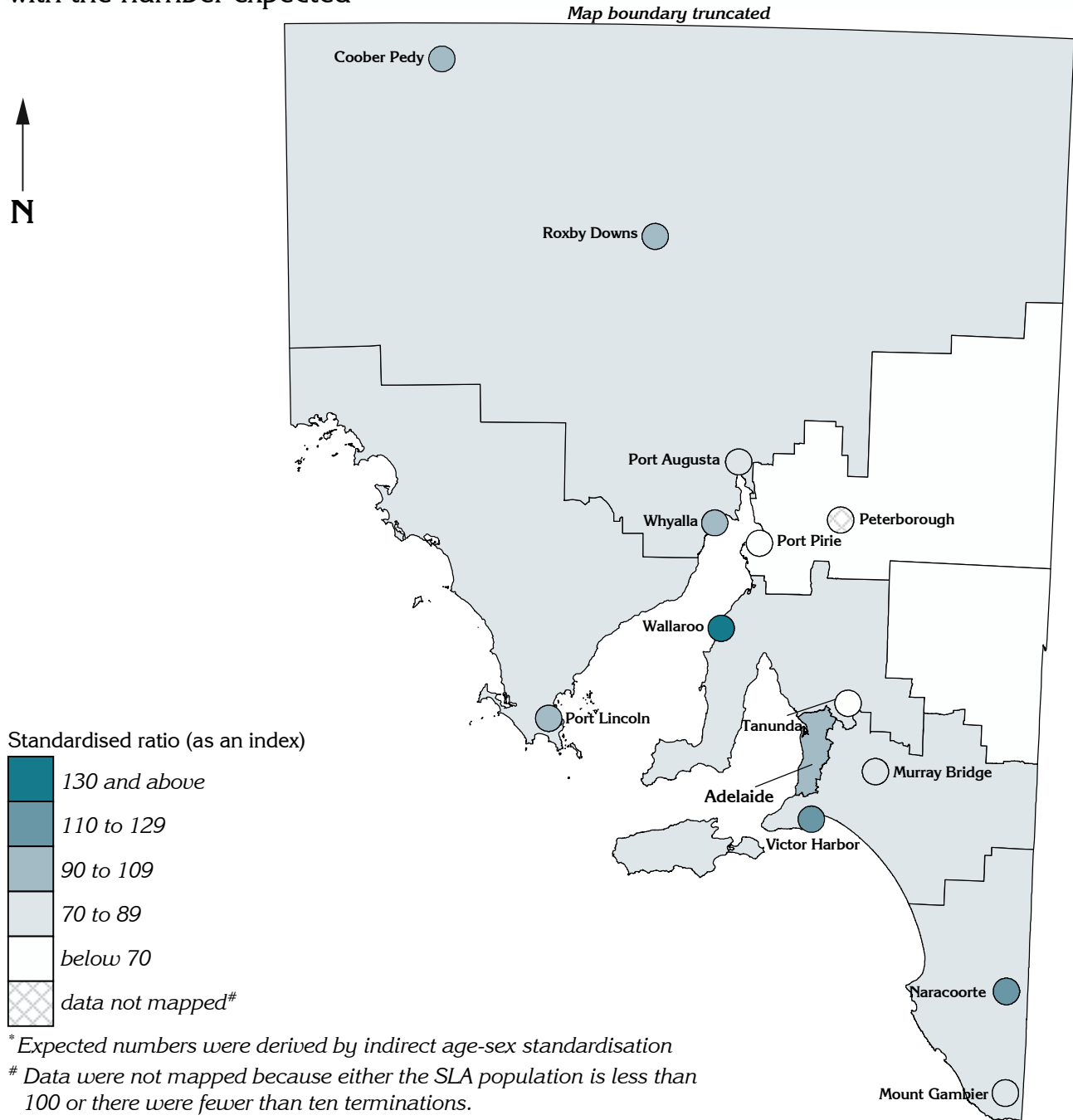
Over the period from 1997 to 1999, more than 200 terminations among women aged 15 to 24 years were recorded in the *Hills, Mallee and Southern* (with 352 terminations), *Whyalla, Flinders and Far North* (258 terminations) and *South East and Yorke, Lower North and Barossa* (both with 235 terminations) Health Regions.

The correlation analysis was not undertaken as there were too few areas with sufficient cases on which to base reliable results.

Map 5.43

Terminations of pregnancy of women aged 15 to 24 years, South Australia, 1997 to 1999

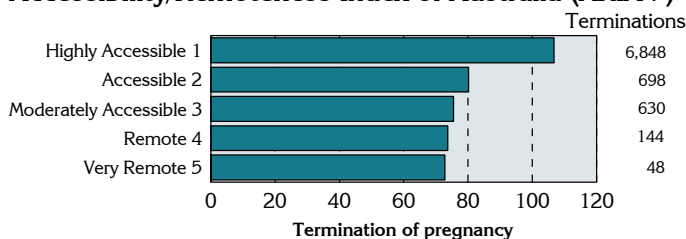
Standardised ratio: number of terminations in Country Health Region compared with the number expected*



Source: Compiled from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Female residents of the Highly Accessible areas under the ARIA+ classification accounted for the majority of terminations of pregnancy (81.8%) and had the only elevated ratio (107). Ratios in the other classes were all lower than expected, with a standardised ratio of 73 in the Very Remote class (27% fewer terminations than expected from the State rates).

Source: Calculated on ARIA+ classification

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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% of the population who visit them each year. As such, they are a significant part of the health care system.

Data limitations

Coverage

The following analysis uses Medicare statistics for the year 1998. Details of the number of GP services in each postcode were provided by the Medicare Statistics Section, Department of Health and Ageing, 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 in hospital 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.

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. 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% of GP attendances recorded in the Medicare statistics collection for that year. These attendances are likely to be predominantly of people of low socioeconomic status and their inclusion would strengthen the spatial distribution evident in the data mapped in this section.

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 health workers, and others, are not currently available. The Office of Aboriginal and Torres Strait Islanders Health has been working for some years on the collection of this information which may, in time, fill an important gap in the available data.

The impact on the data presented below of the relatively small number of medical services provided by private companies, the Defence Forces and the Royal Flying Doctor Service is also likely to be minimal.

Other gaps and deficiencies

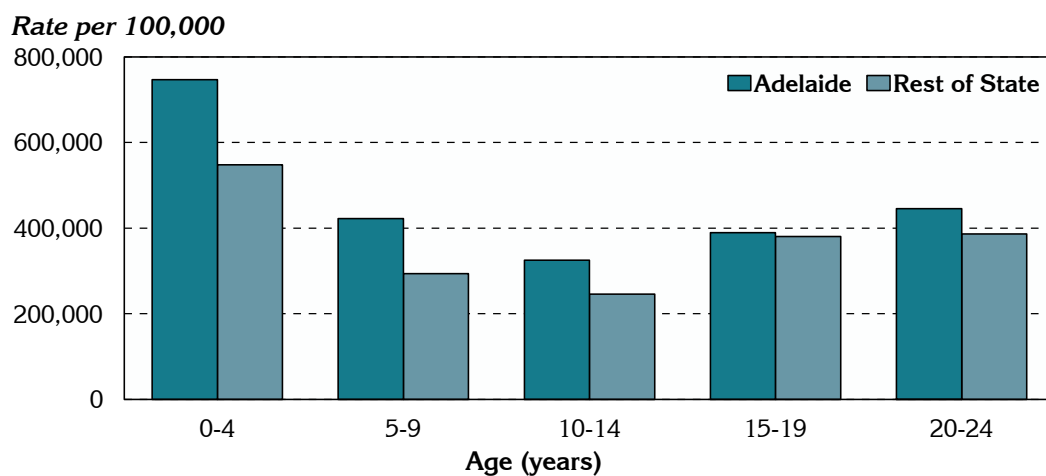
The data presented here are of services provided by general practitioners and not by specialist medical practitioners. The spatial patterns of distribution of services of specialist medical practitioners would be of value in informing policy development and strategic and service planning activities. They cannot, however, be mapped as details of the large number of such services provided through public hospital outpatient departments (and the lesser number through public hospital accident and emergency departments) are not available at an area level. Details of such services provided outside public hospitals by specialist medical practitioners (and billed through Medicare) are available, but to map just this sub-set would provide a biased view of the distribution of specialist services at the small area level.

GP services by age and area of residence

Children and young people in Adelaide used more GP services than those in non-metropolitan areas, accounting for more than three quarters (76.9%) of services in South Australia in 1998. Metropolitan residents accounted for more services per 100,000 population at each age group analysed.

In both metropolitan and non-metropolitan areas the rates were highest in the 0 to 4 year age group and lowest among children aged from 10 to 14 years (Figure 5.47).

Figure 5.47: General medical practitioner services, by age and area of residence, 1998



Source: Data supplied by the Department of Health and Ageing

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General medical practitioner services to children aged 0 to 4 years, 1998

Adelaide

Young children aged from 0 to 4 years living in Adelaide received over half a million (518,868) services from general medical practitioners (GPs) in 1998. This was nine per cent more GP services than were expected from the State rates (a standardised GP service ratio (SSR) of 109**). GP services to these children account for almost one third (30.3%) of all services to people aged 0 to 24 years.

The highest ratios were primarily in postcode areas located to the north (both inner- and outer north), north-west and north-east of Adelaide, with a cluster of high ratios in the outer south (**Map 5.44**).

The most highly elevated ratio for this variable was recorded for young children in *Virginia*, with more than twice the number of GP services expected from the State rates (an SSR of 218**). Highly elevated ratios were also recorded in the Adelaide Hills in *Ashton* (with an SSR of 161**) and *Summertown* (145**) (see box); in the north-western suburbs of *Woodville North* (144**), *Outer Harbour* and *Rosewater* (both 143**), *West Lakes Shores* (139**), *Ferryden Park* (129**) and *Largs Bay* (127**); in the outer southern areas of *Moana* (132**) and *Old Noarlunga* (131**); and in the outer northern postcode areas of *Parafield Gardens* (131**), *Angle Vale* (130**), *Gepps Cross* (127**) and *Salisbury* (125**).

The lowest ratio, of 14**, was recorded for young children in *Carey Gully*, indicating that there were 86% fewer services from GPs than the level expected from the State rate (see box). Relatively low ratios were also recorded in the postcode areas of *Montacute* (with an SSR of 22**), *Basket Range* (45**), *North Adelaide* (52**), *Piccadilly* (59**), *Stirling Forward* (64**) and *Greenhill* (66**).

More than 12,000 GP services were recorded for young children in *Salisbury* (32,111 services), *Morphett Vale* (22,287 services), *Smithfield* (16,091 services), *Happy Valley* (15,077 services), *Elizabeth North* (13,496 services), *Salisbury East* (12,540 services) and *Elizabeth* (12,394 services).

There were weak correlations at the postcode level with the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status.

When the data were aggregated to the SLA level, correlations of meaningful significance were recorded with the variables for children aged 0 to 14 years living in single parent families (0.70), low income families (0.69), dwelling rented from the SA Housing Trust (0.64) and dwellings with no vehicles (0.58); Indigenous people aged 15 to 24 years (0.67) and 0 to 14 years (0.55); and people who left school at 15 years of age or earlier (0.52).

These results, together with the inverse correlation with the IRSD (-0.70), indicate an association at the SLA level between high rates of GP services to children aged 0 to 4 years and socioeconomic disadvantage.

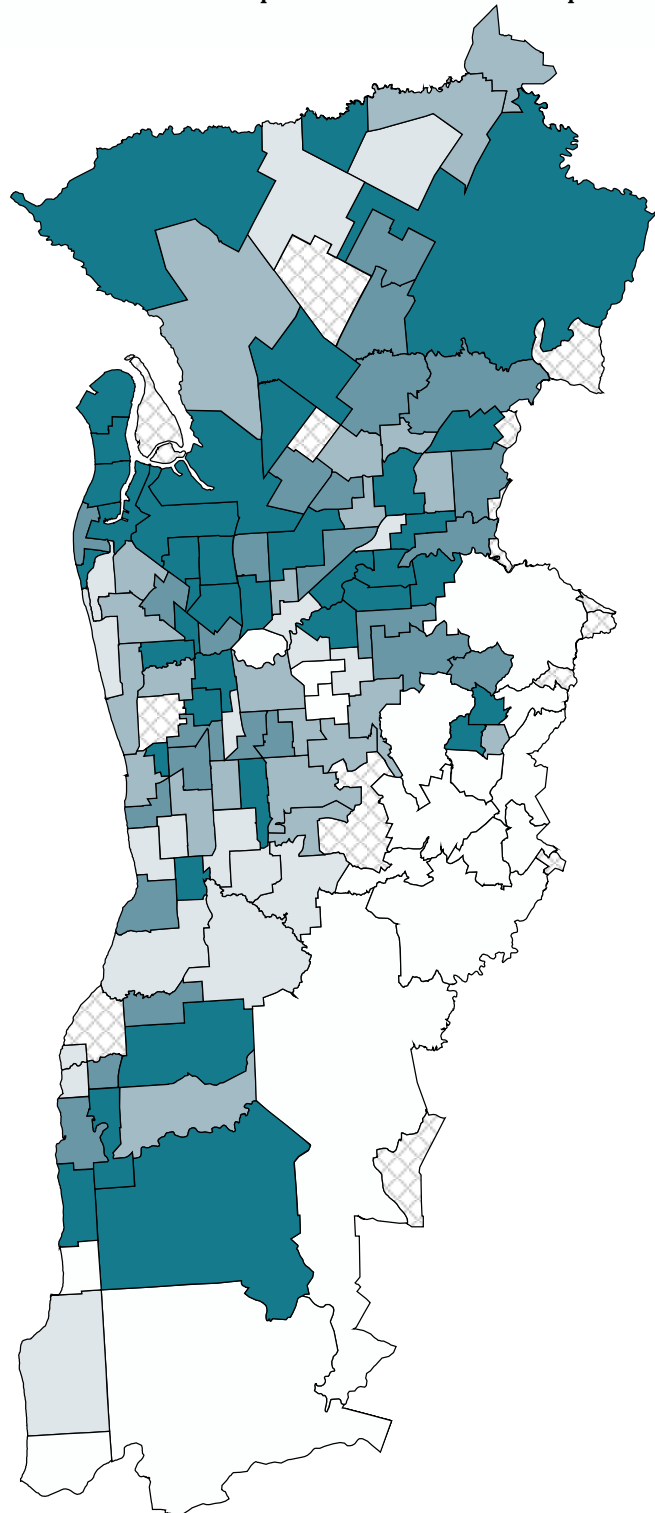
The high and low ratios in adjacent postcode areas in the Adelaide Hills postcodes of *Ashton* and *Summertown* (high) and *Carey Gully*, *Montacute*, *Basket Range*, *North Adelaide* and *Piccadilly* (low) suggest that the postcode of address in the Medicare data and the estimate of the postcode population produced by the ABS and used as the denominator in the standardisation process are not the same area (see the discussion on page 17, Chapter 2, for further details of this issue).

When these postcodes are combined the SSR averages out at 67**.

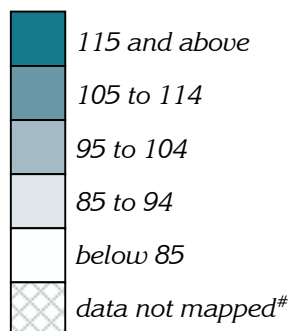
Map 5.44

General medical practitioner services to children aged 0 to 4 years, Adelaide, 1998

Standardised service ratio: number of services in each postcode area compared with the number expected*



Standardised service ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected services.

Source: Data supplied by the Department of Health and Ageing

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

General medical practitioner services to children aged 0 to 4 years, 1998

Non-metropolitan South Australia

Young children aged 0 to 4 years living in the non-metropolitan area of South Australia had significantly fewer services from GPs in 1998 than were expected from the State rates, a standardised GP service ratio (SSR) of 77^{**}. Overall, there were 154,240 GP services.

The low rate (both overall and in some regions) of use of GP services funded through Medicare in the non-metropolitan area of the State is likely to reflect a number of things, including:

- the lesser availability of GPs – 1,517 people per GP in the non-metropolitan area compared with 1,145 people per GP in Adelaide (Glover 1999);
- the exclusion of data for services operated by the Aboriginal Medical Service and some State funded Aboriginal health services.

Only nine SLAs had standardised ratios above the level expected from the State rates (**Map 5.45**): these were Carrieton (with an SSR of 139^{**}), Wallaroo (113^{**}), Murray Bridge (109^{**}), Orroroo (106), Victor Harbor (105^{**}), Peake (104), Mount Barker (104^{**}), Port Broughton (103) and Yankalilla (102). The highest ratios in the remaining SLAs were recorded in Onkaparinga (with an SSR of 100), Meningie (98), Northern Yorke Peninsula (96^{*}), Port Elliot and Goolwa (92^{**}) and Minlaton (90^{**}).

At the other end of the scale, 79% fewer GP services than expected were recorded for young children in Browns Well, an SSR of 21^{**} and 32 services. Relatively low ratios were also recorded in the far northern and western areas of Unincorporated Far North (with an SSR of 23^{**}), Hawker (24^{**}), Unincorporated Lincoln (28^{**}), and Unincorporated Pirie and Unincorporated Flinders Ranges (both 31^{**}); in the south-eastern SLAs of Port MacDonnell (28^{**}), and Mount Gambier (DC) and Lucindale (both 32^{**}).

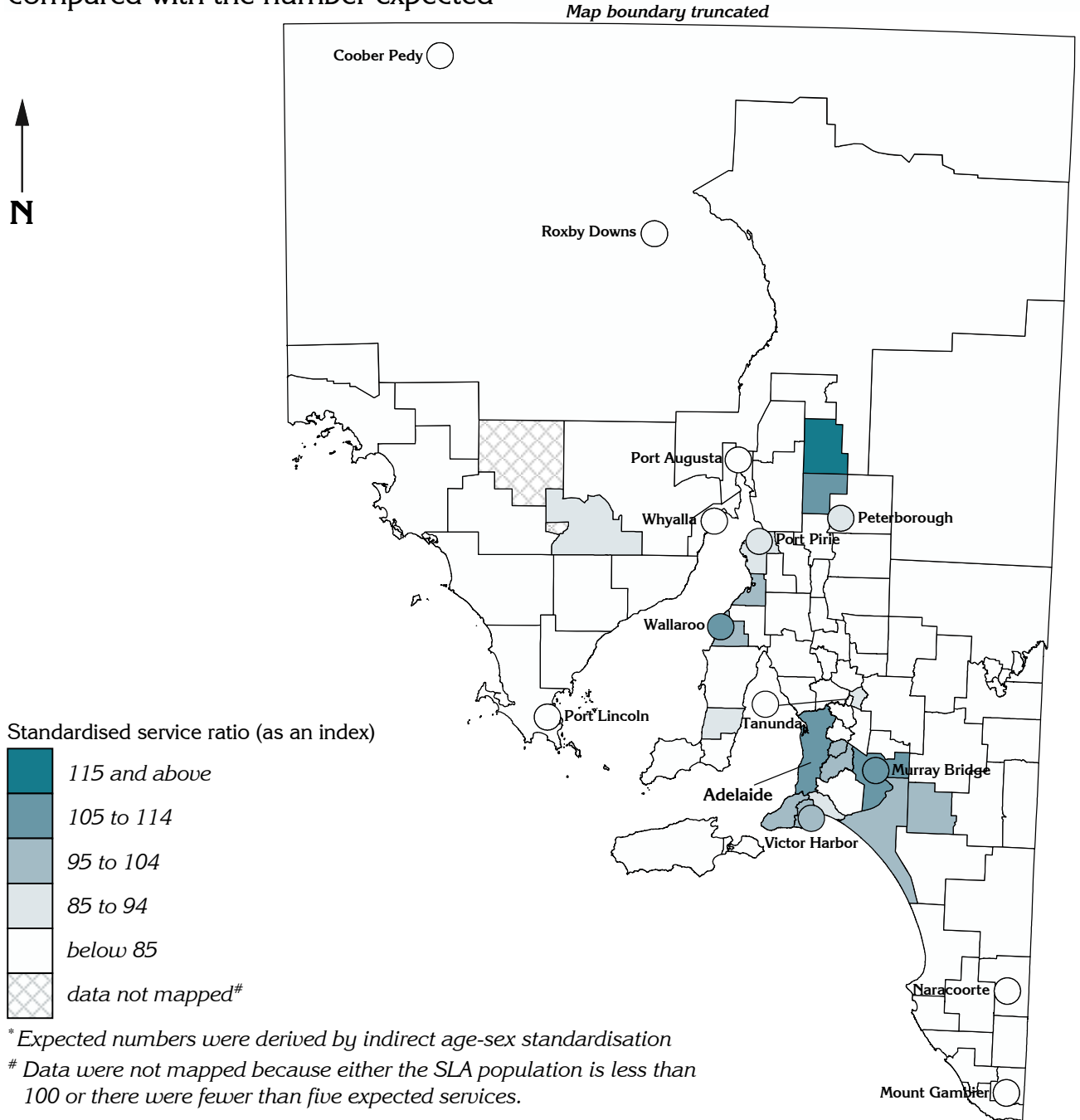
In 1998, the largest numbers of GP services were recorded in the towns of Whyalla (with 11,551 services), Murray Bridge (9,817 services), Mount Gambier (9,699 services), Port Pirie (6,353 services) and Port Augusta (6,037 services).

There were inverse correlations of meaningful significance at the SLA level between the variable for GP services to children aged 0 to 4 years and high proportions of Aboriginal and Torres Strait Islander children aged 0 to 14 years and 15 to 24 years (both -0.55). These inverse correlations indicate that areas with relatively high proportions of Indigenous children generally have low rates of use of GP services funded through Medicare.

Map 5.45

General medical practitioner services to children aged 0 to 4 years, South Australia, 1998

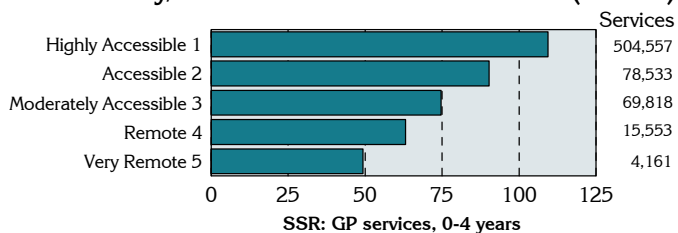
Standardised service ratio: number of services in each Statistical Local Area compared with the number expected*



Source: Data supplied by the Department of Health and Ageing

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised ratios for GP services to 0 to 4 year olds decrease steadily across the ARIA+ classes, from a relatively high ratio of 109 in the Highly Accessible areas, to a low ratio in the Very Remote areas (49).

Source: Calculated on ARIA+ classification

General medical practitioner services to children aged 5 to 14 years, 1998

Adelaide

Children in Adelaide aged from 5 to 14 years received 528,279 services from GPs in 1998, nine per cent more than expected from the State rates (a standardised GP service ratio (SSR) of 110^{**}). GP services among people aged 5 to 14 years accounted for almost a third (30.8%) of all services in the 0 to 24 year age group.

The distribution of SSRs for GP services to children aged 5 to 14 years across postcode areas in Adelaide is similar to that recorded for those aged 0 to 4 years, with the highest ratios primarily in areas located to the north, north-west and north-east of the city; and in the outer south (**Map 5.46**).

The most highly elevated ratios were in the Hills postcode areas of *Ashton* (with an SSR of 245^{**}), *Uraidla* (167^{**}) and *Summertown* (142^{**}) (see box); in the outer northern suburbs of *Virginia* (213^{**}) and *Angle Vale* (143^{**}); in *Gepps Cross* (213^{**}); in the north-western areas of *Osborne* (166^{**}), *Woodville North* (144^{**}), *Ferryden Park* (143^{**}) and *Outer Harbor* (141); and in the southern postcode areas of *Old Noarlunga* (165^{**}) and *Moana* (144^{**}).

The postcode area of *Carey Gully* had the lowest ratio for this variable with 80% fewer services than were expected from the State rates (an SSR of 20^{**}) (see box). Areas with more than 25% fewer than expected were also recorded in the Adelaide Hills in *Montacute* (44^{**}), *Piccadilly* (48^{**}), *Stirling Forward* (62^{**}), *Blackwood Forward* (67^{**}), *Belair* (70^{**}), *Bridgewater* (71^{**}) and *Upper Sturt* (72^{**}).

The largest numbers of GP services were recorded for children in *Salisbury* (with 29,271 services), *Morphett Vale* (21,197 services), *Happy Valley* (16,581 services), *Smithfield* (15,856 services) and *Elizabeth North* (14,546 services).

There were weak correlations at the postcode level with the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status.

When the data were aggregated to the SLA level, correlations of substantial significance were recorded with the variables for Indigenous people aged 15 to 24 years (0.89) and 0 to 14 years (0.84); children aged 0 to 14 years living in low income families (0.86), single parent families (0.84), dwellings with no vehicles (0.83) and dwellings rented from the SA Housing Trust (0.79); and people who left school at 15 years of age or earlier (0.72).

These results, together with the inverse correlation of substantial significance with the IRSD (-0.84), indicate an association at the SLA level between high rates of GP services to children aged 5 to 14 years and socioeconomic disadvantage.

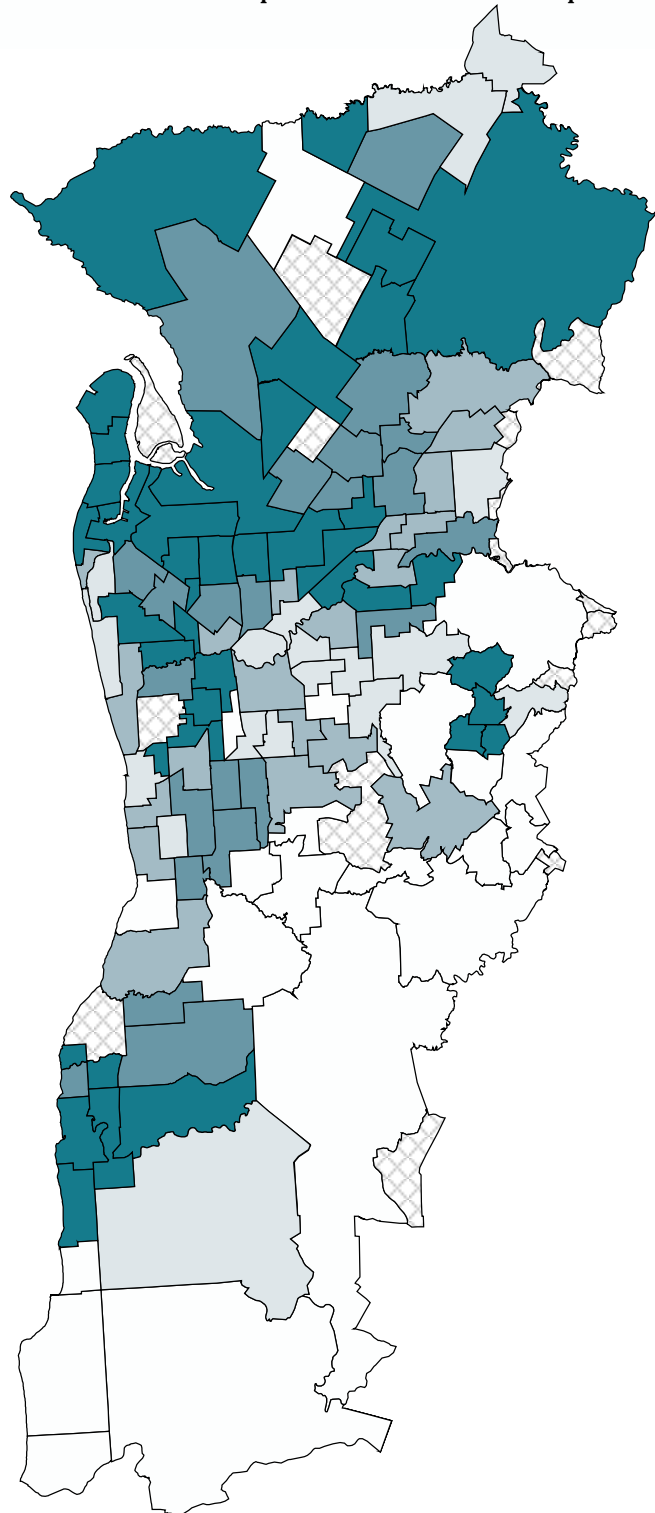
Users should note the comment (under the variable for GP services to 0 to 4 year old children) as to the existence of high and low ratios in adjacent postcode areas in the Adelaide Hills (page 284). That comment is relevant to this age group.

When these postcodes are combined the SSR averages out at 68^{**}.

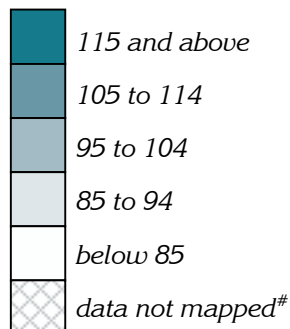
Map 5.46

General medical practitioner services to children aged 5 to 14 years, Adelaide, 1998

Standardised service ratio: number of services in each postcode area compared with the number expected*



Standardised service ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected services.

Source: Data supplied by the Department of Health and Ageing

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

General medical practitioner services to children aged 5 to 14 years, 1998

Non-metropolitan South Australia

As was the case for children aged 0 to 4 years living outside the metropolitan area, 5 to 14 year old children had significantly fewer services from GPs in 1998 than were expected from the State rates, a standardised GP service ratio (SSR) of 77^{**}. Overall there were 164,229 GP services.

The majority of SLAs had standardised ratios below the level expected from the State rates (**Map 5.47**): see page 286 for some possible reasons for these low rates. The exceptions are the SLAs of Wallaroo (with an SSR of 129^{**} and 1,340 services), Port Broughton (126^{**}), Victor Harbor and Meningie (both 107^{**}), Orroroo (106), Murray Bridge (106^{**}), Port Elliott and Goolwa (105^{**}) and Northern Yorke Peninsula (104^{*}).

The lowest ratios were recorded in the SLAs of Browns Well and Unincorporated Far North, with SSRs of 21^{**} and 26^{**} respectively. Relatively low ratios were also recorded in south-eastern areas of Port MacDonnell (27^{**}), Mount Gambier (DC) (28^{**}), Lucindale (32^{**}) and Robe (48^{**}); in the northern SLAs of Hawker (35^{**}), and Unincorporated Flinders Ranges and Hallett (both 39^{**}); on the Eyre Peninsula in Le Hunte (36^{**}); and in the SLA of Karoonda-East Murray (50^{**}).

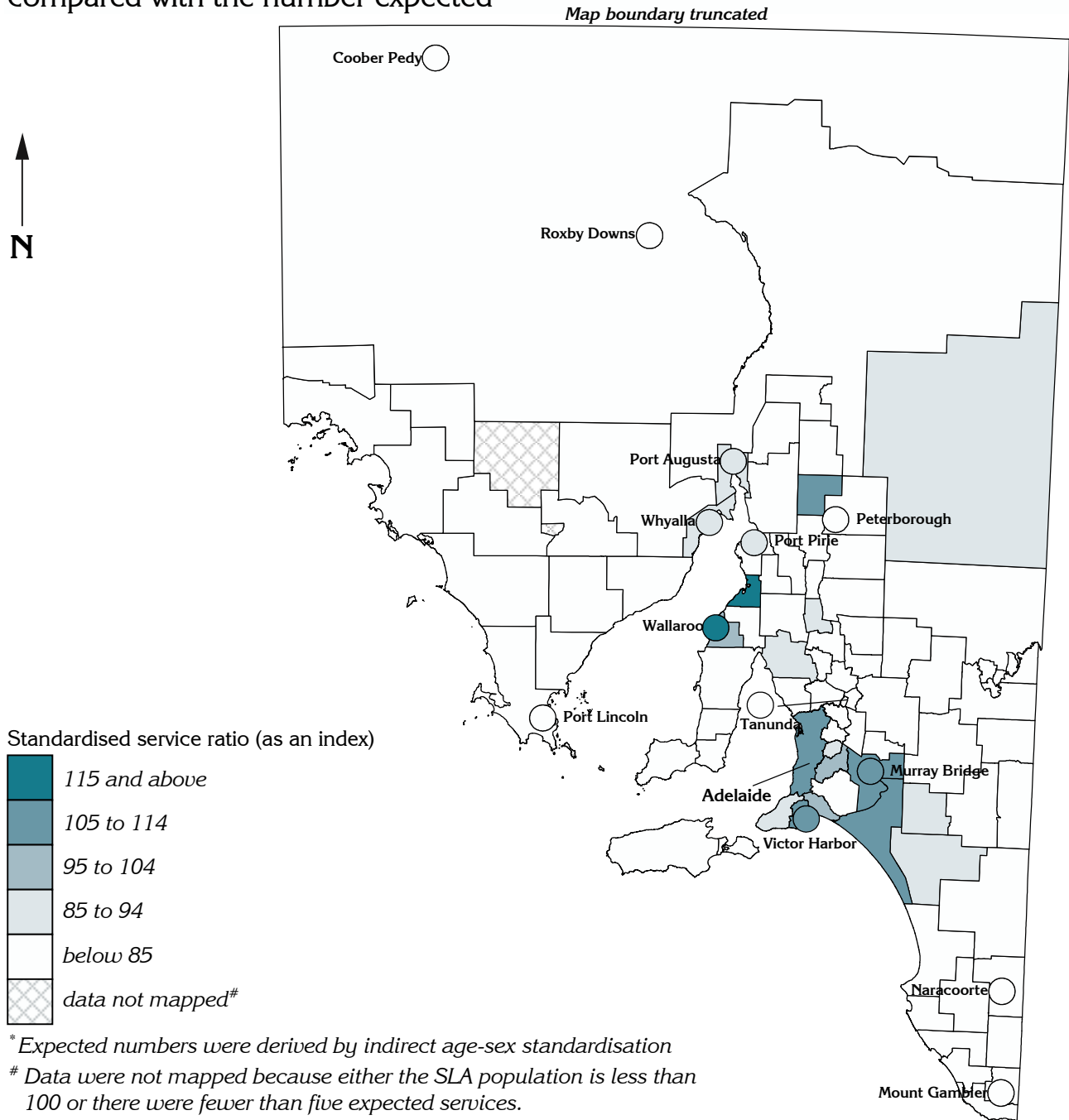
The largest number of GP services was recorded in the towns of Whyalla (with 11,482 services), Murray Bridge (8,870 services), Mount Gambier (8,172 services), Port Augusta (6,922 services) and Port Pirie (6,014 services).

There were inverse correlations of weak significance at the SLA level between the variable for GP services to children aged 5 to 14 years and high proportions of Aboriginal and Torres Strait Islander children aged 0 to 14 years (-0.44) and 15 to 24 years (-0.46). These inverse correlations indicate that areas with relatively high proportions of Indigenous children generally have low rates of use of GP services funded through Medicare.

Map 5.47

General medical practitioner services to children aged 5 to 14 years, South Australia, 1998

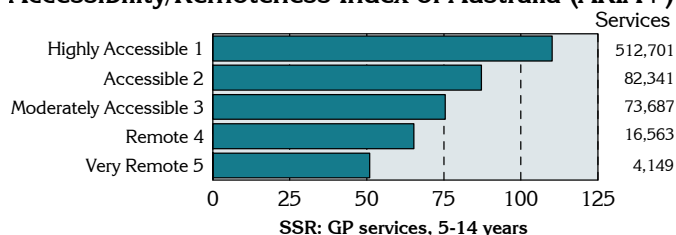
Standardised service ratio: number of services in each Statistical Local Area compared with the number expected*



Source: Data supplied by the Department of Health and Ageing

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised ratios for GP services to 5 to 14 year olds decrease steadily across the ARIA+ classes, from a relatively high ratio of 110 in the Highly Accessible areas, to a low ratio in the Very Remote areas (51).

Source: Calculated on ARIA+ classification

General medical practitioner services to people aged 15 to 24 years, 1998

Adelaide

There were 666,825 GP services to residents of Adelaide aged 15 to 24 years in 1998, two per cent more than were expected from the State rates (a standardised GP service ratio (SSR) of 102**).

The distribution of GP services to people aged 15 to 24 years across Adelaide shows a slightly different pattern to that evident for the two younger age groups mapped, with the highest ratios in postcode areas largely located in the outer north and the north-west, as well as in a number of outer southern suburbs (**Map 5.48**).

Young people in *Virginia* had the highest ratio for this variable, with more than twice the number of services expected from the State rates (an SSR of 221**). Ratios elevated by 40% or more were also recorded in the Adelaide Hills in *Uraidla* (with an SSR of 195**), *Summertown* (144**) and *Ashton* (143**) (see box); in the outer southern postcode areas of *Old Noarlunga* (169**), *Christies Downs* (161**) and *Moana* (148**); in the north-western area of *Osborne* (152**); and in the outer northern postcode areas of *Elizabeth North* (147**) and *Smithfield* (142**).

By far the lowest ratio was recorded in the postcode area of *Carey Gully*, with 86% fewer services than were expected (an SSR of 14**) (see box). The next lowest ratios were recorded for young people in *North Adelaide* (49**), *Basket Range* (56**), *Norwood* (57**), *Keswick* (61**), *Montacute* (66**), *Eastwood* (67**), *Kensington Park* (67**), *Novar Gardens* (69**) and *Adelaide* (70**).

The largest number of GP services to people aged 15 to 24 years was recorded in *Salisbury*, with 32,488 services. More than 14,000 services were also recorded in *Morphett Vale* (with 26,199 services), *Happy Valley* (19,101 services), *Elizabeth North* (17,050 services), *Salisbury East* (16,868 services), *Smithfield* (14,887 services) and *Elizabeth* (14,852 services).

There were weak correlations at the postcode level with the indicators of socioeconomic disadvantage and weak inverse correlations with the indicators of high socioeconomic status.

When the data were aggregated to the SLA level, correlations of statistical significance were recorded with the variables for people who left school at 15 years of age or earlier (0.88); children aged 0 to 14 years living in low income families (0.75), dwellings rented from the SA Housing Trust (0.70), single parent families (0.66) and dwellings with no vehicles (0.53); unemployed females (0.68) and males (0.62) aged 15 to 24 years; and Indigenous people aged 15 to 24 years (0.62) and 0 to 14 years (0.58).

These results, together with the inverse correlation of substantial significance with the IRSD (-0.74), indicate an association at the SLA level between high rates of GP services to people aged 15 to 24 years and socioeconomic disadvantage.

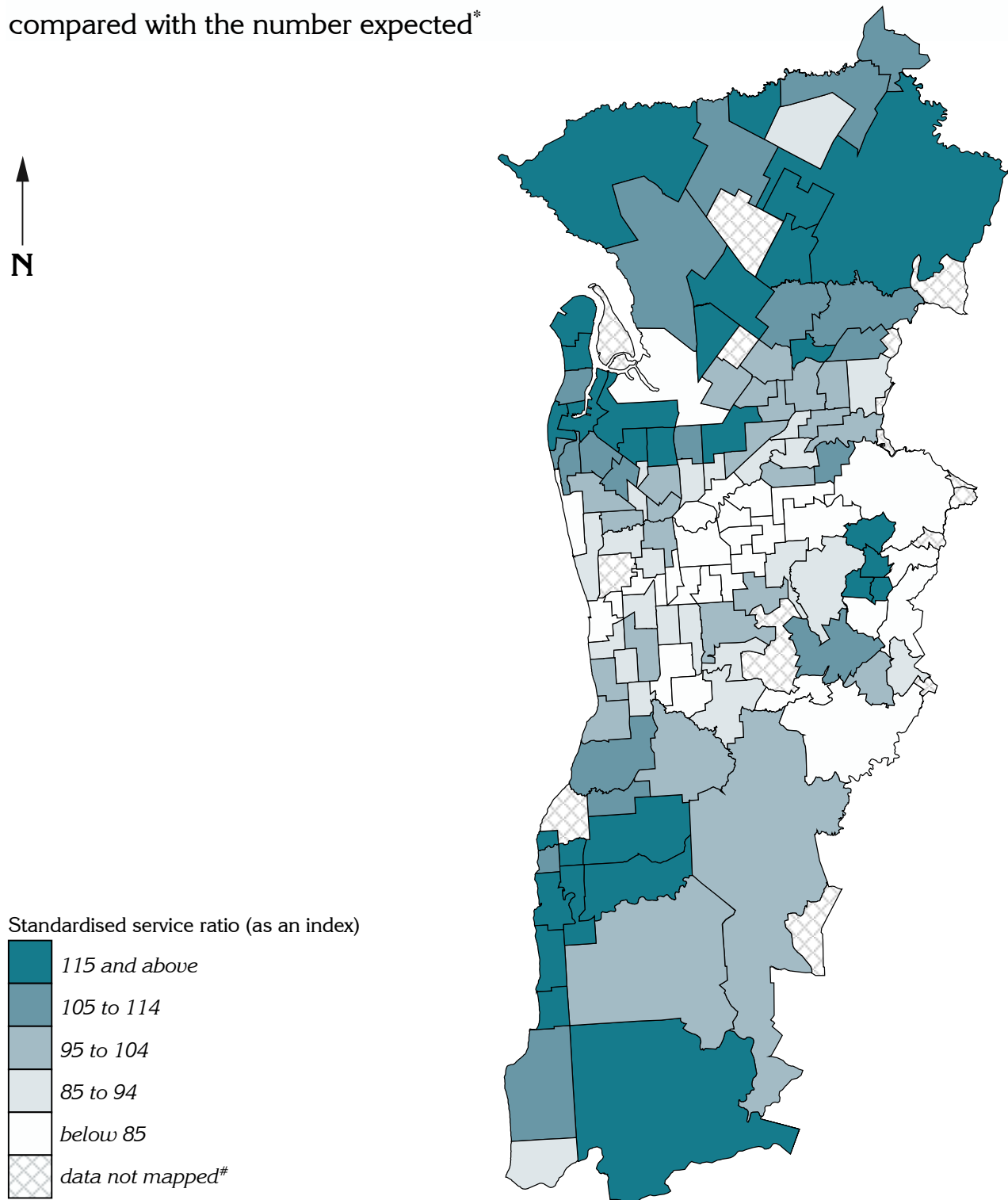
Users should note the comment (under the variable for GP services to 0 to 4 year old children) as to the existence of high and low ratios in adjacent postcode areas in the Adelaide Hills (page 284). That comment is relevant to this age group.

When these postcodes are combined the SSR averages out at 73**.

Map 5.48

General medical practitioner services to people aged 15 to 24 years, Adelaide, 1998

Standardised service ratio: number of services in each Statistical Local Area compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected services.

Source: Data supplied by the Department of Health and Ageing

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

General medical practitioner services to people aged 15 to 24 years, 1998

Non-metropolitan South Australia

There were 171,029 GP services to people aged 15 to 24 years in the non-metropolitan area of South Australia in 1998, nine per cent fewer than were expected from the State rates (a standardised GP service ratio (SSR) of 91**).

Just over one third (35.4%) of the SLAs mapped for this variable had elevated ratios (**Map 5.49**).

The highest of these was in the SLA of Northern Yorke Peninsula, where 30% more GP services were provided than were expected from the State rates (an SSR of 130** and 3,782 services). Ratios elevated by 15% or more were also recorded in Minlaton (with an SSR of 129**), Port Elliott and Goolwa (128**), Clare (127**), Naracoorte (DC) and Murray Bridge (both 121**), Yankalilla (119**), Wallaroo and Victor Harbor (both 118**), Coober Pedy (117**), Peterborough (DC) (117) and Kanyaka and Quorn (115**).

Unincorporated Far North had the lowest ratio, with an SSR of 24**, indicating that there were 76% fewer services than expected from the State rates. The south-eastern SLAs of Port MacDonnell (an SSR of 26**), Mount Gambier (DC) (32**) and Lucindale (53**); and the northern SLAs of Unincorporated Flinders Ranges (49**), Unincorporated Pirie (52**) and Hawker (54**), also recorded relatively low ratios.

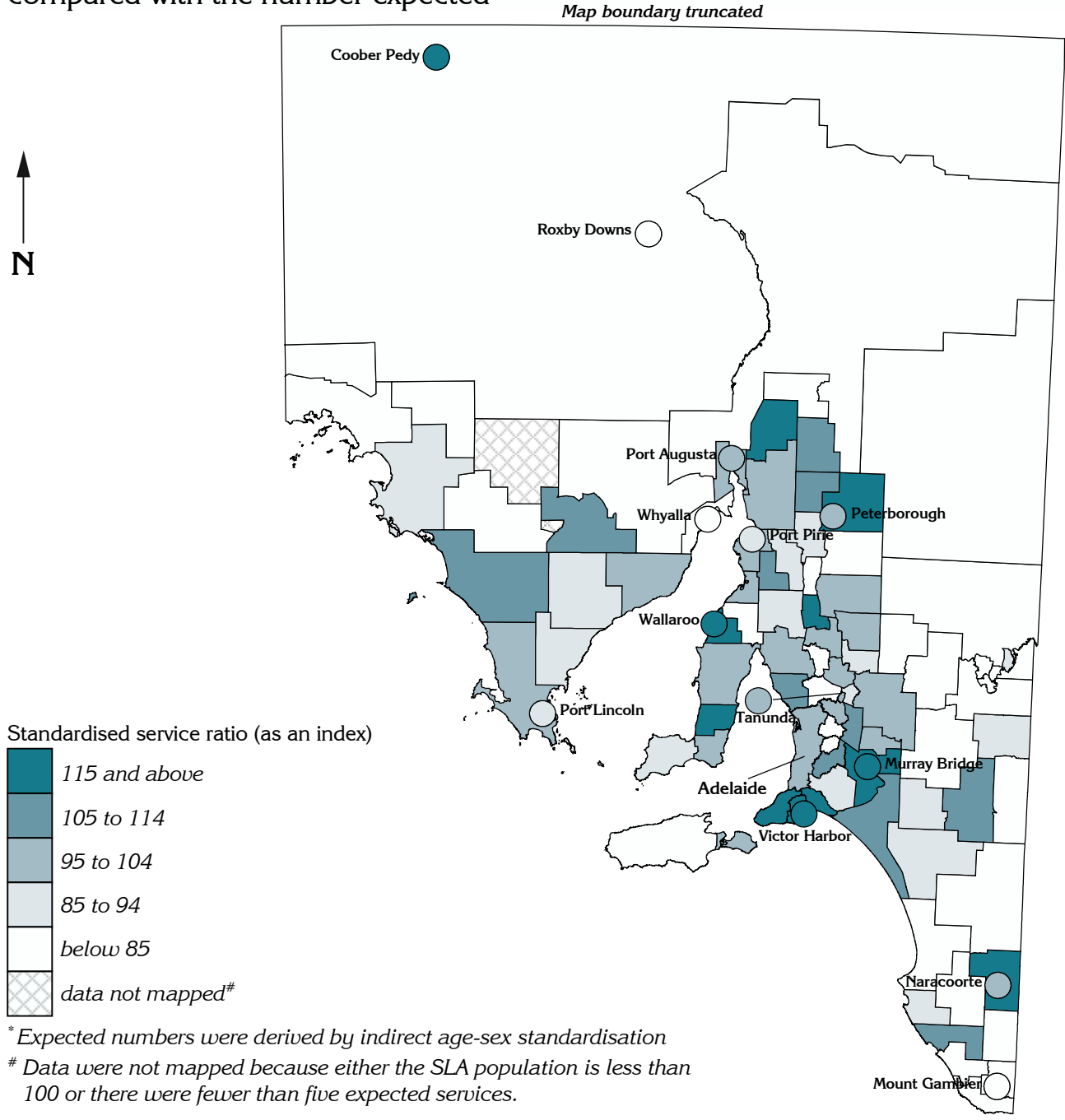
Young people in Mount Barker had the largest number of GP services for people aged 15 to 24 years in 1998 (with 11,761 services), followed by Whyalla (11,630 services), Mount Gambier (C) (11,422 services) and Murray Bridge (10,492 services).

There were weak inverse correlations of meaningful significance between GP services to children aged 15 to 24 years and high proportions of Aboriginal and Torres Strait Islander children aged 0 to 14 years (-0.44) and 15 to 24 years (-0.45). These inverse correlations indicate that areas with relatively high proportions of Indigenous children generally have low rates of use of GP services funded through Medicare.

Map 5.49

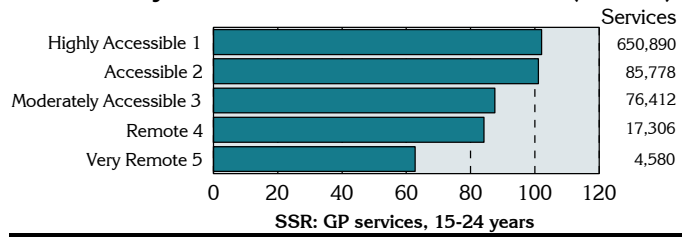
General medical practitioner services to people aged 15 to 24 years, South Australia, 1998

Standardised service ratio: number of services in each Statistical Local Area compared with the number expected*



Source: Data supplied by the Department of Health and Ageing *Details of map boundaries are in Appendix 1.2*

Accessibility/Remoteness Index of Australia (ARIA+)



Standardised ratios for GP services to 15 to 24 year olds decrease across the ARIA+ classes, from near average ratios of 102 and 101 in the Highly Accessible and Accessible areas, respectively; to a low ratio in the Very Remote area (63).

Source: Calculated on ARIA+ classification

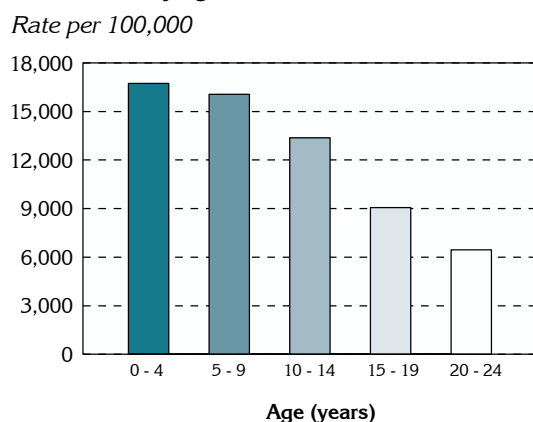
Family and Youth Services clients, 0 to 24 years, 1999

For Family and Youth Services, a Division of the Department of Human Services, details are available for individual clients. This is a better measure than the total number of services, as is available for clients of GPs, or admissions to hospital. Family and Youth Services provides a range of services to people in the community, including emergency financial assistance, individual and family support, counselling (eg. personal, financial), crisis care (including after hours care) and child protection.

Adelaide

The number of clients of Family and Youth Services (FAYS) in Adelaide varies substantially between the five year age groups within the 0 to 24 year age category (**Figure 5.48**). Children in the 0 to 4 year age group have the highest rate (16,740 clients per 100,000 population aged 0 to 4 years), and those in the 20 to 24 year age group have the lowest rate (6,461 clients per 100,000).

Figure 5.48: Family and Youth Services clients, by age, Adelaide, 1999



Source: Compiled in HealthWIZ from data supplied by DHS

In 1999 there 43,432 FAYS clients aged 0 to 24 years in Adelaide, 15% fewer clients than were expected from the State rates (a standardised client ratio (SCR) of 85**).

The distribution of FAYS clients across Adelaide has a distinctive spatial pattern, which is strongly associated with the distribution of disadvantaged populations. It is also striking in that postcode areas generally fall into either the highest or lowest ranges. The highest ratios are in a group of postcodes across the north-west, north and outer northern suburbs, with high ratios also recorded in a small number of middle and outer southern postcode areas (**Map 5.50**).

Almost five times the number of clients expected from the State rates were recorded for children and young people in *Adelaide*, an SCR of 490**. Postcode areas also recording highly elevated ratios were *Woodville North* (412**), *Blair Athol* (386**), *Ferryden Park* (278**), *Enfield* (206**), *Gepps Cross* (199**) and *Klemzig* (146**), in the inner north and north-west; *Park Holme* (184**) and *Edwardstown* (149**) to the south of the city; *Christies Downs* (286**), *Darlington* (260**), *Old Noarlunga* (250**) and *Hackham* (195**) in the outer south; and *Elizabeth North* (273**), *Elizabeth* (228**), *Evanston* (216**) and *Parafield Gardens* (152**) in the outer northern suburbs.

In contrast, ratios below the level expected from the State rates were recorded in almost three quarters (72.7%) of the postcode areas. Excluding areas with fewer than 20 clients, the lowest ratios were recorded for children and young people in *Kingswood* (with an SCR of 8**; and 52 clients), *Belair* (8**; 22 clients), *Eden Hills* (9**; 20 clients), *Unley* (10**; 43 clients), *Somerton Park* (10**; 32 clients), *West Lakes* (10; 26 clients), *Kensington Park* (11**; 58 clients), *Glenside* (13**; 56 clients) and *Blackwood* (14**; 85 clients).

The largest numbers of clients were in postcodes located predominantly in the outer northern suburbs, including *Elizabeth North* (with 3,007 clients), *Salisbury* (2,848 clients), *Elizabeth* (2,304 clients), *Woodville North* (1,741 clients), *Hackham* (1,662 clients) and *Blair Athol* (1,636 clients).

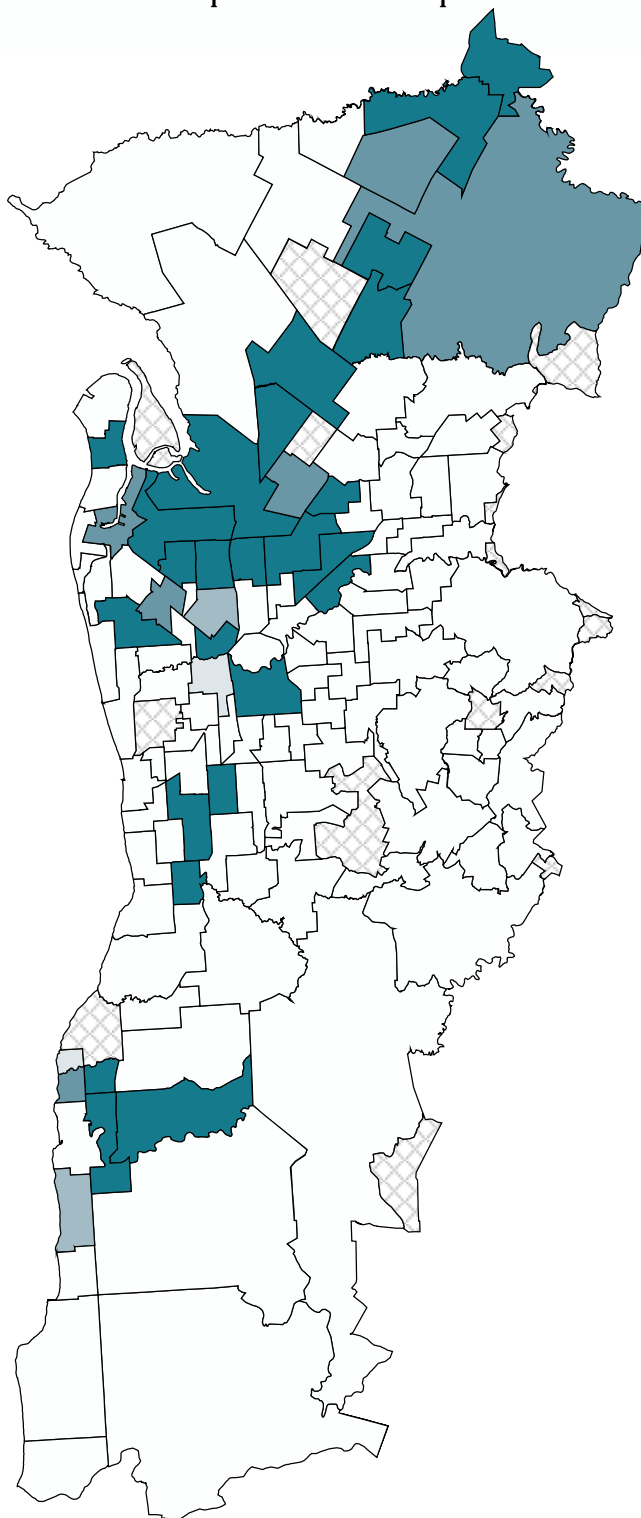
There were correlations of substantial significance at the postcode level with the variables for children aged 0 to 14 years living in dwellings with no motor vehicles (0.79) and dwellings rented from the SA Housing Trust (0.76). Correlations of meaningful significance were also recorded with the variables for children aged 0 to 14 years living in low income families (0.69) and single parent families (0.68); unemployed females (0.62) and males (0.56) aged 15 to 24 years; people who left school at age 15 years or earlier (0.60); and Indigenous people aged 15 to 24 years (0.58). Inverse correlations were recorded with the variables for female labour force participation (-0.71) and high-income families (-0.55).

These results, together with the inverse correlation with the IRSD (-0.73), indicate the existence of a strong association at the postcode level between high rates of FAYS clients and socioeconomic disadvantage.

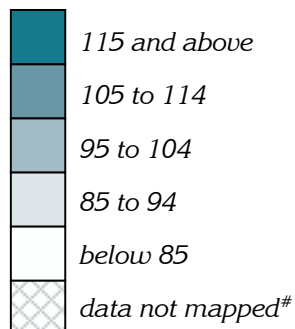
Map 5.50

Family and Youth Services clients, 0 to 24 years, Adelaide, 1999

Standardised client ratio: number of clients in each postcode compared with the number expected*



Standardised client ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected clients.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

Family and Youth Services clients, 0 to 24 years, 1999

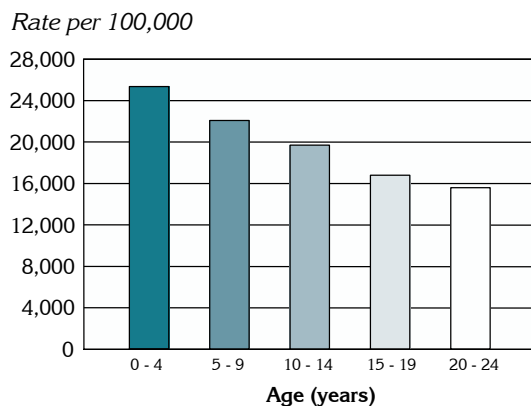
For Family and Youth Services, a Division of the Department of Human Services, details are available for individual clients. This is a better measure than the total number of services, as is available for clients of GPs, or admissions to hospital.

Family and Youth Services provides a range of services to people in the community, including emergency financial assistance, individual and family support, counselling (eg. personal, financial), crisis care (including after hours care) and child protection.

Non-metropolitan South Australia

The number of clients of Family and Youth Services (FAYS) in the non-metropolitan areas varies substantially between the five year age groups within the 0 to 24 year age category (**Figure 5.49**). Children in the 0 to 4 year age group have the highest rate (25,398 clients per 100,000 population aged 0 to 4 years), and those in the 20 to 24 year age group have the lowest rate (15,645 clients per 100,000).

Figure 5.49: Family and Youth Services clients, by age, non-metropolitan areas, 1999



Source: Compiled in HealthWIZ from data supplied by DHS

There were 27,375 FAYS clients aged 0 to 24 years living in the non-metropolitan area of South Australia in 1999, 36% more clients than were expected from the State rates (a standardised client ratio (SCR) of 136**).

SLAs with high ratios were concentrated in three main locations: one extending from Whyalla and Port Augusta to the north and north-west of the State, another in the Riverland and the third located in and around Murray Bridge (**Map 5.51**). These are generally areas with relatively large Indigenous populations.

Ratios elevated by more than twice the expected levels were recorded for children and young people in Unincorporated West Coast (with an SCR of 626** and 241 clients), Coober Pedy (562**), Ceduna (473**), Port Augusta (449**), Port Lincoln (280**), Unincorporated Whyalla (270**), Unincorporated Far North (235**) and Whyalla (213**), located in the far north and west of the State; Unincorporated Riverland (372**) and Berri (315**), in the Riverland; and Murray Bridge (272**), in the Murray Mallee. Other highly elevated ratios were recorded in Mannum (189**), Kanyaka and Quorn (186**), Renmark (179**), Morgan (169**), Paringa (167**) and Port Pirie (161**).

Excluding SLAs with fewer than 20 clients, the lowest ratios were recorded for residents of Tanunda (with an SCR of 19**; and 41 clients), Yorketown (20**; 22 clients), Onkaparinga (24**; 102 clients), Tumby Bay (25**; 31 clients), Mount Pleasant (26**; 28 clients), Yankalilla (27**; 43 clients), Port MacDonnell (28**; 38 clients), Gumeracha (29**; 102 clients), Clare (29**; 64 clients) and Mount Gambier (DC) (30**; 80 clients).

The largest numbers of FAYS clients aged 0 to 24 years were recorded in the towns of Port Augusta (with 3,428 clients), Whyalla (2,696 clients), Murray Bridge (2,353 clients), Port Lincoln (1,965 clients) and Mount Gambier (1,947 clients).

There were correlations of substantial significance with the variables for substantiated cases of child abuse (0.88), children aged 0 to 14 years living in dwellings with no motor vehicles (0.83) and dwellings rented from the SA Housing Trust (0.73) and clients of Child and Adolescent Mental Health Services (0.72); and of meaningful significance with children aged 0 to 14 years living in a single parent family (0.58) and Indigenous children aged from 0 to 14 years (and a weaker correlation. Of 0.42, with children aged 15 to 24 years). There were also inverse correlations of meaningful significance with full-time students aged 15 to 24 years (-0.52), PES scores (-0.67) and managers and administrators, and professionals (-0.52).

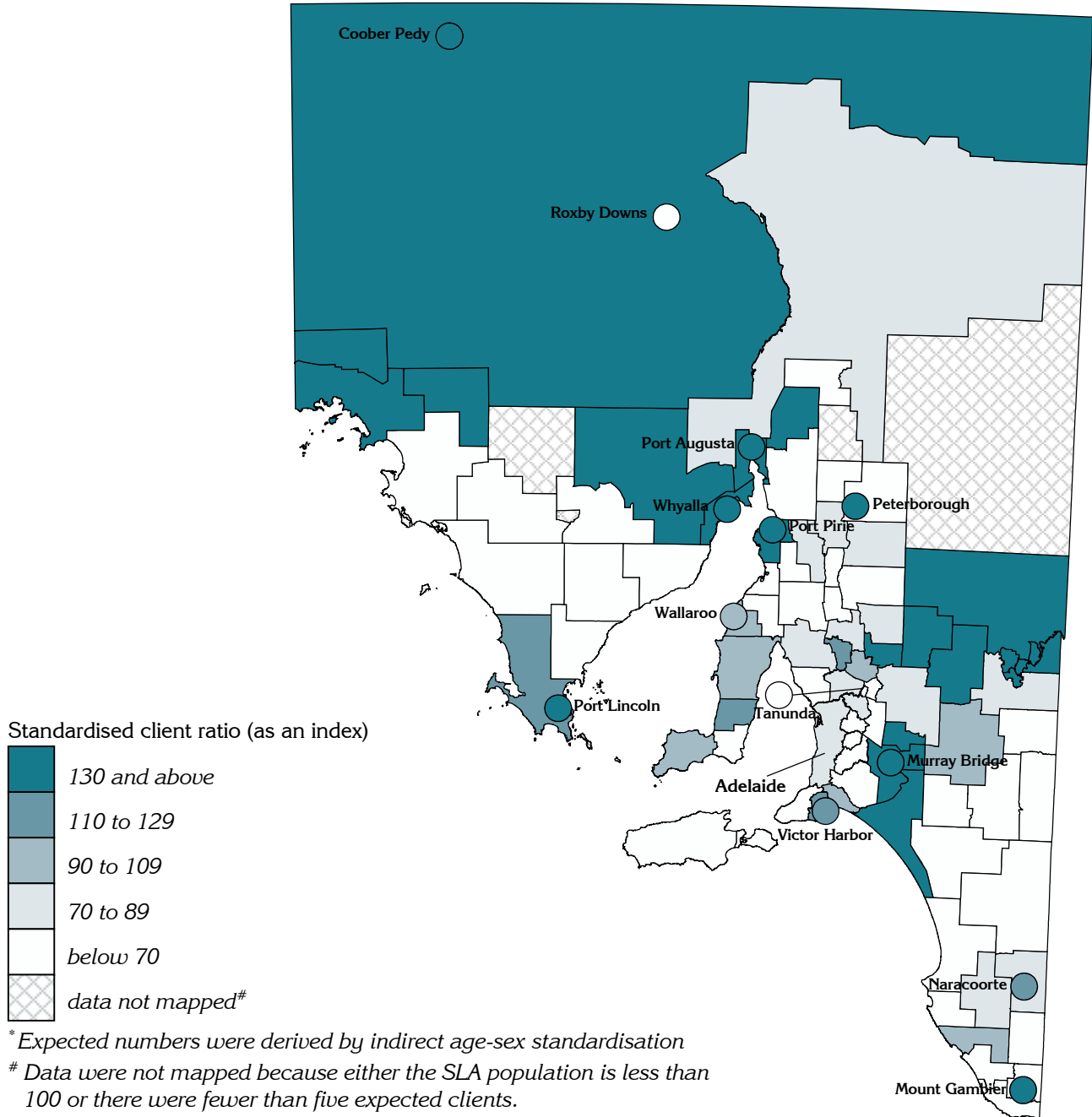
These results, together with the inverse correlation with the IRSD (-0.70), indicate an association at the SLA level between high rates of FAYS clients and socioeconomic disadvantage.

Map 5.51

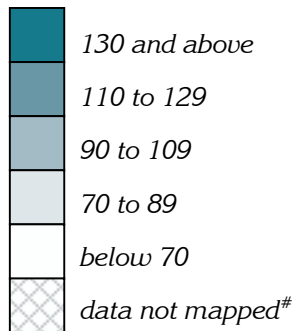
Family and Youth Services clients, 0 to 24 years, South Australia, 1999

Standardised client ratio: number of clients in each Statistical Local Area compared with the number expected*

Map boundary truncated



Standardised client ratio (as an index)



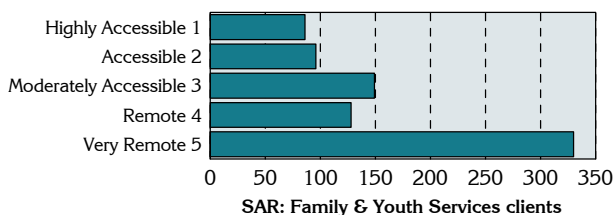
* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either the SLA population is less than 100 or there were fewer than five expected clients.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



The distribution of FAYS clients shows a strong relationship with remoteness. The ratios increase by almost four times (3.8 times), from an SCR of 86 in the Highly Accessible areas to 330 in the Very Remote areas. The second highest ratio is in the Moderately Accessible areas (149), with ratios of 96 and 128 in the Accessible and Remote areas, respectively.

Source: Calculated on ARIA+ classification

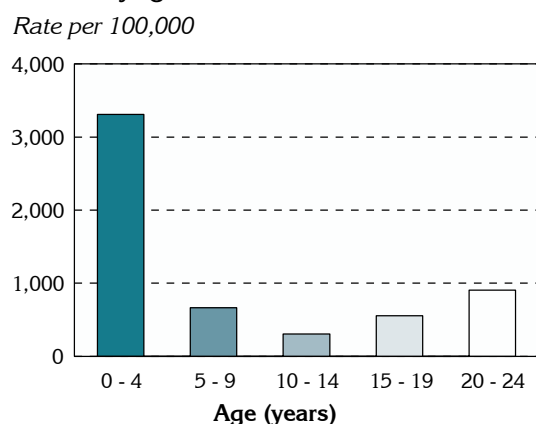
Community based health services, one-to-one clients, 0 to 24 years, 1997 to 1999

Details are recorded for individuals at each community health service they attend (ie. clients attending more than one community health service will be recorded at each location). Community health centres provide a regional network of health services at the community level, covering rural and metropolitan areas, including specific Aboriginal health services.

Adelaide

The number of clients of community based health services in Adelaide varies substantially between the five year age groups within the 0 to 24 year age category (**Figure 5.50**). Children in the 0 to 4 year age group have the highest rate (3,311 clients per 100,000 population aged 0 to 4 years), decreasing to a rate of 306 per 100,000 population in the 10 to 14 year age group, before increasing to 904 per 100,000 population among people aged 20 to 24 years.

Figure 5.50: Use of community based health services, by age, Adelaide, 1997 to 1999



Source: Compiled in HealthWIZ from data supplied by DHS

There were 36,541 clients aged 0 to 24 years of community based health services in Adelaide over the three years from 1997 to 1999. This was 36% more than were expected from the State rates, a standardised client ratio (SCR) of 136**.

The distribution of clients is highly concentrated in the inner northern, north-western and outer northern suburbs, as well as across a wide area of the southern areas of the city (**Map 5.52**), a pattern which strongly reflects the location of community health centres. The postcode areas with the most highly elevated ratio for clients of community based health services are *Ferryden Park* (with an SCR of 1,576**) and *Woodville North* (1,067**). These

values are very high in comparison with the ratios recorded for this variable in other postcodes, or indeed for the other variables in this atlas. As noted above, these services are not universally available across Adelaide: they are, however, relatively accessible to residents of *Ferryden Park* and *Woodville North*.

Ratios elevated by at least three times the level expected from the State rates were also recorded in *Port Adelaide* (528**), *Old Noarlunga* (468**), *Rosewater* (450**), *Christie Downs* (357**), *Moana* and *Hackham* (both 341**), *Morphett Vale* (334**), *Gepps Cross* (327**) and *Port Noarlunga* (300**).

In contrast, standardised client ratios were relatively low throughout the inner southern suburbs, the eastern and Hills areas and in several locations along the coastline. Excluding areas with fewer than 20 clients, *Magill* (with an SCR of 10**; and 23 clients), *St Peters* (12**; 22 clients), *Flinders Park* (16**; 25 clients), *Paradise* (19**; 47 clients), *Fulham* (20**; 50 clients), *Goodwood* (24**; 53 clients), *Marden* (27**; 70 clients), *Athelstone* (28**; 65 clients), *Eastwood* (29**; 83 clients), *Walkerville* (29; 50 clients), *North Adelaide* (30**; 49 clients) and *Stirling Forward* (30**; 46 clients) all recorded at least 70% fewer clients than were expected.

More than 1,000 clients of community based health services were recorded for children and young people in *Morphett Vale* (3,385 clients), *Woodville North* (2,541 clients), *Ferryden Park* (2,157 clients), *Happy Valley* (1,586 clients), *Hackham* (1,558 clients), *Salisbury* (1,544 clients) and *Rosewater* (1,102 clients).

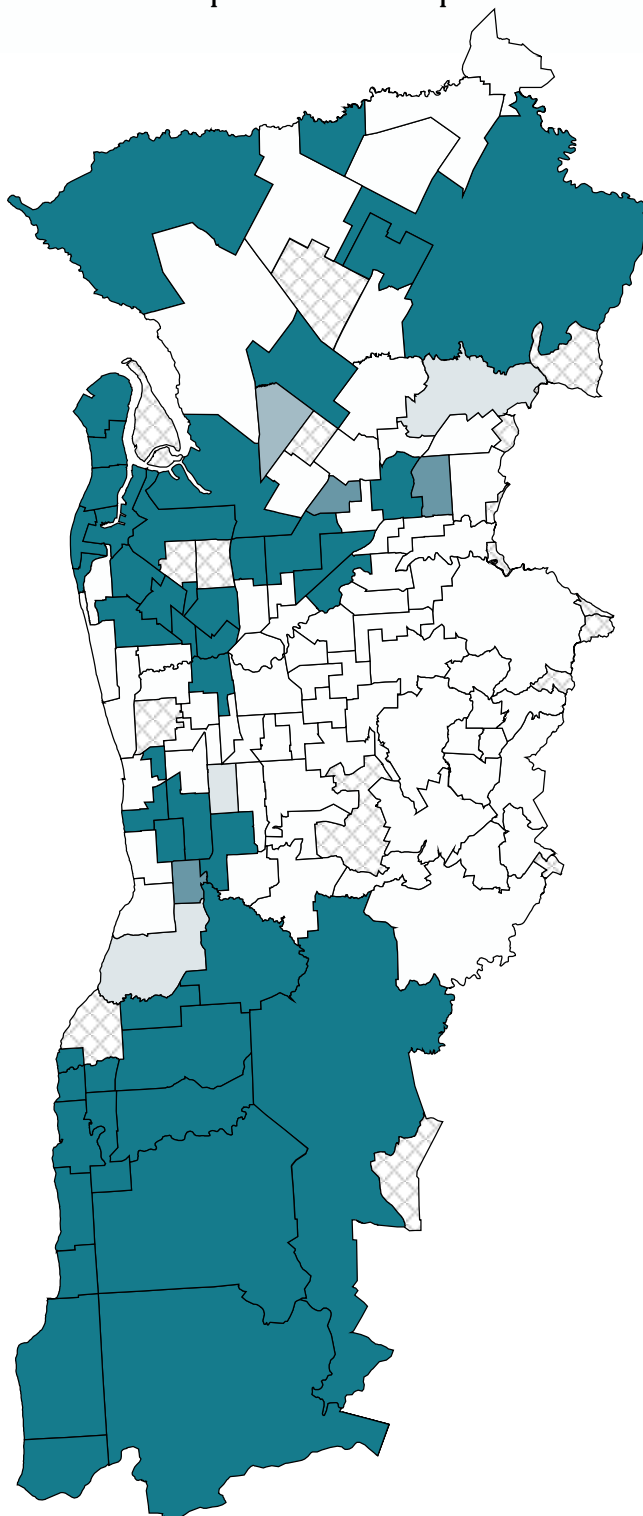
There were correlations of meaningful significance at the postcode level with the variables for children aged 0 to 14 years living in dwellings rented from the SA Housing Trust (0.70), low income families (0.60), single parent families (0.57) and dwellings with no motor vehicles (0.55); people aged 15 to 24 years from non-English speaking countries (0.55); and unemployed females aged 15 to 24 years (0.51). These results, together with the inverse correlation with the IRSD (-0.65), indicate an association at the postcode level between high rates of community health services and socioeconomic disadvantage.

The non-metropolitan area of the States has not been mapped for this variable, as there were too few cases to produce reliable results.

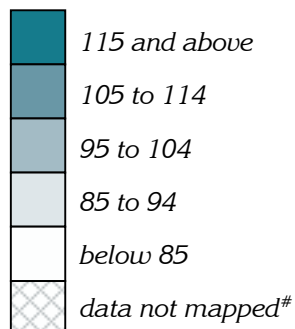
Map 5.52

Community health services one-to-one clients, 0 to 24 years, Adelaide, 1997 to 1999

Standardised client ratio: number of clients in each postcode compared with the number expected*



Standardised client ratio (as an index)



* Expected numbers were derived by indirect age-sex standardisation

[#] Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected clients.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

Child and Adolescent Mental Health Services, one-to-one clients, 0 to 24 years, 1997 to 1999

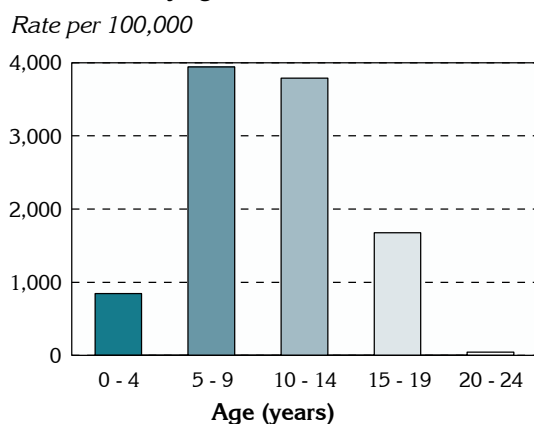
For Child and Adolescent Mental Health Services (CAMHS), details are available for individual clients (ie. clients attending at more than one location will be recorded at each location). This is a better measure than the total number of services, as available for clients of GPs, or admissions, as are available for hospitals.

CAMHS provides a confidential counselling service for children and young people and their families. Services are provided by child and family specialists including psychologists, psychiatrists, social workers, nurses, occupational therapists and speech pathologists who are experienced in helping children with emotional, behavioural or mental health difficulties.

Adelaide

The number of clients of CAMHS in Adelaide varies substantially between the five year age groups within the 0 to 24 year age category (Figure 5.51). Children in the 5 to 9 year age group have the highest rates (an average rate of 3,940 clients per 100,000 population aged 5 to 9 years), with a similar rate in the 10 to 14 year age group and the lowest rate (44 clients per 100,000 population) in the 20 to 24 year age group.

Figure 5.51: Use of child and adolescent mental health services, by age, Adelaide, 1997 to 1999



Source: Compiled in HealthWIZ from data supplied by DHS

Over the period 1997 to 1999, there were 65,732 clients aged 0 to 24 years of Child and Adolescent Mental Health Services (CAMHS) in Adelaide. This was four per cent lower than expected from the State rates (a standardised client ratio (SCR) of 96**).

CAMHS clients aged from 0 to 24 years were mainly from postcodes located in the city's north-western and south-western suburbs, as well as in the outer south and, to a lesser extent, the outer north (Map 5.53).

More than twice the expected number of CAMHS clients were recorded in the postcode areas of *Park Holme* (with an SCR of 317**), *Osborne* (236**), *Darlington* (233**) and *Christies Downs* (210**).

Ratios elevated by 50% or more were also recorded in the southern suburbs of *Old Noarlunga* (189**), *Hackham* (166**), *Brighton* (159**), *Seaton* (151**) and *Morphett Vale* (150**); in the north-western postcode areas of *Largs Bay* (168**), *Port Adelaide* (167**), *Ferryden Park* and *Woodville* (both 155**) and *Woodville North* (151**); and the inner northern area of *Enfield* (168**).

Excluding areas with fewer than 20 clients, the lowest ratios were recorded in *Glenside* and *North Adelaide*, with 90% and 86% fewer clients than were expected, respectively. Relatively low ratios were also recorded in the postcode areas of *Glen Osmond* (with an SCR of 15**), *Angle Vale*, *Kensington Park* and *Burnside* (each 18**), *Aldgate* (27**), *Bridgewater* and *Stirling* (28**) and *Eastwood* (30**).

Over the three years 1997 to 1999, there were more than 2,000 CAMHS clients aged 0 to 24 years from *Morphett Vale* (with 3,947 clients), *Salisbury* (2,739 clients), *Park Holme* (2,660 clients), *Happy Valley* (2,517 clients) and *Elizabeth North* (2,177 clients).

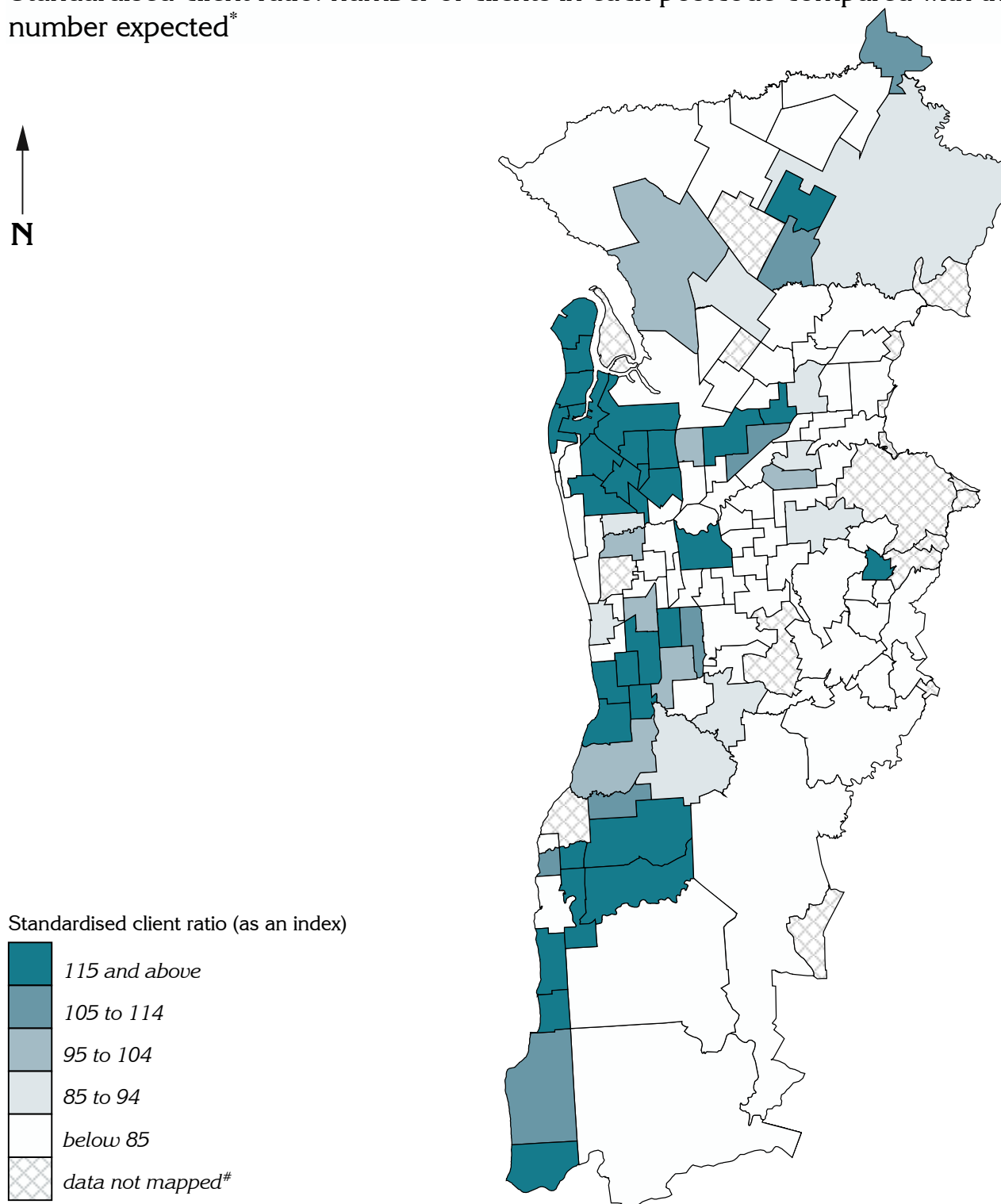
Correlations of meaningful significance were recorded at the postcode level with the variables for children aged 0 to 14 years living in single parent families (0.64), low income families (0.60), dwellings rented from the SA Housing Trust (0.57) and dwellings with no motor vehicles (0.56). An inverse correlation was also recorded with the variable for people aged 15 to 24 years who were full-time students (-0.50).

These results, together with the inverse correlation with the IRSD (-0.60), indicate an association at the postcode level between CAMHS and socioeconomic disadvantage.

Map 5.53

Child and Adolescent Mental Health Services one-to-one clients, 0 to 24 years, Adelaide, 1997 to 1999

Standardised client ratio: number of clients in each postcode compared with the number expected*



* Expected numbers were derived by indirect age-sex standardisation

Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five expected clients.

Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

Child and Adolescent Mental Health Services, one-to-one clients, 0 to 24 years, 1997 to 1999

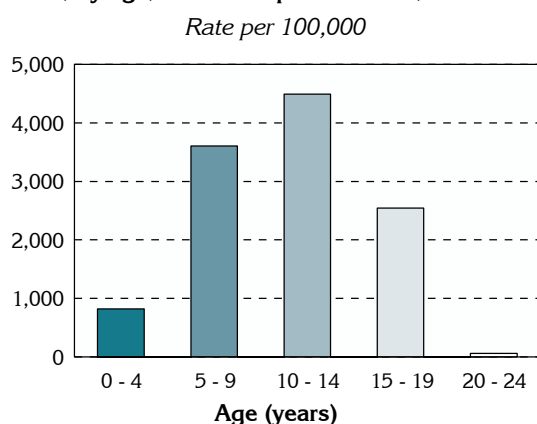
For Child and Adolescent Mental Health Services (CAMHS), details are available for individual clients (ie. clients attending at more than one location will be recorded at each location). This is a better measure than the total number of services, as is available for clients of GPs, or admissions, as are available for hospitals.

CAMHS provides a confidential counselling service for children and young people and their families. Services are provided by child and family specialists including psychologists, psychiatrists, social workers, nurses, occupational therapists and speech pathologists who are experienced in helping children with emotional, behavioural or mental health difficulties.

Non-metropolitan South Australia

The number of clients of CAMHS in non-metropolitan South Australia varies substantially between the five year age groups within the 0 to 24 year age category (Figure 5.53). From a relatively low rate at ages 0 to 4 years (an average rate of 817 clients per 100,000 population over the three years), it increases to the highest rate in the 10 to 14 year age group (4,492 clients per 100,000 population aged 10 to 14 years) then declines to a low of 56 clients per 100,000 population among people aged 20 to 24 years.

Figure 5.52: Use of child and adolescent mental health services, by age, non-metropolitan areas, 1997 to 1999



Source: Compiled in HealthWIZ from data supplied by DHS

There were 30,457 clients aged 0 to 24 years of CAMHS in the non-metropolitan area of South Australia over the period from 1997 to 1999. This was six per cent higher than expected from the State rates (a standardised client ratio (SCR) of 106**).

The highest ratios were primarily in a number of the towns and across a broad area from the Riverland, south to Murray Bridge and down into parts of the south-east (Map 5.54).

Ratios of at least twice the level expected from the State rates were recorded in the SLAs of Murray Bridge (with an SCR of 266**), Meningie (257**), Unincorporated Lincoln (234*), Unincorporated Riverland (227**) and Berri (203**).

Relatively high ratios were also recorded in Mount Gambier (C) (199**), Mannum (198**), Peake (197**), Robertstown (191**), Port Lincoln (189**), Unincorporated Whyalla (187**), Port Augusta (186**), Renmark (168**), Morgan (158**), Karoonda-East Murray (154**), Beachport (150**) and Penola (150**).

Children and young people in Roxby Downs, Yankalilla and Unincorporated Far North had the lowest ratios (of areas with more than 20 clients) for this variable, with SCRs of 13**, 14** and 15** respectively. Other areas with particularly low ratios included Tumby Bay (with an SCR of 17**), Le Hunte (18**), Blyth-Snowtown (22**), Unincorporated Flinders Ranges and Onkaparinga (both 30**), Mount Pleasant and Central Yorke Peninsula (both 35**).

The largest numbers of CAMHS clients aged from 0 to 24 years were recorded in Mount Gambier (with 3,315 clients), Murray Bridge (3,103 clients), Port Augusta (2,007 clients), Whyalla (1,885 clients) and Port Lincoln (1,847 clients).

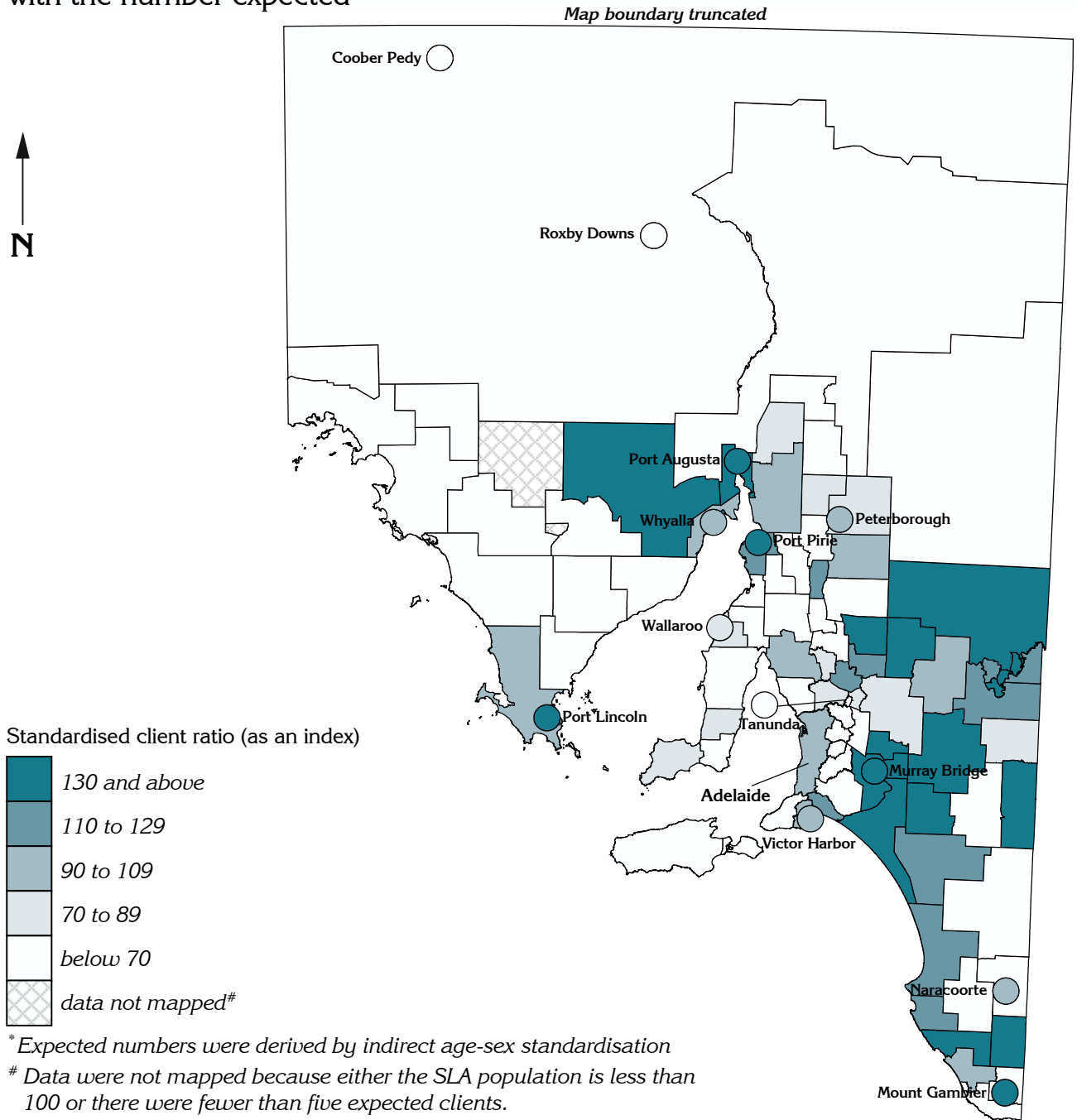
There was a correlation of substantial significance with clients of Family and Youth Services (0.72) and correlations of meaningful significance with the variables for children aged 0 to 14 years living in houses rented from the SA Housing Trust (0.69), single parent families (0.64), dwellings with no motor vehicles (0.53) and low income families (0.52); and dependent children (0.55) and unemployed males aged 15 to 24 years (0.50).

These results, together with the inverse correlation with the IRSD (-0.59), indicate an association at the SLA level between high rates of CAMHS clients and socioeconomic disadvantage.

Map 5.54

Child and Adolescent Mental Health Services one-to-one clients, 0 to 24 years, South Australia, 1997 to 1999

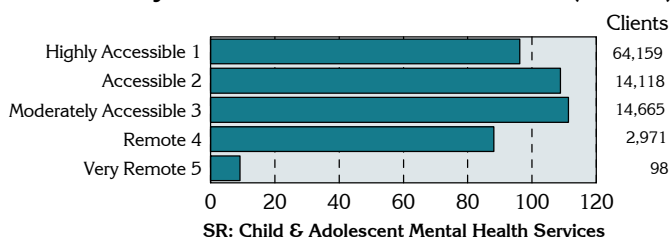
Standardised client ratio: number of clients in each Statistical Local Area compared with the number expected*



Source: Compiled in HealthWIZ from data supplied by DHS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



The majority (66.8%) of one-to-one Child and Adolescent Mental Health Service clients were in the Highly Accessible ARIA+ class. However, the highest standardised ratios were recorded in the Moderately Accessible (an SCR of 111) and Accessible (109) classes. The Very Remote areas had 91% fewer clients than were expected from the State rates (an SCR of 9).

Source: Calculated on ARIA+ classification

Immunisation status of children at 12 months of age, 2001

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 Ageing, 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.

The data shown here are of the proportion of children born between 1 January 1999 and 31 December 1999 who were registered with Medicare and who were shown on the ACIR at 17 April 2001 as being fully immunised. Children who are fully immunised at 12 months of age are those who have 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 were made by the National Centre for Immunisation Research and Surveillance, who also supplied the data.

Adelaide

In 2001, 12,299 children in Adelaide aged 12 months were fully immunised; that is, 94.7% of children at this age.

The highest immunisation rates were in postcode areas scattered throughout Adelaide in no notable pattern (**Map 5.55**).

Several postcode areas had proportions of 100% or more³; they included *Sellicks Beach*, *Maslin Beach*, *Upper Sturt*, *Aldgate*, *Uraidla*, *Norton Summit*, *Angle Vale*, *Gepps Cross*, *Belair*, *Seacliff*, *Darlington* and *West Lakes Shore*.

The next highest proportions were recorded in *St Agnes* (98.9%), *Burton* (98.7%), *Ingle Farm* (98.3%) and *Rosewater* (98.3%).

The postcode area of *MacDonald Park* had the lowest immunisation rates in 2001, with 80.0% of 12 month old children in this category. Relatively low immunisation rates were also recorded in the southern postcode areas of *Christies Beach* and *Blackwood Forward* (both 86.2%) and *McLaren Vale* (87.8%); in the north-western and inner northern postcode areas of *Osborne* (88.1%), *Ferryden Park* (89.3%) and *Blair Athol* (89.4%); and in the outer northern areas of *Evanston* (88.5%), *Elizabeth* (89.3%) and *Elizabeth North* (89.5%).

The largest numbers of fully immunised children were recorded in *Salisbury* (534 children), *Morphett Vale* (466 children), *Happy Valley* (422 children) and *Smithfield* (365 children).

There was no consistent evidence in the correlation analysis at the postcode level of an association between children fully immunised at 12 months of age and socioeconomic status.

When the data were aggregated to the SLA level, inverse correlations of substantial significance were found with the variables for unemployed males (-0.75) and females (-0.71) aged 15 to 24 years. Inverse correlations of meaningful significance were also recorded with Indigenous people aged 0 to 14 years (-0.64) and 15 to 24 years (-0.57); and children aged 0 to 14 years living in low income families (-0.63), dwellings with no vehicles (-0.61), dwellings rented from the SA Housing Trust (-0.55) and single parent families (-0.51).

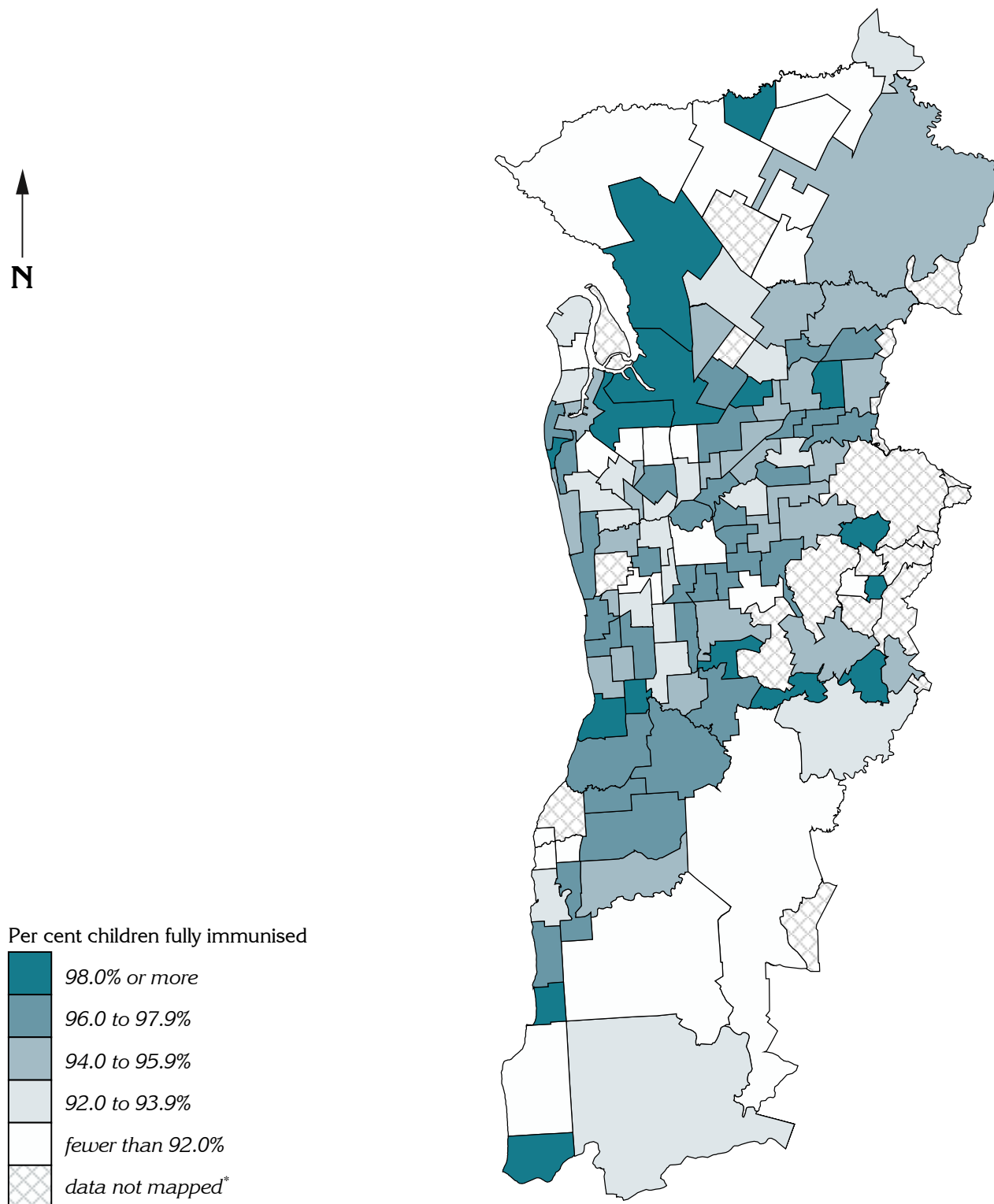
These results, together with the correlation of meaningful significance with the IRSD (0.60), indicate an association at the SLA level between high rates of childhood immunisation at 12 months of age and high socioeconomic status.

³ The reason for the occurrence of a proportion of 100% or higher is unclear. It may reflect, in part, a mismatch between the area represented by the postcode data from immunisation records and the area represented by the 'postal' area constructed by the ABS (see page 18).

Map 5.55

Immunisation status of children at 12 months of age, Adelaide, 2001

as a percentage of all children at 12 months of age in each postcode area



*Data were not mapped because either the postcode population is less than 100, only a small part of the postcode is located in Adelaide or there were fewer than five children.

Source: Data supplied by the NCIRS

Details of map boundaries are in Appendix 1.2

A Social Health Atlas of Young South Australians, 2003

Immunisation status of children at 12 months of age, 2001

A general description of the immunisation data is included on the previous the text page.

Non-metropolitan South Australia

In 2001, 4,887 children in the non-metropolitan area of South Australia were fully immunised at the age of 12 months, 95.0% of children at this age.

SLAs with the highest rates of immunisation were distributed across a wide area (**Map 5.56**).

Several SLAs have proportions of 100.0% or more⁴. They include Bute, Carrieton, Cleve, Coonalpyn Downs, Dudley, Eudunda, Franklin Harbor, Hallett, Hawker, Jamestown, Kanyaka and Quorn, Kimba, Lacepede, Lameroo, Orroroo, Peake, Pinnaroo, Port MacDonnell, Robe, Robertstown, Saddleworth and Auburn, Spalding, Tanunda, Warooka, and Yorketown. It is unclear as to why these rates are so high: it is possible that it is related, at least in part, to the conversion of postcode based data to SLA.

The next highest immunisation rates were recorded in the south-eastern SLAs of Naracoorte (DC) (99.2%), Naracoorte (M) (99.0%) and Mount Gambier (DC) (98.7%); in Onkaparinga (98.5%), Kapunda (97.7%), Strathalbyn (97.4%) and Angaston (97.3%), located in the areas surrounding Adelaide; and in the mid northern areas of Light (98.5%), Clare (98.3%), Crystal Brook-Redhill (98.2%) and Peterborough (98.1%).

Immunisation rates below 92.0% were primarily found in SLAs located in the far northern and western parts of the State, in areas which included Unincorporated Whyalla (68.7%), Le Hunte (87.5%), Streaky Bay (87.9%), Elliston (90.1%), Port Augusta (91.1%), Unincorporated Flinders Ranges (91.5%) and Coober Pedy (91.7%). Proportions of below 92.0% were also recorded in the SLAs of Riverton (84.2%), Burra Burra (85.9%), Barmera (86.0%), Central Yorke Peninsula (87.4%), Port Broughton (87.5%), Paringa (88.4%), Rocky River (88.9%), Peterborough (89.5%) and Victor Harbor (91.4%).

The largest number of fully immunised children in the non-metropolitan areas was recorded in the town of Mount Gambier, a total of 413 children. More than 150 fully immunised children were also recorded in Mount Barker (342 children), Whyalla

(300 children), Murray Bridge (222 children), Port Lincoln (195 children), Port Augusta (192 children) and Port Pirie (184 children).

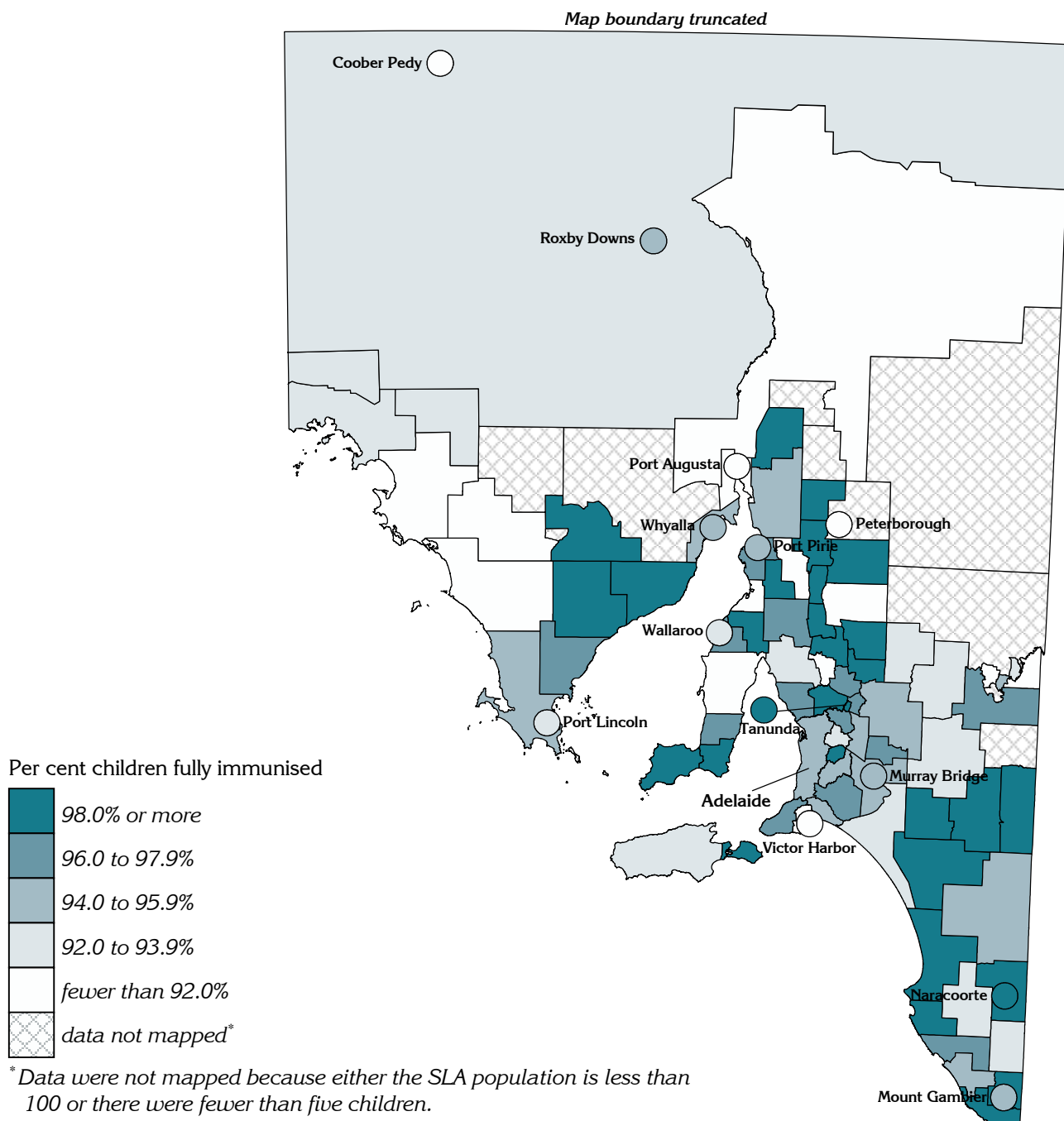
There was an inverse correlation of meaningful significance with the variable children aged 0 to 14 years and born in predominantly non-English speaking countries (-0.55), indicating lower immunisation rates in areas with relatively more children born in these countries.

⁴ The reason for the occurrence of a proportion of 100% or higher is unclear.

Map 5.56

Immunisation status of children at 12 months of age, South Australia, 2001

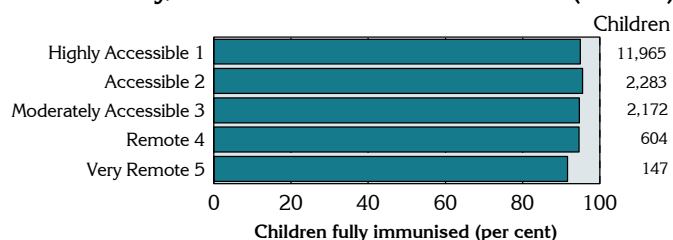
as a percentage of all children at 12 months of age in each Statistical Local Area



Source: Data supplied by the NCIRS

Details of map boundaries are in Appendix 1.2

Accessibility/Remoteness Index of Australia (ARIA+)



There is little variation in immunisation rates across the first four ARIA+ classes, with between 94.6% and 95.5% of 12 month old children being fully immunised. The lowest rate, of 91.6%, was recorded in the Very Remote areas.

Source: Calculated on ARIA+ classification

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