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Managing Two Worlds Together:

Study 1 — Report on Admissions and Costs

Cover Artwork:

Kuntjanu – Mingkiri Tjuta Tjukurpa (Marsupial Mouse Dreaming)

by Rama Sampson
painting (no.74),
courtesy Better
World Art

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Study 1—Report on Admissions and Costs

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Additional copies of the *Managing Two Worlds Together: Study 1—Report on Admissions and Costs*, along with downloadable pdfs of all six reports emanating from this project, can be obtained from:

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The Managing Two Worlds Together Project

The Managing Two Worlds Together project aims to add to existing knowledge of what works well and what needs improvement in the system of care for Aboriginal patients from rural and remote areas of South Australia (and parts of the Northern Territory). It explores their complex patient journeys and what happens when they come to Adelaide for hospital care

The relationship between patients and health care providers is the foundation of care and requires communication across cultures, geography and life experiences. As a staff member in one rural Aboriginal Community Controlled Health Service put it: 'It's like managing two worlds together, it doesn't always work'.

Stage 1 of the project focuses on the problems. Four studies were conducted and are reported in six documents:

- *Managing Two Worlds Together: City Hospital Care for Country Aboriginal People Project Report* (available on the website and as a printed document)
- *Managing Two Worlds Together: City Hospital Care for Country Aboriginal People Community Summary* (available on the website and as a printed document)
- *Managing Two Worlds Together: Study 1—Report on Admissions and Costs* (**this report**—available on the website)
- *Managing Two Worlds Together: Study 2—Staff Perspectives on Care for Country Aboriginal Patients* (available on the website)
- *Managing Two Worlds Together: Study 3—The Experiences of Patients and Their Carers* (available on the website)
- *Managing Two Worlds Together: Study 4—Complex Country Aboriginal Patient Journeys* (available on the website).

Stage 2 will focus on solutions and will consist of a small set of action research projects. During 2012 the research team will work with partner organisations in this study to develop and/or document the implementation of strategies to improve the health care journeys for country Aboriginal patients, based on existing good practice and on the findings of Stage 1.

Full details about the project are available at the Managing Two Worlds Together website, which is hosted by Flinders University at: <www.flinders.edu.au/medicine/sites/health-care-management/research/MTWT/>.

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Abbreviations and Terms

ABS	Australian Bureau of Statistics
CI	confidence interval
ISAAC	Integrated South Australian Activity Collection
Oacis	Open Architecture Clinical Information Systems
SLA	Statistical Local Area
SR	Standardised Ratio

Summary: Aboriginal Patient Admissions to City Hospitals

This report presents an analysis of two years of data on admissions of Aboriginal people from country South Australia to public hospitals (2006/07 and 2007/08). Data were provided by SA Health from the Integrated South Australian Activity Collection (ISAAC). The analysis of adult admissions focuses on eight health problems that are the most common reasons for admission to city hospitals (278 of 2,714 admissions), while the analysis for Aboriginal children includes 363 admissions for the four most common health problems (72% of all admissions). The main findings from this analysis are presented below.

Data quality problems

Indigenous status is often not recorded, or not recorded accurately, by hospitals, and this makes the data much less reliable. Further, the number of admissions for the conditions we focused on was quite small, which makes some analysis unreliable and reduces our ability to determine when differences between Aboriginal and non-Aboriginal people are statistically significant (i.e. when they are highly unlikely to be due to chance variations). This poor level of identification persists despite the considerable efforts that have been made to identify Aboriginal people in the admissions data (including by Aboriginal Hospital Liaison Officers) and 30 per cent additional inpatient funding for patients identified as Aboriginal.

Adult admissions

High reliance on country hospitals

Aboriginal South Australian adults (not just those living in the country) are much more likely (6.6 times higher rate) than non-Aboriginal people to be admitted to *country* hospitals for the eight conditions, and are also more likely (1.9 times higher rate) to be admitted to *city* hospitals. The relatively high reliance on country hospitals compared to the pattern for non-Aboriginal people indicates barriers to access to city hospitals (as well as problems with identification of Aboriginal status, which are likely to lead to under-counting of Aboriginal admissions, particularly in city hospitals).

Admissions to city hospitals

There were 2714 admissions of Aboriginal adults from country areas to city hospitals in the two-year period. One-tenth (10.1%) of these admissions were for one of the eight selected health problems examined in this study (circulatory disease, digestive disease, endocrine disease, genitourinary disease, injury, kidney disease, mental health and respiratory disease). These disease groups accounted for the same proportion of non-Aboriginal admissions (10.0%).

The rate of admissions for Aboriginal adults was substantially higher (65%) than for the non-Aboriginal population. The Hills Mallee Southern SA Health region had a significantly higher admission rate for Aboriginal people than the average, and the South East region had a significantly lower rate.

Admissions for particular health problems

There were 70 admissions of Aboriginal people for mental health conditions, a rate almost five times that of the non-Aboriginal population. Notably, no admissions were recorded for Aboriginal people aged 60 years and over. Rates in the Northern and Far Western regions were lower than those for non-Aboriginal people.

The rate of admissions for respiratory disease (46 admissions) was twice as high for Aboriginal as non-Aboriginal people, with substantially higher rates at older ages—more than five times those in the non-Aboriginal population. People from the Eyre region had a rate of admission more than twice the average of the overall Aboriginal admission rate.

Aboriginal people from the Hills Mallee Southern region, and those from the Inner Regional remoteness class, had significantly higher admission rates for circulatory disease than non-Aboriginal people from those regions.

Cost of admissions

The average cost per admission was significantly higher for Aboriginal people than non-Aboriginal people overall (27% higher for the combined disease/condition groups) and for admissions for circulatory disease (54% higher).

Average length of stay

The average length of stay per admission was longer in the Aboriginal than non-Aboriginal populations, both overall (23% longer) and for admissions for circulatory disease (32% longer). The actual number of days was 5.96 days compared with 4.84 days for all condition/disease groups combined; and 5.47 compared with 4.13 days for circulatory disease.

Admissions of Aboriginal children (less than 16 years old)

There were 505 admissions of Aboriginal children aged less than 16 years from country areas to city hospitals in 2006/07 and 2007/08. Almost three-quarters (71.8%) of these admissions were for one of four selected health problems examined in this study (acute upper respiratory infections; low birth weight/prematurity; injury, poisoning and other external causes; and intestinal infectious diseases). However, these disease groups accounted for a much lower proportion of non-Aboriginal admissions (38.7%).

Admission rates of Aboriginal children for these health problems were 67 per cent higher than for non-Aboriginal children. But admission rates for Aboriginal children for all health problems were lower than the admission rates for non-Aboriginal children (90%). This finding suggests that either Aboriginal children do not need as many admissions for other health problems, or that they are missing out on many admissions. Again, poor identification of patients as Aboriginal is also likely to be an issue.

High admission rates for younger children

Of all admissions for these health problems, 81 per cent of Aboriginal children were aged 0 to 4 years, compared with 53.9 per cent of non-Aboriginal children.

Admissions from different regions

Admission rates varied by region, with Aboriginal children in Eyre having a 57 per cent higher rate compared with the overall Aboriginal rate. Aboriginal children in the South East and Hills Mallee Southern regions had lower rates (65% and 37% respectively).

Admissions for particular health problems

Of admissions for the selected conditions, those due to injury, poisoning and other external causes comprised the greatest proportion of all admissions for both Aboriginal (51.5%) and non-Aboriginal children (54.0%). However, admission rates for these conditions were 59 per cent higher for Aboriginal children than for non-Aboriginal children, with a much larger differential in the 0 to 4 year age group.

The largest difference in admission rates between Aboriginal and non-Aboriginal children was for acute upper respiratory infections, with the rate for Aboriginal children just over twice that of non-Aboriginal children (mostly of children aged 0 to 4 years in both groups). Aboriginal children in Eyre and Wakefield had the most elevated admission rates (more than eight times and more than six times respectively).

Admissions related to low birth weight and prematurity were 79 per cent higher for Aboriginal than non-Aboriginal children.

Admissions for intestinal infectious diseases were 50 per cent higher in Aboriginal than non-Aboriginal children. Admission rates were highest for Aboriginal children from the Eyre SA Health region (almost twice the level expected for this population, and more than seven times that for non-Aboriginal children in the region). Rates for Aboriginal children in Very Remote areas were more than 50 per cent higher than those for non-Aboriginal children.

Length of stay

On average, country Aboriginal children admitted for the four health problems stayed in hospital 49 per cent longer than non-Aboriginal children (6.7 days compared with 4.5 days).

The greatest difference in average length of stay was for intestinal infectious diseases (more than two and a half times), and the difference was 50 per cent for acute upper respiratory infection.

Introduction

This report presents analysis of data on the utilisation of city hospitals by country Aboriginal people in South Australia. It forms part of the Managing Two Worlds Together project, which aims to strengthen understanding of the barriers against access to good quality care in the mainstream health system for Aboriginal people from rural and remote areas of South Australia. Data for people with a usual address in country South Australia who were admitted to a public acute hospital in metropolitan Adelaide form the basis of much of the analysis.[1] Analyses were performed separately for those aged less than 16 years and those aged 16 years and over.

Data on admissions[2] from South Australian public acute hospitals over the 2006/07 and 2007/08 financial years were provided by SA Health from the Integrated South Australian Activity Collection (ISAAC) overall, and for selected conditions (the selection was based on an earlier analysis to ascertain the conditions responsible for the largest number of admissions). The dataset contained the Statistical Local Area (SLA) of the usual address of the patient and his/her age, gender, Indigenous status (Aboriginal,[3] non-Aboriginal), principal diagnosis, length of stay, cost of stay and location of hospital (country or metropolitan).

Data caveats

1. **Admission rates for Aboriginal people are likely to be understated.** This is a result of several factors, including poor identification in the hospital administrative records of Aboriginal people; loss from the data of people who live in the Anangu Pitjantjatjara Yankunytjatjara Lands or other remote areas and are admitted to a hospital in the Northern Territory; and poor coding (e.g. for a person who lives in the Lands or other remote areas and is coded to an address in Adelaide where they have family or friends, or where their families are living while they are in hospital). *These effects may vary between regions*.

   Further, some admissions do not have an Indigenous status recorded. For example, 6.8 per cent of admissions of adults to public acute hospitals in metropolitan Adelaide of Aboriginal people living in country South Australia for the conditions studied did not have an Indigenous status; for those under 16 years of age the proportion was 3.7 per cent. Although these numbers represent a small proportion of total admissions, for adults they are larger than the number of admissions identified as being of Aboriginal people; and, for children, about 40 per cent of the number of children identified as being Aboriginal. *Therefore rates for admissions of Aboriginal people, and ratios of rates between Aboriginal and non-Aboriginal people, should be seen as most likely describing the low point of a range*.

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1 'Country South Australia' refers to the area of the State outside of metropolitan Adelaide: metropolitan Adelaide covers the two metropolitan health and four metropolitan State regions in existence in February 2010.

2 The technically correct terminology is *separation*, but the more commonly used term of *admission* is used in this report.

3 The term *Aboriginal* as used here includes persons identifying as Torres Strait Islanders.

It should be noted that this poor level of identification exists despite the considerable efforts that have been made to identify Aboriginal people in the admissions data (including by Aboriginal Hospital Liaison Officers) and 30 per cent additional inpatient funding for patients identified as being Aboriginal.

2. **Small numbers have been removed from tables.** In this report small numbers of admissions (e.g. under five) in tables have been removed to avoid any risk of breach of privacy.

3. **Fewer details shown for conditions with fewer than 50 admissions.** Where there were fewer than 50 admissions for a disease/condition, details of distribution by age, region, socioeconomic status and remoteness are not generally shown.

Data were also obtained from the Open Architecture Clinical Information System (Oacis). The Oacis data can be used to analyse data for individuals, including the number of admissions per individual over a specified period. This provides the potential to understand the extent to which higher rates of admission reflect the admission of more individuals and/or more admissions per individual.

Structure of the report

This section concludes with a discussion of the methods and data sources. The main analysis is provided in the following sections—first, about adults (people aged 16 years and over) and then about children (aged less than 16 years). A short section follows describing the information obtained from an analysis of the Oacis data. The report concludes with a summary of the main findings.

Methods and data sources

Calculation of rates

Data for both age groups for both Aboriginal and non-Aboriginal people were indirectly age standardised according to their respective weighted average populations for June 2006, 2007 and 2008. For Aboriginal people, the populations used were experimental estimates from the Australian Bureau of Statistics (ABS 2009a). For non-Aboriginal people, populations were calculated from the weighted populations over the period 2006 to 2008 (ABS 2009b), less the figures obtained for the Aboriginal population.

Rates are presented as the number of admissions per 100,000 people. The Standardised Ratio (SR) is also presented and shows the extent to which the rate for the particular group (e.g. Aboriginal people) varies from (i.e. is above or below) the level expected if the rates for the South Australian population had applied in the region, remoteness area, age group etc. For example, if the SR for a region is 130, this means that the number of admissions in that region is 30 per cent higher than would be the case if the admission rate for the State as a whole had applied in that region: it is often written as 30 per cent more admissions than expected. This calculation is undertaken for each five-year age group, thereby adjusting for differences in the age profile of the region compared to the State as a whole—hence the term *age standardisation*.

Readers should note that a person may have been admitted on more than one occasion; each admission is counted separately.

Rate ratios

Rate ratios are used as the main comparator between admission rates for the Aboriginal and non-Aboriginal populations. A rate ratio is the ratio of two rates—for example, the ratio of the rate for the Aboriginal to the rate for the non-Aboriginal population, or between the most disadvantaged socioeconomic status group (Quintile 5) and the least socioeconomically

disadvantaged group (Quintile 1). A rate ratio of 1.87 indicates the rate for the comparator (e.g. the Aboriginal population) is 87 per cent higher than the reference rate (the non-Aboriginal population); a rate ratio of 0.54 indicates the rate is 46 per cent lower. Note that rate ratios greater than 200, such as 2.44 (one rate is elevated by more than 100%), are expressed as the comparator rate being 2.44 times the reference rate.

Confidence intervals

Confidence intervals (CIs) are reported at the 95 per cent level for the ratio of Aboriginal to non-Aboriginal admissions for the total admission rates of all diseases. This reflects the lower and upper levels of the true ratio at a 95 per cent confidence level. Tests for statistically significant differences between Aboriginal and non-Aboriginal admission rates were performed using two-tailed statistical tests, which test to see if the Aboriginal admission rate is higher than the non-Aboriginal admission rate, as well as vice versa.[4] Although applying to both the SRs and the rates, the indicator of statistical significance (*, or **) has only been shown against the SR.

In the age tables in this report tests have only been applied to the totals, and not to each age group. Statistical significance has only been added to the socioeconomic status and remoteness classes where there were ten or more admissions in the highest socioeconomic status and Major Cities classes: as a result of the application of this rule, the only data for which statistical significance could be calculated is in Table 6.

Disease groups analysed

A preliminary analysis was undertaken on a dataset of hospital admissions in South Australia held by the Public Health Information Development Unit. The dataset allowed the identification of Aboriginal adults (16 years and over) and children (0 to 15 years) living in country South Australia by disease/condition: although it did not identify whether the admission was to a metropolitan or country hospital, it was sufficient to guide the choice of the disease/condition groups. From a review of this output, eight disease/condition groups were chosen for the analysis for adults, and four for children. These are listed below.

Adults *(ages 16 years and over)*

Data are presented for admissions for the following groupings of diseases/conditions (the codes from the International Classification of Diseases used to identify these diseases are listed in the Appendix to this report):

- circulatory disease
- digestive disease
- endocrine disease
- genitourinary disease
- injury
- kidney disease
- mental health
- respiratory disease.

4 A one-tailed test would increase the probability of detecting a statistically significant difference in admission rates if there was prior knowledge to predict that, say, Aboriginal people may have a higher admission rate for a particular disease than non-Aboriginal people. The use and validity of one-tailed tests is debated regularly among the statistical community. In the case of this report, for circulatory disease admissions for those aged 16 years and over there was not a statistically significant difference between Aboriginal and non-Aboriginal admission rates; however, this was significant with a one-tailed test testing that the Aboriginal rate was higher than the non-Aboriginal rate. It should also be noted that statistical significance does not necessarily reflect clinical significance.

Children *(ages 0 to 15 years)*

Data were collected for all admissions of children aged from 0 to 15 years. However, admissions for the most common diagnoses among Aboriginal children were used for this analysis in order to maximise the potential for meaningful results, given the relatively small size of the Aboriginal child population.

The four disease groups were:

- acute upper respiratory infections
- disorders related to low birth weight/short gestation
- injury, poisoning and certain other consequences of external causes
- intestinal infectious diseases.

Area of analysis

Data are presented at two regional levels—SA Health region and State region.

Data are also presented by socioeconomic groupings of areas and remoteness:

- By socioeconomic status, based on the ABS Index of Relative Socio-economic Disadvantage (IRSD), a summary measure of socioeconomic status produced from a number of socioeconomic factors from the 2006 ABS Census. Each SLA in country South Australia was assigned an IRSD score; the SLAs were then ranked by that score and divided into five groups (quintiles) of approximately equal (20%) populations. Rates, and SRs, are calculated for admissions for each of the five groups. The quintiles are based on the total population (as the standard for comparison), not by Indigenous status or age group. The quintiles are based on country SLAs, not on SLAs across the whole State, and reflect relative levels of disadvantage of the whole population, not solely children and not solely Aboriginal people.
- By remoteness, based on the ABS remoteness classification.

Data sources

Data on admissions to South Australian public acute hospitals over the 2006/07 and 2007/08 financial years were provided by SA Health from ISAAC for selected conditions (the selection was based on an earlier analysis to ascertain the conditions responsible for the largest number of admissions). The dataset contained the SLA of the usual address of the patient and his/her age, gender, Indigenous status (Aboriginal, non-Aboriginal), principal diagnosis, length of stay, cost of stay and location of hospital (country or metropolitan).

Admissions data were also obtained from Oacis. The Oacis data can be used to analyse data for individuals, including the number of admissions per individual over a specified period. This provides the potential to understand the extent to which higher rates of admission reflect the admission of more individuals and/or more admissions per individual.

The cost per admission was provided for each hospital admission from cost weight data.

For those aged 16 years and over, cost data were obtained for the specific diseases; data were missing for four of the 278 Aboriginal people (1.4%) and for 150 of the 6,169 non-Aboriginal people (2.4%).

For those aged less than 16 years, cost data were obtained for all hospital admissions of country residents from metropolitan public hospitals for both Aboriginal and non-Aboriginal children, regardless of disease condition.

Hospital Admissions—Patients Aged 16 Years and Over

This section presents the analysis of data on admissions of people aged 16 years and over to public acute hospitals in South Australia (2006/07 and 2007/08). The first two tables provide details of admissions for all South Australians at these ages, by Indigenous status, regardless of their area of residence (metropolitan or country). The remainder of the section focuses on eight health problems that are the most common reasons for admission of Aboriginal people from country South Australia to city hospitals.

Admissions for the eight disease/condition groups combined—all South Australian residents admitted to a public acute hospital

Tables 1 and 2 provide a comparison of admissions for all South Australians aged 16 years and over, regardless of their area of residence (metropolitan or country), to public acute hospitals for both Aboriginal and non-Aboriginal people for the eight selected diseases/conditions. Table 1 shows admissions to public acute hospitals in country South Australia. Table 2 shows admissions to public acute hospitals in metropolitan Adelaide.

Admission rates of Aboriginal people to country hospitals were more than six-and-a-half times those of non-Aboriginal people (a rate ratio of 6.59), with the greatest differentials in the 55 to 59 year age group (a rate ratio of 23.54) and the 40 to 44 (17.05) and 45 to 49 (17.83) year age groups (Table 1).

Admission rates of Aboriginal people to public acute hospitals in metropolitan Adelaide were lower than admission rates to country hospitals (68.8% of the country hospital rate), whereas admission rates for non-Aboriginal people were substantially higher (2.45 times). Despite the lower overall rate, the differential in admissions rates to hospitals in metropolitan Adelaide, although much smaller than in country South Australia, was still a substantial 85 per cent (admissions of Aboriginal people were higher than those of non-Aboriginal people (a rate ratio of 1.85)), with the greatest differentials in the 35 to 39 and 45 to 49 year age groups (Table 2).

Admissions for the eight disease/condition groups combined—country residents admitted to metropolitan public acute hospitals

This section comprises the main analysis for adults, restricted to people living in country South Australia who were admitted to public acute hospitals in metropolitan Adelaide.

There were 278 admissions of Aboriginal people and 6,169 admissions of non-Aboriginal people from country areas to metropolitan public acute hospitals over the two years 2006/07 and 2007/08 for these eight disease/condition groups (Table 3).

Table 1: Admissions to public acute hospitals in country South Australia, by Indigenous status and age, all selected diseases/conditions

Age group	Number		Rate per 100,000		Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
16 to 19 years	79	547	1,552.5	332.7	4.67
20 to 24 years	104	656	1,993.5	305.5	6.53
25 to 29 years	134	609	3,279.3	312.5	10.49
30 to 34 years	153	724	3,721.8	366.0	10.17
35 to 39 years	204	830	5,293.9	375.6	14.09
40 to 44 years	234	885	6,714.8	393.8	17.05
45 to 49 years	226	1,040	8,038.8	450.8	17.83
50 to 54 years	139	1,054	6,289.7	490.2	12.83
55 to 59 years	214	1,236	14,371.2	610.5	23.54
60 to 64 years	89	1,493	8,342.1	875.3	9.53
65 to 69 years	92	1,632	12,700.6	1,247.7	10.18
70 to 74 years	40	1,724	8,005.5	1,582.2	5.06
75 plus years	34	6,402	4,917.6	2,661.9	1.85
Total	**1,742**	**18,832**	**4,930.1**	**748.3**	**6.59 (6.27–6.92)****

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate. Significance only tested for at the 'total' level
**Statistically significant, at the 1% confidence level

Table 2: Admissions to public acute hospitals in metropolitan Adelaide, by Indigenous status and age, all selected diseases/conditions

Age group	Number		Rate per 100,000		Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
16 to 19 years	49	935	962.9	568.7	1.69
20 to 24 years	72	1,231	1,380.1	573.4	2.41
25 to 29 years	84	1,302	2,055.7	668.1	3.08
30 to 34 years	117	1,431	2,846.1	723.4	3.93
35 to 39 years	163	1,676	4,229.9	758.4	5.58
40 to 44 years	144	2,072	4,132.2	922.0	4.48
45 to 49 years	153	2,419	5,442.2	1,048.5	5.19
50 to 54 years	110	2,527	4,977.5	1,175.2	4.24
55 to 59 years	105	3,385	7,051.3	1,672.0	4.22
60 to 64 years	99	3,630	9,279.5	2,128.0	4.36
65 to 69 years	45	4,170	6,212.2	3,188.0	1.95
70 to 74 years	40	4,724	8,005.5	4,335.4	1.85
75 plus years	18	16,709	2,603.5	6,947.5	0.37
Total	**1,199**	**46,211**	**3,393.3**	**1,836.3**	**1.85 (1.75–1.96)****

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate. Significance only tested for at the 'total' level
**Statistically significant, at the 1% confidence level

Table 3: Admissions of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and by age for selected diseases/conditions

Age group	Number			Rate per 100,000			Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Not known	Aboriginal	Non-Aboriginal	Not known	
16 to 19 years	14	101	21	556.2	235.9	46.4	2.36
20 to 24 years	19	111	30	730.7	251.2	64.1	2.91
25 to 29 years	20	127	19	960.0	289.0	41.3	3.32
30 to 34 years	22	144	23	982.4	295.2	45.1	3.33
35 to 39 years	24	223	27	1,165.2	372.3	43.6	3.13
40 to 44 years	28	340	24	1,493.3	538.8	36.9	2.77
45 to 49 years	41	357	35	2,744.6	535.8	51.4	5.12
50 to 54 years	26	405	24	2,183.4	653.1	38.0	3.34
55 to 59 years	27	615	71	3,134.3	1,035.7	117.8	3.03
60 to 64 years	23	686	32	3,782.9	1,301.1	60.0	2.91
65 to 69 years	16	800	35	3,603.8	1,928.4	83.5	1.87
70 to 74 years	13	790	35	4,329.8	2,412.7	105.9	1.79
75 plus years	5	1,470	91	1,347.4	2,273.4	139.9	0.59
Sub-total (selected diseases/ conditions)	278	6,169	467	1,491.1	904.1	66.6	1.65 (1.46–1.86)**
Other diseases/ conditions	2,463	55,574	3,279	13,210.7	8,144.2	480.5	1.62 (1.55–1.70)**
Total	**2,741**	**61,743**	**3,746**	**14,701.8**	**9,048.2**	**549.0**	**1.62 (1.56–1.70)****

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate. Significance only tested for at the 'total' level
**Statistically significant, at the 1% confidence level

Table 4: Admissions of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region, all selected diseases/conditions

Region	Number		SR		Rate per 100,000		Rate ratio
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	64	2,125	173.3**	115.8**	2,584.3	1,046.8	2.47
South East	##	675	..	80.0**	..	723.6	..
Wakefield	27	1,759	89.1	115.0**	1,328.7	1,039.3	1.28
Mid North	9	372	67.4	78.0**	1,005.3	704.9	1.43
Riverland	24	398	136.8	85.9**	2,039.4	776.8	2.63
Eyre	45	293	123.4	64.0**	1,839.7	578.7	3.18
Northern & Far Western	106	547	83.4	97.3	1,243.5	879.5	1.41
Total	**278**	**6,169**	**100.0**	**100.0**	**1,491.1**	**904.1**	**1.65**

##Numbers have been excluded where there were fewer than five admissions
^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution
**Statistically significant, at the 1% confidence level
..Not applicable

Note of further caution in using these data

Admissions of Aboriginal people to hospitals in metropolitan Adelaide for these disease/condition groups represent just less than one-quarter (23.2%) of admissions to these hospitals regardless of residence (278 of the 1,199 admissions in Table 2). This proportion appears to be low, given that just over half (51.1%) of the Aboriginal population lives in country South Australia, and the severity of illnesses they experience is often likely to require hospitalisation in hospitals with facilities and staff only available in metropolitan Adelaide. The low proportion found in this analysis is therefore likely to reflect issues of access, as well as under-identification of Aboriginal people in the hospital records.

The situation appears similar for the non-Aboriginal population, with admissions for these disease/condition groups representing 13.3 per cent of admissions, when the population proportion is 26.9 per cent. However, this understates the number of admissions for this group, as some non-Aboriginal children would be admitted to private hospitals not included in this analysis.

Admissions by age

The rate of admissions for Aboriginal people was substantially higher (65%) than for the non-Aboriginal population. However, this pattern was not consistent in all age groups, with most differentials somewhat larger. Rates were also substantially higher than for non-Aboriginal people in all age groups except the 75 years and over age group (where it was 41% lower). The largest differential was found in the 45 to 49 year age group, where the admission rate for Aboriginal people was more than five times that of non-Aboriginal people. This may be a reflection of Aboriginal people developing health problems that are often associated with ageing (and requiring hospitalisation) at a much earlier age than non-Aboriginal people.

In the 75 years and over age group, Aboriginal people had an admission rate some 41 per cent lower than for non- Aboriginal people. It may be that Aboriginal people who reached 75 years of age and over were in somewhat better health; it may also be that they did not go to hospital in these later years of their lives, or at least not to hospitals in metropolitan Adelaide.

There were 467 admissions where the Indigenous status of the person was not given. Of these, 71 were in the 55 to 59 year age group; all other age groups had between 19 and 38 of these admissions. More than half of the 467 admissions were of people from two regions: 143 were from the Hills Mallee Southern region and 134 were from the Wakefield region.

The last row of Table 3 provides the number of admissions of people from country areas to metropolitan public acute hospitals for all diseases/conditions, while the second to last row reflects all admissions other than for the eight selected diseases/conditions that form the main analysis here. Although the Aboriginal rate was higher, both the Aboriginal and non-Aboriginal rates were elevated to a similar extent, with the selected diseases/conditions comprising 10.1 per cent of admissions for any disease/condition for Aboriginal people, and 11.1 per cent for non-Aboriginal people.

Admissions by region

SA Health region

Admission rates for Aboriginal people were 73 per cent higher in the Hills Mallee Southern region (Table 4) than expected from the State rates.

The rate of admissions was higher for Aboriginal people than non-Aboriginal people in all SA Health regions in country South Australia, with the exception of South East. The greatest disparity between admission rates for Aboriginal and non-Aboriginal people was in the Eyre region, with more than three times the admission rate. The Hills Mallee Southern and Riverland regions had admission rates for Aboriginal people approximately two-and-a-half times those of non-Aboriginal people. The Wakefield, Mid North, and Northern and Far Western regions showed smaller but clear differences in admission rates.

Table 5: Admissions of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and State region, all selected diseases/conditions

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Adelaide Hills	10	752	206.0*	140.2**	3,071.5	1,267.1	2.42
Murray and Mallee	73	916	176.8**	92.8**	2,636.4	839.2	3.14
Fleurieu and Kangaroo Island	5	855	60.0	110.3**	894.7	997.2	0.90
Limestone Coast	##	675	..	80.0**	..	723.6	..
Barossa	11	1,078	86.4	131.2**	1,287.7	1,186.3	1.09
Yorke and Mid North	25	1,050	81.8	88.8**	1,220.3	802.6	1.52
Eyre and Western	58	574	109.4	77.6**	1,631.6	701.4	2.33
Far North	93	269	83.8	95.0	1,250.0	859.0	1.46
Total	**278**	**6,169**	**100.0**	**100.0**	**1,491.1**	**904.1**	**1.65**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

Table 6: Admissions of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status, all selected diseases/conditions

Quintile	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	12	1,127	96.1	109.2	1433.5	987.0	1.45
2	7	1,058	37.3	83.9	555.6	758.7	0.73
3	53	1,761	110.7	116.8	1650.4	1055.9	1.56
4	37	1,259	105.8	100.2	1577.7	905.8	1.74
5—most disadvantaged	169	964	104.6	86.8	1560.0	784.3	1.99
Total	**278**	**6,169**	**100.0**	**100.0**	**1491.1**	**904.1**	**1.65**
Rate ratio#	**..**	**..**	**1.09**	**0.79***	**1.09**	**0.79**	**..**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rates in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

..Not applicable

Table 7: Admissions of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and remoteness, all selected diseases/conditions

Remoteness class	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Major Cities	8	540	168.7	166.5	2,515.1**	1,505.0	1.67
Inner Regional	59	2,963	124.9	116.6	1,861.8**	1,054.0	1.77
Outer Regional	136	2,150	107.4	84.1	1,602.1**	760.2	2.11
Remote	14	397	60.8	64.8	906.5**	585.9	1.55
Very Remote	61	120	80.0	89.0	1,192.5	804.2	1.48
Total	**278**	**6,169**	**100.0**	**100.0**	**1,491.1**	**904.1**	**1.65**
Rate ratio#	**..**	**..**	**0.47**	**0.53**	**0.47**	**0.53**	**..**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the Very Remote areas to the Major Cities areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

**Statistically significant, at the 1% confidence level

..Not applicable

Of the 467 admissions without an Indigenous status, 143 were from the Hills Mallee Southern region; 52 from South East; 134 from Wakefield; 35 from Mid North; 32 from Riverland; 24 from Eyre; and 47 from the Northern and Far Western region.

State region

The highest rate of admissions for Aboriginal people—more than 3,000 admissions per 100,000 population—was in Adelaide Hills, just over twice the level expected from the State rates for this population, and almost two-and-a-half times the corresponding rate for non-Aboriginal people in this region (Table 5).

Aboriginal people had higher admission rates than non-Aboriginal people in all State regions other than in Fleurieu and Kangaroo Island and Limestone Coast. The greatest difference in admission rates between the Aboriginal and non-Aboriginal populations was in the Murray and Mallee region, with a rate more than three times as high for Aboriginal people when compared with non-Aboriginal people.

Admissions by socioeconomic status

Aboriginal people had a slightly higher rate (8.8%) of hospital admissions in the most disadvantaged (when compared with the least disadvantaged) areas, and a higher rate of admission than non-Aboriginal people in all but the second quintile (where there were only seven admissions); the largest differential was recorded for people living in the most disadvantaged areas (Table 6). Non-Aboriginal people had a higher rate of admission in the least disadvantaged quintile compared to the most disadvantaged quintile, perhaps related to their overall health status and their use of private hospitals.

Admissions by remoteness

The hospital admission rate for Aboriginal people decreased with remoteness, apart from the lower rate in the Remote areas (Table 7). Although rates ranged from 906 admissions per 100,000 people per year (Remote) to 2,515 admissions per 100,000 people per year (Major Cities), none of the differences was statistically significant.

The rate for Aboriginal people was around one-and-a-half to two times that of non-Aboriginal people when examined by remoteness. Outer Regional areas of South Australia showed the greatest differential in rates, with more than twice as many admissions (a rate ratio of 2.11, although not statistically significant) for Aboriginal people as non-Aboriginal people.

Admissions for circulatory disease—country residents admitted to metropolitan public acute hospitals

Admissions by age

Aboriginal people had substantially higher hospital admission rates for circulatory diseases than non-Aboriginal people in all but the oldest age groups (Table 8). In the 35 to 39, 40 to 44 and 45 to 49 year age groups, Aboriginal people recorded admission rates more than seven times those of non-Aboriginal people. Although the overall rate of admissions for Aboriginal people was just 21 per cent higher than for non-Aboriginal people (a rate ratio of 1.21), it would be much higher if not for non-Aboriginal people aged 65 years and over accounting for nearly 60 per cent of all non-Aboriginal admissions for circulatory disease.

Admissions by region

SA Health region

The rate of hospital admissions was greater for Aboriginal people than non-Aboriginal people in each of the three SA Health regions with ten or more admissions (Table 9). The greatest disparities were in the Hills Mallee Southern and Eyre regions, with more than twice the admission rates for Aboriginal people.

Table 8: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for circulatory disease, by Indigenous status and age

Age group	Number		Rate per 100,000		Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
16 to 34 years	##	27	..	15.0	..
35 to 39 years	10	37	485.5	61.8	7.86
40 to 44 years	19	90	1,013.3	142.6	7.11
45 to 49 years	22	139	1,472.7	208.6	7.06
50 to 54 years	14	223	1,175.7	359.6	3.27
55 to 59 years	14	381	1,625.2	641.6	2.53
60 to 64 years	13	449	2,138.1	851.6	2.51
65 to 69 years	5	524	1,126.2	1,263.1	0.89
70 to 74 years	6	570	1,998.4	1,740.8	1.15
75 plus years	##	905	..	1,399.6	..
Total	**111**	**3,345**	**595.4**	**490.2**	**1.21 (1.00–1.47)**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution; significance only tested for at the 'total' level

..Not applicable

Table 9: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for circulatory disease, by Indigenous status and SA Health region

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	28	1,069	193.6**	105.8	1,152.5	518.4	2.22
South East	0	419	..	94.5	..	463.2	..
Wakefield	9	971	67.5	116.2**	402.1	569.7	0.71
Mid North	##	212	..	79.7**	..	390.6	..
Riverland	9	214	128.9	85.2*	767.7	417.4	1.84
Eyre	16	165	113.2	67.0**	673.9	328.6	2.05
Northern & Far Western	46	295	92.0	101.1	547.5	495.6	1.10
Total	**111**	**3,345**	**100.0**	**100.0**	**595.4**	**490.2**	**1.21**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

State region

Aboriginal people had higher admission rates than non-Aboriginal people in each of the three State regions with ten or more admissions (Table 10). Of these, the greatest difference in admission rates was in the Murray and Mallee region, with a rate recorded for Aboriginal people of more than two-and-a-half times that of non-Aboriginal people.

Admissions by socioeconomic status

Aboriginal people had a 7 per cent higher rate of admissions in the most disadvantaged areas when compared with the least disadvantaged areas, although the number of admissions in the least disadvantaged areas was relatively small (Table 11). Although not statistically significant, the rate of admission of Aboriginal people living in the most disadvantaged areas was almost 60 per cent higher than that of non-Aboriginal people.

Admissions by remoteness

Only one statistically significant result was found for the admission rate of Aboriginal people by remoteness, with the Inner Regional areas recording a statistically significantly higher rate of admissions for circulatory disease than the State rate (Table 12). This may be an indication that Aboriginal status is more relevant in determining the admission rate than where the person comes from; however, the loss of people from the most remote areas (in particular) affects these comparisons.

The admission rate for Aboriginal people was much higher than the rate for non-Aboriginal people in the Inner and Outer Regional areas of South Australia and in the Very Remote areas. The numbers of Aboriginal admissions in the Major Cities and Remote areas were too small to be reliable.

Table 10: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for circulatory disease, by Indigenous status and State region

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Adelaide Hills	##	369	..	134.3**	..	658.2	..
Murray and Mallee	31	475	188.9**	88.2**	1,124.6	432.1	2.60
Fleurieu and Kangaroo Island	##	439	..	97.9	..	479.9	..
Limestone Coast	0	419	..	94.5	..	463.2	..
Barossa	##	565	..	130.8**	..	641.4	..
Yorke and Mid North	8	615	59.8	92.0*	356.3	451.2	0.79
Eyre and Western	23	334	110.8	84.8**	659.5	415.6	1.59
Far North	39	129	89.5	88.7	532.7	434.7	1.23
Total	**111**	**3,345**	**100.0**	**100.0**	**595.4**	**490.2**	**1.21**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

Table 11: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for circulatory disease, by Indigenous status and socioeconomic status

Quintile	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	5	587	103.7	111.3	617.5	545.8	1.13
2	##	580	..	83.7	..	410.1	..
3	21	929	104.0	112.2	619.1	550.0	1.13
4	11	732	77.0	105.2	458.6	515.9	0.89
5—most disadvantaged	70	517	111.4	86.1	663.3	421.9	1.57
Total	**111**	**3,345**	**100.0**	**100.0**	**595.4**	**490.2**	**1.21**
Rate ratio#	**..**	**..**	**1.07**	**0.77**	**1.07**	**0.77**	**..**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rates in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

..Not applicable

Table 12: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for circulatory disease, by Indigenous status and remoteness

Remoteness class	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Major Cities	##	278	..	160.7**	..	787.8	..
Inner Regional	29	1,528	155.3*	111.1**	924.7	544.6	1.70
Outer Regional	50	1,242	96.8	88.9**	576.3	435.8	1.32
Remote	5	246	52.2	75.2**	310.5	368.5	0.84
Very Remote	25	51	86.4	70.7*	514.3	346.4	1.48
Total	**111**	**3,345**	**100.0**	**100.0**	**595.4**	**490.2**	**1.21**
Rate ratio#	**..**	**..**	**..**	**0.44**	**..**	**0.44**	**..**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the Very Remote areas to the Major Cities areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

Admissions for digestive disease—country residents admitted to metropolitan public acute hospitals

Only 13 Aboriginal people from country areas were admitted to metropolitan hospitals for digestive disorders, so the numbers are considered to be too small to be reliable when disaggregated by age, region, socioeconomic status or remoteness.

Admissions for endocrine disease—country residents admitted to metropolitan public acute hospitals

From July 2006 to June 2008 there were 23 admissions of country residents in metropolitan public acute hospitals for endocrine disease. Only one of these was a person identified as being Aboriginal.

Admissions for genitourinary disease—country residents admitted to metropolitan public acute hospitals

Over the two years there were 62 admissions of country residents in metropolitan hospitals for genitourinary disease. Three of these were people who identified as being Aboriginal. The numbers are considered to be too small to be reliable when disaggregated by age, region, socioeconomic status or remoteness.

Admissions for injuries—country residents admitted to metropolitan public acute hospitals

There were 55 admissions of country residents in metropolitan hospitals for injuries. Five of these were identified as being admissions of Aboriginal people. The numbers are considered to be too small to be reliable when disaggregated by age, region, socioeconomic status or remoteness.

Admissions for kidney disease—country residents admitted to metropolitan public acute hospitals

There were 29 admissions for kidney disease of Aboriginal people from country areas. The numbers are considered to be too small to be reliable when disaggregated by age, region, socioeconomic status or remoteness.

Admissions for mental health conditions—country residents admitted to metropolitan public acute hospitals

Admissions by age

There were 70 admissions of Aboriginal people and 532 of non-Aboriginal people from country areas to metropolitan public hospitals over the 2006/07 and 2007/08 period for mental health conditions (Table 13). The rate of admissions for Aboriginal people was almost five times the rate of non-Aboriginal people. However, this pattern was not consistent in all age groups.

The rate of admissions for Aboriginal people was substantially greater than that of non-Aboriginal people in each of the age groups with ten or more admissions of Aboriginal people. Among this group the 25 to 29 year age group had the highest admission rate for Aboriginal people, almost eight times that of the corresponding rate for non-Aboriginal people. There were 130 admissions where the Indigenous status of the person was not given.

Admissions by region

SA Health region

The rate of hospital admissions was substantially greater for Aboriginal people than for non-Aboriginal people in the four country SA Health regions with ten or more admissions (Table 14). The highest rate of admissions for Aboriginal people was in the Hills Mallee Southern region. This rate was statistically significantly higher at the 1 per cent confidence level than the overall rate for Aboriginal people.

State region

Aboriginal people also had substantially higher admission rates than non-Aboriginal people in the four State regions with more than ten admissions; in both Murray and Mallee, and Yorke and Mid North regions there were more than 600 admissions per 100,000

Table 13: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for mental health conditions, by Indigenous status and age

Age group	Number		Rate per 100,000		Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
16 to 19 years	10	49	397.3	114.5	3.47
20 to 24 years	11	57	423.0	129.0	3.28
25 to 29 years	16	43	768.0	97.8	7.85
30 to 34 years	14	64	625.2	131.2	4.77
35 to 39 years	6	87	291.3	145.2	2.01
40 to 44 years	##	64	..	101.4	..
45 to 49 years	5	41	334.7	61.5	5.44
50 to 54 years	##	21	..	33.9	..
55 to 59 years	##	39	..	65.7	..
60 to 64 years	0	26	..	49.3	..
65 to 69 years	0	12	..	28.9	..
70 to 74 years	0	8	..	24.4	..
75 plus years	0	21	..	32.5	..
Total	**70**	**532**	**375.5**	**78.0**	**4.82 (3.70–6.19)****

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution; significance only tested for at the 'total' level

**Statistically significant, at the 1% confidence level

..Not applicable

Table 14: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for mental health conditions, by Indigenous status and SA Health region

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	21	188	224.8**	125.9**	843.9	98.2	8.59
South East	0	45	..	55.5**	..	43.3	..
Wakefield	10	173	169.6	135.3**	636.9	105.5	6.04
Mid North	##	30	..	83.2	..	64.9	..
Riverland	7	24	155.4	60.4*	583.3	47.1	12.38
Eyre	10	20	98.2	49.4**	368.7	38.5	9.58
Northern & Far Western	19	52	57.0	90.4	213.9*	70.4	3.04
Total	**70**	**532**	**100.0**	**100.0**	**375.5**	**78.0**	**4.82**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

Table 15: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for mental health conditions, by Indigenous status and State region

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Adelaide Hills	##	74	..	130.7*	..	101.9	..
Murray and Mallee	25	74	237.3**	89.3	891.1	69.6	12.80
Fleurieu and Kangaroo Island	0	64	..	129.2*	..	100.7	..
Limestone Coast	0	45	..	55.5**	..	43.3	..
Barossa	##	115	..	145.6**	..	113.5	..
Yorke and Mid North	10	88	168.9	104.1	634.2	81.2	7.81
Eyre and Western	11	41	75.3	59.8**	282.7	46.6	6.07
Far North	18	31	62.1**	104.0	233.3	81.1	2.88
Total	**70**	**532**	**100.0**	**100.0**	**375.5**	**78.0**	**4.82**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

population (Table 15). The admission rate of the Far North region for Aboriginal people was significantly lower (at the 1% confidence level) than the average for Aboriginal people. As previously noted, this may in part be due to the lack of inpatient facilities in the region and its geographical isolation from metropolitan Adelaide, with not all admissions of people living in the region being accurately recorded to the region.

Admissions by socioeconomic status

Rates of admissions of Aboriginal people varied inconsistently with socioeconomic status, and were lowest in the most disadvantaged areas (Table 16). This may be due to the geographical isolation of those in the most disadvantaged quintile, as discussed earlier. However, where there were data, rates for admissions of Aboriginal people were substantially higher than for admissions of non-Aboriginal people.

Admissions by remoteness

The Very Remote areas were the only areas to show a statistically significant difference in admission rates for Aboriginal people for mental health conditions, with around half the rate of admissions in this area than expected for this population (Table 17). However, the admission rate for this region was still higher than any of the admission rates for non-Aboriginal people. The admission rate for Aboriginal people was much higher than the rate for non-Aboriginal people in all remoteness areas, although the differential in rates was lowest in the Very Remote areas (3.55) and highest in the Remote areas (more than nine times).

Table 16: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for mental health conditions, by Indigenous status and socioeconomic status

Quintile	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	##	120	..	109.6	..	85.4	..
2	##	78	..	76.4	..	59.6	..
3	11	151	101.5	122.8	380.9	95.7	3.98
4	17	83	206.1	83.3	773.7	65.0	11.90
5—most disadvantaged	37	100	86.0	102.2	323.0	79.7	4.05
Total	**70**	**532**	**100.0**	**100.0**	**375.5**	**78.0**	**4.82**
Rate ratio#	**..**	**..**	**..**	**0.93**	**..**	**0.93**	**..**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the Very Remote areas to the Major Cities areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

..Not applicable

Table 17: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for mental health conditions, by Indigenous status and remoteness

Remoteness class	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Major Cities	##	66	..	223.3**	..	174.1	..
Inner Regional	16	261	135.0	117.8**	506.8	91.8	5.52
Outer Regional	36	170	121.2	79.9**	454.9	62.3	7.30
Remote	5	27	92.8	48.2**	348.5	37.5	9.29
Very Remote	10	8	46.9**	63.6	176.0	49.6	3.55
Total	**70**	**532**	**100.0**	**100.0**	**375.5**	**78.0**	**4.82**
Rate ratio#	**..**	**..**	**..**	**0.29**	**..**	**0.29**	**..**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the Very Remote areas to the Major Cities areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

**Statistically significant, at the 1% confidence level

..Not applicable

Admissions for respiratory disease—country residents admitted to metropolitan public acute hospitals

Admissions by age

There were 46 admissions of Aboriginal people and 828 admissions of non-Aboriginal people from country areas to metropolitan public hospitals over the two-year period for respiratory diseases (Table 18). The rate of admissions for Aboriginal people was twice as high as it was for non-Aboriginal people. Although the numbers in the age groups are too small to be reliable, when aggregated they indicate higher rates of admission at older ages.

The numbers are considered to be too small to be reliable when disaggregated by region, socioeconomic status or remoteness.

Costs

Cost data were provided for admissions of people aged 16 years and over. There were four admissions of Aboriginal people (1.4% of total Aboriginal admissions) and 149 admissions (2.4%) of non-Aboriginal people listed as having no cost data. The analysis has been limited to five disease/condition groups (circulatory disease, digestive system, kidney disease, mental health and respiratory disease), as the other groups had very small numbers of admissions.

Cost per admission

The average cost per admission for Aboriginal people was highest for circulatory disease (30.2% above the average for these disease/condition groups), digestive disease and respiratory disease (Table 19).

Average costs for the total of the disease/condition groups were statistically significantly higher (27% higher) for Aboriginal than for non-Aboriginal people; the differential for circulatory disease, the only other group where the difference in cost was statistically significant, was 54 per cent. Although Aboriginal people recorded a cost per admission of nearly four times that of non-Aboriginal people for digestive system disease, there were only 13 admissions, and the difference was not statistically significant. Average costs for admissions of Aboriginal people for mental health disorders were marginally lower than for non-Aboriginal people but, again, the difference was not significantly significant.

There was a large variation in the average cost per admission by SA Health region for Aboriginal people, with costs above the average cost ($8,192) for people from the Riverland, Eyre and Mid North regions (Table 20). Average costs per admission were higher for Aboriginal than for non-Aboriginal people—with the exception of the South East (43% lower) and Wakefield (23% lower) regions—with the largest difference being in the Riverland, where the cost per admission for an Aboriginal person was 55 per cent above that of a non-Aboriginal person from the same region.

The cost per admission was 71 per cent higher in the most disadvantaged areas compared with the least disadvantaged areas for Aboriginal people; and half as high (36% higher) for the non-Aboriginal population; however, the rate in Quintile 2 for Aboriginal people was virtually as high as that in Quintile 5 (Table 21). Aboriginal people from the most disadvantaged areas had a 25 per cent higher cost per admission than non-Aboriginal people from the same quintile; and for those from the second least disadvantaged group (Quintile 2) the differential was twice that level, at 52 per cent.

Cost per head of population

The cost per admission (Table 19 above) was much higher than the cost per head of population (Table 22) for both groups. For Aboriginal people the cost per admission was just over 33 times the cost per head of population; for the non-Aboriginal population it was just over 55 times higher, reflecting the higher rate of admission among Aboriginal people. As with all these data, the impact of the quality of the identification of Aboriginal people in the admission and population data, in addition

Table 18: Admissions of country residents to public acute hospitals in metropolitan Adelaide, for respiratory disease, by Indigenous status and age

Age group	Number		Rate per 100,000		Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
16 to 19 years	##	21	..	49.1	..
20 to 24 years	##	8	..	18.1	..
25 to 29 years	##	20	..	45.5	..
30 to 34 years	##	15	..	30.8	..
35 to 39 years	##	20	..	33.4	..
40 to 44 years	##	35	..	55.5	..
45 to 49 years	7	38	468.6	57.0	8.22
50 to 54 years	##	41	..	66.1	..
55 to 59 years	6	71	696.5	119.6	5.82
60 to 64 years	6	81	986.8	153.6	6.42
65 to 69 years	##	90	..	216.9	..
70 to 74 years	6	95	1998.4	290.1	6.89
75 plus years	##	293	..	453.1	..
Total	**46**	**828**	**246.7**	**121.3**	**2.03 (1.48–2.74)****

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution; significance only tested for at the 'total' level

**Statistically significant, at the 1% confidence level

..Not applicable

Table 19: Average cost per admission of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and disease/condition

Disease/condition group	Average cost ($) per admission (CI 95%)		Cost ratio^
	Aboriginal	Non-Aboriginal	
Circulatory disease	10,668	6,936	1.54*
Digestive system	8,344	2,191	3.81
Kidney disease	6,431	6,119	1.05
Mental health	5,768	5,902	0.98
Respiratory disease	8,120	7,731	1.05
Total#	**8,192**	**6,439**	**1.27***

^Cost ratio is ratio of the Aboriginal rate to the non-Aboriginal rate.

*Statistically significant difference between Aboriginal and non-Aboriginal cost per admission at the <0.05 level.

#Total refers to the total of all eight selected disease groups; a statistically significant result was still obtained when only totalling the five most common groups in the table above

Table 20: Average cost per admission of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region

Region	Average cost ($) per admission (CI 95%)		Cost ratio^
	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	7,324	5,403	1.36
South East	4,040	8,644	0.47
Wakefield	4,355	5,691	0.77
Mid North	9,566	7,765	1.23
Riverland	11,930	7,676	1.55
Eyre	10,544	7,885	1.34
Northern & Far Western	7,849	7,577	1.04
Total	**8,192**	**6,439**	**1.27**

^Cost ratio is ratio of the Aboriginal rate to the non-Aboriginal rate.

Table 21: Average cost per admission of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status

Quintile	Average cost ($) per admission		Cost ratio^
	Aboriginal	Non-Aboriginal	
1—least disadvantaged	5,464	5,510	0.99
2	9,313	6,126	1.52
3	6,016	6,259	0.96
4	6,745	6,986	0.97
5—most disadvantaged	9,338	7,485	1.25
Total	**8,192**	**6,439**	**1.27**
Rate ratio#	**1.71**	**1.36**	**..**

^Cost ratio is ratio of the Aboriginal rate to the non-Aboriginal rate

#Rate ratio is the ratio of the rates in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

Table 22: Average cost per country resident admitted to public acute hospitals in metropolitan Adelaide, by disease/condition

Disease/condition group	Average cost ($) per head		Cost ratio^
	Aboriginal	Non-Aboriginal	
Circulatory disease	127	8	1.87
Digestive system	12	3	4.58
Kidney disease	20	17	1.19
Mental health	43	9	4.71
Respiratory disease	40	19	2.14
Total#	**244**	**116**	**2.10**

^Cost ratio is ratio of the Aboriginal rate to the non-Aboriginal rate

#Total refers to the total of all eight selected disease groups

Table 23: Average cost per country resident admitted to public acute hospitals in metropolitan Adelaide, by SA Health region and Indigenous status

Region	Average cost ($) per admission (CI 95%)		Cost ratio—per head^
	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	374	117	3.19
South East	23	117	0.19
Wakefield	133	120	1.10
Mid North	207	119	1.74
Riverland	493	120	4.12
Eyre	363	90	4.05
Northern & Far Western	192	119	1.61
Total	**244**	**116**	**2.10**

^Cost ratio is ratio of the Aboriginal rate to the non-Aboriginal rate

to the small numbers of admissions, makes comparisons difficult and definitive statements somewhat difficult.

The rank order of these diseases also changed somewhat, with only circulatory disease (ranked first (costliest) in both lists) and respiratory disease (third) maintaining their rankings. Notably, mental health—the least costly of these five disease/condition groups under the cost per admission—was ranked second under the cost per population measure; however, it was only a third the cost per head of circulatory admissions.

The average cost per head of population over all the disease/condition groups for Aboriginal people was just over twice that for non-Aboriginal people, with admissions for circulatory disease having the highest cost, being almost three times the next most costly admission type (mental health admissions). The overall cost per head of population was more than twice as high for the Aboriginal as for the non-Aboriginal populations, with a higher cost per country resident for Aboriginal people in all disease groups ranging from 19 per cent more for kidney disease to more than four-and-a-half times as high for both mental health admissions and admissions related to diseases of the digestive system.

When examined by SA Health region, the largest differentials in cost per head were in the Riverland and Eyre regions, with Aboriginal costs more than four times those of the non-Aboriginal population; in the Hills Mallee Southern region the Aboriginal cost was more than three times that of the non-Aboriginal population (Table 23). Only the South East region had a higher cost for non-Aboriginal people than for Aboriginal people.

Aboriginal people in the most disadvantaged areas had a cost per head that was 87 per cent higher than for those in the least disadvantaged areas; other than the lower cost per head in Quintile 2 than in Quintile 1, the costs showed a consistent socioeconomic gradient (Table 24). The cost per head of the adult population was higher for Aboriginal people than non-Aboriginal people in all quintiles. This difference was greatest in the most disadvantaged areas, with Aboriginal people recording a cost per head more than 2.44 times that of non-Aboriginal people.

Length of stay in hospital

The data presented below show the average length of stay (in days) and the Standard Error (in brackets) per admission for each disease/condition group, by Indigenous status.

The average length of stay per admission for these disease/condition groups combined was significantly longer for Aboriginal people than non-Aboriginal people, at 5.96 days compared to 4.84 days (Table 25). This was also the case for circulatory disorders. Although Aboriginal people admitted with digestive system disease stayed in hospital on average more than 2.5 times as long as non-Aboriginal people, this was not a

Table 24: Average cost per country resident admitted to public acute hospitals in metropolitan Adelaide, by socioeconomic status and Indigenous status

Quintile	Average cost ($) per head		Cost ratio—per head^
	Aboriginal	Non-Aboriginal	
1—least disadvantaged	152	95	1.60
2	110	97	1.14
3	209	137	1.53
4	221	133	1.65
5—most disadvantaged	284	116	2.44
Total	**244**	**116**	**2.10**
Rate ratio#	**1.87**	**1.23**	**..**

^Cost ratio is ratio of the Aboriginal rate to the non-Aboriginal rate

#Rate ratio is the ratio of the rates in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

Table 25: Average length of stay per admission of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and disease/condition

Disease/condition group	Days per admission		Rate ratio^
	Aboriginal	Non-Aboriginal	
Circulatory disorders	5.47 (4.33 – 6.61)	4.13 (3.93 – 4.33)	1.32*
Digestive system	5.77 (1.96 – 9.58)	2.21 (1.83 – 2.59)	2.61
Kidney disease	5.93 (4.06 – 7.80)	4.73 (4.27 – 5.19)	1.25
Mental health	6.27 (4.01 – 8.53)	8.57 (7.21 – 9.93)	0.73
Respiratory disease	7.50 (6.00 – 9.00)	6.91 (6.45 – 7.37)	1.09
Total#	**5.96 (5.14 – 6.78)**	**4.84 (4.65 – 5.03)**	**1.23***

^Rate ratio is the Aboriginal length of stay over the non-Aboriginal length of stay

*Statistically significant, at the 5% confidence level

Table 26: Average length of stay per admission of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status

Quintile	Number		Days per admission		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	12	1,127	4.83	4.71	1.03
2	7	1,058	7.00	4.86	1.44
3	53	1,761	4.40	4.75	0.93
4	37	1,259	6.08	4.76	1.28
5—most disadvantaged	169	964	6.46	5.20	1.24
Total	**278**	**6,169**	**5.96**	**4.84**	**1.23**
Rate ratio#	**..**	**..**	**1.34**	**1.10**	**..**

^Rate ratio is the Aboriginal length of stay over the non-Aboriginal length of stay: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the length of stay in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

Table 27: Average length of stay per admission of country residents to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region

Region	Number		Days per admission		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	64	2,125	5.7	4.5	1.26
South East	##	675	..	30.4	..
Wakefield	27	1,759	3.6	4.5	0.78
Mid North	9	372	7.1	5.0	1.43
Riverland	24	398	6.7	5.1	1.30
Eyre	45	293	7.5	5.7	1.31
Northern & Far Western	106	547	5.8	5.2	1.11
Total	**278**	**6,169**	**6.0**	**7.5**	**0.79**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the Aboriginal length of stay over the non-Aboriginal length of stay: rate ratios based on small numbers have been retained for information only, and should be used with caution

..Not applicable

statistically significant difference. Non-Aboriginal people recorded a longer average stay in hospital per admission than Aboriginal people for mental health conditions; however, this result was not statistically significant.

The analysis has been limited to five disease/condition groups (circulatory disorders, digestive system, kidney disease, mental health and respiratory disease), as the other groups had very small numbers of admissions.

Aboriginal people from the most disadvantaged quintile recorded an average length of stay 34 per cent longer than Aboriginal people from the least disadvantaged quintile (6.46 days compared with 4.83 days) (Table 26).

The average stay per admission was greater for Aboriginal people than non-Aboriginal people in all but the middle quintile, although the differences were not statistically significant.

There were no statistically significant differences in the average length of stay per admission between Aboriginal and non-Aboriginal people in any of the SA Health regions. However, the average length of stay per admission was greater for Aboriginal people than non-Aboriginal people in five of the seven regions.

Hospital Admissions—Patients Aged Less than 16 Years

This section presents the analysis of data on admissions of people aged less than 16 years to public acute hospitals in South Australia (2006/07 and 2007/08). The first two tables provide details of admissions for all South Australians at these ages, by Indigenous status, regardless of their area of residence (metropolitan or country). The remainder of the section focuses on health problems that are the most common reasons for admission of Aboriginal children from country South Australia to city hospitals.

All admissions (including admissions for disease/condition groups not forming part of this analysis)—all South Australians

Table 28 shows details for admissions of patients aged less than 16 years living (anywhere) in South Australia who were admitted to a public acute hospital in country South Australia; most of the admissions were of children living in country areas. Higher rates were recorded for Aboriginal children for all disease/condition groups other than disorders related to low birth weight/short gestation, for which the rates were similar. The rate of admissions for non-Aboriginal children for this group was very high, and it is likely that many of the admissions that have been categorised as non-Aboriginal would be of Aboriginal children. In addition, a large proportion of the group for whom Indigenous status was not known would also be likely to be Aboriginal. This situation once again highlights the difficulty of using the available data to describe the use of the hospital system by Aboriginal people.

There were 468 admissions for which Indigenous status was not known: 28 for acute upper respiratory infections; 16 for diseases of the digestive system excluding dental; four for disorders related to low birth weight/short gestation; 135 for injury, poisoning and certain other consequences of external causes; 37 for intestinal infectious diseases; and 248 for all other admissions.

Admissions of patients aged less than 16 years living (anywhere) in South Australia who were admitted to a public acute hospital in metropolitan Adelaide are shown in Table 29. Only admissions for injury, poisoning and certain other external causes have similar rates to those seen for country hospitals. Notably, the rate for disorders related to low birth weight/short gestation was twice as high for Aboriginal children as for non-Aboriginal children. Although the higher rate for Aboriginal children in this instance makes more sense, it still appears likely that there is some under-identification of Aboriginal children, with a relatively higher than expected rate for non-Aboriginal children.

There were 1,570 admissions for which the Indigenous status was not known: 84 for acute upper respiratory infections; 72 for diseases of the digestive system excluding dental; 96 for disorders related to low birth weight/short gestation; 151 for injury, poisoning and certain other consequences of external causes; 94 for intestinal infectious diseases; and 1,073 for all other admissions.

Table 28: Admissions of children to public acute hospitals in country South Australia, by Indigenous status and disease/condition

Disease/condition group	Number		Rate per 100,000 per year		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Acute upper respiratory infections	70	899	319.3	150.4	2.12
Diseases of digestive system excl. dental	61	549	278.3	91.9	3.03
Disorders related to low birth weight/short gestation	12	160	54.7	53.5	1.02
Injury, poisoning and certain other consequences of external causes	113	2,237	515.5	374.3	1.38
Intestinal infectious diseases	126	1,109	574.8	185.6	3.10
Total selected disease/ condition groups	**382**	**4,954**	**1,742.6**	**855.7**	**2.04**
All other admissions	1,190	7,861	5,428.5	1,288.5	4.21
Total#	**1,572**	**12,815**	**7,171.1**	**2,144.2**	**3.34**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate

#'Total' includes admissions for all other diseases/conditions

Table 29: Admissions of children to public acute hospitals in metropolitan Adelaide, by Indigenous status and disease/condition

Disease/condition group	Number		Rate per 100,000 per year		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Acute upper respiratory infections	105	2,339	479.0	391.4	1.22
Diseases of digestive system excl. dental	24	2,675	109.5	447.6	0.24
Disorders related to low birth weight/short gestation	148	2,019	675.1	337.8	2.00
Injury, poisoning and certain other consequences of external causes	355	6,647	1,619.4	1,112.1	1.46
Intestinal infectious diseases	104	2,876	474.4	481.2	0.99
Total selected disease/ condition groups	**736**	**16,556**	**3,357.4**	**2,770.1**	**1.21**
All other admissions	1,103	38,161	5,031.7	6,384.9	0.79
Total#	**1,839**	**54,717**	**8,389.1**	**9,155.0**	**0.92**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate

#'Total' includes admissions for all other diseases/conditions

Admissions by disease/condition groups—children resident in country areas admitted to metropolitan public acute hospitals

Background

There were 10,009 admissions of children aged 0 to 15 years from country South Australia to public acute hospitals in metropolitan Adelaide for any disease/condition. Of these, 505 were identified as being admissions of Aboriginal children, 9,146 admissions as non-Aboriginal, and 358 had no information as to their Indigenous status.

Although data are presented above for five disease/condition groups, the number of admissions of children from country areas to metropolitan hospitals for diseases of the digestive system was very small and was excluded from the following analysis, which therefore refers to four selected disease/condition groups.

Almost three-quarters (71.9%) of the 505 admissions were for one of the four selected disease/condition groups (Table 30); however, these disease groups accounted for a much lower proportion (38.7%) of non-Aboriginal admissions (also see comments in the paragraph before Table 32). Admissions due to injury, poisoning and certain other external causes comprised the greatest proportion of admissions for both Aboriginal and non-Aboriginal children, although the proportion was 77 per cent larger for Aboriginal children (37.0%) than for non-Aboriginal children (20.9%). The proportion of admissions for the other disease/condition groups was also substantially higher for Aboriginal children; however, the reverse is the case for the 'other' admissions group, which accounted for just less than half the proportion for Aboriginal children compared to non-Aboriginal children.

Table 31 shows variations by SA Health region in the number of admissions for the four selected disease/condition groups combined, as a percentage of admissions from all causes.

In the Northern and Far Western region, all 156 admissions of Aboriginal children were accounted for by the four selected disease groups, with a similar result (90.5%) in Mid North. However, for the Hills Mallee Southern region and the Wakefield region, less than 50 per cent of all admissions were in the selected groups. For non-Aboriginal children, admissions for the four disease/condition groups represented more than half of all admissions in South East, Mid North, and Northern and Far Western.

Admission rates for Aboriginal children were 67 per cent higher than for non-Aboriginal children for the total of the disease/condition groups, with the differentials for all disease/condition groups 50 per cent or greater; all the differences are statistically significant (Table 32). Admissions due to Injury, poisoning and certain other external causes comprised the greatest proportion of all admissions for both Aboriginal (51.5%) and non-Aboriginal children (54.0%).

The last line of Table 32 shows that, when all conditions are taken into account, the rates are substantially different, with the rate for admissions of non-Aboriginal children higher than for Aboriginal children. This suggests that either Aboriginal children do not need admissions for all other diseases/conditions at the rate of non-Aboriginal children or that they are missing out on many admissions.

Admissions by age

Of all admissions at ages 0 to 15 years for these disease/condition groups, 81.0 per cent of Aboriginal children were aged 0 to 4 years, compared with 53.9 per cent of non-Aboriginal children. Among those for whom an age was not stated, the proportion in this youngest age group was 77.7 per cent; this suggests that this group may largely comprise Aboriginal children.

The rate of admission for Aboriginal children aged 0 to 4 years for the four disease groups combined was very high, at 8,678.6 admissions per 100,000 population aged 0 to 15 years, with substantially lower rates in the other age groups (Table 33). This rate is around ten times those in the other age groups. For non-Aboriginal children, the highest admission rate was also in the 0 to 4 year age group.

Table 30: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and disease/condition as a percentage of all diseases/conditions

Disease/condition group	Aboriginal (%)	Non-Aboriginal (%)	Rate ratio^
Acute upper respiratory infections	12.5	5.4	2.31
Disorders related to low birth weight/short gestation	11.1	5.6	1.98
Injury, poisoning and other external causes	37.0	20.9	1.77
Intestinal infectious diseases	11.3	6.8	1.66
Total selected disease/condition groups	**71.9**	**38.7**	**1.86**
All other admissions	28.1	61.3	0.46
Total admissions	**100.0**	**100.0**	**..**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate

Table 31: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide as a percentage of admissions from all causes, by Indigenous status and SA Health region, for all diseases/conditions

Region	Aboriginal (%)	Non-Aboriginal (%)
Hills Mallee Southern	43.8	31.5
South East	53.3	56.4
Wakefield	45.8	32.4
Mid North	90.5	58.3
Riverland	68.8	39.4
Eyre	70.8	39.5
Northern & Far Western	100.0	64.1
Total	**71.9**	**38.7**

Table 32: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and disease/condition

Disease/condition group	Number		Rate per 100,000 per year		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Acute upper respiratory infections	63	497	567.0	274.6	2.07**
Disorders related to low birth weight/short gestation	56	511	504.0	282.3	1.79**
Injury, poisoning and certain other consequences of external causes	187	1,914	1,683.0	1,057.3	1.59**
Intestinal infectious diseases	57	621	513.0	343.1	1.50**
Total selected disease/ condition groups	**363**	**3,543**	**3,267.0**	**1,957.2**	**1.67****
Total admissions (all conditions)	**505**	**9,146**	**4,545.1**	**5,052.5**	**0.90****

^Ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate

**Statistically significant, at the 1% confidence level

Table 33: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and age, for all diseases/conditions

Age group	Number			Rate per 100,000			Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Unknown	Aboriginal	Non-Aboriginal	Unknown	
0 to 4 years	294	1,909	115	8,678.6	3,732.0	210.9	2.33**
5 to 9 years	35	708	11	981.9	1,256.7	18.4	0.78
10 to 15 years	34	926	22	817.6	1,259.3	28.3	0.65
Total	**363**	**3,543**	**148**	**3,267.0**	**1,957.2**	**77.1**	**1.67 (1.49–1.86)****

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate.

**Statistically significant, at the 1% confidence level

Table 34: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region, for all diseases/conditions

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	35	1,010	62.7**	105.3	2,047.7	2,060.9	0.99
South East	8	492	35.0**	88.2**	1,143.3	1,726.2	0.66
Wakefield	38	921	136.4	108.8*	4,454.7	2,129.2	2.09
Mid North	19	273	107.2	109.1	3,502.9	2,136.0	1.64
Riverland	22	231	87.3	84.5**	2,853.5	1,653.0	1.73
Eyre	85	222	157.1**	79.5**	5,132.5	1,556.7	3.30
Northern & Far Western	156	394	97.9	104.6	3,197.0	2,047.9	1.56
Total	**363**	**3,543**	**100.0**	**100.0**	**3267.0**	**1,957.2**	**1.67**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

There were 67 per cent more admissions of Aboriginal than non-Aboriginal children (a statistically significant rate ratio of 1.67). However, the differential was not consistent between the three age groups, with admissions of Aboriginal children more than twice (2.33 times) the rate for non-Aboriginal children in the 0 to 4 year age group, and 22 per cent and 35 per cent lower in the 5 to 9 and 10 to 15 year age groups, respectively. This pattern is repeated for the respiratory and injury groups (shown later in this report).

Although the rates were much lower for non-Aboriginal children, the pattern across the age groups was similar, with the highest admission rate also in the 0 to 4 year age group.

There were 148 admissions of children aged 0 to 15 years without an Indigenous status recorded. Of these, more than three-quarters (77.7%, 115 admissions) were for children aged 0 to 4 years; 11 were aged 5 to 9 years; and 22 were aged 10 to 15 years.

Admissions by region

SA Health region

Aboriginal children in the Eyre region had a statistically significantly higher admission rate (57.1%) than expected for this population; and those in the Hills Mallee Southern and South East regions had statistically significantly lower rates (Table 34).

The largest differential in admission rate between Aboriginal and non-Aboriginal children was in the Eyre region, where Aboriginal children had more than three times (3.30) the admission rate of non-Aboriginal children. Aboriginal children from the Wakefield region had more than twice the admission rate of non-Aboriginal children (a rate ratio of 2.09), while those from the Riverland (1.73), Mid North (1.64), and Northern and Far Western (1.56) regions had admission rates more than 50 per cent greater than their non-Aboriginal counterparts. The only region where Aboriginal children had a markedly lower admission rate (34%) was in the South East (with eight admissions). None of these differences was statistically significant.

Almost one-third of the total 148 admissions without an Indigenous status were of children from the Hills Mallee Southern region (48 admissions); 14 from South East; 25 from Wakefield; 11 from Mid North; 19 from Riverland; 14 from Eyre; and 17 from the Northern and Far Western region. Given the locations listed above, it is likely that many of these 'not stated' admissions could be of Aboriginal children.

State region

Aboriginal children from the Eyre and Western region had a statistically significantly higher admission rate (44.7%) than the overall admission rate for Aboriginal children, while those from the Fleurieu and Kangaroo Island and Limestone Coast regions had statistically significantly lower admission rates, with around one-third of the number of admissions expected (Table 35).

Table 35: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and State region, for all diseases/conditions

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Adelaide Hills	##	387	..	97.9	..	1,915.5	..
Murray and Mallee	50	533	79.5	98.1	2,597.5	1,920.3	1.35
Fleurieu and Kangaroo Island	##	321	..	109.2	..	2,136.7	..
Limestone Coast	8	492	35.0**	88.2**	1,143.3	1,726.2	0.66
Barossa	17	544	125.6	102.7	4,103.7	2,010.7	2.04
Yorke and Mid North	40	648	125.2	114.7**	4,089.3	2,245.2	1.82
Eyre and Western	116	424	144.7**	90.2*	4,726.9	1,765.5	2.68
Far North	125	194	93.7	103.2	3,060.3	2,020.3	1.51
Total	**363**	**3,543**	**100.0**	**100.0**	**3267.0**	**1957.2**	**1.67**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

Aboriginal children had a higher admission rate than non-Aboriginal children in all five of the State regions with ten or more admissions. Of the 148 admissions missing an Indigenous status, 14 were from Adelaide Hills, 40 from Murray and Mallee, 13 from Fleurieu and Kangaroo Island, 14 from Limestone Coast, 16 from Barossa, 20 from Yorke and Mid North, 23 from Eyre and Western, and eight from Far North.

Admissions by socioeconomic status

No differences in admission rates for Aboriginal children by socioeconomic status were statistically significant (Table 36). Although there were 87 per cent more admissions in the most disadvantaged quintile than in the least disadvantaged quintile (with just seven admissions), a rate ratio of 1.87, the highest rate was in Quintile 3; the rate ratio between areas in the most disadvantaged quintile and the second least disadvantaged quintile (with more admissions) shows the admission rate to be 38 per cent higher.

The admission rates for Aboriginal children in Quintiles 3, 4 and 5 were almost double those for non-Aboriginal children. Unlike the admissions for which Indigenous status was designated as 'Aboriginal, the 148 admissions missing an Indigenous status were evenly spread across the quintiles, with 28 from Quintile 1; 21 from Quintile 2; 36 from Quintile 3, 36 from Quintile 4; and 27 from Quintile 5.

Admissions by remoteness

Aboriginal children from Outer Regional areas had the highest admission rate, as well as the largest number of admissions of Aboriginal children; those from the Inner Regional areas had a statistically significantly low rate (Table 37). The rate of admissions for Aboriginal children was greater than that of non-Aboriginal children at all levels of remoteness.

Admissions for acute upper respiratory infections—country children in metropolitan hospitals

Admissions by age

All but two of the admissions of Aboriginal children for this disease group were in the age group 0 to 4 years; this age group also comprised the majority (87.7%) of non-Aboriginal admissions.

The rate of admissions for Aboriginal children was just over twice (2.07 times) the rate for non-Aboriginal children.

The numbers are considered to be too small to be reliable when disaggregated by region, socioeconomic status or remoteness.

Admissions for disorders related to low birth weight/ short gestation

Admissions by age

All but one of the admissions of both Aboriginal and non-Aboriginal children for this disease group were in the age group 0 to 4 years (Table 38) and the rate of admissions for Aboriginal children in this age group was statistically significant (63% higher than for non-Aboriginal children).

There were 28 admissions of children aged 0 to 15 years without an Indigenous status: 14 aged 0 to 4 years; and 14 aged 10 to 15 years. The admission in the 5 to 9 year age group may well be accurate, and reflect a continuing admission for these underlying conditions.

Table 36: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status, for all diseases/conditions

Quintile	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	7	181	56.8	116.9*	1,854.1	2,287.9	0.81
2	17	154	77.2	116.1	2,523.4	2,271.6	1.11
3	62	151	107.8	95.6	3,522.9	1,870.4	1.88
4	41	97	86.3	75.0**	2,820.3	1,468.6	1.92
5—most disadvantaged	236	118	106.2	93.5	3,470.5	1,830.7	1.90
Total	**363**	**3,543**	**100.0**	**100.0**	**3,267.0**	**1,957.2**	**1.67**
Rate ratio#	**..**	**..**	**1.87**	**0.80**	**1.87**	**0.80**	**..**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the most disadvantaged areas to the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

Table 37: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and remoteness

Remoteness class	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Major Cities	9	226	101.5	118.8**	3,316.4	2,326.1	1.43
Inner Regional	41	1,406	60.3**	96.2	1,971.3	1,883.8	1.05
Outer Regional	188	1,492	118.0	103.1	3,853.6	2,017.1	1.91
Remote	32	354	86.7	94.6	2,833.4	1,850.6	1.53
Very Remote	94	65	103.7	93.1	3,389.2	1,821.2	1.86
Total	**363**	**3,543**	**100.0**	**100.0**	**3,267.0**	**1,957.2**	**1.67**
Rate ratio#	**..**	**..**	**1.02**	**0.78**	**1.02**	**0.78**	**..**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the Very Remote areas to the Major Cities areas; rate ratios based on small numbers have been retained for information only, and should be used with caution

**Statistically significant, at the 1% confidence level

Table 38: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and age, for low birth weight and related disorders

Age group	Number		Rate per 100,000		Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
0 to 4 years	55	510	1623.5	997.0	1.63 (1.21–2.15)**
5 to 9 years	##	##	..	..	
10 to 15 years	0	0	..	..	..
Total	**56**	**511**	**504.0**	**282.3**	**1.79 (1.33–2.36)****

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

**Statistically significant, at the 1% confidence level

..Not applicable

Admissions by region

SA Health region

There were no statistically significant differences in admission rates between SA Health regions for Aboriginal children, which is not surprising given the small numbers involved (Table 39).

Both regions with ten or more Aboriginal admissions had admission rates for Aboriginal children more than twice those of non-Aboriginal children: in Eyre the rate was 2.73 times that of non-Aboriginal children and in Northern and Far Western the differential was 2.29 times.

Of the 28 admissions without an Indigenous status, nine were from the Hills Mallee Southern region; six from South East; eight from Wakefield; three from Mid North; none from Riverland; five from Eyre; and five from the Northern and Far Western region.

State region

There were no statistically significant differences in admission rates for this disease group between State regions for Aboriginal children, which is not surprising given the small numbers involved (Table 40).

Both regions with ten or more Aboriginal admissions had admission rates for Aboriginal children substantially higher than those for non-Aboriginal children: in Eyre and Western the rate was 2.27 times that of non-Aboriginal children, and in Far North the differential was 3.10.

Of the 28 admissions missing Indigenous status, two were from Adelaide Hills; six from Murray and Mallee; one from Fleurieu and Kangaroo Island; nine from Limestone Coast, one from Barossa; eight from Eyre and Western; and one from Far North.

Admissions by socioeconomic status

Again, looking only at those socioeconomic status groups with ten or more Aboriginal admissions, rates were more than 500 admissions per 100,000 people for both Quintiles 3 and 5 (Table 41). In both of these socioeconomic status groups admission rates for Aboriginal children were 90 per cent above those for non-Aboriginal children. A rate ratio could not be calculated as there were no admissions of Aboriginal children from the least disadvantaged quintile.

Admissions by remoteness

Although not statistically significant, Aboriginal children in the Outer Regional areas had a higher than expected admission rate for this disease group and their admission rates were higher than for non-Aboriginal children (Table 42).

Table 39: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region, for low birth weight and related disorders

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	5	142	57.9	104.1	291.6	293.8	0.99
South East	##	65	..	79.2	..	223.6	..
Wakefield	5	142	128.7	118.5*	648.7	334.5	1.94
Mid North	##	34	..	98.1	..	277.0	..
Riverland	##	38	..	96.6	..	272.6	..
Eyre	11	36	133.8	87.6	674.1	247.2	2.73
Northern & Far Western	30	54	120.2	93.8	605.6	264.7	2.29
Total	**56**	**511**	**100.0**	**100.0**	**504.0**	**282.3**	**1.79**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

..Not applicable

Table 40: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and State region, for low birth weight and related disorders

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Adelaide Hills	0	56	..	99.3	..	280.2	..
Murray and Mallee	6	78	61.3	100.2	308.8	282.9	1.09
Fleurieu and Kangaroo Island	##	46	..	110.8	..	312.7	..
Limestone Coast	##	65	..	79.2	..	223.6	..
Barossa	##	96	..	127.1*	..	358.9	..
Yorke and Mid North	##	78	..	99.3	..	280.4	..
Eyre and Western	16	72	130.9	102.9	659.8	290.5	2.27
Far North	25	20	119.2	68.6	600.9	193.6	3.10
Total	**56**	**511**	**100.0**	**100.0**	**504.0**	**282.3**	**1.79**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

..Not applicable

Table 41: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status, for low birth weight and related disorders

Quintile	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	0	103	..	91.2	..	257.4	..
2	##	86	..	89.1	..	251.4	..
3	10	100	115.6	107.8	582.5	304.2	1.91
4	##	84	..	89.3	..	252.1	..
5—most disadvantaged	38	95	108.7	101.9	547.7	287.6	1.90
Total	**56**	**511**	**100.0**	**100.0**	**504.0**	**282.3**	**1.79**
Rate ratio#	**..**	**..**	**..**	**1.12**	**..**	**1.12**	**..**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rates in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

..Not applicable

Table 42: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and remoteness, for low birth weight and related disorders

Remoteness class	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Major Cities	0	48	..	..	..	..	..
Inner Regional	8	210	75.1	99.7	378.6	281.3	1.35
Outer Regional	31	198	126.7	94.9	638.5	268.0	2.38
Remote	5	51	88.9	94.1	447.8	265.8	1.69
Very Remote	12	4	85.8	40.7*	432.4	115.0	3.76
Total	**56**	**511**	**100.0**	**100.0**	**504.0**	**282.3**	**1.79**
Rate ratio#	**..**	**..**	**..**	**0.23**	**..**	**0.23**	**..**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the Very Remote areas to the Major Cities areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

Admissions for Injury, poisoning and certain other consequences of external causes

Admissions by age

The rate of admissions for these external causes for Aboriginal children aged 0 to 4 years was very high, at 4,368.8 admissions per 100,000 people at these ages, with substantially lower rates in the other age groups (Table 43).

Aboriginal children had a statistically significant 59 per cent higher rate of admissions than non-Aboriginal children. This large differential was driven by the rates in the 0 to 4 year age group, where Aboriginal children had an admission rate 3.65 times that of non-Aboriginal children. In the other two age groups, Aboriginal children had substantially lower admission rates than non-Aboriginal children.

There were 86 admissions of 0 to 15 year olds without an Indigenous status: 76 were aged 0 to 4 years; two were 5 to 9 years; and eight were 10 to 15 years.

Admissions by region

SA Health region

The admission rate for these external causes for Aboriginal children in Eyre was statistically significantly higher than the overall rate for Aboriginal children, but in the Hills Mallee Southern region it was statistically significantly lower (Table 44).

Aboriginal children had a higher admission rate than non-Aboriginal children in a majority of regions. The greatest differences were in the Riverland and Eyre regions, where Aboriginal children had around 2.3 times the admission rates of non-Aboriginal children. Aboriginal children from the Wakefield and the Northern and Far Western regions had admission rates of close to twice those of non-Aboriginal children.

Of the 86 admissions without an Indigenous status, 30 were from the Hills Mallee Southern region; five from South East; 15 from Wakefield; seven from Mid North; ten from Riverland; nine from Eyre; and ten from the Northern and Far Western region.

Table 43: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and age, for external causes

Age group	Number		Rate per 100,000		Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
0 to 4 years	148	613	4,368.8	1,198.4	3.65
5 to 9 years	15	526	420.8	933.7	0.45
10 to 15 years	24	775	577.1	1054.0	0.55
Total	**187**	**1,914**	**1,683.0**	**1,057.3**	**1.59 (1.36–1.85)****

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate

**Statistically significant, at the 1% confidence level

Table 44: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region, for external causes

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	16	572	55.9*	109.6*	941.0	1,159.3	0.81
South East	6	272	51.2	91.2	861.9	964.0	0.89
Wakefield	19	499	130.3	108.1	2,192.5	1,143.0	1.92
Mid North	10	145	110.3	105.2	1,855.6	1,112.2	1.67
Riverland	15	117	115.8	79.1*	1,949.0	836.3	2.33
Eyre	39	147	139.6*	98.6	2,349.2	1,042.1	2.25
Northern & Far Western	82	162	99.9	82.1*	1,680.6	867.7	1.94
Total	**187**	**1,914**	**100.0**	**100.0**	**1683.0**	**1,057.3**	**1.59**

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

State region

The Eyre and Western region was the only region in which the number of admissions of Aboriginal children was statistically significantly different from the overall Aboriginal admission rate (Table 45).

Aboriginal children had a higher rate of admissions than non-Aboriginal children in each of the regions with more than ten admissions. The greatest difference in admission rates was in Eyre and Western, where Aboriginal children had more than twice (2.32 times) as many admissions per 100,000 people.

Of the 86 admissions without an Indigenous status, seven were from Adelaide Hills, 23 from Murray and Mallee, ten from Fleurieu and Kangaroo Island, five from Limestone Coast, seven from Barossa, 15 from Yorke and Mid North, 14 from Eyre and Western and five from Far North.

Admissions by socioeconomic status

The admission rate for these external causes of Aboriginal children from the most disadvantaged areas was 25 per cent higher than those from the least disadvantaged areas; however, the number of admissions in the least disadvantaged areas was very small, and the highest rates were in Quintiles 3 and 4 (Table 46).

The admission rate for Aboriginal children was higher than that of non-Aboriginal children in all quintiles.

Of the 86 admissions missing an Indigenous status, 15 were from Quintile 1; 13 from Quintile 2; 24 from Quintile 3; 18 from Quintile 4; and 16 from Quintile 5.

Table 45: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and State region, for external causes

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Adelaide Hills	##	230	..	107.2	..	1,133.0	..
Murray and Mallee	26	269	80.5	91.3	1,354.6	965.6	1.40
Fleurieu and Kangaroo Island	##	190	..	118.4*	..	1,252.0	..
Limestone Coast	6	272	51.2	91.2	861.9	964.0	0.89
Barossa	7	284	97.6	98.7	1,642.2	1,043.8	1.57
Yorke and Mid North	22	360	134.1	115.8**	2,256.2	1,224.9	1.84
Eyre and Western	54	224	130.5*	89.6	2,196.6	947.9	2.32
Far North	67	85	97.5	87.0	1,640.1	919.7	1.78
Total	**187**	**1,914**	**100.0**	**100.0**	**1,683.0**	**1057.3**	**1.59**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

Table 46: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status, for external causes

Quintile	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	5	374	78.4	88.9	1,318.9	940.4	1.40
2	10	412	87.0	113.5	1,463.4	1,200.0	1.22
3	35	347	117.7	99.1	1,980.1	1,048.2	1.89
4	25	354	102.5	100.0	1,725.7	1,057.5	1.63
5—most disadvantaged	112	331	98.1	96.4	1,650.6	1,019.7	1.62
Total	**187**	**1,914**	**100.0**	**100.0**	**1,683.0**	**1,057.3**	**1.59**
Rate ratio#	**..**	**..**	**1.25**	**1.08**	**1.25**	**1.08**	**..**

#Rate ratio is the ratio of the rates in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

..Not applicable

Table 47: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and remoteness, for external causes

Remoteness class	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Major Cities	##	113	..	109.9	..	1161.8	..
Inner Regional	20	784	57.1*	99.3	961.2	1049.9	0.92
Outer Regional	99	756	121.2	96.7	2039.8	1022.2	2.00
Remote	21	219	111.6	108.1	1877.5	1142.7	1.64
Very Remote	43	43	92.7	113.5	1560.0	1199.8	1.30
Total	**187**	**1914**	**100.0**	**100.0**	**1683.0**	**1057.3**	**1.59**
Rate ratio#	**12.68**	**0.38**	**1.19**	**1.03**	**1.19**	**1.03**	**..**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the Very Remote areas to the Major Cities areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

..Not applicable

Table 48: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and age, for intestinal infectious diseases

Age group	Number		Rate per 100,000		Rate ratio (CI 95%)^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
0 to 4 years	30	350	885.6	684.2	1.29
5 to 9 years	18	141	505.0	250.3	2.02
10 to 15 years	9	130	216.4	176.8	1.22
Total	**57**	**621**	**513.0**	**343.1**	**1.50 (1.12–1.96)****

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution; significance was only tested at the 'total' level

**Statistically significant, at the 1% confidence level

Admissions by remoteness

Aboriginal children in the Outer Regional areas recorded the highest admission rate, while those in Inner Regional areas recorded the lowest (Table 47). Aboriginal children had a higher admission rate than non-Aboriginal children across all levels of remoteness except for the Inner Regional areas, with an admission rate 8 per cent lower than expected from the State rates.

Admissions for intestinal infectious disease

Admissions by age

The admission rate from intestinal infectious diseases for Aboriginal children was 50 per cent higher than for non-Aboriginal children (Table 48).

There were 23 admissions in the 0 to 15 year age group without an Indigenous status: 21 were 0 to 4 year olds and two were 5 to 9 year olds. There were no 10 to 15 year olds.

Admissions by region

SA Health region

The Eyre region, with almost twice the number of admissions expected for Aboriginal people for a population of this size and composition, was the only region with an admission rate that was statistically significantly different from the overall Aboriginal admission rate (Table 49). It also had more than seven times the admission rate for Aboriginal children when compared with non-Aboriginal children.

Of the 23 admissions without an Indigenous status, six were from the Hills Mallee Southern region; eight from Wakefield; two from Mid North; six from Riverland; and one from the Northern and Far Western region.

State region

Aboriginal children in Eyre and Western had a statistically significantly elevated admission rate, 87 per cent above the number of admissions expected from the State Aboriginal rate; this rate was more than three times the rate for non-Aboriginal children (but not statistically significantly elevated) (Table 50).

Of the 23 admissions missing Indigenous status, three were from Adelaide Hills; seven from Murray and Mallee; two from Fleurieu and Kangaroo Island; seven from Barossa; three from Yorke and Mid North; and one from Far North.

Admissions by socioeconomic status

Aboriginal children living in the most disadvantaged areas accounted for almost 80 per cent of admissions (Table 51). This group also recorded the highest rate of admissions, a rate that was three times the rate of non-Aboriginal children in the same quintile. As there were no admissions of Aboriginal children from the least disadvantaged quintile, a rate ratio was not calculated.

Of the 23 admissions missing an Indigenous status, eight were from Quintile 1; four from Quintile 2; six from Quintile 3, four from Quintile 4; and one from Quintile 5.

Admissions by remoteness

Both remoteness classes with more than ten Aboriginal admissions (Outer Regional and Very Remote) had higher rates of Aboriginal admissions than expected, with the highest rate, in the Very Remote areas, being statistically significantly elevated (Table 52). The admission rates in both these remoteness classes were higher for Aboriginal children than for non-Aboriginal children.

Table 49: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region, for intestinal infectious diseases

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Hills Mallee Southern	6	148	67.6	88.1	346.8	302.4	1.15
South East	##	81	..	82.7	..	283.6	..
Wakefield	##	175	..	118.2	..	405.3	..
Mid North	5	52	178.3	119.1	914.5	408.7	2.24
Riverland	##	43	..	89.7	..	307.7	..
Eyre	17	20	196.0**	40.8**	1,005.3	139.9	7.19
Northern & Far Western	24	102	98.9	153.8**	507.4	527.5	0.96
Total	**57**	**621**	**100.0**	**100.0**	**513.0**	**343.1**	**1.50**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

**Statistically significant, at the 1% confidence level

..Not applicable

Table 50: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and State region, for intestinal infectious diseases

Region	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Adelaide Hills	0	59	..	85.1	..	292.0	..
Murray and Mallee	8	90	81.7	94.6	419.3	324.7	1.29
Fleurieu and Kangaroo Island	0	42	..	81.6	..	280.1	..
Limestone Coast	##	81	..	82.7	..	283.6	..
Barossa	##	106	..	114.3	..	392.2	..
Yorke and Mid North	6	121	111.2	122.7*	570.5	420.9	1.36
Eyre and Western	24	74	187.3**	89.5	960.8	307.2	3.13
Far North	17	48	84.4	144.7**	432.8	496.5	0.87
Total	**57**	**621**	**100.0**	**100.0**	**513.0**	**343.1**	**1.50**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

..Not applicable

Table 51: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status, for intestinal infectious diseases

Quintile	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	0	113	..	82.5	..	283.0	..
2	##	122	..	103.8	..	356.0	..
3	5	101	53.6	89.1	549.6	305.6	1.80
4	6	107	78.6	93.4	806.4	320.4	2.52
5—most disadvantaged	44	144	130.5	128.6	1339.0	441.0	3.03
Total	**57**	**621**	**100.0**	**100.0**	**513.0**	**343.1**	**1.50**
Rate ratio#	**..**	**..**	**..**	**1.56**	**..**	**1.56**	**..**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rates in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

..Not applicable

Table 52: Admissions of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and remoteness, for intestinal infectious diseases

Remoteness class	Number		SR		Rate per 100,000		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Major Cities	0	39	..	118.1	..	405.1	..
Inner Regional	5	226	43.7	88.4	224.0	303.1	0.74
Outer Regional	29	305	115.3	120.0	591.7**	411.7	1.44
Remote	##	46	..	69.6	..	238.9	..
Very Remote	22	5	152.3*	42.7	781.3*	146.6	5.33
Total	**57**	**621**	**100.0**	**100.0**	**513.0**	**343.1**	**1.50**
Rate ratio#	**..**	**..**	**..**	**0.36**	**..**	**0.36**	**..**

##Numbers have been excluded where there were fewer than five admissions

^Rate ratio is the ratio of the Aboriginal rate to the non-Aboriginal rate: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the rate in the Very Remote areas to the Major Cities areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

Table 53: Average length of stay per admission of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and disease/condition

Disease/condition group	Days per admission		Rate ratio^
	Aboriginal (95% CI)	Non-Aboriginal (95% CI)	
Acute upper respiratory infection	2.27 (1.74 – 2.80)	1.51 (1.42 – 1.60)	1.50**
Disorders related to low birth weight/short gestation	25.46 (15.72 – 35.20)	20.13 (18.21 – 22.05)	1.26
Injury, poisoning and other external causes	3.34 (1.89 – 4.79)	1.98 (1.77 – 2.19)	1.69
Intestinal infectious diseases	3.95 (2.77 – 5.13)	1.57 (1.44 – 1.70)	2.52**
Total	**6.66 (4.79 – 8.53)**	**4.46 (4.09 – 4.83)**	**1.49***

^Rate ratio is the Aboriginal length of stay over the non-Aboriginal length of stay

*Statistically significant, at the 5% confidence level

**Statistically significant, at the 1% confidence level

Length of stay in hospital

The data presented below show the average length of stay (in days) and the Standard Error (in brackets) per admission for each disease/condition group, by Indigenous status.

In each case, the length of stay for admissions of Aboriginal children was greater than for non-Aboriginal children (Table 53). Statistically significant differences were found for intestinal infectious diseases and acute upper respiratory infections.

The differential in length of stay per admission of Aboriginal children between those from the most disadvantaged areas and the least disadvantaged areas was almost seven times (6.7); however, only seven admissions of Aboriginal children were recorded in the least disadvantaged areas, and the differential was not statistically significant (Table 54). The longest length of stay was recorded for children from Quintile 3 (10.2 days).

There was little difference in the average length of stay in hospital per admission other than in Quintile 2, where the length of stay was 27 per cent lower than the overall average for non-Aboriginal children.

The average length of stay for Aboriginal children varied inconsistently across the remoteness classes, with the shortest stays recorded for children from the Very Remote areas, where length of stay was below that for the large number of children recorded as being non-Aboriginal (Table 55): this appears likely to be the result of the data quality problems inherent in this dataset. Length of stay was substantially higher for Aboriginal children in the Inner Regional, Outer Regional and Remote areas under this classification.

Costs

Cost data were provided by SA Health for children under 16 years of age living in country South Australia who were admitted to a metropolitan hospital in 2006/07 and 2007/08. There were 10,009 such admissions for any condition, 505 of which were identified as Aboriginal children and 9,146 as non-Aboriginal; 358 had no information as to their Indigenous status.

The quintiles are based on country SLAs, not on SLAs across the whole State, and reflect relative levels of disadvantage of the whole population, not solely children and not solely Aboriginal people.

Table 54: Average length of stay per admission of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status

Quintile	Number		Days per admission		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
1—least disadvantaged	7	667	1.0	4.8	0.21
2	17	706	5.6	3.3	1.69
3	62	831	10.2	4.9	2.07
4	41	659	2.3	4.6	0.50
5—most disadvantaged	236	680	6.7	4.6	1.46
Total	**363**	**3543**	**6.7**	**4.5**	**1.49**
Rate ratio#	**..**	**..**	**6.7**	**1.0**	**..**

^Rate ratio is the Aboriginal length of stay over the non-Aboriginal length of stay: rate ratios based on small numbers have been retained for information only, and should be used with caution

#Rate ratio is the ratio of the length of stay in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

Table 55: Average length of stay per admission of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and remoteness

Remoteness class	Number		Days per admission		Rate ratio^
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	
Major Cities	10	217	5.6	6.3	0.88
Inner Regional	98	1,361	9.0	5.0	1.80
Outer Regional	195	1,481	6.5	4.0	1.64
Remote	33	355	4.6	3.4	1.37
Very Remote	27	129	2.0	4.0	0.50
Total	**363**	**3,543**	**6.7**	**4.5**	**1.49***
Rate ratio#	**..**	**..**	**0.36**	**0.63**	**..**

^Rate ratio is the Aboriginal length of stay over the non-Aboriginal length of stay: rate ratios based on small numbers have been retained for information only, and should be used with caution; significance was only tested at the 'total' level

#Rate ratio is the ratio of the length of stay in the most disadvantaged and the least disadvantaged areas: rate ratios based on small numbers have been retained for information only, and should be used with caution

*Statistically significant, at the 5% confidence level

Cost per admission

The overall cost per admission was almost twice as high for Aboriginal children ($9,609) as it was for non-Aboriginal children ($4,610) in this age group (96% higher, a rate ratio of 1.96).

There was no clear socioeconomic pattern in the cost per admission for Aboriginal children (Table 56); this is most likely due to the relatively small number of admissions for some quintiles, the clustered nature of admissions in certain areas of the State (which are then allocated to quintiles based on the whole population), and the poor quality of Indigenous identification. For non-Aboriginal children, costs increased as socioeconomic disadvantage increased.

More than half of all Aboriginal admissions came from the most disadvantaged quintile, and the cost per admission was 81 per cent higher than for non-Aboriginal children from the same quintile. The largest differential was in Quintile 3 (more than two-and-a-half times the cost per admission for Aboriginal children).

The cost per admission was by far the highest for Aboriginal children from the Riverland region, with other very high costs in Northern and Far Western and Eyre (Table 57).

Costs for Aboriginal children were higher than for non-Aboriginal children in four of the seven regions: the largest differential was in the Riverland, where Aboriginal children recorded a cost per admission more than three times that of non-Aboriginal children.

More than 50 per cent of all Aboriginal admissions were from the Eyre and Northern and Far Western regions, and had costs per admission of 1.82 and 2.27 times those of non-Aboriginal children, respectively.

The costs per admission for both Aboriginal and non-Aboriginal children generally increased with remoteness.

Apart from similar costs in the Inner Regional areas and lower costs in the Major Cities areas,[5] costs for Aboriginal children in the most remote classes were substantially higher than those for non-Aboriginal children.

Table 56: Average cost per admission of children from country areas admitted to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status

Quintile	Aboriginal admissions	Cost ($) per Aboriginal admission	Non-Aboriginal admissions	Cost ($) per non-Aboriginal admission	Cost ratio^
1—least disadvantaged	17	2,254	2,208	3,824	0.59
2	35	6,656	2,447	4,220	1.58
3	110	12,229	1,624	4,716	2.59
4	64	3,381	1,526	5,5528	0.61
5—most disadvantaged	279	9,793	1,323	5,4249	1.81
Total	**505**	**9,039**	**9,128**	**4,610**	**1.96**

^ Cost ratio is ratio of the Aboriginal rate to the non-Aboriginal rate

5 The majority of admissions of children from Major Cities areas have been excluded from this analysis, which is focused on providing information on the experiences of Aboriginal children in metropolitan hospitals.

Table 57: Average cost per admission of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region

Region	Aboriginal admissions	Cost ($) per Aboriginal admission	Non-Aboriginal admissions	Cost ($) per non-Aboriginal admission	Rate ratio^
Hills Mallee Southern	80	4,205.5	3,203	4,109.7	1.02
South East	15	4,645.2	872	6,084.3	0.76
Wakefield	83	3,024.7	2,840	4,101.7	0.74
Mid North	21	7,108.9	450	4,685.2	1.52
Riverland	32	18,813.1	586	5,712.2	3.29
Eyre	120	9,597.5	562	5,287.1	1.82
Northern and Far Western	154	13,017.7	615	5,742.1	2.27
Total	**505**	**9,039.4**	**9,128**	**4,609.6**	**1.96**

^Ratio of Aboriginal to non-Aboriginal costs

Table 58: Average cost per admission of children from country areas to public acute hospitals in metropolitan Adelaide, by Indigenous status and remoteness

Remoteness class	Aboriginal admissions	Cost ($) per Aboriginal admission	Non-Aboriginal admissions	Cost ($) per non-Aboriginal admission	Rate ratio^
Major Cities	18	2,103.8	795	3,879.8	0.54
Inner Regional	109	4,245.8	4,404	4,146.9	1.02
Outer Regional	222	10,865.1	2,918	5,469.7	1.99
Remote	42	9,098.1	881	4,516.0	2.01
Very Remote	114	11,121.9	130	6,078.3	1.83
Total	**505**	**9,039.4**	**9,128**	**4,609.6**	**1.96**

^Ratio of Aboriginal to non-Aboriginal costs

Cost per head of population

The overall cost per head of population for Aboriginal children was 77 per cent higher than for non-Aboriginal children, a smaller differential than seen for the cost per admission (96%). For both Aboriginal and non-Aboriginal children, costs per admission were more than ten times the cost per head of population.

The cost of hospital admissions per head of population for Aboriginal children also showed no clear pattern when examined by socioeconomic status (Table 59). Quintile 3 (moderate disadvantage) and Quintile 5 (most disadvantaged) had the highest cost per head of population.

The cost per head of population for non-Aboriginal children increased with increasing disadvantage, although with a lower rate in the most disadvantaged areas.

The cost per head of population for Aboriginal children was highest in the Riverland region, with other very high costs in Eyre (Table 60).

The cost per head of population was greater for Aboriginal children in four of the seven regions. The greatest differentials were in the Riverland and Eyre regions, where Aboriginal children recorded costs per head of population more than three times as high as non-Aboriginal children.

More than 50 per cent of all Aboriginal admissions were from the Eyre and the Northern and Far Western regions, which showed costs per head of population of 3.16 and 2.26 times as high as their non-Aboriginal counterparts.

The costs per admission for Aboriginal children generally increased with remoteness, although with a lower rate in the Remote areas (Table 61).

The cost per head of population for Aboriginal children was more than twice as high as for non-Aboriginal children in Outer Regional and Very Remote regions; these were the two regions with the highest number of admissions for Aboriginal children.

Table 59: Average cost per admission of children from country areas admitted to public acute hospitals in metropolitan Adelaide, by Indigenous status and socioeconomic status

Quintile	Aboriginal admissions	Cost ($) per Aboriginal head of population	Non-Aboriginal admissions	Cost ($) per non-Aboriginal head of population	Cost ratio^
1—least disadvantaged	17	171.9	2,208	424.5	0.40
2	35	555.0	2,447	489.4	1.13
3	110	1,425.7	1,624	462.4	3.08
4	64	293.4	1,526	506.2	0.58
5—most disadvantaged	279	854.4	1,323	442.7	1.93
Total	**505**	**821.7**	**9,128**	**464.9**	**1.77**

^Ratio of Aboriginal to non-Aboriginal costs

Table 60: Average cost per admission of children from country areas admitted to public acute hospitals in metropolitan Adelaide, by Indigenous status and SA Health region

Region	Aboriginal admissions	Cost ($) per Aboriginal head of population	Non-Aboriginal admissions	Cost ($) per non-Aboriginal head of population	Cost ratio^
Hills Mallee Southern	80	397.9	3203	533.1	0.75
South East	15	208.4	872	376.4	0.55
Wakefield	83	458.4	2840	533.1	0.86
Mid North	21	563.8	450	322.8	1.75
Riverland	32	1,640.9	586	478.4	3.43
Eyre	120	1,333.1	562	421.7	3.16
Northern and Far Western	154	859.6	615	379.8	2.26
Total	**505**	**821.69**	**9128**	**464.88**	**1.77**

^Ratio of Aboriginal to non-Aboriginal costs

Table 61: Average cost per country resident (less than 16 years) admitted to public acute hospitals in metropolitan Adelaide, by Indigenous status and remoteness

Remoteness class	Aboriginal admissions	Cost ($) per Aboriginal head of population	Non-Aboriginal admissions	Cost ($) per non-Aboriginal head of population	Cost ratio^
Major Cities	18	288.2	795	636.0	0.45
Inner Regional	109	440.0	4,404	489.4	0.90
Outer Regional	222	992.1	2,918	431.5	2.30
Remote	42	686.9	881	415.5	1.65
Very Remote	114	916.3	130	442.7	2.07
Total	**505**	**821.7**	**9128**	**464.88**	**1.77**

^Ratio of Aboriginal to non-Aboriginal costs

Admissions of Individuals in 2009

Analysis of admissions of country residents to metropolitan public acute hospitals in 2009 from Oacis data

The Oacis dataset allows for the identification of individual patients, so that repeat visits over time for an individual can be linked. The analysis based on ISAAC identified an annual number of 252 admissions (505 admissions of children over two years, 2006/07 and 2007/08), compared with 295 identified in the Oacis data for the same hospitals. Although the number of admissions identified as being of Aboriginal children was higher in Oacis, identification of patients as being Aboriginal people is likely to remain a problem in this dataset, as it was in ISAAC, thereby impacting on the results. The comparable figures for non-Aboriginal children were 5,504 in Oacis and 4,573 in ISAAC. Differences in the overall numbers (higher in Oacis) could include different treatment of inter-hospital transfers (counted as admissions in Oacis).

It should be noted that Oacis does not include the cost data that were linked to records in ISAAC; in addition, the diagnostic condition is that reported in clinical notes and has not been coded to the International Classification of Diseases, making it difficult to analyse the data by the diseases and conditions. As such, the analysis is more limited than that described with data from ISAAC (above).

Births of 'well' babies are not counted as admissions; however, babies admitted in their own right, because of a specific illness or condition, are counted as admissions.

Patients aged 16 years and over

There were 628 Aboriginal admissions and 36,623 admissions that were not classified as Aboriginal or Torres Strait Islander (7,418 of these were of unknown race).

Rates

The rate of admissions per 1,000 people aged 16 years and over was more than one-third (37.2%) lower for Aboriginal people (67.4 Aboriginal admissions per 1,000 people; and 107.3 non-Aboriginal/unknown race admissions per 1,000 population).

The greater number of admissions per 1,000 people for non-Aboriginal people may be related to age and life expectancy, as well as to misidentification. For example, admissions of Aboriginal people aged 65 years and over accounted for 11.6 per cent of all admissions (16 years and over), while for non-Aboriginal people this figure was 39.8 per cent.

Length of stay

Aboriginal people aged 16 years and over stayed an average of 4.04 days, almost the same as non-Aboriginal/unknown race people (4.02 days; or 3.96 days if 'unknown' are excluded).

Admissions per patient

Aboriginal people aged 16 years and over had an average of 2.21 hospital admissions over 2009, 21.4 per cent more than non-Aboriginal people, who had an average of 1.73 admissions.

Table 62: Number of admissions per patient in 2009, for patients aged 16 years and over

Variable	Number of admissions					Total
	One	Two	Three	Four	Five or more	
Aboriginal						
No.	203	49	16	5	11	284
%	71.5	17.3	5.6	1.8	3.9	100.0
Non-Aboriginal						
No.	15,668	3,513	1,014	427	567	21,189
%	73.9	16.6	4.8	2.0	2.7	100.0
Rate ratio*	**0.97**	**1.04**	**1.17**	**0.90**	**1.44**	**1.00**

*Rate ratio is percentage Aboriginal compared to non-Aboriginal

There was little difference in the number of admissions per patient over the year for Aboriginal and non-Aboriginal patients in all but the 'three' and 'five or more' admissions categories (Table 62); however, the numbers are very small and, as with other comparisons here, are likely to be impacted by poor identification of Aboriginal people.

Patients aged less than 16 years

There were 295 Aboriginal admissions (excluding 39 births ('well babies')) and 5,504 other admissions (i.e. not classified as Aboriginal or Torres Strait Islander) (excluding 1,066 births). There were 453 admissions stated as being of unknown race (excluding 76 births).

Rates

The rate of admissions per 1,000 people aged less than 16 years was slightly lower (4.8%) for Aboriginal children (53.1 (60.1 if births included) Aboriginal admissions per 1,000 population; and 55.8 (72.6 if births included) non-Aboriginal/unknown race admissions per 1,000 population).

Length of stay

Aboriginal children aged less than 16 years stayed an average of 6.00 days, substantially longer (64.8%) than non-Aboriginal/unknown race children, at 3.64 days (also 3.64 days if 'unknown' are excluded). These data exclude births.

Admissions per patient

Aboriginal children had an average of 1.19 hospital admissions each (1.25 including births), 8.5 per cent below the figure for non-Aboriginal children, who had an average of 1.30 admissions each (1.34 including births).

There was little difference in the number of admissions per patient over the year for Aboriginal and non-Aboriginal patients.

Table 63: Number of admissions per patient in 2009, for patients aged less than 16 years

Variable	Number of admissions					Total
	One	Two	Three	Four	Five or more	
Aboriginal						
No.	212	22	7	2	2	245
%	86.5	9.0	2.9	0.8	0.8	100.0
Non-Aboriginal						
No.	3,553	437	121	37	70	4,218
%	84.2	10.4	2.9	0.9	1.7	100.0
Rate ratio*	**1.03**	**0.87**	**1.00**	**0.89**	**0.47**	**1.00**

*Rate ratio is percentage Aboriginal compared to non-Aboriginal

Main Findings

In summary, the poor quality of the data (resulting from the poor identification of Aboriginal and Torres Strait Islander people in hospital inpatient records) and the small cell sizes (which are, in part, due to low rates of identification) make comparisons difficult and the achievement of statistically significant results relatively rare. Two examples that support this contention and suggest that recording of Indigenous status in the hospital administrative records needs urgent, further attention are:

- the relatively large numbers of admissions in Very Remote areas and in regions with relatively large Aboriginal populations where Indigenous status was not assigned, or described as non-Aboriginal
- the high admission rates to country hospitals for children recorded as non-Aboriginal with particular diseases/conditions that are rarely associated with non-Aboriginal children (as noted in the 'Background' notes in the section 'Hospital admissions—patients aged less than 16 years', above).

This is not to deny the difficulties faced in this aspect of inpatient data collection, nor the efforts made to date. However, better quality data will clearly assist in better identifying issues of access to metropolitan public acute hospitals by Aboriginal people from rural and remote areas.

Despite these deficiencies, a number of relatively large differentials in admission rates, costs and average length of stay have been identified by Indigenous status, socioeconomic status and remoteness. These are summarised below.

Admissions of adults

Admissions for selected disease/ condition groups (aggregated)

There were 2,741 admissions of Aboriginal adults from country areas to city hospitals in 2006/07 and 2007/08. One-tenth (10.1%) of these admissions (278 admissions) were for one of the eight selected health problems examined in this study (circulatory disease, digestive disease, endocrine disease, genitourinary disease, injury, kidney disease, mental health and respiratory disease). These disease groups accounted for the same proportion of non-Aboriginal admissions (10.0%).

Admissions of Aboriginal people to hospitals in metropolitan Adelaide for these disease/ condition groups represent just less than one-quarter (23.2%) of admissions to these hospitals regardless of residence (278 of the 1,199 admissions). This proportion appears to be low, given that just over half (51.1%) of the Aboriginal population lives in country South Australia, and the severity of illnesses they experience is often likely to require hospitalisation in hospitals with facilities and staff only available in metropolitan Adelaide. The low proportion found in this analysis is therefore likely to reflect issues of access, as well as under-identification of Aboriginal people in the hospital records.

The rate of admissions for Aboriginal adults was substantially higher (by a statistically significant 65%) than for the non-Aboriginal population. Although this pattern is not consistent in all age groups, the only age group in which Aboriginal people had a lower admission rate was the 75 year and over age group (differences in the individual age groups were not statistically significant, which is likely to reflect the small

number of Aboriginal admissions). Also of note is that the largest differential in rates was found in the 45 to 49 year age group, where the admission rate for Aboriginal people was more than five times that of non-Aboriginal people. This may be a reflection of Aboriginal people developing health problems that are often associated with ageing (and requiring hospitalisation) at a much earlier age than non-Aboriginal people.

In the 75 years and over age group, Aboriginal people had an admission rate some 41 per cent lower than for non- Aboriginal people. It may be that Aboriginal people who reached 75 years of age or more were in somewhat better health; it may also be that they did not go to hospital in these later years of their lives, or at least not to hospitals in metropolitan Adelaide.

The Hills Mallee Southern SA Health region had a substantially (and statistically significantly) higher admission rate for Aboriginal people than the overall Aboriginal admission rate. Conversely, the South East region had a substantially and statistically significantly lower rate.

The remoteness data provide support for the comment, above, about issues of access and data quality, with 47 per cent fewer admissions of Aboriginal people in the Very Remote areas compared with the Major Cities areas (although this latter figure should be used with caution, as there were few cases in Major Cities and the rate ratio was not statistically significant). When compared with the Inner Regional areas, there was a marked differential, with 36 per cent fewer admissions in the Very Remote areas.

Admissions by selected disease/ condition group

Aboriginal people had a 21 per cent higher admission rate for circulatory disease than non-Aboriginal people (not statistically significant); the rates in the Hills Mallee Southern region and in the Inner Regional remoteness class were both statistically significantly elevated.

For kidney disease the admission rate was 13 per cent higher in the Aboriginal than non-Aboriginal populations; however, this result was not statistically significant.

There were 70 admissions of Aboriginal people for mental health conditions, a statistically significantly elevated rate that was almost five times that of the non-Aboriginal population. Notably, no admissions were recorded for Aboriginal people aged 60 years and over. Rates in both Hills Mallee Southern, with a higher rate, and Northern and Far Western, with a lower rate, were statistically significant. The three SA Health regions with ten or more admissions all had substantially higher admission rates for Aboriginal people. There was no clear gradient in Aboriginal admission rates by socioeconomic status, although in each of the quintiles Aboriginal people had a higher admission rate than non-Aboriginal people.

The rate of admissions for respiratory disease (46 admissions) was twice as high for Aboriginal as for non-Aboriginal people, a statistically significant differential. Although the numbers in the age groups were too small to be reliable, when aggregated they indicated substantially higher rates of admission at older ages, more than five times those in the non-Aboriginal population.

Cost

The average cost per admission was statistically significantly higher for Aboriginal people than non-Aboriginal people both overall (27% for the combined disease/condition groups) and for admissions for circulatory disease (54%). Aboriginal people had a 2 per cent lower cost per mental health admission than non-Aboriginal people, but this result was not statistically significant.

The cost per admission for Aboriginal people was:

- highest in the Riverland, Eyre and Mid North SA Health regions
- 71 per cent higher in the most socioeconomically disadvantaged quintile compared to the least disadvantaged quintile.

Aboriginal people from the most disadvantaged quintile also had a 27 per cent higher cost per admission than non-Aboriginal people from the same quintile.

For the combined disease/condition groups, the cost per head of population for Aboriginal people was:

- just over twice that for non-Aboriginal people (a rate ratio of 2.10) and substantially higher than that for mental health and digestive disease admissions
- highest in the Riverland, Hills Mallee Southern and Eyre SA Health regions
- 87 per cent higher in the most disadvantaged areas than in the least disadvantaged areas.

Aboriginal people from the most disadvantaged quintile also had a cost per head 2.44 times that of non-Aboriginal people from the same quintile.

The *cost per admission was much higher than the cost per head of population* for both groups. For Aboriginal people, the cost per admission was just over 33 times the cost per head of population; for the non-Aboriginal population it was just over 55 times higher. The difference in these figures reflects the higher rate of admission of Aboriginal people. As with all these data, the impact of the quality of the identification of Aboriginal people in the admission and population data, in addition to the small numbers of admissions, makes comparisons difficult and definitive statements somewhat difficult.

The rank order of these diseases also changed somewhat, with only circulatory disease (ranked first (costliest) in both lists) and respiratory disease (third) maintaining their rankings. Notably, mental health, the least costly of these five disease/condition groups under the cost per admission, was ranked second under the cost per population measure; however, it was only a third the cost per head of circulatory admissions.

Although the cost per admission for Aboriginal people with circulatory diseases was 30 per cent higher than the average cost per admission for the total of the selected diseases, when examined by cost per head of population, this disease accounted for more than 50 per cent of the total cost of all Aboriginal admissions for these disease/condition groups, reflecting the large number of admissions.

Average length of stay

The average length of stay per admission was statistically significantly longer in the Aboriginal than non-Aboriginal populations, both overall (23% longer) and for admissions for circulatory disease (32% longer). The actual number of days was 5.96 days compared with 4.84 days for all condition/disease groups combined; and 5.47 compared with 4.13 days for circulatory disease.

In the case of mental health admissions, Aboriginal people stayed in hospital for a shorter time per admission than non-Aboriginal people, although the 27 per cent shorter stay was not statistically significant.

Aboriginal people from the most socioeconomically disadvantaged areas stayed on average 34 per cent longer than those from the least disadvantaged areas, and 23 per cent longer than non-Aboriginal people from the same quintile; however, neither differential was statistically significant.

Admissions of children

All admissions

There were 505 admissions of Aboriginal children aged less than 16 years from country areas to metropolitan public acute hospitals over the 2006/07 and 2007/08 financial years. Almost three-quarters (71.8%) of these admissions were for one of four selected disease groups examined in this study (acute upper respiratory infections; disorders related to low birth weight/ short gestation; injury, poisoning and certain other consequences of external causes; and intestinal infectious diseases). However, these disease groups accounted for a much lower proportion of non-Aboriginal admissions (38.7%).

Admission rates for Aboriginal children were 67 per cent higher than for non-Aboriginal children for the total of the disease/condition groups; the differentials for each of the disease/condition groups were 50 per cent or greater, and all were statistically significant. However, when all conditions (not just the selected diseases) are taken into account, the rates were substantially different, with the rate for admissions of non-

Aboriginal children higher than for Aboriginal children. This suggests that either Aboriginal children do not need admissions for all other diseases/conditions at the rate of non-Aboriginal children or that they are missing out on many admissions.

Of all admissions at ages 0 to 15 years for these disease/condition groups, 81.0 per cent of children identified as Aboriginal were aged 0 to 4 years, compared with 53.9 per cent of non-Aboriginal children. Among the 148 children for whom Indigenous status was not stated, the proportion in this youngest age group was 77.7 per cent; this suggests that this group may largely comprise Aboriginal children.

The admission rate for Aboriginal children in the 0 to 4 year age group was 8,678.6 admissions per 100,000 children aged 0 to 15 years, with rates of around 1,000 for the 5 to 9 and 10 to 14 year age groups.

Admission rates varied by SA Health region. Aboriginal children in Eyre had a significantly higher rate (57% higher) compared with the overall Aboriginal rate, and Aboriginal children in the South East and Hills Mallee Southern regions had statistically significantly lower rates (65.0% and 37.3%, respectively).

Aboriginal children living in areas in the three most disadvantaged quintiles had admission rates almost twice as high as non-Aboriginal children. The differential in rates for Aboriginal children in the most disadvantaged areas (Quintile 5) compared with those in the second least disadvantaged areas (Quintile 2) was 38 per cent (there were too few admissions in Quintile 1 to base the calculation on those areas).

There was no particular pattern in the data when analysed by remoteness.

Admissions by selected disease group

Of admissions for the selected conditions, those due to injury, poisoning and certain other external causes comprised the greatest proportion of all admissions for both Aboriginal (51.5%) and non-Aboriginal children (54.0%).

The largest difference in admission rates between Aboriginal and non-Aboriginal children was for acute upper respiratory infections, with the rate for Aboriginal children just over twice (2.07 times) that for non-Aboriginal children. All other disease/condition groups had admission rates for Aboriginal children that were between 50 per cent and 80 per cent higher than those for non-Aboriginal children.

Admissions due to acute upper respiratory infections were primarily of children aged 0 to 4 years for both Aboriginal (97%) and non-Aboriginal (88%) children. Of the three SA Health regions with sufficient numbers for analysis, Aboriginal children in Wakefield and Eyre had the most highly elevated admission rates; Aboriginal children in Eyre had an admission rate more than eight times that of non-Aboriginal children (6.25 times in Wakefield). There was little difference in admission rates between the least and most disadvantaged socioeconomic status quintiles for Aboriginal children; however, Aboriginal children from the most disadvantaged areas had an admission rate 81 per cent higher than that of non-Aboriginal children. Despite the small numbers, the analysis shows little variation in rates of admission for acute upper respiratory infections of Aboriginal children between the remoteness classes, other than in the Major Cities areas: the highly elevated rate in the Major Cities areas (more than 3.5 times) reinforces earlier statements as to the low proportion of Aboriginal children from rural and remote areas in metropolitan public hospitals for these conditions.

As noted for admissions due to acute upper respiratory infections, disorders related to low birth weight/short gestation were limited to the 0 to 4 year age group, with all but one admission for Aboriginal children and one for non-Aboriginal children older than four years. The admission rate in this age group for Aboriginal children was 63 per cent higher than the non-Aboriginal rate, and 79 per cent higher for the whole 0 to 15 year age group (with both differentials statistically significant). The largest differential in admission rates was in the North and Far Western SA Health region, where Aboriginal children had an admission rate more than twice (2.29) that of the non-Aboriginal rate. In the most disadvantaged quintile, Aboriginal children had an admission rate 90 per cent higher than that of non-Aboriginal children, with a similar differential in the middle quintile.

Admissions rates for injury, poisoning and other external causes were 59 per cent higher for Aboriginal children than for non-Aboriginal children, with a much larger differential in the 0 to 4 year age group (3.65 times that of non-Aboriginal children). Admission rates for Aboriginal children were statistically significantly elevated in the Eyre region, and similarly low in Hills Mallee Southern. They were also higher than for non-Aboriginal children in all quintiles and all but the Inner Regional remoteness class.

Admissions for intestinal infectious disease were 50 per cent higher in Aboriginal than non-Aboriginal children, a statistically significant difference. The differential ranged from 22 per cent in the 10 to 15 year age group to double (a rate ratio of 2.02) in the 5 to 9 year age group. Admission rates were highest for Aboriginal children from the Eyre SA Health region (almost twice the level expected for this population, and more than seven times that of non-Aboriginal children in the region). Aboriginal children from the most disadvantaged quintile had an admission rate three times (3.04) that of non-Aboriginal children from the same quintile. Rates for Aboriginal children in Outer Regional, Remote and Very Remote remoteness classes were highly elevated, although the Remote rate was below that of non-Aboriginal children.

Length of stay

The average length of stay per admission was greater for Aboriginal children than non-Aboriginal children for all five disease groups—by 49 per cent for the combined disease/condition groups (6.7 days compared with 4.5 days).

The greatest difference in average length of stay per admission between Aboriginal and non-Aboriginal children was for intestinal infectious diseases, where Aboriginal children had an average stay more than two-and-a-half times as long as non-Aboriginal children.

Average length of stay varied inconsistently by socioeconomic status; however, in the most disadvantaged quintile, Aboriginal children stayed on average approximately one-and-a-half times as long as their non-Aboriginal counterparts.

Average length of stay also varied inconsistently across the remoteness classes, with the shortest stays recorded for children from the Very Remote areas, where the average length of stay was below the stay for the large number of children recorded as being non-Aboriginal: this appears likely to be another example of the data quality problems in this dataset.

Cost

The overall cost per admission was almost twice as high for Aboriginal children ($9,609) as it was for non-Aboriginal children ($4,610) in this age group (96% higher, a rate ratio of 1.96).

More than half of all Aboriginal admissions came from the most disadvantaged quintile, and their cost per admission was 81 per cent higher than for non-Aboriginal children from the same quintile. The largest differential was in Quintile 3, with more than two-and-a-half times the cost per admission for Aboriginal children.

The cost per admission was by far the highest for Aboriginal children from the Riverland SA Health region, with other very high costs in Northern and Far Western and in Eyre. Costs for Aboriginal children in the most remote classes were substantially higher than those for non-Aboriginal children.

The overall cost per head of population for Aboriginal children was 77 per cent higher than for non-Aboriginal children in this age group, a smaller differential than seen for the cost per admission (96%). For both Aboriginal and non-Aboriginal children, costs per admission were more than ten times the cost per head of population.

The cost per head of population for Aboriginal children was highest in the Riverland SA Health region, with other very high costs in Eyre. The Eyre and the Northern and Far Western regions comprised more than 50 per cent of all Aboriginal admissions and showed costs per head of population of 3.16 and 2.26 times as high as their non-Aboriginal counterparts, respectively.

The cost per head of population for Aboriginal children was more than twice as high as for non-Aboriginal children in the Outer Regional and Very Remote areas; these were the two remoteness classes with the highest numbers of admissions for Aboriginal children.

Admissions of individuals

Adults

The rate of admissions per 1,000 people aged 16 years and over was more than one-third (37.2%) lower for Aboriginal people (67.4 Aboriginal admissions per 1,000 people; 107.3 non-Aboriginal/unknown race admissions per 1,000 population).

The greater number of admissions per 1,000 people for non-Aboriginal people may be related to age and life expectancy. For example, admissions of Aboriginal people aged 65 years and over accounted for 11.6 per cent of all admissions (16 years and over), while for non-Aboriginal people this figure was 39.8 per cent.

Aboriginal people aged 16 years and over stayed an average of 4.04 days, almost the same as non-Aboriginal/unknown race people, at 4.02 days (3.96 days if 'unknown' are excluded). They also had an average of 2.21 hospital admissions over 2009, 21.4 per cent more than non-Aboriginal people, who had an average of 1.73 admissions.

Children

The rate of admissions per 1,000 people aged less than 16 years was slightly lower (4.8%) for Aboriginal children (53.1 (60.1 if births included) Aboriginal admissions per 1,000 population; 55.8 (72.6 if births included) non-Aboriginal/unknown race admissions per 1,000 population).

Aboriginal children aged less than 16 years stayed an average of 6.00 days, substantially (64.8%) longer than non-Aboriginal/unknown race children, at 3.64 days (also 3.64 days if 'unknown' are excluded). These data exclude births.

Aboriginal children had an average of 1.19 hospital admissions each (1.25 including births), 8.5 per cent below that of non-Aboriginal children who had an average of 1.30 admissions each (1.34 including births).

There was little difference in the number of admissions over the year for Aboriginal and non-Aboriginal patients.

References

Australian Bureau of Statistics (ABS) 2009a, *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2021*, Cat. No. 3238.0, ABS, Canberra.

Australian Bureau of Statistics 2009b, *Population by Age and Sex, Regions of Australia*, Cat. No. 3235.0, ABS, Canberra.

Appendix

ICD-10 codes (International Classification of Diseases) of the adult (16 years plus) admission group

Admission group	ICD-10 codes
Circulatory disorder	I10, I20.0, I20.9, I21.4, I21.9, I25.11, I48, I50.0, I50.1
Digestive system	K02.9, K10.2, K29.2, K52.9, K85
Endocrine	E11.65
Genitourinary system	N18.90
Injury	S01.0, S09.9
Kidney	N00, N01, N02, N03, N04, N05, N06, N07, N08, N10, N11, N12, N13, N14, N15, N17, N18, N19, N20, N21, N23
Mental health	F10.0, F10.2, F20.9, F32.9, F43.0, F43.2
Respiratory	J18.9, J22, J44.0, J44.1, J45.9

ICD-10 codes of the child (less than 16 years) admission group

Admission group	ICD-10 codes
Admission group	ICD-10 codes
Acute upper respiratory infections	J00, J01, J02, J03, J04, J05, J06
Diseases of digestive system excluding dental	K20-22, K29-31, K35-38, K40-46, K50-52, K55-63, K65-66, K71-72, K74-76, K80-83, K85-86, K90-92
Disorders related to low birth weight/ short gestation	P07
Injury, poisoning and certain other consequences of external causes	S00-S09, S10-S19, S20-29, S30-39, S40-49, S50-59, S60-69, S70-79, S80-89, S90-99, T00-T07, T08-14, T15-19, T20-25, T26-28, T29-31, T33-35, T36-T50, T51-65, T66-78, T79-98
Intestinal infectious diseases	A00, A01, A02, A03, A04, A05, A06, A07, A08, A09

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