Australian Government
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Health indicators for Remote Service Delivery communities

A summary report

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Authoritative information and statistics to promote better health and wellbeing

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A summary report

2003–2011

Australian Institute of Health and Welfare
Canberra
Cat. no. IHW 142

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ISBN 978-1-74249-651-1

Suggested citation

Australian Institute of Health and Welfare 2014. Health Indicators for Remote Service Delivery communities: a summary report 2003–2011. Cat. no. IHW 142. Canberra: AIHW.

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Published by the Australian Institute of Health and Welfare

Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

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Acknowledgments

This report was prepared by staff from the Indigenous Community and Health Service Reporting Unit at the Australian Institute of Health and Welfare (AIHW).

The Remote Service Delivery evaluation advisory group, Fadwa Al-Yaman and Indrani Pieris-Caldwell are gratefully acknowledged for their guidance and invaluable comments throughout this project.

Funding of this project was provided by the former Department of Families, Housing, Community Services and Indigenous Affairs.

Thanks are extended to a number of AIHW units and collaborating centres both for data provided and their advice and assistance.

Abbreviations

A	Area
ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
Bal	Balance
CD	Collection district
CGC	Community Government Council
FaHCSIA	Department of Families, Housing, Community Services and Indigenous Affairs
NPA RSD	National Partnership Agreement on Remote Service Delivery
PM&C	Department of Prime Minister and Cabinet
RSD	Remote Service Delivery
RSD SLA	Remote Service Delivery Statistical Local Area
S	Shire
SLA	Statistical Local Area
WHO	World Health Organization

Symbols

–	nil or rounded to zero
. .	not applicable
n.a.	not available
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data

Summary

The National Partnership Agreement on Remote Service Delivery (NPA RSD) was one aspect of a broader government agenda to reduce the gap in Indigenous disadvantage. It was implemented between June 2009 and June 2013 in 29 priority remote communities across New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. To inform the implementation of the NPA RSD, the Australian Institute of Health and Welfare (AIHW) provided selected data for each RSD community in 2010. Data were then updated in 2012 to inform the NPA RSD evaluation process. The evaluation was conducted in 2013, with a final report released in July 2014 (Australian Government 2014). This report summarises the data provided by AIHW for this evaluation. It presents data around antenatal care, live births, low birthweight babies, hospitalisations (all and selected causes), disability, mortality, child protection, juvenile justice, alcohol and other drug use, and aged care. Various issues impact on the data presented. In particular, there were no community level data in most administrative data collections, so communities were approximated by the statistical local area (SLA) or postcodes in which the community was located.

Key findings

RSD SLAs have higher teenage fertility rates

- In 2008–2009, RSD SLA teenage fertility rates were much higher than the national rate as a whole. Most were also higher than the national Indigenous teenage fertility rate.
- In 2009, in most RSD SLAs, the rate of low birthweight babies born to Indigenous mothers was higher than Indigenous jurisdictional and national rates.

RSD SLAs have higher hospitalisation rates

- In 2010–11, almost all RSD SLAs had higher hospitalisation rates than the national Indigenous rate. Walgett SLA had a significant decrease in hospitalisation rates between 2003–04 and 2010–11.
- Hospitalisation rates were generally much higher in RSD SLAs when dialysis was included. Indigenous Australians are more likely than other Australians to be hospitalised for diabetes. This may explain the high rates of dialysis hospitalisations.
- Hospitalisation rates for potentially preventable conditions in RSD SLAs were generally higher than Indigenous jurisdictional rates; except in Lajamanu and Ngukurr.
- Hospitalisation rates for diseases associated with poor environmental health were higher in RSD SLAs compared with Indigenous rates nationally.
- In 2008–09 to 2010–11, Indigenous residents of RSD SLAs were more than 6 times as likely to be hospitalised for diabetes as other Australians nationally. They were also more likely to be hospitalised for assault (20 times as likely), care involving dialysis (10 times as likely) and alcohol-related conditions (5 times as likely).

RSD SLAs have higher death rates

- In 2003–2010, Indigenous residents of RSD SLAs experienced an all-cause death rate over 3 times that of other Australians nationally. They also died from preventable diseases at 10 times the rate of other Australians nationally.

1. Introduction

In December 2007, the Council of Australian Governments (COAG), agreed to a partnership between all levels of government to work with Indigenous communities to close the gap in Indigenous disadvantage. The National Partnership Agreement on Remote Service Delivery (NPA RSD) was one aspect of this broader agenda. The NPA RSD sought to improve access to government services and facilities, raise the quality of these services and better support Indigenous community governance and leadership (COAG 2009). It was implemented between June 2009 and June 2013 in 29 priority remote communities across New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. Nearly all RSD communities were classified as being *Remote* or *Very remote* apart from Mossman Gorge which is located in *Outer regional* Australia. The communities differ in size from less than 250 people to over 1,250 (Table 1.2).

In 2010, a range of data were collected for each community to inform the implementation of the agreement, the development of local plans, and to provide a baseline for future monitoring and evaluation. The Australian Institute of Health and Welfare (AIHW) provided health and welfare based data reports for each of the 29 Remote Service Delivery (RSD) communities.

An evaluation of the NPA RSD was conducted in 2013 and involved several qualitative and quantitative methods. It was managed by the Evidence and Evaluation Branch of the former Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA); now part of the Department of the Prime Minister and Cabinet (PM&C). In 2012–13, AIHW updated the health and welfare data reports for the 29 RSD communities, using the latest available data at the time for each community, and a summary report (this report) was prepared to inform the 'outcomes' analysis (chapter 7) component of the overall evaluation strategy. The final NPA RSD evaluation report was released in July 2014 (Australian Government 2014).

This report summarises information provided for the NPA RSD evaluation around antenatal care, live births, low birthweight babies, hospitalisations (all and selected causes), disability, mortality, child protection, juvenile justice, alcohol and other drug use and aged care. Where possible, data are presented at the jurisdictional and national level, and time series data provided for comparison. Table 1.1 outlines the measures included in this report. It also shows the period for which the latest data were available, at the time of preparing this report and expected timeframes for assessing progress against these measures. It is noteworthy that most were not expected to see progress during the life of the NPA.

Table 1.1: Measures to help assess progress in meeting NPA RSD objectives

Indicators to measure progress in outcomes	Process or outcome indicator	Latest available data[(a)]	Currently able to assess progress	Estimated earliest timeframe before data can measure progress in indicators
Age-specific fertility rate/teenage birth rate	Outcome	2009	No	2013
Proportion of babies born of low birth weight	Outcome	2009	No	2013
Number of women with at least one antenatal visit in the first trimester of pregnancy	Process	2009	No	2014
Hospitalisation rates for all causes	Outcome	2010–11	No	2015
Mortality rates for all causes	Outcome	2010	No	2015
Hospitalisation rates for diseases associated with poor environmental health	Outcome	2010–11	No	2015
Hospitalisation rates diabetes	Outcome	2010–11	No	2015
Hospitalisation rates for injury and assault	Outcome	2010–11	No	2015
Potentially avoidable deaths	Outcome	2010	No	2020
Selected potentially preventable hospitalisations	Outcome	2010–11	No	2014
Users of disability services	Process	2010–11	Yes	. .
Children in substantiated child protection	Outcome	2011–12	No	2013–14
Average number of young people under juvenile justice supervision	Outcome	2010–11	No	2013–14
Closed treatment episodes for alcohol and other drugs	Process	2010–11	No	2013–14
Provision of Home and Community Care (HACC) services to aged care clients	Process	2010–11	Yes	. .

(a) For reporting on in 2012.

Data issues to consider

Lack of specific community data

Data in this report were based on existing administrative collections for hospitalisations, mortality, perinatal, child protection, aged care, disability, drug and alcohol, and juvenile justice. A limitation of the data presented is that it was not specific to RSD communities. There were no community level data in most administrative data collections, so communities were approximated by the statistical local area (SLA) or postcode in which the community was located.

Table 1.2 shows each RSD community and the SLA in which it is located. It also shows the community Indigenous population as a proportion of the total Indigenous population of the SLA and how this varies between communities. For many RSD communities, the SLA provides a good approximation of its population. The Indigenous population of 10 communities aligned closely, representing around 99–100% of the Indigenous population of the SLA in which it was located (Table 1.2).

Table 1.2: Community Indigenous population as a proportion of the total Indigenous population of the SLA in which the community is located, 2006

% of SLA Indigenous population[(a)]	SLA name	Community name	Community population[(b)]	Jurisdiction
99%–100%	Numbulwar Numburindi	Numbulwar	250 to 750	Northern Territory
	Yuendumu	Yuendumu	250 to 750	Northern Territory
	Angurugu	Angurugu	250 to 750	Northern Territory
	Aurukun	Aurukun	250 to 750	Queensland
	Kunbarllanjnja	Gunbalanya	250 to 750	Northern Territory
	Hope Vale	Hope Vale	750 to 1,249	Queensland
	Mornington	Mornington Island	750 to 1,249	Queensland
	Thamarrurr	Wadeye	Over 1,250	Northern Territory
	Doomadgee	Doomadgee	250 to 750	Queensland
	Lajamanu	Lajamanu	250 to 750	Northern Territory
60% to <99%	West Arnhem	Maningrida	Over 1,250	Northern Territory
	Tiwi Islands	Nguiu	Over 1,250	Northern Territory
50% to <60%	Yugul Mangi	Ngukurr	250 to 750	Northern Territory
	Central Darling	Wilcannia	250 to 750	New South Wales
	Walgett	Walgett	750 to 1,249	New South Wales
	Groote Eylandt	Umbakumba	250 to 750	Northern Territory
25% to <50%	Tanami	Hermannsburg	250 to 750	Northern Territory
	Cook	Coen	Less than 250	Queensland
	Halls Creek	Halls Creek	250 to 750	Western Australia
15% to <25%	East Arnhem-Balance	Yirrkala	Over 1,250	Northern Territory
		Gapuwiyak	250 to 750	Northern Territory
		Milingimbi	750 to 1,249	Northern Territory
		Galiwinku	Over 1,250	Northern Territory
	Douglas	Mossman Gorge	Less than 250	Queensland
	Derby-West Kimberley	Fitzroy Crossing	250 to 750	Western Australia
<15%	Broome	Ardyaloon	Less than 250	Western Australia
		Beagle Bay	Less than 250	Western Australia

(a) Based on FaHCSIA analysis of ABS 2006 census counts where people have been coded to the RSD location (CD defined) and the 2006 SLA.

(b) Based on Coordinator-General for Remote Indigenous Services, Six Monthly Report, July to November 2009 (CGRIS 2009).

Note: Table excludes Amata and Mimili (RSD communities in South Australia) as they are being approximated by *Remote and very remote* areas of South Australia, rather than the SLA in which they are located. Both of these communities had a population of 250 to 750 people.

There were some communities, however, that were smaller than the SLA in which they were located. The Indigenous population in 11 communities represented less than 50% of the Indigenous population of the SLA in which they were located. Of these:

- Hermannsburg, Coen and Halls Creek represented between 25–50% of their respective SLA Indigenous populations
- Mossman Gorge and Fitzroy Crossing represented around 15%
- Beagle Bay and Ardyaloon are both in Broome SLA and each represented around 5% of the Indigenous population of this SLA (or 10% combined)

- Yirrkala, Gapuwiyak, Milingimbi and Galiwinku are all located in the East Arnhem-Balance SLA; individually they each represented around 15–25% of the Indigenous population of this SLA, but combined represented around 85% of the Indigenous population of this SLA.

In this report, the term RSD SLA is used for analysis done at the SLA level. In the commentary, if the community name is different from the SLA name, the SLA name is used and the community name included in brackets. Most tables and figures use the community name only; however, communities that represent less than 50% of the Indigenous population of the SLA in which they are located are noted.

For RSD communities in South Australia (Amata and Mimili), hospitalisations and mortality data were unreliable at the SLA level. *Remote and very remote* areas of South Australia were used to approximate these communities instead.

Data at the SLA level were not available for some indicators. Data on antenatal care, child protection and juvenile justice could therefore not be presented at the community level in this summary report.

Small numbers

The numbers of events per year in some data collections were too small to be meaningful. In these instances, data across years were combined for analysis and it is not possible to look at trends over a short timeframe. For example, data on deaths were too small to be presented annually.

Data for several hospitals in the Cape York Hospital and Health Service (HHS) are incomplete from 2010–11; this made it necessary to exclude hospital-based data for the Aurukun and Coen communities of Queensland for 2010–11.

Indigenous identification

The under-identification of Aboriginal and Torres Strait Islander people is a problem in most administrative data collections such as mortality and hospital morbidity, and the level of under-identification varies by state and territory.

Hospital data

Hospital records are for 'separations' (hospital episodes) and not individuals and as there can be multiple admissions for the same individual, separation rates do not usually reflect the incidence or prevalence of a disease or condition. There are some specific issues around the hospital separation data presented in this report:

- Hospital separation rates at the SLA level were based on relatively small numbers. Rates based on small numbers can fluctuate widely from year to year.
- The number and pattern of hospital separations can be affected by the availability of other health care services and by admission practices. These can vary among health service providers and over time.

The quality of the administrative data in the National Hospital Morbidity database should also be considered. For example:

- In some SLAs in the Northern Territory (Angurugu, Kunbarllanja, Lajamanu and Thamarrurr in particular) the numbers of separations for 2004–05 were lower than for

2003–04, 2005–06, 2006–07 and 2007–08, which may indicate data quality issues. Rates for the five year period 2003–04 to 2007–08 may also be low as a result.

- Due to differences in SLA concordances, Angurugu, Kunbarllanja and Numbulwar Numuburindi SLAs had small numbers of hospitalisations for 2009–10 and 2010–11. Data are only presented for periods where data appears to be reliable.

Methods

Indigenous population data at the SLA level are only available for Census years and so for most analyses, the denominator population is based on 2006 Census data. Various methods were used to present data in this report. These include crude rates, age-specific rates, age-standardised rates, annual change and percent change. See Appendix B for more information on the populations and methods used in this report.

Statistical significance

For trend analyses, the 95% confidence intervals (CIs) for the standard error of the slope estimate (average annual change), based on linear regression, were used to determine whether apparent increases or decreases in the data were statistically significant at the $p < 0.05$ level.

If the upper and lower 95% confidence intervals do not include zero, then it can be concluded that there is statistical evidence of an increasing or decreasing trend in the data over the study period.

Data quality

A lack of good quality, long-term data; small numbers; and the time lag between policy implementation and the realisation of its full benefits, especially with respect to health outcomes, may contribute to the weakness of the evidence presented in this report.

Moreover, the patterns of service use at broader geographic levels may not reflect actual service use at the RSD level. Because of these limitations caution should be used when interpreting and comparing data presented at the community level. Actual patterns of health status and service use can only be understood if there are timely clinical data collected at local clinic level. The national key performance indicators (nKPIs) data collection for primary health-care services was established in 2012. This collection includes information on maternal and child health and some chronic disease management closest to the community level.

2. Health indicators for RSD communities

The RSD baseline mapping process in 2010 showed differences in the quantity and quality of services delivered and in the patterns of service use in RSD locations, which would affect the health of Indigenous Australians living in these communities. For example:

- In some communities, the nearest hospital was located in the community itself. For others, the nearest hospital was more than 250 km away. Physical access was also hindered by the standard of roads. Some communities were connected by sealed roads while others were linked by unsealed roads, many of which were subject to seasonal floods.
- All communities had a primary health-care centre/health clinic with access to registered nurses and Aboriginal health workers, and limited access to specialist professional staff, either in-community or as a visiting service.
- All communities had access to a general practitioner (GP) either in-community or as a visiting service, however, the frequency of visits was variable. The Royal Flying Doctor Service also provides GP services to remote communities, either regularly or on an ad-hoc basis.
- All communities had access to some form of Home and Community Care (HACC) services. These are designed to enhance the independence and quality of life of people living in the community and reduce inappropriate or premature admission to long-term residential care.
- With the exception of Walgett, where a dental clinic was available, visiting dental services were infrequent. Most communities had access to a dentist for several days at least once per year.
- All communities had some form of ambulance service, however many communities were accessible only by partially sealed or unsealed roads, and may have been inaccessible during the wet season. This limits access to major hospitals to air transport only. The response to emergency medical care is difficult for some communities in remote locations.
- Lack of accessibility and remoteness limits specialist health services.
- Indigenous Australians have high rates of chronic kidney disease. The incidence rate of end stage kidney disease, which requires regular dialysis or a kidney transplant for survival, is significantly higher for Indigenous Australians. Despite this there were limited dialysis services available in remote communities.

This chapter updates and expands on RSD data presented in the baseline mapping process. It includes data on antenatal care, live births, low birthweight babies, hospitalisations (all and selected causes), disability, mortality, child protection, juvenile justice supervision, alcohol and other drug use and aged care.

Antenatal care

Antenatal care (also known as prenatal care) is an important part of pregnancy, as there is a strong relationship between regular antenatal care and positive maternal and child health outcomes. It is recommended that antenatal care begins during the first trimester of pregnancy (before 13 weeks), as this enables the identification of any risk factors or potential problems early in pregnancy. Antenatal care is important for Aboriginal and Torres Strait Islander women, as they are at higher risk of giving birth to low birthweight babies and of having other risks factors such as diabetes, poor nutrition, anaemia, urinary tract infections and smoking during pregnancy (AIHW 2013a). Indigenous women have lower rates of attending antenatal care in the first trimester than non-Indigenous women. Between 1998 and 2009, the proportion of Indigenous women accessing antenatal care at least once during pregnancy increased (this is based on data from New South Wales, Queensland and South Australia combined). In 2009, 97% of Indigenous women accessed antenatal care at least once during their pregnancy. However, only 56% of Indigenous mothers had their first antenatal visit in the first trimester compared with 75% of non-Indigenous mothers (New South Wales, Queensland, South Australia and the Northern Territory combined). In South Australia between 2007 and 2009, the rate of Indigenous mothers attending antenatal care in the first trimester increased significantly, from 41% to 58% and there was a significant reduction (33%) in the gap between Indigenous and non-Indigenous mothers (AIHW 2013b). In the Northern Territory between 2000 and 2009, there was no significant change in the rate at which Indigenous mothers or non-Indigenous mothers attended antenatal care. The Northern Territory had, however, the highest rate of mothers attending antenatal visits and also the least difference between Indigenous and non-Indigenous women (AIHW 2013a).

When data was collated for the NPA RSD, data on antenatal care was not consistent or available for all jurisdictions. Data could not, therefore, be presented at the RSD SLA level. However, a new data element for gestational age at first antenatal visit has been developed and included in the Perinatal National Minimum Data Set. National data around this indicator is now available for the 2011 calendar year (Li et al. 2013).

Births

Aboriginal and Torres Strait Islander women have a higher overall fertility rate and teenage fertility rate than non-Indigenous women. The teenage fertility rate is an indicator of the health and wellbeing of mothers and children. Babies born to teenage mothers are more likely to be of low birth weight. Teenage pregnancy has also been associated with lower educational attainment, high unemployment, greater welfare dependency and lower levels of social and emotional wellbeing for both mothers and children.

In 2008–2009 the Indigenous teenage fertility rate of 75 babies per 1,000 women aged 15–19, was almost 5 times the teenage fertility rate of all women (17 babies per 1,000 women aged 15–19). This pattern was also apparent in RSD SLAs. RSD SLAs had much higher teenage fertility rates compared with the teenage fertility rate for all women nationally. Moreover, most RSD SLAs also had higher teenage fertility rates compared with the teenage fertility rate for all Indigenous women. Only Douglas (Mossman Gorge) with 61 babies per 1,000 women and Tanami (Hermannsburg) with 62 babies per 1,000 women had lower teenage fertility rates than the national Indigenous rate of 75 per 1,000 women aged 15–19 (Table 2.1).

Table 2.1: Indigenous age-specific fertility rate[(a)] by RSD SLA of usual residence and age of mother, 2008–2009

	Age-specific fertility rate			
Community (SLA)	**15–19**	**20–34**	**35–44**	**Total (15–44)**
NSW	*65.8*	*126.9*	*28.3*	*83.7*
Wilcannia	90.9	188.5	30.0	109.7
Walgett	149.4	158.0	15.5	112.4
NT	*90.4*	*113.6*	*23.9*	*83.8*
Angurugu	n.a.	n.a.	n.a.	n.a.
Yirrkala, Gapuwiak, Millingimbi, Galiwinku (East Arnhem-Balance)	97.6	111.7	34.6	89.4
Umbakumba	n.a.	n.a.	n.a.	n.a.
Gunbalanya	n.a.	n.a.	n.a.	n.a.
Lajamanu	n.a.	n.a.	n.a.	n.a.
Numbulwar	n.a.	n.a.	n.a.	n.a.
Hermannsburg (Tanami)	62.0	67.5	14.3	53.3
Wadeye	104.3	152.5	62.5	119.8
Nguiu	126.6	155.5	16.2	106.8
Manigrida	100.6	149.1	22.7	108.1
Yuendumu	n.a.	n.a.	n.a.	n.a.
Ngukurr	186.7	162.6	29.1	131.5
QLD	*76.9*	*138.0*	*31.9*	*93.8*
Aurukun	155.6	212.5	77.9	159.1
Coen (Cook)	277.8	276.9	9.8	175.4
Doomadgee	233.9	174.6	37.0	159.1
Hope Vale	100.0	115.4	27.3	83.8
Mornington Island	209.7	182.5	20.0	133.6
Mossman Gorge (Douglas)	61.0	65.7	n.p.	49.2
WA	*98.7*	*138.6*	*29.1*	*99.3*
Ardyaloon, Beagle Bay (Broome)	167.7	209.9	42.8	156.7
Fitzroy Crossing (Derby-West Kimberley)	155.6	148.6	27.8	115.5
Halls Creek (Halls Creek)	82.0	120.5	52.2	98.2
SA	*74.0*	*127.9*	*26.9*	*88.0*
Amata & Mimili (*Remote and very remote* South Australia)	87.9	111.8	15.5	79.3
Total Indigenous	*74.8*	*128.6*	*29.4*	*88.3*
Total non-Indigenous	*14.1*	*94.1*	*43.4*	*64.1*
Total Australia	**16.7**	**95.3**	**43.3**	**65.0**

(a) Live births per 1,000 women.

Notes

1. No data on age-specific fertility for 2008–2009 were available for Angurugu, Umbakumba and Gunbalanya, Lajamanu, Numbulwar and Yuendumu.
2. SLA name is included in brackets where the individual community represents less than 50% of the total Indigenous population of the SLA.

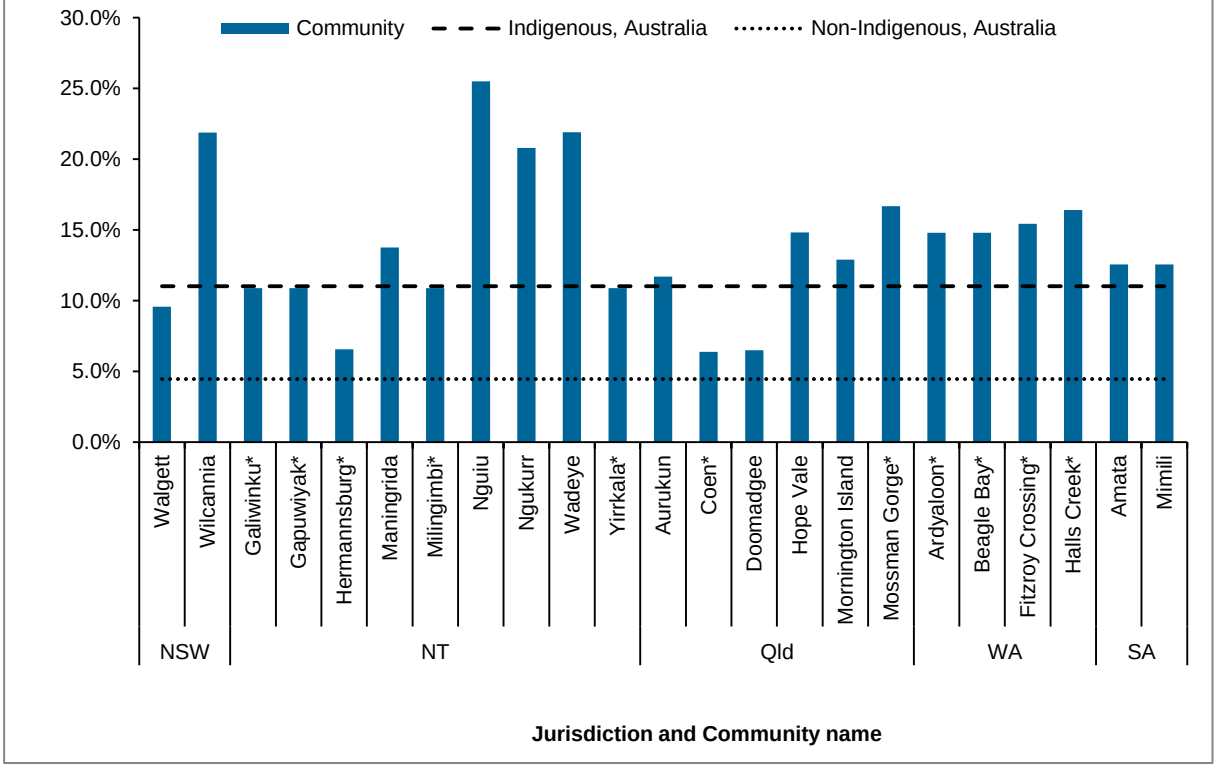
Source: National Perinatal Data Collection.

Low birthweight babies

Birthweight is a key indicator of infant health and determinant of a baby's chances of survival and good health during the first year of life and into childhood. Low birthweight (babies weighing less than 2,500g) is associated with premature birth or suboptimal intrauterine environments. Low birthweight can also increase the likelihood of developing chronic diseases later in life.

From 2003 to 2009, the rate of low birthweight babies to Indigenous mothers in Australia declined significantly. However in 2007–2009, babies of Indigenous mothers were still twice as likely to be of low birthweight as babies born to non-Indigenous mothers (12.3% compared with 5.9%). When multiple births are excluded, around 11% of liveborn babies born to Indigenous mothers were of low birthweight compared to 4% of babies born to non-Indigenous mothers (AIHW 2013a).

In 2008–2009, most RSD SLAs had a higher rate of low birthweight babies compared with the Indigenous rate as a whole (Figure 2.1). The highest proportions of low birthweight babies were in SLAs that included the communities of Nguiu (25.5%), Wadeye (21.9%), Wilcannia (21.9%) and Ngukurr (20.8%). This compares to 11.0% of Indigenous and 4.4% of non-Indigenous births at the national level. Most RSD SLAs also had higher rates of low birthweight babies compared with *Remote and very remote* areas of Australia (Table 2.2).



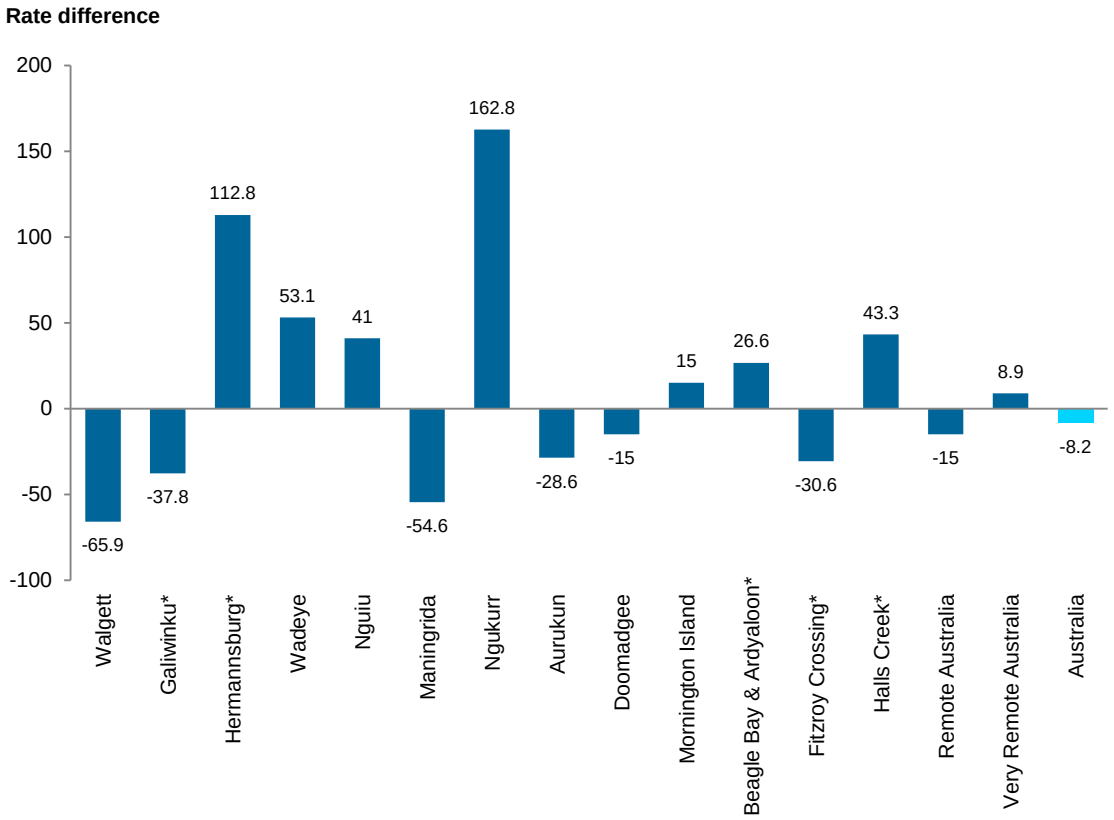
* indicates where the individual community represents less than 50% of the total Indigenous population of the SLA.

Note: Data is for the SLA in which the community is located. Ardyaloon and Beagle Bay are both located within Broome SLA, which includes the town of Broome. The communities of Gapuwiyak, Milingimbi, Galiwinku and Yirrkala are all located within East Arnhem-Balance SLA. For Amata and Mimili data are for *Remote and very remote* areas in South Australia.

Source: National Perinatal Data Collection.

Figure 2.1: Proportion of live born singleton births of low birth weight (<2,500g), by RSD community (SLA), 2008–2009

Rates of low birthweight babies in RSD SLAs fluctuated over time, and were sometimes based on small numbers. There were no statistically significant increases or decreases in any community (Table 2.2). The greatest rate decrease of 65.9 was in Walgett (Figure 2.2).



* indicates where the individual community represents less than 50% of the total Indigenous population of the SLA.

Notes

1. Data for Wilcannia, Angurugu, Umbakumba, Gunbalanya, Lajamanu, Numbulwar, Yuendumu, Coen, Mossman Gorge, Hope Vale, Amata and Mimili are excluded due to small numbers.
2. Rate difference is the rate in 2009 minus the rate in 2003. Where no data were available for 2003 or 2009, other available data points were used to obtain the rate difference. The rate difference is for the SLA in which the community is located.
3. Galiwinku also represents Gapuwiyak, Milingimbi and Yirrkala communities.

Source: AIHW analyses of National Perinatal Epidemiology and Statistics Unit (NPESU) data.

Figure 2.2: Change in the rate of low birthweight babies born to Indigenous mothers, 2003 and 2009, by RSD community (SLA)

Table 2.2: Low birthweight live born babies per 1,000 population born to Indigenous mothers, by RSD community (SLA), 2003 to 2009

RSD community (SLA)	2003	2004	2005	2006	2007	2008	2009	Annual change	% change	Rate difference (2003–2009)
New South Wales	**111.6**	**113.1**	**108.6**	**109.7**	**102.9**	**104.5**	**100.0**	**–2.1***	**–11.1***	**–11.6**
Walgett	205.9	95.2	88.9	148.1	108.7	n.p.	140.0	–13.2	–38.3	–65.9
Northern Territory	**141.7**	**139.8**	**140.0**	**135.6**	**123.4**	**137.4**	**123.8**	**–2.7**	**–11.3**	**–17.9**
Galiwinku (East Arnhem-Balance)	129.4	124.2	74.5	156.9	107.9	130.1	91.5	–2.4	–11.3	–37.8
Hermannsburg (Tanami)	97.1	136.4	n.p.	158.5	209.9	n.p.	n.p.	24.8	102.1	112.8
Wadeye	n.p.	133.3	225.0	102.9	81.6	260.9	186.4	10.1	37.7	53.1
Nguiu	272.7	113.6	333.3	243.9	150.0	196.1	313.7	3.7	8.2	41.0
Maningrida	194.2	206.3	187.5	243.2	184.6	135.1	139.5	–11.0	–34.1	–54.6
Ngukurr	n.p.	106.4	206.9	n.p.	200.0	142.9	269.2	23.5	110.4	162.8
Queensland	**104.8**	**105.0**	**106.2**	**96.7**	**99.6**	**89.3**	**98.2**	**–2.1**	**–11.8**	**–6.6**
Aurukun	n.p.	171.4	113.6	n.p.	133.3	n.p.	142.9	–10.0	–29.2	–28.6
Doomadgee	157.9	n.p.	108.7	n.p.	142.9	n.p.	n.p.	–2.4	–6.2	–15.0
Hope Vale	n.p.	461.5	n.p.	285.7	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Mornington Island	n.p.	138.9	n.p.	n.p.	105.3	111.1	153.8	14.7	52.8	15.0
Western Australia	**n.a.**	**138.5**	**142.0**	**132.1**	**143.8**	**139.5**	**129.5**	**–1.2**	**–4.2**	**–9.0**
Beagle Bay (Broome)	n.a.	n.p.	122.6	168.2	139.7	146.6	149.3	3.2	10.3	26.6
Fitzroy Crossing (Derby-West Kimberley)	n.a.	n.p.	180.6	140.0	160.6	157.0	150.0	–4.4	–9.8	–30.6
Halls Creek (Halls Creek)	n.a.	n.p.	150.7	69.4	216.7	127.3	194.0	14.5	38.4	43.3

(continued)

Table 2.2 (continued): Low birthweight live born babies per 1,000 population born to Indigenous mothers, by RSD community (SLA), 2003 to 2009

RSD community (SLA)	2003	2004	2005	2006	2007	2008	2009	Annual change	% change	Rate difference (2003–2009)
Remoteness										
Major Cities of Australia	122.9	125.7	133.8	117.2	124.5	123.8	110.9	–1.7	–8.5	–12.0
Inner Regional Australia	117.3	128.6	106.5	114.5	111.0	114.6	96.1	–3.1	31.7	–21.1
Outer Regional Australia	123.9	132.3	142.6	126.8	115.5	119.2	117.0	–2.6	45.2	–6.9
Remote Australia	151.5	143.6	142.1	137.6	143.6	140.9	136.5	–1.8*	8.0*	–15.0
Very Remote Australia	136.3	131.8	133.9	129.8	143.9	128.7	145.2	1.1	–11.9	8.9
All Australia	**116.9**	**121.4**	**120.0**	**113.4**	**112.1**	**111.6**	**108.7**	**–1.9***	**–9.5***	**–8.2**

* indicates statistically significant difference

Notes

1. SLA name is included in brackets where the individual community represents less than 50% of the total Indigenous SLA population.
2. Galiwinku also includes Gapuwiyak, Milingimbi and Yirrkala communities.
3. Beagle Bay also includes Ardyaloon.
4. Data for Wilcannia, Angurugu, Umbakumba, Gunbalanya, Lajamanu, Numbulwar, Yuendumu, Coen, Mossman Gorge, Amata and Mimili are excluded due to small numbers.
5. Rate difference is the rate in 2009 minus the rate in 2003. Where no data were available for 2003 or 2009 other available data points were used to obtain the difference.

Source: AIHW analyses of National Perinatal Epidemiology and Statistics Unit (NPESU) data.

Hospitalisations

Hospitalisations provide an indication of the occurrence of serious, acute illnesses and conditions requiring inpatient hospital treatment in a population; and the access to and use of hospital inpatient services by people with such conditions. Hospitalisation rates do not directly indicate the prevalence of a disease in a population, as they are based on the number of hospital episodes, rather than the number of individual people who are hospitalised. A person with frequent admissions for the same disease is counted multiple times. Hospitalisations for conditions that can be addressed by primary health-care services (potentially preventable conditions) provide a good indicator of access to such services or other alternatives. There are some specific issues around the hospital data presented in this report.

- Hospital separation rates at the SLA level were based on relatively small numbers of separations. Rates based on small numbers can fluctuate widely from year to year.
- Hospital separation data were based on the patient's area of usual residence and for admitted patients only. The number and pattern of hospital separations can be affected by the differing availability of other health care services. They can also be influenced by admission practices, which can vary among health service providers and over time. As discussed in the Centre for Aboriginal Economic Policy research Monograph No 21 "high rates may reflect not only serious morbidity but inadequate primary care or specialist services (especially where Indigenous people are the predominant population). Low rates on the other hand may simply be the result of difficulties of access" (Gray et al. 2002).
- In some SLAs in the Northern Territory (Angurugu, Kunbarllanja, Lajamanu and Thamarrurr in particular) numbers of separations for 2004–05 were lower than for 2003–04, 2005–06, 2006–07 and 2007–08, which may indicate data quality problems. Rates for the five year period 2003–04 to 2007–08 may also be low as a result.
- Due to differences in SLA concordances, Angurugu, Kunbarllanja and Numbulwar Numuburindi SLAs had relatively small numbers of hospitalisations for 2009–10 and 2010–11. Data are only presented for periods where data appears reliable.

Hospitalisations for all conditions

Hospitalisation rates for all conditions (including and excluding dialysis) increased significantly between 2003–04 and 2010–11 for both Indigenous and other Australians. Age standardised rates show in 2010–11 Indigenous Australians were 2.5 times as likely as other Australians to be hospitalised for all conditions including dialysis. When dialysis is excluded, the rate ratio between Indigenous and other Australians was 1.3 (AIHW 2013a).

The data for RSD communities show that in 2010–11:

- Indigenous hospitalisation rates for all conditions excluding dialysis were higher in most RSD SLAs compared with rates for Indigenous Australians nationally. Communities with lower hospitalisation rates than the national Indigenous rate were Wadeye, Nguiu and Maningrida in the Northern Territory (Table 2.3).
- the Northern Territory RSD communities of Umbakumba, Wadeye, Nguiu and Maningrida had lower hospitalisation rates for all conditions, excluding dialysis, than the Northern Territory Indigenous hospitalisation rate. However, RSD SLAs in New

South Wales, Queensland, Western Australia and South Australia had higher hospitalisation rates than their respective Indigenous jurisdictional rates.

Time series

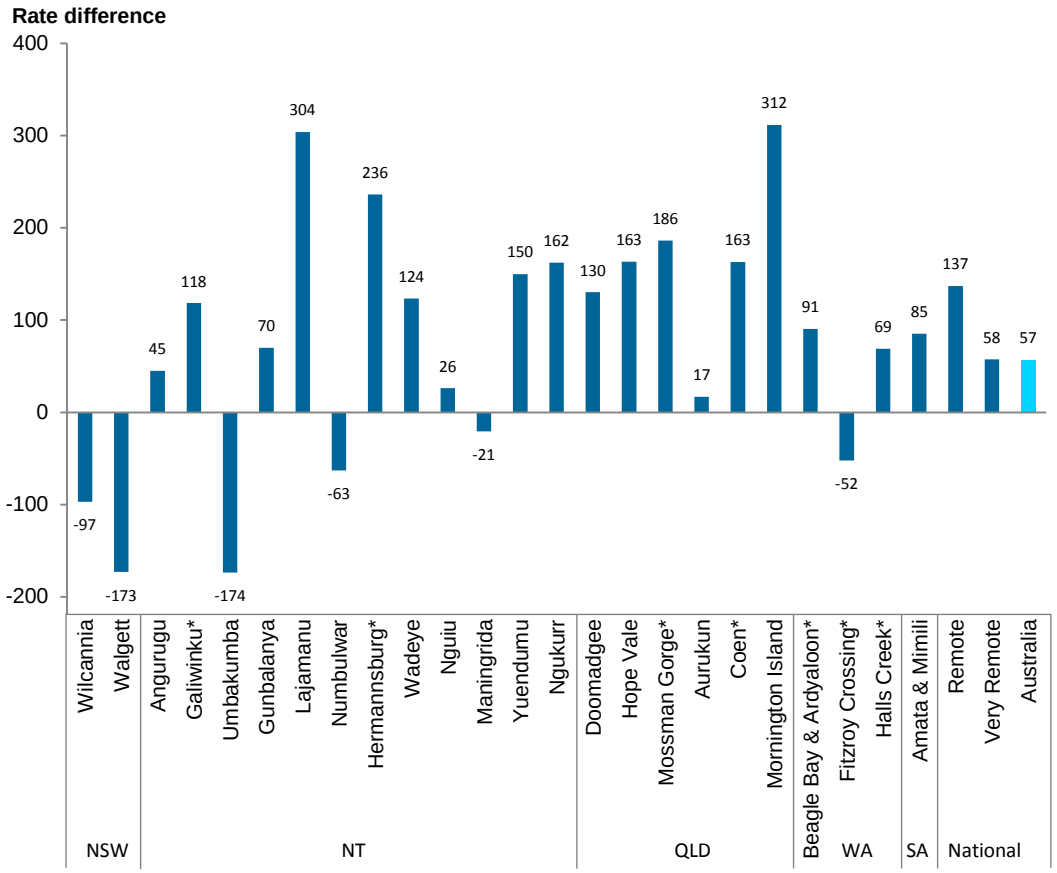
Indigenous hospitalisation rates for all conditions (including and excluding dialysis) at the national level increased significantly between 2003–04 and 2010–11. Indigenous hospitalisation rates, excluding dialysis, also increased significantly in *Remote and very remote* areas (Table 2.3). RSD communities (except Mossman Gorge), are in *Remote and very remote* areas of Australia where Indigenous hospitalisation rates are generally higher than Indigenous rates at a jurisdictional or national level. Between 2003–04 and 2010–11 hospitalisation rates for all conditions, excluding dialysis, for the Northern Territory RSD SLAs of Angurugu, East Arnhem-Balance (Galiwinku, Gapuwiyak, Milingimbi, Yirrkala), Kunbarllanjnja (Gunbalanya), Numbulwar, Thamarrurr (Wadeye), Tiwi Islands (Nguiu), West Arnhem (Maningrida) and Yugul Mangi (Ngukurr) were consistently lower than rates in *Remote and very remote* areas of Australia combined. Groote Eylandt (Umbakumba) had lower rates from 2005–06. In other RSD SLAs, rates were generally higher than for Indigenous people living in *Remote and very remote* Australia combined (Figure 2.3 and Table 2.3).

Changes over the medium term (2003–04 to 2010–11):

- Walgett was the only RSD SLA with a statistically significant decrease in hospitalisations for all conditions, excluding dialysis.
- RSD SLAs with statistically significant increases in hospitalisations for all conditions excluding dialysis were: East Arnhem-Balance (Galiwinku, Gapuwiyak, Milingimbi, Yirrkala), Mornington, Douglas (Mossman Gorge), *Remote and very remote* areas of South Australia (Amata and Mimili).

Changes over the short term (2006–07 to 2010–11):

- There were no communities with a statistically significant short term decrease in hospitalisations for all conditions, excluding dialysis.
- No RSD SLAs had statistically significant increases in hospitalisations for all conditions, excluding dialysis, over the short term.



* indicates where the individual community represents less than 50% of the total Indigenous population of the SLA

Notes

1. Rate difference is the hospitalisation rate in 2010–11 minus the rate in 2003–04. Where no data were available for 2003–04 and 2010–11 other available data points were used to obtain the difference. The rate difference is for the SLA in which the community is located. Data for Amata and Mimili is the rate difference for *Remote and very remote* areas of South Australia.

2. Galiwinku also represents Gapuwiyak, Milingimbi and Yirrkala communities.

3. Australia includes all jurisdictions considered to have data of reportable quality (NSW, Vic, Qld, WA, SA and NT).

Source: AIHW analyses of Hospital Morbidity Database.

Figure 2.3: Hospitalisation rate difference (excluding dialysis) between 2003–04 and 2010–11, Indigenous Australians by RSD community (SLA)

Table 2.3: Indigenous hospitalisations (excluding dialysis) per 1,000 population, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
NSW	**223.9**	**232.2**	**248.0**	**255.2**	**259.5**	**271.2**	**277.2**	**287.4**	**8.8***	**27.7***	**8.2***	**12.9***	**63.5**
Wilcannia	607.7	515.0	457.9	533.5	460.8	632.0	539.2	510.7	–1.3	–1.5	3.3	2.5	–97.0
Walgett	634.8	592.4	547.5	505.1	538.3	488.3	475.5	461.7	–23.1*	–25.5*	–15.0	–11.8	–173.1
NT	**328.6**	**343.2**	**363.4**	**371.5**	**365.1**	**376.9**	**392.1**	**401.9**	**9.4***	**20.1***	**8.8***	**9.5***	**73.3**
Angurugu	163.9	n.p.	325.2	233.0	195.9	208.7	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	44.8
Galiwinku[(a)] (East Arnhem-Balance)	278.7	280.7	303.4	317.6	293.6	332.7	398.1	397.1	17.6*	44.3*	26.4	33.2	118.4
Umbakumba	503.1	690.6	353.7	298.8	277.4	294.2	329.3	329.3	–38.4	–53.4	11.3	15.1	–173.8
Gunbalanya	242.5	n.p.	362.5	301.3	373.8	312.5	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	70.0
Lajamanu	261.4	n.p.	469.0	447.7	524.5	565.4	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	304.0
Numbulwar	346.3	381.9	228.2	260.5	262.1	283.2	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	–63.1
Hermannsburg (Tanami)	712.8	999.5	804.0	821.8	800.8	777.8	933.1	949.0	14.5	14.3	38.7	18.8	236.2
Wadeye	182.1	n.p	276.0	267.0	227.4	244.1	277.7	305.6	n.p.	n.p.	12.8	19.1	123.5
Nguiu	303.3	208.7	339.3	348.6	279.7	332.1	361.4	329.6	10.2	23.5	4.4	5.0	26.3
Maningrida	260.1	210.1	249.4	255.5	273.7	269.8	235.1	239.6	0.7	2.0	–7.0	–11.0	–20.5
Yuendumu	441.5	374.0	626.0	642.5	711.7	825.4	533.8	591.4	29.9	47.5	–28.0	–17.4	149.9
Ngukurr	227.1	n.p	328.1	310.9	288.5	389.4	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	162.3

(Continued)

Table 2.3 (continued): Indigenous hospitalisations (excluding dialysis) per 1,000 population, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
QLD	**270.9**	**266.5**	**275.1**	**272.4**	**290.3**	**292.6**	**299.0**	**306.8**	**5.8***	**14.9***	**7.8***	**11.4***	**35.9**
Aurukun	374.5	529.3	570.1	481.2	393.3	477.0	391.2	n.p.	n.p.	n.p.	n.p.	n.p.	16.7
Coen (Cook)	682.8	810.0	611.1	532.3	733.0	659.5	845.9	n.p.	n.p.	n.p.	n.p.	n.p.	163.1
Doomadgee	564.2	605.0	671.6	701.5	652.7	620.9	572.1	694.5	6.5	8.1	–9.5	–5.4	130.3
Hope Vale	813.4	729.8	684.5	812.1	908.1	699.6	1,020.6	976.7	32.6	28.1	44.2	21.8	163.3
Mornington Island	548.7	715.0	667.4	800.9	812.5	814.6	883.5	860.2	41.4*	52.8*	19.0	9.5	311.5
Mossman Gorge (Douglas)	558.4	579.1	560.8	641.1	748.2	715.3	723.8	744.5	30.9*	38.8*	18.2	11.4	186.1
WA	**390.7**	**381.0**	**377.4**	**374.7**	**382.9**	**376.8**	**387.3**	**433.8**	**4.0**	**7.2**	**12.3**	**13.1**	**43.1**
Beagle Bay[(b)] (Broome)	621.2	556.1	606.6	572.9	570.4	562.0	603.3	711.7	8.7	9.8	31.1	21.7	90.5
Fitzroy Crossing (Derby-West Kimberley)	674.7	651.1	612.7	647.4	676.4	513.4	474.2	622.6	–18.1	–18.8	–25.2	–15.6	–52.1
Halls Creek (Halls Creek)	675.0	665.7	612.9	625.4	585.5	599.2	615.7	744.0	1.8	1.9	26.7	17.1	69.0
SA	**363.3**	**338.1**	**359.7**	**358.7**	**384.0**	**369.0**	**374.1**	**394.5**	**5.4**	**10.4**	**6.2**	**6.9**	**31.2**
Amata & Mimili[(d)]	483.1	469.9	528.9	525.5	588.3	537.1	518.2	568.2	17.8*	25.7*	1.5	1.2	85.1

(Continued)

Table 2.3 (continued): Indigenous hospitalisations (excluding dialysis) per 1,000 population, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
Remoteness													
Remote	428.4	393.1	423.9	468.4	512.4	507.1	530.5	565.3	23.1*	37.7*	21.2*	18.1*	136.9
Very Remote	376.4	389.1	410.3	381.7	380.7	385.8	403.4	434.0	4.8	8.9	12.7*	13.3*	57.6
Remote and very remote	*395.8*	*390.6*	*415.4*	*414.2*	*430.0*	*431.2*	*450.9*	*483.1*	*11.6**	*20.5**	*15.9**	*15.3**	87.3
Total Indigenous (excluding dialysis)[(e)]	**280.9**	**280.9**	**292.5**	**296.2**	**305.6**	**310.0**	**319.4**	**337.8**	**7.8***	**19.4***	**9.7***	**13.1***	**56.9**
Total Indigenous (including dialysis)[(e)]	**453.8**	**469.7**	**497.4**	**507.1**	**532.0**	**547.6**	**572.5**	**601.2**	**20.5***	**31.6***	**22.9***	**18.1***	**147.4**

* indicates statistically significant difference

(a) Also represents Gapuwiyak, Milingimbi and Yirrkala communities.

(b) Also represents Ardyaloon.

(c) Rate difference is the hospitalisation rate in 2010–11 minus the rate in 2003–04. Where no data were available for 2003–04 and 2010–11 other available data points were used to obtain the difference.

(d) Data is for *Remote and very remote* areas of South Australia.

(e) Includes all jurisdictions considered to have data of reportable quality (NSW, Vic, Qld, WA, SA and NT).

Notes

1. SLA name is included in brackets where the individual community represents less than 50% of the total Indigenous SLA population.
2. Data for Numbulwar was unreliable for 2009–10 and 2010–11 as a result of shifting SLA boundaries.
3. In some years the numbers of hospitalisations were too small to be presented for Angurugu, Gunbalanya, Lajamanu, Numbulwar, Wadeye and Ngukurr.
4. Data for Coen and Aurukun were not included for 2010–11 due to data quality issues.

Source: AIHW analyses of Hospital Morbidity Database.

NSW RSD communities

In 2010–11, Indigenous residents of Central Darling SLA (Wilcannia) and Walgett SLA were nearly twice as likely as other residents in these locations to be hospitalised for all conditions including dialysis (1.7 and 1.9 times respectively). The rate ratios remained similar when hospitalisations for dialysis were excluded (1.7 and 1.8 respectively). This may be an indication that Indigenous people in these communities seek dialysis treatment outside the community.

Queensland RSD communities

In general, the hospitalisation rate for all conditions excluding dialysis was higher for Indigenous residents than other residents. It should be noted, however, that data for several hospitals in the Cape York Hospital and Health Service, were known to be incomplete from 2010–11.

Between 2003–04 and 2010–11, there was a significant increase in hospitalisation rates in Mornington. The rate ratio of hospitalisations for all conditions including dialysis, between Indigenous and other residents in Doomadgee increased from 3.1 to 6.4. When hospitalisations for dialysis were excluded, the rate ratios between Indigenous and other residents in 2010–11 were around 2 in all Queensland RSD SLAs except Doomadgee (4.3).

Western Australian RSD communities

Indigenous residents of Broome SLA (Beagle Bay and Ardyaloon) had much higher rates of hospitalisations for all conditions including dialysis compared with other residents in this SLA. Rate ratios were 14.9 in 2003–04 and 10.8 in 2010–11. When dialysis was excluded, rate ratios were 3.7 in 2003–04 and 2.3 in 2010–11.

In 2010–11, Indigenous residents of Derby-West Kimberley SLA (Fitzroy Crossing) were 2.2 times as likely as other residents to be hospitalised when dialysis was included. This fell to 1.9 when dialysis was excluded. In Halls Creek, the hospitalisations rate ratio remained similar when dialysis was included or excluded (1.5 and 1.3 respectively).

Northern Territory RSD communities

The numbers of hospitalisations on which age standardised rates were based were small, particularly for other residents; therefore, rates should be interpreted with caution. In the Northern Territory:

- in East Arnhem-Balance SLA (Galiwinku, Gapuwiyak, Milingimbi and Yirrkala communities) hospitalisations for all conditions including dialysis, were nearly twice the rate of other residents in 2010–11.
- in Groote Eylandt SLA (Umbakumba), Indigenous residents were hospitalised for all conditions including dialysis at 12 times the rate of other residents in 2003–04. This fell over time, but in 2010–11 Indigenous residents were still over 7 times as likely to be hospitalised for all conditions.
- in Tanami SLA (Hermannsburg), Indigenous residents were hospitalised for all conditions including dialysis at about 5 times the rate of other residents, in both 2003–04 and 2010–11.
- in Tiwi Islands SLA (Nguiu), the hospitalisation rate including dialysis increased significantly; the rate ratio also increased from 1.3 to 9.2 between 2003–04 and 2010–11.

- in West Arnhem SLA (Maningrida), the rate ratio was less than 1 in both 2003–04 and 2010–11; this suggests in this community Indigenous residents were hospitalised at lower rates than other residents.
- in Yugul Mangi SLA (Ngukurr), the rate ratio was similar in 2003–04 and 2010–11 (1.4 and 1.5 respectively).
- the rate ratios of hospitalisations for all conditions excluding dialysis, in both West Arnhem SLA (Maningrida) and Yugul Mangi SLA (Ngukurr), were less than 1 in 2003–04 and 2010–11. In the remaining SLAs for which data were available (East Arnhem-Balance, Tanami, and Tiwi Islands) the rate ratios were slightly higher for Indigenous residents, ranging from 0.9 to 1.5. In Groote Eylandt SLA (Umbakumba), the rate ratios were much higher, but decreased from 8.2 in 2003–04 to 4.7 in 2010–11.

South Australian RSD communities

Data for *Remote and very remote* areas of South Australia were used as a proxy for Amata and Mimili. In 2003–04, Indigenous Australians in *Remote and very remote* areas of South Australia had 3.2 times the rate of hospitalisations for all conditions including dialysis, than other residents. The rate ratio increased to 6.3 in 2010–11. When dialysis hospitalisations were excluded, the rate ratio was around 2 suggesting that Indigenous Australians were still twice as likely to be hospitalised for all conditions.

Potentially preventable hospitalisations

Potentially preventable hospitalisations are hospitalisations thought to be avoidable through health care in ambulatory settings. Ambulatory settings include primary health care, together with general practice, community care, emergency department and outpatient care. In 2010-11:

- Indigenous residents in most RSD SLAs had higher hospitalisation rates for potentially preventable conditions than Indigenous Australians nationally. However, Indigenous residents in Walgett in NSW; and Thamarrurr (Wadeye), West Arnhem (Maningrida) and Yugul Mangi (Ngukurr) in the Northern Territory had lower rates than Indigenous Australians nationally (Table 2.4).
- Indigenous residents in most RSD SLAs had higher hospitalisation rates for potentially preventable conditions than their respective jurisdictional rates. However, Groote Eylandt (Umbakumba), West Arnhem (Maningrida) and Yugul Mangi (Ngukurr) in the Northern Territory had lower rates than Indigenous residents in the Northern Territory as a whole. Rates were also lower in Numbulwar for most years for which data were available.
- Indigenous residents in RSD SLAs in New South Wales and the Northern Territory had lower rates of hospitalisations for potentially preventable conditions than Indigenous Australians in *Remote and very remote* Australia. However, Indigenous residents in RSD SLAs in Queensland and Western Australian had higher rates than Indigenous Australians living in *Remote and very remote* Australia.

Time series

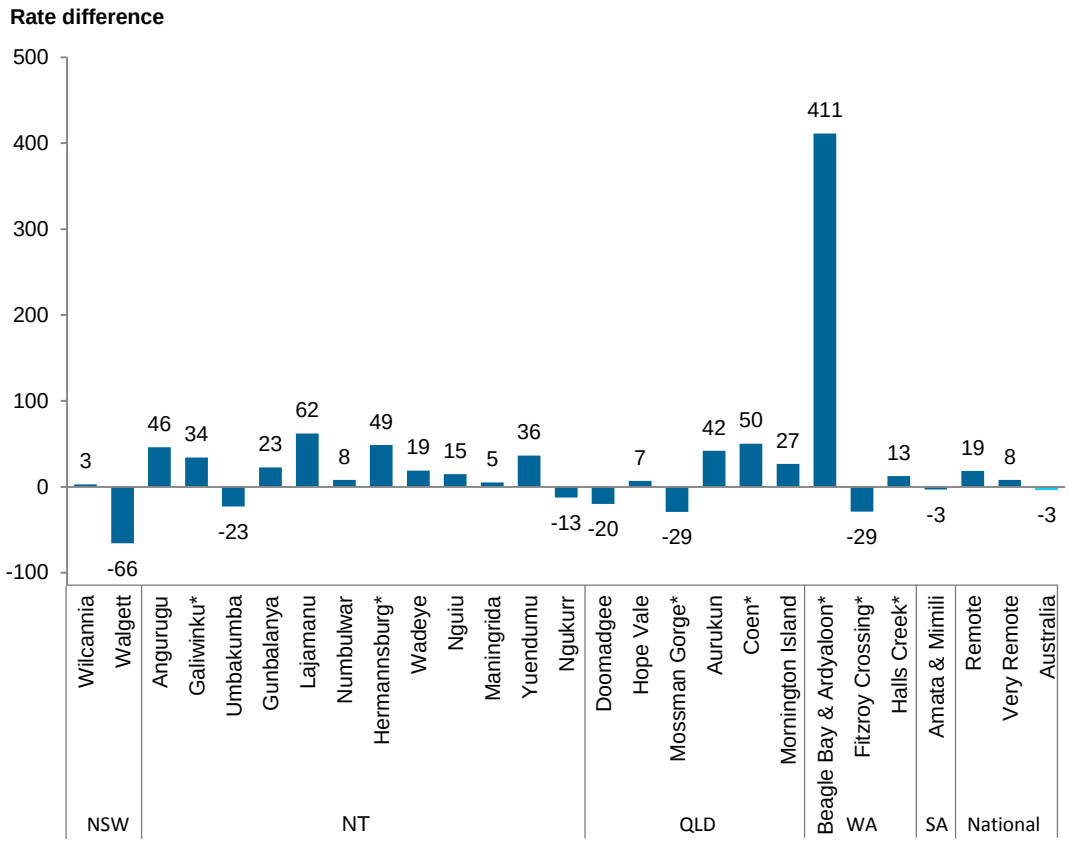
Between 2003–04 and 2010–11, hospitalisations for potentially preventable conditions declined in 6 RSD SLAs, but the decline was statistically significant in Walgett only (Figure 2.4 and Table 2.4).

Changes in hospitalisations over the medium term (2003–04 to 2010–11):

- Only Walgett in New South Wales had a statistically significant decrease in hospitalisations for potentially preventable conditions.
- Only East Arnhem-Balance (Galiwinku, Gapuwiyak, Milingimbi and Yirrkala) in the Northern Territory had a statistically significant increase in hospitalisations for potentially preventable conditions.

Changes in hospitalisations over the short term (2006–07 to 2010–11):

- Only Walgett in New South Wales had a statistically significant decrease in hospitalisations for potentially preventable conditions.
- Only East Arnhem-Balance (Galiwinku, Gapuwiyak, Milingimbi and Yirrkala) in the Northern Territory had a statistically significant increase in hospitalisations for potentially preventable conditions.



* indicates where the individual community represents less than 50% of the total Indigenous population of the SLA

Notes

1. Rate difference is the hospitalisation rate in 2010–11 minus the rate in 2003–04. Where no data were available for 2003–04 and 2010–11, other available data points were used to obtain the difference. The rate difference is for the SLA in which the community is located. The rate difference for Amata and Mimili is for *Remote and very remote* areas of South Australia.

2. Galiwinku also represents Gapuwiyak, Milingimbi and Yirrkala communities.

3. Australia includes all jurisdictions considered to have data of reportable quality (NSW, Vic, Qld, WA, SA and NT).

Source: AIHW analyses of Hospital Morbidity Database.

Figure 2.4: Hospitalisations rate difference for potentially preventable conditions between 2003–04 and 2010–11, Indigenous Australians by RSD community (SLA)

Table 2.4: Indigenous hospitalisations per 1,000 population for potentially preventable conditions, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
NSW	**47.4**	**47.1**	**50.4**	**49.0**	**54.6**	**48.0**	**46.4**	**43.3**	**–0.4**	**–5.9**	**–2.0**	**–16.0**	–4.1
Wilcannia	84.2	94.2	68.5	79.9	84.2	125.5	108.4	87.0	3.2	26.3	3.8	19.2	2.8
Walgett	133.3	111.3	99.6	102.1	105.2	83.8	81.2	66.4	–8.0*	–41.5*	–10.0*	–37.4*	–66.9
NT	**65.9**	**64.8**	**69.6**	**69.4**	**70.4**	**79.9**	**84.9**	**79.9**	**2.7***	**29.1***	**3.6**	**20.5**	**14.0**
Angurugu	30.7	n.p.	81.9	47.4	33.3	76.8	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	46.1
Galiwinku[(a)] (East Arnhem-Balance)	53.7	53.7	50.3	54.7	55.3	72.0	93.2	87.7	6.0*	77.9*	10.4*	76.0*	34.0
Umbakumba	99.1	155.5	82.3	85.4	44.2	47.3	71.6	76.2	–8.6	–61.0	0.9	4.2	–22.9
Gunbalanya	36.3	n.p.	60.0	40.0	61.3	58.8	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	22.5
Lajamanu	45.8	n.p.	107.8	106.2	112.7	107.8	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	62.0
Numbulwar	59.9	79.3	37.2	53.4	24.3	68.0	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	8.1
Hermannsburg (Tanami)	124.4	183.3	157.6	144.5	141.3	150.1	205.3	173.1	5.1	28.4	12.1	33.6	48.7
Wadeye	27.4	n.p.	37.4	31.8	31.3	39.1	52.0	46.4	n.p.	n.p.	5.0	62.8	19.0
Nguiu	63.8	34.4	63.8	66.8	56.0	69.4	95.1	78.7	4.9	54.1	6.3	37.7	14.9
Maningrida	39.9	32.8	39.3	45.8	52.6	54.9	41.9	44.8	1.6	27.8	–1.3	–11.1	4.9
Yuendumu	74.1	64.3	115.3	118.6	121.9	168.0	123.6	110.4	8.5	80.0	–1.5	–5.0	36.3
Ngukurr	37.0	36.3	54.8	44.9	41.6	74.6	34.3	24.4	–0.5	–9.4	–4.8	–43.0	–12.6

(Continued)

Table 2.4 (continued): Indigenous hospitalisations per 1,000 population for potentially preventable conditions, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
QLD	**56.7**	**55.8**	**58.1**	**58.4**	**63.9**	**65.1**	**70.4**	**54.1**	**1.0**	**12.3**	**–0.1**	**–1.0**	**–2.3**
Aurukun	54.4	91.0	91.0	93.1	62.8	62.8	96.2	n.p.	n.p.	n.p.	n.p.	n.p.	41.8
Coen (Cook)	139.8	143.4	111.1	121.9	138	100.4	190.0	n.p.	n.p.	n.p.	n.p.	n.p.	50.2
Doomadgee	150.2	157.2	160.2	157.2	123.4	156.2	149.3	130.3	–2.7	–12.5	–2.8	–7.1	–19.9
Hope Vale	205.8	186.6	182.4	164.6	208.5	155.0	286.7	212.6	6.1	20.7	17.4	42.3	6.8
Mornington Island	139.8	174.8	128.2	149.4	165.3	214.0	186.4	166.3	6.2	30.8	5.5	14.7	26.5
Mossman Gorge (Douglas)	122.9	175.2	129.0	146.0	178.8	159.4	166.7	152.1	3.4	19.4	0.0	0.0	–29.2
WA	**195.5**	**261.1**	**293**	**311.7**	**348.8**	**249**	**202**	**180.8**	**–5.9**	**–21.0**	**–40.9***	**–52.4***	**–14.7**
Beagle Bay[(b)] (Broome)	940.7	1,023.9	1,011.2	1,382.4	1,666.2	1,493.1	1,352.9	1,351.8	74.4	55.4	–37.5	–10.8	411.1
Fitzroy Crossing (Derby-West Kimberley)	167.0	209.7	291.3	288.8	366.7	146.4	106.2	138.0	–12.8	–53.8	–56.2	–77.9	–29.0
Halls Creek (Halls Creek)	135.1	145.2	193.5	128.2	128.2	115.3	130.2	147.6	–2.6	–13.7	4.1	12.7	12.5

(continued)

Table 2.4 (continued): Indigenous hospitalisations per 1,000 population for potentially preventable conditions, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
SA	**68.8**	**69.2**	**73.4**	**68.0**	**82.6**	**71.4**	**68.0**	**74.3**	**0.5**	**5.0**	**–0.2**	**–1.2**	**5.5**
Amata & Mimili[(d)]	108.6	101.7	118.9	108.8	131.1	120.1	105.0	105.6	0.3	1.6	–3.3	–11.9	–3.0
Remoteness													
Remote	156.9	160.0	174.2	204.2	239.9	184.6	176.4	175.5	3.3	14.8	–12.1	–23.7	18.6
Very Remote	79.1	87.3	100.2	87.8	93.8	89.4	91.2	87.2	0.6	5.2	–0.4	–1.7	8.1
Remote and very remote	109.1	113.8	126.2	129.5	148.7	125.0	124.2	120.2	1.7	11.1	–4.3	–13.3	11.1
Total Indigenous[(e)]	**75.5**	**85.1**	**91.8**	**93.4**	**103.4**	**86.7**	**81.3**	**72.6**	**–0.5**	**–4.9**	**–6.4**	**–27.3**	**–2.9**

* indicates statistically significant difference

(a) Also represents Gapuwiyak, Milingimbi and Yirrkala communities.

(b) Also represents Ardyaloon.

(c) Rate difference is the hospitalisation rate in 2010–11 minus the rate in 2003–04. Where no data were available for 2003–04 and 2010–11 other available data points were used to obtain the difference.

(d) *Remote and very remote* areas of South Australia.

(e) Includes all jurisdictions considered to have data of reportable quality (NSW, Vic, Qld, WA, SA and NT).

Notes

1. SLA name is included in brackets where the individual community represents less than 50% of the total Indigenous SLA population.
2. Data for Numbulwar was unreliable for 2009–10 and 2010–11 as a result of shifting SLA boundaries.
3. In some years the numbers of hospitalisations were too small to be presented for Angurugu, Gunbalanya, Lajamanu, Numbulwar, Wadeye and Ngukurr.

Source: AIHW analyses of Hospital Morbidity Database.

Comparisons with other Australians

In 2010-11:

- Indigenous Australians were about 4 times as likely as other Australians to be hospitalised for potentially preventable conditions. Between 2003–04 and 2010–11, rates for potentially preventable conditions among Indigenous and other Australians showed a non-significant decline.
- In New South Wales, the rate ratio was 2.5. Indigenous residents of Central Darling SLA (Wilcannia) were nearly 5 times as likely as other residents to be hospitalised for potentially preventable conditions, while in Walgett SLA the rate ratio was 2.1.
- In Western Australia, the rate ratio was 11.7. Indigenous residents of Broome SLA (Beagle Bay and Ardyaloon) had much higher rates of hospitalisations for potentially preventable conditions than other residents (a rate ratio of 44). In the same year, Indigenous residents of Derby-West Kimberley SLA (Fitzroy Crossing) were hospitalised for potentially preventable conditions at 4 times the rate of other residents and Indigenous residents of Halls Creek were hospitalised at 1.3 times the rate of other residents.
- The numbers of hospitalisations for potentially preventable conditions for other residents in Northern Territory RSD SLAs were too small for comparison.

Diseases associated with poor environmental health

Diseases associated with poor environmental health include infectious, bacterial and respiratory conditions. Between 2003–04 and 2010–11, Indigenous hospitalisation rates for diseases associated with poor environmental health showed a non-significant increase; for other Australians there was a statistically significant increase. Age standardised hospitalisation rates suggest Indigenous Australians were about three times as likely as other Australians to be hospitalised for these conditions in 2010–11. Analysis show that:

- in 2010–11, Indigenous residents in most RSD SLAs had higher rates of hospitalisations for diseases associated with poor environmental health than Indigenous Australians nationally. In Central Darling (Wilcannia), West Arnhem (Maningrida) and Yugul Mangi (Ngukurr), rates fluctuated but were lower than the national Indigenous rate in 2010–11.
- most RSD SLAs in New South Wales, Queensland, Western Australia and South Australia had higher rates of hospitalisations for diseases associated with poor environmental health compared with Indigenous rates in their respective jurisdictions. Most RSD SLAs in the Northern Territory had lower rates compared with Indigenous rates in the Northern Territory as a whole; however, rates in Lajamanu, Tanami (Hermannsburg), and Yuendumu were higher.
- the hospitalisation rate for diseases associated with poor environmental health increased between 2003–04 and 2010–11 for Indigenous Australians living in *Remote* areas of Australia, but not significantly. There was a non-significant decrease in *Very remote* areas of Australia. While rates have fluctuated, in general RSD SLAs in New South Wales, South Australia and the Northern Territory had lower rates than Indigenous rates in *Remote and very remote* areas. However, RSD SLAs in Western Australia and Queensland had higher rates than Indigenous rates in *Remote and very remote* areas.

Time series

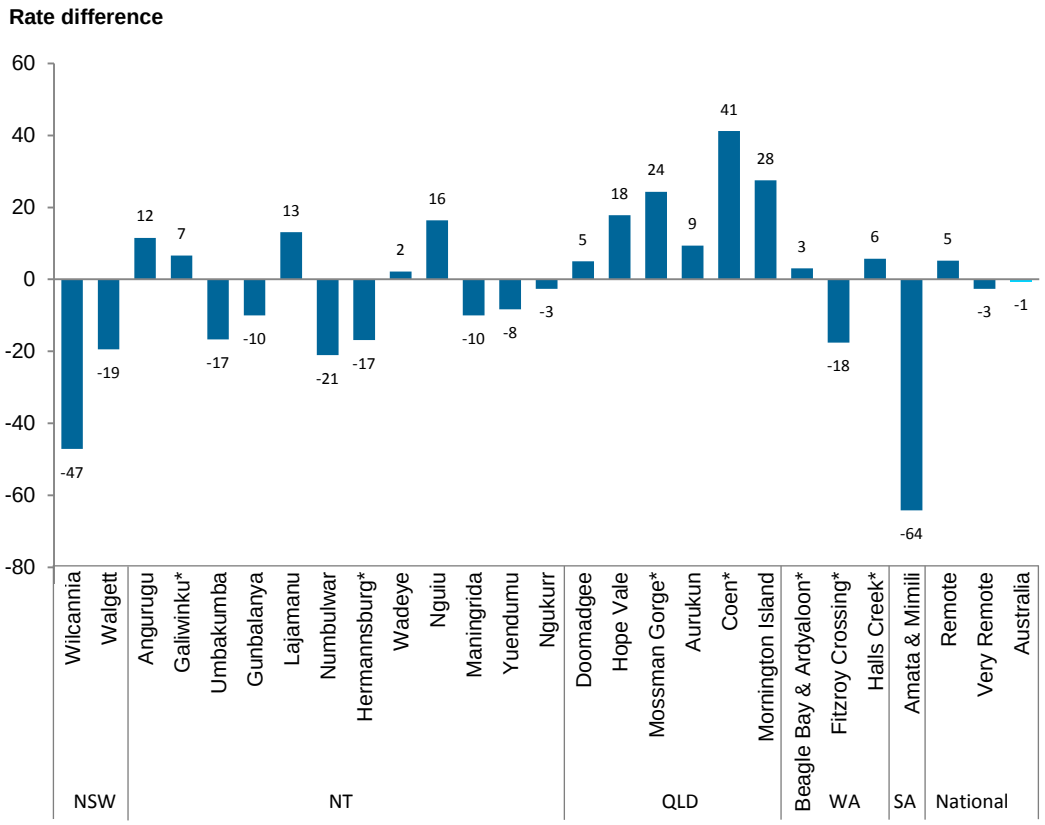
Figure 2.5 and Table 2.5 show Indigenous hospitalisations rate for diseases associated with poor environmental health for RSD communities between 2003–04 and 2010–11.

Changes in hospitalisations over the medium term (2003–04 to 2010–11):

- RSD SLAs with statistically significant decreases in hospitalisations for diseases associated with poor environmental conditions were Walgett, Derby-West Kimberley (Fitzroy Crossing) and *Remote and very remote* areas of South Australia.
- Mornington was the only RSD SLA with a significant increase in hospitalisations for diseases associated with poor environmental conditions.

Changes in hospitalisations over the short term (2006–07 to 2010–11):

- Only *Remote and very remote* areas of South Australia (Amata and Mimili) had a statistically significant decrease in hospitalisations for diseases associated with poor environmental conditions.
- No RSD SLA had a statistically significant increase in hospitalisations for diseases associated with poor environmental conditions over the short term.



* indicates where the individual community represents less than 50% of the total Indigenous population of the SLA

Notes

1. Rate difference is the hospitalisation rate in 2010–11 minus the rate in 2003–04. Where no data were available for 2003–04 and 2010–11 other available data points were used to obtain the difference. The rate difference is for the SLA in which the community is located. Data for Amata and Mimili are the rate difference for *Remote and very remote* areas of South Australia.

2. Galiwinku also represents Gapuwiyak, Milingimbi and Yirrkala communities.

3. Australia includes all jurisdictions considered to have data of reportable quality (NSW, Vic, Qld, WA, SA and NT).

Source: AIHW analyses of Hospital Morbidity Database.

Figure 2.5: Change in the rate of hospitalisations between 2003–04 and 2010–11 for diseases associated with poor environmental health, Indigenous Australians by RSD community (SLA)

Table 2.5: Indigenous hospitalisations per 1,000 population for diseases associated with poor environmental conditions, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
NSW	**17.0**	**15.1**	**17.7**	**16.8**	**17.0**	**17.5**	**18.0**	**17.6**	**0.2**	**9.2**	**0.3**	**6.2**	**0.6**
Wilcannia	62.8	28.5	24.3	20.0	27.1	67.0	49.9	15.7	–1.0	–11.6	1.4	28.4	–47.1
Walgett	49.5	42.9	41.9	30.1	36.3	25.5	30.6	30.1	–2.9*	–40.4*	–0.6	–7.6	–19.4
NT	**46.7**	**43.2**	**46.9**	**43.0**	**40.6**	**43.0**	**43.5**	**42.9**	**–0.5**	**–7.0**	**0.3**	**2.5**	**–3.8**
Angurugu	19.2	n.p.	15.4	12.8	16.6	30.7	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	11.5
Galiwinku[(a)] (East Arnhem-Balance)	34.9	29.9	34.6	33.6	31.6	30.7	40.2	41.5	1.0	20.2	2.4	29.0	6.6
Umbakumba	57.9	61.0	38.1	22.9	35.1	22.9	22.9	41.2	–4.1	–49.1	2.4	42.6	–16.7
Gunbalanya	35.0	n.p.	38.8	33.8	42.5	25.0	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	–10.0
Lajamanu	53.9	n.p.	93.1	44.1	55.6	67.0	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	13.1
Numbulwar	37.2	40.5	21.0	14.6	16.2	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	–21.0
Hermannsburg (Tanami)	133.8	174.0	136.1	122.5	109.9	109.9	130.5	116.9	–5.1	–26.6	0.9	3.1	–16.9
Wadeye	29.6	n.p.	26.8	39.7	24.0	30.7	40.8	31.8	n.p.	n.p.	n.p.	n.p.	2.2
Nguiu	27.8	13.4	36.5	44.2	38.6	36.0	36.0	44.2	2.6	66.4	–0.3	–2.4	16.4
Maningrida	31.8	23.1	28.9	31.5	23.4	24.0	26.3	21.8	–0.9	–20.2	–1.7	–21.0	–10.0
Yuendumu	79.1	52.7	143.3	107.1	128.5	149.9	70.8	70.8	0.9	7.8	–13.0	–48.7	–8.3
Ngukurr	23.1	20.5	33.0	21.8	19.8	32.3	13.9	20.5	–0.7	–20.0	–0.9	–15.6	–2.6

(continued)

Table 2.5 (continued): Indigenous hospitalisations per 1,000 population for diseases associated with poor environmental conditions, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
QLD	**22.3**	**19.2**	**21.0**	**18.8**	**21.0**	**19.0**	**21.9**	**22.1**	**0.1**	**3.0**	**0.8**	**16.0**	**–0.2**
Aurukun	31.4	39.7	68.0	40.8	41.8	18.8	40.8	n.p.	n.p.	n.p.	n.p.	n.p.	9.4
Coen (Cook)	55.6	48.4	43.0	68.1	26.9	39.4	96.8	n.p.	n.p.	n.p.	n.p.	n.p.	41.2
Doomadgee	73.6	69.7	76.6	69.7	61.7	63.7	90.5	78.6	1.1	10.5	4.7	26.7	5.0
Hope Vale	79.6	61.7	63.1	115.2	80.9	37.0	75.4	97.4	1.0	8.5	–4.1	–14.3	17.8
Mornington Island	71.0	73.1	68.9	66.7	67.8	108.1	90.0	98.5	4.7*	46.5*	8.6	51.5	27.5
Mossman Gorge (Douglas)	45.0	54.7	48.7	74.2	60.8	85.2	42.6	69.3	2.4	38.1	–2.8	–15.1	24.3
WA	**41.1**	**37.5**	**35.2**	**32.0**	**34.4**	**33.7**	**33.0**	**38.1**	**–0.5**	**–9.1**	**1.1**	**13.5**	**–3.0**
Beagle Bay[(b)] (Broome)	53.7	52.3	52.5	42.1	47.2	43.6	49.2	56.8	–0.2	–2.4	3.1	29.8	3.1
Fitzroy Crossing (Derby-West Kimberley)	84.1	68.0	76.7	71.5	70.5	54.1	54.8	66.5	–3.1*	–25.6*	–2.6	–14.4	–17.6
Halls Creek (Halls Creek)	81.0	66.5	56.0	72.6	74.2	67.3	75.8	86.7	1.4	12.5	3.0	16.4	5.7

(continued)

Table 2.5 (continued): Indigenous hospitalisations per 1,000 people for diseases associated with poor environmental conditions, by RSD community (SLA), 2003–04 to 2010–11

Community (SLA)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	Medium-term trend 2003–04 to 2010–11		Short-term trend 2006–07 to 2010–11		Rate difference[(c)] (2003–04 and 2010–11)
									Annual change	% change	Annual change	% change	
SA	**30.2**	**25.8**	**28.3**	**26.5**	**26.9**	**26.5**	**27.5**	**27.4**	**–0.2**	**–4.4**	**0.2**	**3.6**	**–2.8**
Amata & Mimili[(d)]	260.0	242.5	265.8	265.0	252.5	216.7	220.8	195.8	–8.5*	–23.0*	–17.0*	–25.7*	–64.2
Remoteness													
Remote	49.4	41.7	46.6	46.9	50.8	48.3	52.7	54.6	1.2*	16.9*	1.7	14.8	5.2
Very Remote	46.9	44.1	46.9	40.0	40.0	39.4	42.2	44.3	–0.6	–8.9	1.1	10.8	–2.6
Remote and very remote	47.9	43.2	46.8	42.6	44.1	42.7	46.2	48.2	0.1	1.1	1.3	12.5	0.3
Total Indigenous[(e)]	**26.2**	**23.5**	**25.1**	**23.1**	**24.0**	**23.7**	**24.8**	**25.5**	**0.0**	**–0.5**	**0.6***	**9.7***	**–0.7**

* indicates statistically significant difference

(a) Also represents Gapuwiyak, Milingimbi and Yirrkala communities.

(b) Also represents Ardyaloon.

(c) Rate difference is the hospitalisation rate in 2010–11 minus the rate in 2003–04. Where no data were available for 2003–04 and 2010–11 other available data points were used to obtain the difference.

(d) *Remote and very remote* areas of South Australia.

(e) Includes all jurisdictions considered to have data of reportable quality (NSW, Vic, Qld, WA, SA and NT).

Notes

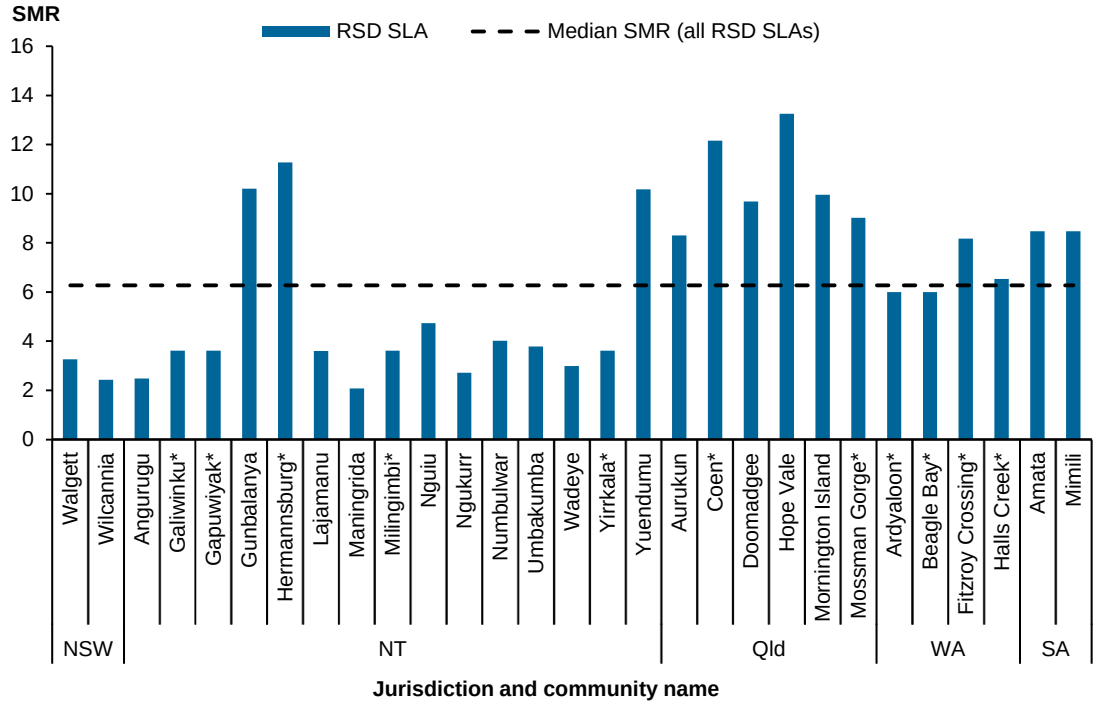
1. SLA name is included in brackets where the individual community represents less than 50% of the total Indigenous SLA population.
2. Data for Numbulwar was unreliable for 2009–10 and 2010–11 as a result of shifting SLA boundaries.
3. In some years the numbers of hospitalisations were too small to be presented for Angurugu, Gunbalanya, Lajamanu, Numbulwar and Wadeye.

Source: AIHW analyses of Hospital Morbidity Database.

Hospitalisations for diabetes

Diabetes is very common among Indigenous Australians. Standardised Morbidity Ratios (SMRs) for diabetes hospitalisations are shown in Figure 2.6. These allow a comparison of the number of observed separations for Indigenous Australians in an RSD SLA to the number of separations if Indigenous age-specific rates in the SLA were the same as national age-specific rates for other Australians. Ratios greater than 1 suggests Indigenous separations in the RSD SLA are higher than would be expected if the age-specific separation rates were the same as for other Australians nationally. Conversely, ratios lower than 1 suggests the observed separations are lower than expected.

In 2008–09 to 2010–11, SMRs for diabetes in RSD SLAs were all greater than 1. This suggests hospital separation rates for diabetes were higher in RSD SLAs compared to other Australians nationally. Ratios do however vary substantially, ranging from 2.1 in West Arnhem (Maningrida) to 13.3 in Hope Vale. The median (middle value) SMR for diabetes was 6.3. This suggests Indigenous residents of RSD SLAs were more than 6 times as likely to be hospitalised for diabetes as other Australians nationally (Figure 2.6).



* indicates where the individual community represents less than 50% of the total Indigenous population of the SLA

(a) The SMR is the ratio of observed hospital separations for Indigenous Australians in each RSD SLA to the expected number of separations if the age-specific hospital separation rates (for specific principal diagnosis) in this SLA were the same as in the standard population. The standard population used is other Australians (that is, non-Indigenous plus not stated) in NSW, Vic, Qld, WA, SA and NT combined.

(b) Ardyaloon and Beagle Bay are both located within Broome SLA, which includes the town of Broome. The communities of Gapuwiyak, Milingimbi, Galiwinku and Yirrkala are all located within East Arnhem-Balance SLA. For Amata and Mimili, data are for *Remote and very remote* areas of South Australia.

(c) Data for Angurugu, Gunbalanya and Numbulwar are for the one-year period 2008–09.

Note: Data for Aurukun and Coen in Queensland are excluded due to data quality issues.

Source: AIHW National Hospital Morbidity Database.

Figure 2.6: Diabetes hospitalisations: Standardised Morbidity Ratio (SMR)[(a)] by RSD community (SLA)[(b)], 2008–09 to 2010–11[(c)]

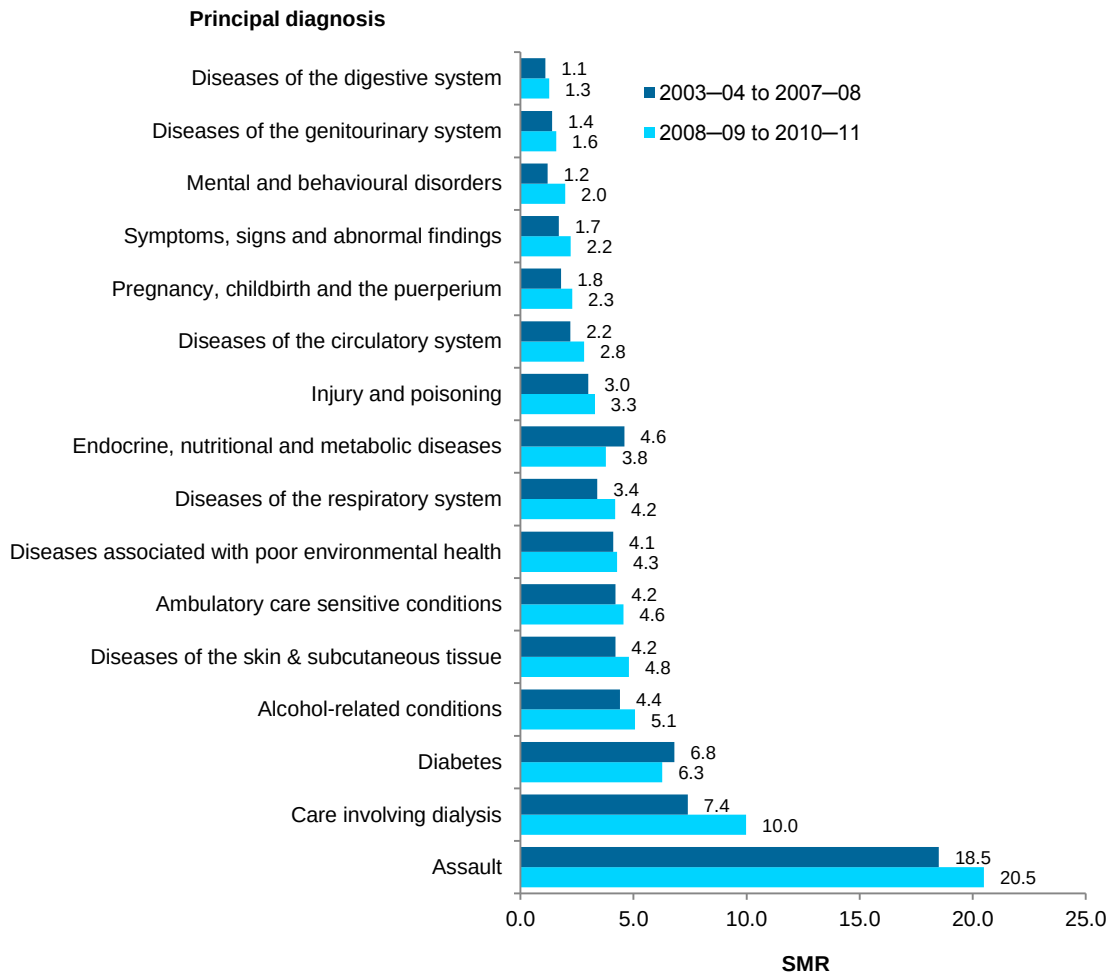
Time series

Compared with 2003–2008, fifteen RSD SLAs had a lower SMR for diabetes hospitalisations in 2008–11. There was no change in the SMR for Indigenous residents of Mornington SLA, while the remaining RSD SLAs had higher SMRs (Table A3; Table A4).

Hospitalisations for other principal diagnoses

Median SMRs for RSD SLAs for various categories of principal diagnosis are shown in Figure 2.7. In 2008-09 to 2010-11:

- the median SMR for potentially preventable conditions was 4.6. This suggests Indigenous Australians in RSD SLAs were over 4 times as likely as other Australians nationally to be hospitalised for potentially preventable conditions. Ratios ranged from 2.2 to 10. RSD SLAs with the highest SMRs for potentially preventable conditions were Hope Vale (10), Tanami (Hermannsburg) (8.8) and Mornington (8.2). SMRs for potentially preventable conditions were lowest in the Northern Territory SLAs of Yugul Mangi (Ngukurr) (2.2), Thamarrurr (Wadeye) (2.2), West Arnhem (Maningrida) (2.4) and Lajamanu (2.5).
- the median SMR for assault for RSD SLAs was 20.5. This compares to 18.5 in 2003–04 to 2007–08. SMRs for assault were highest in the RSD SLAs of Tanami (Hermannsburg) and Yuendumu and lowest in the RSD SLAs of West Arnhem (Maningrida), Angurugu and Numbulwar.
- the median SMR for alcohol-related conditions for RSD SLAs was 5.1. This compares to 4.4 in 2003–04 to 2007–08. SMRs for alcohol-related conditions were highest in the RSD SLAs of Central Darling (Wilcannia), Douglas (Mossman Gorge) and Mornington; and lowest in the RSD SLAs of Angurugu, Numbulwar and Yugul Mangi (Ngukurr).
- the median SMR for care involving dialysis for RSD SLAs was 10. This suggests Indigenous Australians in RSD SLAs were 10 times as likely as other Australians nationally to be hospitalised for dialysis. In 2003–04 to 2007–08 the median SMR was 7.4 (Figure 2.7).



(a) The SMR is the ratio of observed hospital separations for Indigenous Australians in RSD SLAs to the expected number of separations if the age-specific hospital separation rates (for specific principal diagnosis) in this SLA were the same as in the standard population. The standard population used here is other Australians (that is, non-Indigenous plus not stated) in NSW, Vic, Qld, WA, SA & NT combined.

(b) For the calculation of median values, duplicate values for the same SLA were excluded. For Amata and Mimili, information at SLA level was not available and values for Remote and very remote areas in South Australia were used instead. These values were included in median calculations.

(c) Data for the SLAs that include Angurugu, Gunbalanya and Numbulwar are for the one-year period 2008–09.

Source: AIHW National Hospital Morbidity Database.

Figure 2.7: Median Standardised Morbidity Ratios (SMR)[(a)(b)] for RSD communities (SLAs), by principal dialysis, 2003–04 to 2007–08 and 2008–09 to 2010–11[(c)]

Disability

Indigenous Australians have higher rates of profound or severe core activity limitations than other Australians. In 2008 in non-remote areas, the age-standardised rate of profound or severe core activity limitation among Indigenous Australians aged 18 years or over was 2.2 times the rate experienced by non-Indigenous people (AIHW 2013a).

The prevalence of disability among Indigenous Australians is higher at all ages. In 2008, 78% of Indigenous Australians aged 55 years and over, and 66% of those aged 45–54 years had a disability or long-term health condition. This compares to 62% of non-Indigenous

Australians aged 55 years and over and 42% of those aged 45–54 years. The earlier onset of disability or long-term health conditions suggests a greater need for service provision for Indigenous people with a disability at younger ages.

In 2009–10, Indigenous Australians aged less than 65 years used disability support services at around twice the rate of non-Indigenous Australians (28 per 1,000 compared with 13 per 1,000). The biggest rate ratio of 2.7 between Indigenous and non-Indigenous Australians occurred in the 55–64 age group (AIHW 2013a).

Data from the Commonwealth State/Territory Disability Agreement (CSTDA) collection are generally not available at the RSD community or SLA level. Data are available at postcode level—a larger geographic area. Some issues in using postcodes as a unit of analyses are that respondents may mis-report their postcode of residence or use the postcode of post office boxes rather than their residential postcode. Also, postcode boundaries change over time. This may cause problems when working with data from different reference periods as changes to boundaries are difficult to reconcile with changes in the population (ABS 2007a).

Between 2006–07 and 2010–11 there was a general increase in the use of disability services among Indigenous residents in RSD communities. The increase in the number of Indigenous residents accessing disability services was greatest in postcodes that included the following communities: postcode 0822 (Angurugu, Galiwinku, Gunbalanya, Maningrida, Milingimbi, Nguiu, Umbakumba and Wadeye), postcodes 0822 and 0880 (Gapuwiyak), postcode 0872 (Hermannsburg, Yuendumu, Amata and Mimili) and postcode 0852 (Lajamanu, Ngukurr and Numbulwar). Increases were also seen in postcodes containing Walgett, Yirrkala, Ardyaloon and Beagle Bay. No major changes were observed in the remaining communities (Table 2.6).

Table 2.6: Number of Indigenous disability service users residing in RSD communities[(a)], 2006–07 to 2010–11

Community (postcode)	2006–07	2007–08	2008–09	2009–10	2010–11	Change[(b)]
Walgett (2832, 2833)	10	11	20	26	40	30
Wilcannia (2836)	<3	<3	6	7	6	n.p.
Angurugu, Galiwinku, Gunbalanya, Maningrida, Milingimbi, Nguiu, Umbakumba, Wadeye (0822)	54	142	162	n.p.	224	170
Gapuwiyak (0822; 0880)	59	169	189	25	271	212
Hermannsburg (Ntaria), Yuendumu, Amata, Mimili (0872)	109	440	539	488	522	413
Lajamanu, Ngukurr, Numbulwar (0852)	27	59	48	45	101	74
Yirrkala (0880)	5	27	27	25	47	42
Aurukun, Coen, Mornington Island (4871)	47	61	63	71	61	14
Doomadgee (4830)	<3	4	5	6	6	n.p.
Hope Vale (4895)	12	10	14	10	13	1
Mossman Gorge (4873)	15	22	26	28	26	11
Ardyaloon, Beagle Bay (6725)	40	81	73	88	96	56
Fitzroy Crossing (6765)	27	32	37	28	31	4
Halls Creek (6770)	13	20	26	24	25	12

(a) Approximated by postcode of residence.

(b) Change between 2006–07 and 2010–11.

Note: Indigenous status not recorded for 14 cases in postcodes 2832 and 2833; 4 cases in postcodes 0822, 0880, 4873; 3 cases in 4871, 6725; 2 cases in 2836; and 1 case in 0872.

Source: CSTDA National minimum data set (NMDS).

Mortality

Mortality rate is considered a good summary measure of the overall health of a population. In 2006–2010, Aboriginal and Torres Strait Islander people had an age-standardised mortality rate twice the rate of other Australians (Table 2.7). This is despite a 33% reduction in all-cause mortality rates for Indigenous Australians between 1991 and 2010 (based on data from Western Australia, South Australia and the Northern Territory which are considered to have adequate levels of Indigenous identification in mortality data for long-term trends). Data for five jurisdictions considered to have adequate data quality (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory) show a 5% decline in all-cause mortality rates between 2001 and 2010 (AIHW 2013a).

While most non-Indigenous deaths occur in older age groups, most Indigenous deaths occur in middle age groups. Almost two-thirds of Indigenous deaths occur before the age of 65. The all-cause mortality rate among Indigenous Australians aged 35–44 is 5 times that of non-Indigenous Australians.

In 2006–2010, mortality rates for Indigenous Australians ranged from 962 deaths per 100,000 in New South Wales to 1,541 per 100,000 in the Northern Territory.

Table 2.7: Numbers and rates (age-standardised) of all-cause mortality by Indigenous status and jurisdiction, 2006–2010

	Number of deaths		Number per 100,000		
Jurisdiction	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**	**Rate ratio[(b)]**
NSW	2,903	231,732	962	598	1.6
Qld	3,031	125,074	1,089	597	1.8
WA	2,230	59,276	1,431	574	2.5
SA	710	61,226	1,060	615	1.7
NT	2,258	2,625	1,541	645	2.4
Total[(a)]	**11,132**	**479,933**	**1,151**	**597**	**1.9**

(a) Based on NSW, Qld, WA, SA and NT data as these jurisdictions are considered to have adequate levels of Indigenous identification in mortality data.

(b) Rate ratio is the mortality rate for Indigenous Australians divided by the mortality rate for non-Indigenous Australians.

Source: AIHW 2013a.

In 2006–2010, data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory show the most common causes of death among Indigenous Australians were circulatory diseases (26% of all deaths), neoplasm (including cancer) (19%) and external causes (15%). For non-Indigenous Australians, circulatory diseases (34% of all deaths) and neoplasm (including cancer) (30%) were also the most common causes of death. Deaths from external causes were less common for non-Indigenous Australians (6% of all deaths) (AIHW 2013a).

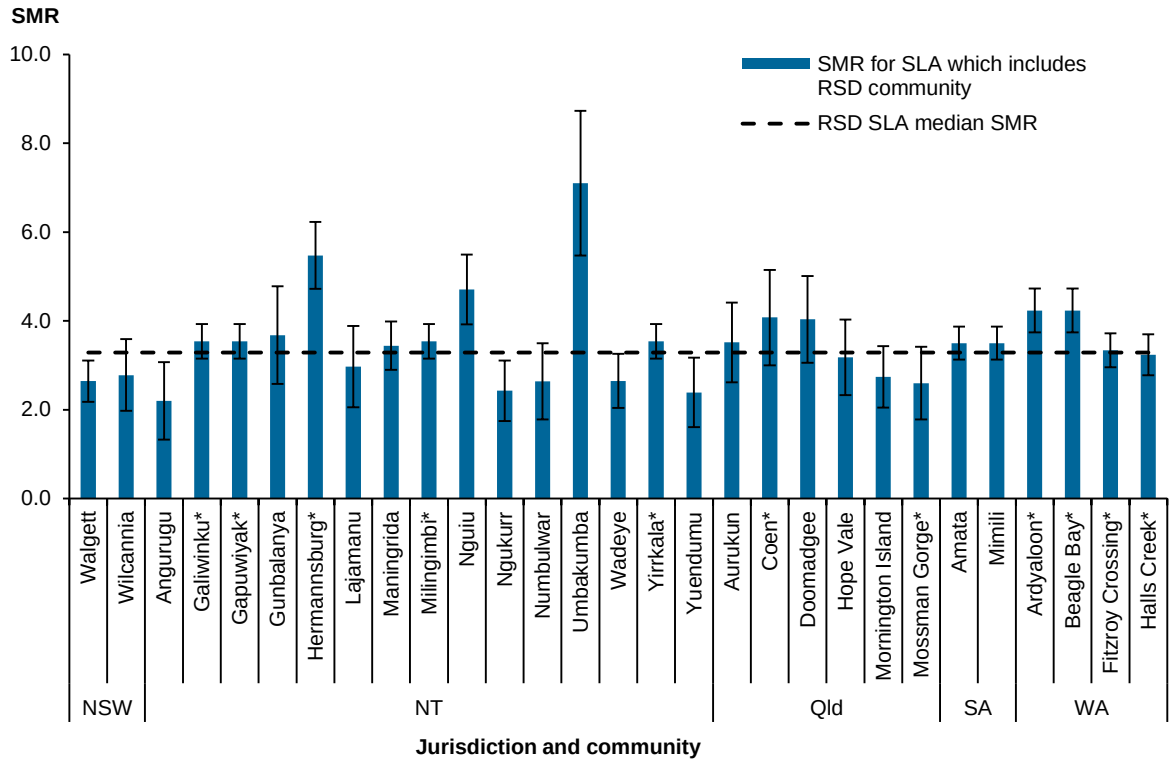
Indigenous Australians had higher rates of death from specific causes than non-Indigenous Australians. The largest gap in death rates were from circulatory disease (27% of the total rate difference); followed by endocrine, metabolic and nutritional disorders (including diabetes) (17% of the rate difference); neoplasms (including cancer) (12%); and respiratory diseases (12%). Indigenous deaths due to diabetes were nearly 7 times the rate of non-Indigenous Australians.

Indigenous Australians were more than twice as likely as non-Indigenous Australians to die from external causes. Deaths from external causes were the third most common cause of death for Indigenous Australians (15% of deaths) and the fourth most common cause among non-Indigenous Australians (6% of deaths). The leading causes of death due to external causes among Indigenous Australians were suicide (30% of all deaths from external causes); transport accidents (28%); accidental poisoning (10%); and assault (9%). Around 61% of these deaths occurred in the 15–39 years age group (AIHW 2013a).

RSD communities

Mortality data were presented for 2003 to 2010 combined. Rates for RSD SLAs were based on small numbers and fluctuate over time; they should, therefore, be interpreted with caution. Standardised Mortality Ratios (SMRs) allow a comparison of the number of deaths for Indigenous Australians in RSD SLAs to the number of deaths that would be expected if the Indigenous age-specific rates in the SLA were the same as national age-specific rates for other Australians. A ratio greater than 1 suggests Indigenous deaths in the RSD SLA were higher than would be expected if the age-specific separation rates were the same as for other Australians nationally. A ratio lower than 1 suggests the observed deaths were lower than expected. In 2003 to 2010, ratios in RSD SLAs were all greater than 1. This suggests death rates were higher in RSD SLAs compared to other Australians nationally. SMR analysis shows:

- High rates of death were observed among Indigenous residents of RSD SLAs compared with other Australians nationally. SMRs for all-cause mortality ranged from 2.2 in Angurugu to 7.1 in Groote Eylandt (Umbakumba) (Figure 2.8). This suggests Indigenous residents in Angurugu had an all-cause death rate 2.2 times that of other Australians nationally and Indigenous residents of Groote Eylandt (Umbakumba) had a death rate 7.1 times other Australians nationally.
- The median (middle) SMR value for RSD SLAs was 3.3.
- In 2003 to 2010, the most common causes of death for Indigenous residents in RSD SLAs were circulatory diseases, followed by cancer and respiratory diseases.



* indicates where the individual community represents less than 50% of the total Indigenous population of the SLA

(a) The SMR is the ratio of observed deaths for Indigenous Australians in the RSD SLA to the expected number of deaths if the age-specific death rates (for specific principal diagnosis) in this SLA were the same as in the standard population. The standard population used is other Australians (that is, non-Indigenous plus not stated) in NSW, Vic, Qld, WA, SA & NT combined. Only these jurisdictions are considered to have adequate levels of Indigenous identification in mortality data.

(b) Error bars show upper and lower confidence intervals.

(c) Ardyaloon and Beagle Bay are both located within Broome SLA, which includes the town of Broome. The communities of Gapuwiyak, Milingimbi, Galiwinku and Yirrkala are all located within East Arnhem–Balance SLA. For Amata and Mimili, information is for *Remote and very remote* areas in South Australia.

Source: AIHW National Mortality Database.

Figure 2.8: All-cause mortality: Standardised Mortality Ratio[a, b], by RSD community (SLA)[c], 2003–2010

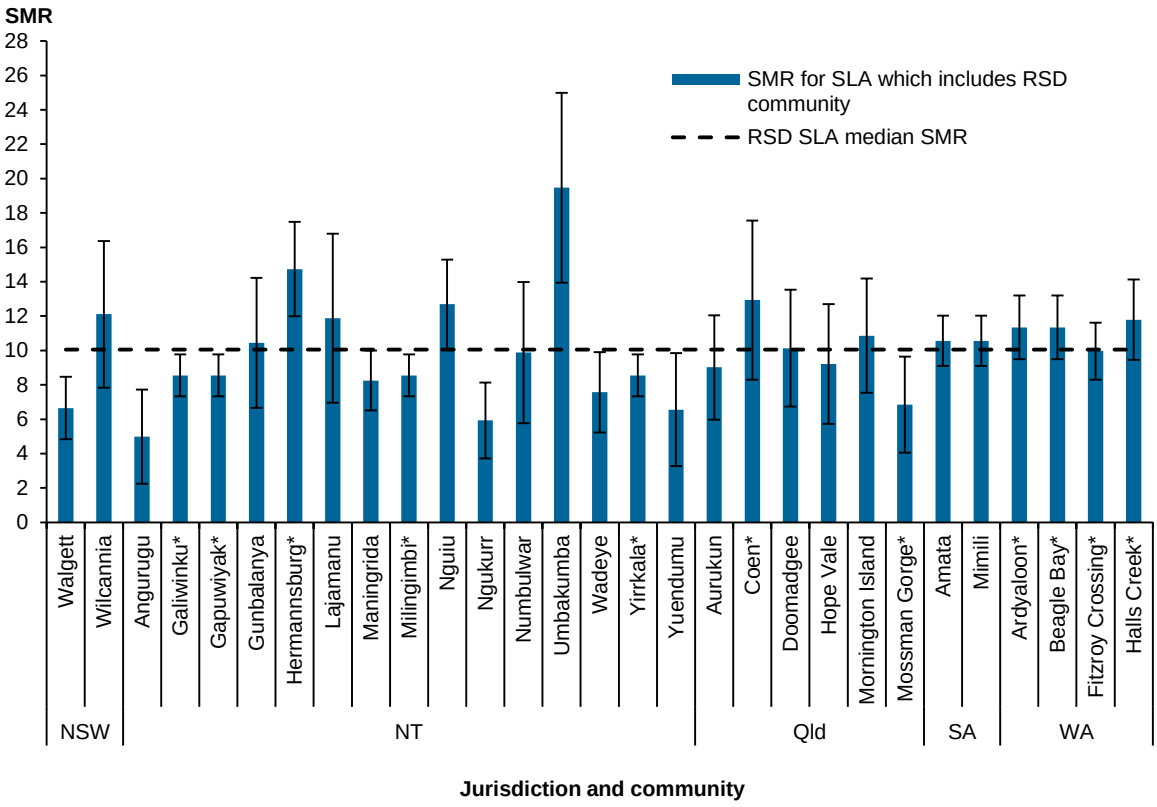
Avoidable mortality

Avoidable mortality is a population-based method of counting untimely and unnecessary deaths from diseases that could be prevented through effective public health and timely medical intervention. Deaths due to preventable causes have been used as a measure of the quality, effectiveness and accessibility of the health system.

Deaths from avoidable causes for Indigenous residents of RSD SLAs were compared to other Australians nationally and SMRs calculated for each RSD SLA.

Combined data for 2003 to 2010 show a median (middle) SMR for deaths from avoidable causes of 10. Indigenous Australians in RSD SLAs experienced deaths from avoidable causes at around 10 times the rate of other Australians nationally (Figure 2.9).

SMRs for avoidable mortality ranged from 5 in Angurugu to 19.5 in Groote Eylandt (Umbakumba).



* indicates where the individual community represents less than 50% of the total Indigenous population of the SLA

(a) The SMR is the ratio of observed deaths for Indigenous Australians in the RSD SLA to the expected number of deaths if the age-specific death rates (for specific principal diagnosis) in this SLA were the same as in the standard population. The standard population used is other Australians (that is, non-Indigenous plus not stated) in NSW, Qld, WA, SA & NT combined. Only these jurisdictions are considered to have adequate levels of Indigenous identification in mortality data.

(b) Error bars show upper and lower confidence intervals.

(c) Ardyaloon and Beagle Bay are both located within Broome SLA, which includes the town of Broome. The communities of Gapuwiyak, Milingimbi, Galiwinku and Yirrkala are all located within East Arnhem–Balance SLA. For Amata and Mimili, data is for *Remote and very remote* areas in South Australia.

Source: AIHW National Mortality Database.

Figure 2.9: Avoidable mortality: Standardised Mortality Ratio[a, b], by RSD community (SLA)[c], 2003–10

Child protection

In Australia, child protection is a state and territory government responsibility. Statistics on child protection at the national and state or territory level are published annually in Child Protection Australia. The 2010–11 report showed that the numbers of children subject to a notification of child abuse or neglect, under care and protection orders and in out-of-home care were rising. Aboriginal and Torres Strait Islander children were over-represented in all of these areas (AIHW 2012a).

Substantiations of notifications received during the year, refer to child protection notifications made to relevant authorities during the year ended 30 June, which were investigated and finalised by 31 August of that year, and concluded there was reasonable cause to believe the child had been, was being or was likely to be abused or neglected or otherwise harmed. Indigenous children were more likely to be the subjects of a substantiation of a notification received during the year than non–Indigenous children. In

2010–11, in all jurisdictions, the substantiation rate for Indigenous children was higher than for non-Indigenous children. Across Australia, Indigenous children were 7.5 times as likely as non-Indigenous children to be the subject of a substantiation (AIHW 2012a).

Substantiations are classified into 4 categories: physical abuse, sexual abuse, emotional abuse and neglect. In 2010–11, neglect was the most common type of substantiated abuse for Indigenous children in New South Wales, Western Australia, South Australia and the Northern Territory; emotional abuse was the most common type of substantiated abuse in Victoria, Queensland, Tasmania and the Australian Capital Territory.

Statistical comparisons between states and territories should, however, be made with caution. For RSD baseline mapping, local information on the number of child protection notifications was available in some jurisdictions but not others. Given this lack of information, and the significant differences in how each jurisdiction deals with and reports on child protection issues, it was not considered appropriate to make comparisons between communities across jurisdictions.

Only Western Australia and Queensland provided updated child protection data. Numbers for Indigenous communities of Western Australia were small and showed no consistent pattern. Numbers for Indigenous communities of Queensland were also small. The Queensland average substantiation rate for child abuse and neglect in 2010–11 was 5.5 per 1,000 children aged 0–17 years. All communities, apart from Mossman Gorge, had higher rates of substantiated notifications than the state average. The rates of substantiated notifications in Hope Vale increased significantly between 2009–10 and 2011–12, while in Doomadgee it decreased significantly. Aurukun and Mornington Island did not show a statistically significant change over time.

Juvenile justice supervision

Indigenous young people are over-represented in the juvenile justice system in Australia. On an average day in 2010–11, almost 40% of young people under juvenile justice supervision were Indigenous. Indigenous young people aged 10–17 were 15 times as likely as non-Indigenous young people to be under supervision on an average day. This over-representation occurred in all states and territories; Indigenous young people were between 14 and 18 times as likely as non-Indigenous young people to be under supervision in Queensland, South Australia and New South Wales (AIHW 2012c).

Indigenous young people under supervision were younger on average than non-Indigenous young people. In 2010–11, almost 25% of Indigenous young people under supervision on an average day were aged 10–14, compared with 14% of non-Indigenous young people. Indigenous young people were also more likely to be younger when they first entered into supervision; 35% who entered into supervision in 2010–11 were aged 10–13 compared with 15% of non-Indigenous young people. In 2010–11, Indigenous young people spent more time than non-Indigenous young people in community-based supervision (13 days more on average) and unsentenced detention (9 days more); but less time in sentenced detention (6 days less).

Due to issues around confidentiality and small numbers, only limited data on children in the juvenile justice system were available for smaller geographic areas. Data suggest, however, that young people from *Remote* areas were the most likely to be under supervision. In 2010–11, young people aged 10–17 from *Remote* areas were 4 times as likely to be under supervision on an average day as those from *Major cities*. This increased to 7 times as likely

for those living in *Very remote* areas. This pattern occurred in both community-based supervision and detention. Moreover, in general Indigenous young people were more likely to be in supervision than non-Indigenous young people (AIHW 2012c).

Alcohol and other drug treatment

The Alcohol and Other Drug Treatment Services National Minimum Data Set (AODTS–NMDS) is a collection of data from all publicly-funded government and non-government agencies that provide one or more specialist alcohol or other drug treatment services. The AODTS–NMDS counts clients who completed one or more treatment episodes at an alcohol or other drug treatment service during a collection period (AIHW 2012b). Data relating to Indigenous substance use services are drawn primarily from treatment episodes where clients identifying as Indigenous have accessed services.

In 2010–11, about 1 in 8 episodes (19,600 episodes or 13%) involved clients who identified as being Aboriginal and Torres Strait Islander. Indigenous Australians were over-represented in this collection. On average, Indigenous clients tended to be younger than non-Indigenous clients. The proportion of episodes in the 10–19 and 20–29 age groups were greater among Indigenous clients (21% and 30%respectively) than among non-Indigenous clients (11% and 27%). In contrast, the proportion of episodes among older age groups (30 years and over) was higher for non-Indigenous than Indigenous clients.

The 'principal' drug of concern refers to the main substance that led a client to seek treatment from an alcohol and drug treatment agency. Indigenous clients reported similar principal drugs of concern as the overall population—alcohol (52% of episodes), cannabis (23%), amphetamines (7%) and heroin (6%). Indigenous Australians were more likely to report alcohol as the principal drug of concern (52% of episodes) than non-Indigenous clients (46%) and less likely to report amphetamines (7% compared with 9%) or heroin (6% compared with 10%). Cannabis was reported in similar proportions.

Indigenous clients were less likely to receive withdrawal management (detoxification) (10% compared with 17%) or counselling (37% compared with 42%), and more likely to receive all other treatments compared with non-Indigenous people.

It should be noted that in 2010–11, the proportion of episodes in which Indigenous status was not recorded or not stated was relatively high; 6% of episodes did not have Indigenous status recorded. Moreover, some treatment services that provide treatment primarily for Indigenous people were not included in this collection as they report for a separate collection specific to indigenous services.

Due to small numbers, it is difficult to provide analyses of alcohol and other drug treatment services provided to Indigenous clients in RSD communities. In SLAs where data were available, combined data for 2006–07 to 2010–11 show that more Indigenous than non-Indigenous residents accessed closed treatment episodes in alcohol and other drug treatment services. Also, when compared with the jurisdictional average, Indigenous residents of RSD SLAs were more likely to access alcohol and other drug treatment services (Table 2.8). Baseline data on access to drug treatment services were not available.

Table 2.8: Closed treatment episodes for alcohol and other drugs, by Indigenous status, RSD SLA and jurisdiction, 2006–07 to 2010–11

RSD community (SLA)[a]	Indigenous		Other[b]	
	Number	Per cent	Number	Per cent
Queensland	**16,401**	**12.9**	**110,988**	**87.1**
Aurukun	44	<100.0	<3	n.p
Broome	922	72.9	343	27.1
Cairns-Douglas[c]	58	48.3	62	51.7
Cook	144	58.1	104	41.9
Doomadgee	54	87.1	8	12.9
Hope Vale	12	66.6	6	33.3
WA	**16,202**	**18.5**	**71,518**	**81.5**
Derby-West Kimberley	50	87.7	7	12.3
NT	**10,564**	**61.0**	**6,760**	**39.0**
East Arnhem[d]	10	100.0	0	0.0
West Arnhem-Bal[e]	8	72.7	3	27.3
Australia	**86,234**	**11.6**	**654,880**	**88.4**

(a) Areas are grouped using 2010–11 SLA names.

(b) Includes people who are non-Indigenous or had unknown Indigenous status.

(c) Douglas prior to 2009.

(d) Angurugu (CGC), East Arnhem Balance and Groote Eylandt prior to 2009.

(e) Kunbarllanjnja prior to 2009.

Source: AIHW analysis of AODTS–NMDS 2006–07, 2007–08, 2008–09, 2009–10 and 2010–11.

Across RSD SLAs, alcohol was the most common principal drug of concern in closed treatment episodes, followed by cannabis. This was similar to jurisdictional and national patterns among Indigenous Australians with alcohol being the most common principal drug of concern, followed by cannabis.

Counselling was the most common form of treatment for closed treatment episodes provided to Indigenous clients in RSD SLAs. Nationally, the most common form of treatment for Indigenous clients were treatments which included detoxification; rehabilitation; support and case management; information and education; or assessment only.

Aged care

Conditions associated with ageing generally affect Aboriginal and Torres Strait Islander people earlier than other Australians. Government planning for aged care services is, therefore, based on the Aboriginal and Torres Strait Islander population aged 50 years or older, compared with 70 years or older for other Australians (DoHA 2009).

In RSD communities, HACC services were commonly used aged care services. HACC services provide basic support and maintenance services to assist frail older people and younger people with moderate, severe or profound disabilities and their carers. The HACC National Minimum Data Set suggests that HACC services were used in all communities between 2004–05 and 2010–11 (Table A5). HACC services provided in most RSD communities include delivered meals, assessment, domestic assistance, personal care, transport, case management and social support. In almost all communities the most common HACC services provided were delivered meals, centre day care and transport.

3 Discussion

A lack of good quality, long-term data, and small numbers impacted on the data provided for the RSD evaluation. However, data presented suggest:

- RSD SLA teenage fertility rates are high compared with national Indigenous and non-Indigenous rates.
- The rate of low birthweight babies in RSD SLAs is also high compared with jurisdictional and national rates. The rate of low birthweight babies declined in a number of RSD SLAs between 2003 and 2009, however, these were not statistically significant.
- Except in some RSD SLAs in the Northern Territory, Indigenous hospitalisations remain high in RSD SLAs compared with Indigenous jurisdictional and national rates.
- Between 2003–04 and 2010–11, Walgett had a significant decrease in hospitalisations for all conditions excluding dialysis; however, hospitalisations increased in East Arnhem-Balance (Galiwinku, Gapuwiyak, Milingimbi, Yirrkala), Douglas (Mossman Gorge), Mornington and *Remote and very remote* South Australia (Amata and Mimili).
- Indigenous residents in most RSD SLAs have higher rates of potentially preventable hospitalisations than Indigenous Australians nationally. Only Walgett in NSW and Thamarrurr (Wadeye), West Arnhem (Maningrida) and Yugul Mangi (Ngukurr) in the Northern Territory had lower rates for avoidable conditions than Indigenous Australians nationally.
- Indigenous residents in most New South Wales and Northern Territory RSD SLAs had lower rates of avoidable conditions than Indigenous Australians living in *Remote and very remote* Australia. However, Indigenous residents in Queensland and Western Australian RSD SLAs had higher rates than Indigenous Australians living in *Remote and very remote* Australia.
- Indigenous residents in RSD SLAs are more likely than other Australians nationally to be hospitalised for potentially preventable conditions. In 2008–09 to 2010–11 ratios ranged from 2.2 to 10.
- Indigenous residents in most RSD SLAs have higher rates of hospitalisations for diseases associated with poor environmental health than Indigenous Australians nationally. However, in Central Darling (Wilcannia), West Arnhem (Maningrida) and Yugul Mangi (Ngukurr), rates were lower than the national Indigenous rate in 2010–11.
- Diabetes remains a major issue. Hospitalisation rates were generally much higher in RSD SLAs when dialysis was included compared to when it was excluded. Indigenous Australians in RSD SLAs were over 6 times as likely as other Australians to be hospitalised for diabetes. This may explain the high rates of dialysis hospitalisations among Indigenous Australians. Ratios do however vary substantially, ranging from 2.1 in West Arnhem (Maningrida) to 13.3 in Hope Vale.
- Indigenous residents in RSD SLAs have higher rates of deaths from all causes than other Australians. Standardised mortality ratios (SMR) for all-cause mortality ranged from 2.2 in Angurugu to 7.1 in Groote Eylandt (Umbakumba). On average, from 2003–2010, Indigenous residents in RSD communities died from diseases that could have been prevented at 10 times the rate of other Australians nationally.
- The numbers of Indigenous disability service users in postcodes where RSD communities are located are high.

Assessing the impact of programs

A major question is whether there have been any improvements in health outcomes directly as a result of services introduced under the National Partnership Agreement on Remote Service Delivery (NPA RSD). At this stage, such an assessment is difficult for a number of reasons:

- As with any policy initiative, there are lead times between policy commencement and implementation on the ground, as well as lag times from when a policy is implemented to when changes can be expected in health outcomes.
- It is difficult to attribute improvements in outcomes to short-term exposure to a program or policy initiative. Changes in the incidence of most chronic diseases and mortality require long-term sustainable improvements across all aspects of people's lives, that is, the social determinants of health, such as education, housing and employment. Moreover, there is strong evidence that poor early childhood health is associated with the development of chronic disease in adult life, as well as increasing the risk of hospitalisation and premature death. As such, improvements in health outcomes are unlikely to be seen just a few years after the introduction of a policy or program.
- The NPA is one of many initiatives by Commonwealth, state and territory governments aimed at improving Indigenous health outcomes and assessing the contribution of this single NPA on a set of broad, population-level performance indicators is difficult.
- It is difficult to identify significant changes over time when comparing data for just a few years. For the NPA RSD evaluation, the most recent data available for low birthweight babies were for 2009, the year in which the NPA RSD was implemented. For hospitalisations, only 2 data points were available since the NPA RSD was implemented. Therefore, it is too early for any changes to be reflected in this data.
- Another difficulty arises when making comparisons for populations which are small and fluctuating as is the case with RSD communities. Rates based on such numbers can be misleading.
- Finally, most datasets do not allow disaggregation of data to individual communities. Datasets, based on broader geographic areas such as postcodes or SLAs, provide an approximation to the actual situation in specific communities. As discussed, some communities represent the entire SLA. For these communities, analyses at the SLA level may provide a closer approximation to the situation of the community compared to a community located in a SLA where it represents a smaller proportion of the SLA population. Depending on the size of the community relative to the SLA, the data may be monitoring a change in a larger geographic area, or may not show a true change that might be happening at the community level. A lack of community-specific data makes detecting changes more difficult.

The continued monitoring of the measures outlined in this report would enable a longer term evaluation of outcomes for RSD communities. However, to deliver appropriate services in individual communities and to evaluate the impact on Closing the Gap targets, it is necessary to improve the coverage, quality and timeliness of data collected at the local level. The initial baseline mapping in 2010 showed that while similar services were available in RSD locations, there were also substantial differences in the quantity and quality of these services. It also showed that while communities may have similar needs for services they also differ. For example, rates for diabetes are much higher for Indigenous Australians, but there are still substantial differences in rates by RSD SLA. The reasons for these differences

are not clear, but may indicate a different scale and urgency of need for services among RSD communities. It is anticipated that data collections such as the national key performance indicators (nKPIs) that collect data at local clinic level will address this data gap to some extent. This collection will be a valuable resource to assess the impact of ongoing service delivery on health outcomes.

Appendix A: Tables

Table A1: RSD Indigenous population as a proportion of the SLA Indigenous population, 2006

RSD location	SLA	proportion
Beagle Bay	Broome (S) SLA	5.0%
Ardyaloon	Broome (S) SLA	5.1%
Fitzroy Crossing	Derby-West Kimberley (S) SLA	15.5%
Milingimbi	East Arnhem-Balance SLA	15.6%
Mossman Gorge	Douglas (S) SLA	17.4%
Gapuwiak	East Arnhem-Balance SLA	17.5%
Yirrkala	East Arnhem-Balance SLA	21.2%
Galiwinku	East Arnhem-Balance SLA	31.1%
Halls Creek	Halls Creek (S) SLA	34.2%
Coen	Cook (S) SLA	34.7%
Hermannsburg	Tanami SLA	37.7%
Umbakumba	Groote Eylandt SLA	55.2%
Walgett	Walgett (A) SLA	55.5%
Wilcannia	Central Darling (A) SLA	58.2%
Ngukurr	Yugul Mangi (CGC) SLA	59.9%
Nguiu	Tiwi Islands (CGC) SLA	64.8%
Maningrida	West Arnhem SLA	73.0%
Lajamanu	Lajamanu (CGC) SLA	99.8%
Doomadgee	Doomadgee (S) SLA	99.9%
Numbulwar	Numbulwar Numburindi (CGC) SLA	100.0%
Yuendumu	Yuendumu (CGC) SLA	100.0%
Angurugu	Angurugu (CGC) SLA	100.0%
Aurukun	Aurukun (S) SLA	100.0%
Gunbalanya	Kunbarllanjnja (CGC) SLA	100.0%
Hope Vale	Hope Vale (S) SLA	100.0%
Mornington Island	Mornington (S) SLA	100.0%
Wadeye	Thamarrurr (CGC) SLA	100.0%
Amata	SA (*Remote and very remote*)	n.a.
Mimili	SA (*Remote and very remote*)	n.a.

Source: FaHCSIA analysis of ABS 2006 census counts where individuals have been coded to both the RSD location (CD defined) and the 2006 SLA.

Table A2: SLA population[(a)]

State	SLA name	Community name	SLA Indigenous population	SLA total population	Indigenous population % of SLA
NSW	Central Darling (A)	Wilcannia	701	1,935	36.2
	Walgett (A)	Walgett	1,958	6,944	28.2
NT	Angurugu (CGC)	Angurugu	781	817	95.6
	East Arnhem - Bal	Galiwinku	6018	6,521	92.3
		Gapuwiyak			
		Milingimbi			
		Yirrkala			
	Groote Eylandt	Umbakumba	656	1,542	42.5
	Kunbarllanjnja (CGC)	Gunbalanya	800	881	90.8
	Lajamanu (CGC)	Lajamanu	612	668	91.6
	Numbulwar Numburindi (CGC)	Numbulwar	618	679	91.0
	Tanami	Hermannsburg	2,138	2,441	87.6
	Thamarrurr (CGC)	Wadeye	1,790	1,932	92.6
	Tiwi Islands (CGC)	Nguiu	1,945	2,130	91.3
	West Arnhem	Maningrida	3,080	3,334	92.4
	Yuendumu (CGC)	Yuendumu	607	692	87.7
	Yugul Mangi (CGC)	Ngukurr	1,515	1,641	92.3
QLD	Aurukun (S)	Aurukun	956	1,041	91.8
	Cook (S)	Coen	558	3,464	16.1
	Doomadgee (S)	Doomadgee	1,005	1,084	92.7
	Douglas (S)	Mossman Gorge	822	10,194	8.1
	Hope Vale (S)	Hope Vale	729	782	93.0
	Mornington (S)	Mornington Island	944	1,032	91.5
WA	Broome (S)	Beagle Bay	3,559	13,059	27.2
		Ardyaloon			
	Derby-West Kimberley (S)	Fitzroy Crossing	4,030	6,506	61.9
	Halls Creek (S)	Halls Creek	2,480	3,136	79.1

(a) Based on 2006 Census data.

Source: ABS 2007b.

Table A3: Hospital separations for diabetes and potentially preventable conditions, Standardised Morbidity Ratios (SMRs)[a] for the SLAs in which RSD communities are located, 2008–09 to 2010–11[b]

Community name	SLA name	Diabetes SMR	Potentially preventable conditions SMR
Amata	SA (*Remote and very remote*)	8.5	5.5
Angurugu	Angurugu	2.5	3.9
Ardyaloon	Broome	6.0	4.9
Aurukun	Aurukun	8.3	3.5
Beagle Bay	Broome	6.0	4.9
Coen	Cook	12.2	6.8
Doomadgee	Doomadgee	9.7	6.7
Fitzroy Crossing	Derby-West Kimberley	8.2	4.7
Galiwinku	East Arnhem-Balance	3.6	4.4
Gapuwiyak	East Arnhem-Balance	3.6	4.4
Gunbalanya	Kunbarllanjnja	10.2	3.1
Halls Creek	Halls Creek	6.5	5.7
Hermannsburg	Tanami	11.3	8.8
Hope Vale	Hope Vale	13.3	10
Lajamanu	Lajamanu	3.6	2.5
Maningrida	West Arnhem	2.1	2.4
Milingimbi	East Arnhem-Balance	3.6	4.4
Mimili	SA (*Remote and very remote*)	8.5	5.5
Mornington Island	Mornington	10.0	8.2
Mossman Gorge	Douglas	9.0	7.7
Nguiu	Tiwi Islands	4.7	4.2
Ngukurr	Yugul Mangi	2.7	2.2
Numbulwar	Numbulwar Numburindi	4.0	3.2
Umbakumba	Groote Eylandt	3.8	3.4
Wadeye	Thamarrurr	3.0	2.2
Walgett	Walgett	3.3	3.4
Wilcannia	Central Darling	2.4	5
Yirrkala	East Arnhem-Balance	3.6	4.4
Yuendumu	Yuendumu	10.2	6.1

(a) The SMR is the ratio of observed separations for Indigenous Australians in this SLA to the expected number of separations if the age-specific hospital separation rates (for each principal diagnosis) in this SLA were the same as in the standard population. The standard population used here is other Australians in NSW, Vic, Qld, WA, SA & NT combined. Ratios greater than 1 indicate that observed Indigenous separations in this SLA are higher than would be expected if the age-specific separation rates in this SLA were the same as in the standard population. Conversely, ratios lower than 1 indicate that observed separations are lower than expected.

(b) Data for Angurugu, Gunbalanya and Numbulwar are for the one-year period 2008–09.

Notes

1. Care types 7.3, 9 and 10 (newborn – unqualified days only, organ procurement, hospital boarder) are excluded from analysis.
2. Data are from public and most private hospitals, excluding private hospitals in the Northern Territory.
3. Data are reported by SLA of usual residence of the patient hospitalised.

Table A4: Hospital separations for diabetes and potentially preventable conditions, Standardised morbidity ratios (SMRs)[(a)] for the SLAs in which RSD communities are located, 2003–04 to 2007–08

Community name	SLA name	Diabetes SMR	Potentially preventable conditions SMR
Amata	SA (*Remote and very remote*)	9.5	6.2
Angurugu	Angurugu	6.5	1.7
Ardyaloon	Broome	7.6	39.0
Aurukun	Aurukun	6.8	3.8
Beagle Bay	Broome	7.6	39.0
Coen	Cook	8.1	5.3
Doomadgee	Doomadgee	10.3	6.3
Fitzroy Crossing	Derby-West Kimberley	9.3	9.9
Galiwinku	East Arnhem - Bal	2.6	2.4
Gapuwiak	East Arnhem - Bal	2.6	2.4
Gunbalanya	Kunbarllanjnja	3.4	2.0
Halls Creek	Halls Creek	6.0	5.7
Hermannsburg	Tanami	10.5	7.8
Hope Vale	Hope Vale	20.4	8.8
Lajamanu	Lajamanu	11.5	3.9
Maningrida	West Arnhem	1.4	1.8
Milingimbi	East Arnhem - Bal	2.6	2.4
Mimili	SA (*Remote and very remote*)	9.5	6.2
Mornington Island	Mornington	10.0	5.6
Mossman Gorge	Douglas	13.7	7.7
Nguiu	Tiwi Islands	3.7	3.1
Ngukurr	Yugul Mangi	4.6	2.2
Numbulwar	Numbulwar Numburindi	4.4	2.2
Umbakumba	Groote Eylandt	6.8	4.5
Wadeye	Thamarrurr	1.7	1.1
Walgett	Walgett	4.0	4.0
Wilcannia	Central Darling	3.2	3.5
Yirrkala	East Arnhem - Bal	2.6	2.4
Yuendumu	Yuendumu	6.8	4.7

(a) The SMR is the ratio of observed separations for Indigenous Australians in this SLA to the expected number of separations if the age-specific hospital separation rates (for each principal diagnosis) in this SLA were the same as in the standard population. The standard population used here is other Australians in NSW, Vic, Qld, WA, SA & NT combined. Ratios greater than 1 indicate that observed Indigenous separations in this SLA are higher than would be expected if the age-specific separation rates in this SLA were the same as in the standard population. Conversely, ratios lower than 1 indicate that observed separations are lower than expected.

Notes

1. Care types 7.3, 9 and 10 (newborn—unqualified days only; organ procurement; hospital boarder) are excluded from analysis.
2. Data are from public and most private hospitals, excluding private hospitals in the Northern Territory.
3. Data are reported by SLA of usual residence of the patient hospitalised.

Table A5: Number of Indigenous HACC clients residing in RSD communities, 2004–05 to 2009–10

Community	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Walgett and Wilcannia	74	78	141	76	172	175
Angurugu	27	36	49	45	40	35
Galiwinku	49	46	32	21	31	18
Gapuwiyak	<5	54	93	48	47	39
Oenpelli/Gunbalanya	28	33	40	43	39	39
Hermannsburg	48	45	41	33	30	10
Lajamanu	20	48	56	44	21	22
Maningrida	34	39	39	25	37	45
Milingimbi	5	<5	<5	<5	15	19
Nguiu	53	37	49	19	15	8
Ngukurr	26	30	30	34	25	24
Numbulwar	<5	<5	<5	<5	<5	9
Umbakumba	16	26	22	21	21	27
Wadeye	46	75	92	68	69	65
Yirrkala	29	18	21	17	16	15
Yuendumu	63	37	70	53	21	24
Aurukun	64	58	62	55	64	79
Coen	48	34	37	26	30	48
Doomadgee	0	24	17	12	20	19
Hope Vale	78	69	56	44	20	18
Mornington Island	26	22	19	<5	<5	8
Mossman and Mossman Gorge	62	79	102	96	78	58
Amata	47	<5	39	26	20	15
Mimili	41	18	22	13	15	3
Ardyaloon	13	9	9	8	6	17
Beagle Bay	7	6	5	6	6	6
Fitzroy Crossing	34	39	65	35	49	46
Halls Creek	36	62	50	45	47	47

Notes

1. The number of clients in Numbulwar was too small for analysis.
2. Town/suburb is a free text field in the HACC MDS and may be subject to misspelling. In some cases alternative locality names may be used. Where possible, HACC data include data with misspelt or alternative locality names.

Source: HACC NMDS.

Appendix B: Methods

Population data used to calculate rates

Indigenous population data at the SLA level are only available for Census years, so for most analyses, the denominator population is based on 2006 Census data.

Rates for the five year period 2003–04 to 2007–08 (hospital separations data) were obtained in the following way:

- For state/territory level analyses, Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) data were used. As hospitalisations data are reported by financial year and the population data are reported as at 30 June each year, mid-year population, as at 31 December each year, needed to be derived. This was achieved by adding population data for 2 years and dividing by 2. For example, population data as at December 2003 were obtained by adding population as at June 2003 and 2004 and then dividing the sum by 2. This process was repeated to obtain December populations each year for 5 years from 2003 to 2007, which was then summed to obtain combined population data for the five year period.
- For SLA level analyses of data presented from disability (period up to 2007–08) and aged care (period up to 2008–09), the community population data were provided by the former FaHCSIA. These data were based on the ABS ERP data for 2001 and 2006 and a set of values were derived for 6 years from 2001 to 2006 by interpolation. These values were summed and a deflation factor also supplied by the former FaHCSIA was applied to reduce the six year data to represent a five year period from 2001 to 2005 (see Box 2.1 for deflation factors used).

Box 2.1: Methods used for deriving population data

Population data by SLA were only available for six years combined for 2001 to 2006. As the hospitalisations data were presented for a combined period of five years the population data for 2001–2006 were adjusted by applying the following deflation factors developed by the AIHW:

- 0.836 for Indigenous males and 0.839 for Indigenous females
- 0.825 for non-Indigenous males and 0.831 for non-Indigenous females.

As hospitalisations data are based on 2006 SLA boundaries, when calculating hospitalisations rates by single year, SLA population based on 2006 Census was used as a proxy for all years. If a rate is based on 3 years of data combined, then the population based on Census 2006 for the relevant SLA was multiplied by 3 to obtain an appropriate denominator.

Crude rates

A crude rate is defined as the number of events over a specified period (for example, a year) divided by the total mid-year population (30 June of the reference year for mortality and 31 December for hospital separations).

Age-specific rates

An age-specific rate is defined as the number of events for a specified age group over a specified period (for example, a year) divided by the total population at risk of the event in

that age group. Age-specific rates were calculated by dividing, for example, the number of hospitalisations or deaths in each specified age group by the mid-year population in the same age group.

Age-standardised rates

Age-standardisation is a technique used to eliminate the effect of differences in population age structures when comparing rates for different periods of time and/or different geographic areas and/or different population groups.

There are two methods of age-standardisation: direct and indirect. The indirect method was used to calculated standardised morbidity or mortality ratios (SMRs) to compare the results for Indigenous populations in communities with 'other' Australians at a national level.

Indirect age-standardisation and SMR

Comparisons between mortality and hospitalisations rates for Indigenous populations of RSD communities were made with the other Australian population or another standard population using standardised mortality or hospitalisation ratios. Indirect standardisation was used to account for any differences in the age structure between the two populations.

These rates were calculated using the following steps:

1. The 'observed' number (that is, the actual number) of events for the population of interest (that is, the Indigenous population) was derived by age and sex.
2. Calculate age-specific proportions for the standard population of choice.
3. Multiply the population in each age and sex group by the corresponding age-specific proportions in the standard population to get expected numbers in each age and sex group.
4. The total expected number was calculated by summing the age-specific expected numbers for each sex (from Step 3).
5. The standardised mortality or morbidity ratio (SMR) was then calculated by dividing the total observed deaths by the total expected deaths (from Step 4). A ratio of 1 indicates that there is no difference between the rate of death or hospitalisations experienced by the study population and the standard population.
6. The confidence intervals were calculated using the method outlined below.

Annual change and per cent change

Percentage change is calculated by multiplying the average annual change over a period by the number of data points less 1. This is then divided by the rate for the first year in the series and multiplied by 100.

The average annual change in rates is calculated using linear regression which uses the 'least squares' method to calculate a straight line that best fits the data and returns an array that best describes the line. The simple linear regression line ($Y = a + bX$, or 'slope' estimate) was used to determine the average annual change in the data over the period.

When numbers on which the rates are based are too small or fluctuate over time, this can affect any conclusions based on average annual changes presented. Therefore, it is advisable to consider actual numbers of events overtime in conjunction with the rates.

The percentage change estimate depends heavily on the first data point used in the time series.

Statistical significance

For trend analyses, the 95% confidence intervals (CIs) for the standard error of the slope estimate (average annual change) based on linear regression are used to determine whether the apparent increases or decreases in the data are statistically significant at the $p < 0.05$ level. The formula used to calculate the CIs for the standard error of the slope estimate is:

$$95\%\ CI(x) = x \pm t_{(n-2)} \times SE(x)$$

where x is the average annual change (slope estimate).

If the upper and lower 95% confidence intervals do not include zero, then it can be concluded that there is statistical evidence of an increasing or decreasing trend in the data over the study period.

Glossary

Aboriginal or Torres Strait Islander: a person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also **Indigenous**.

administrative data collection: a dataset that results from the information collected for the purposes of delivering a service or paying the provider of the service. This type of collection is usually complete (that is, all in-scope events are collected), but it may not be fully suitable for population-level analysis because the data are collected primarily for an administrative purpose. Examples include the National Hospital Morbidity Database and the Alcohol and Other Drug Treatment Services collection.

age-specific rate: a rate for a specific age group. The numerator and denominator relate to the same age group.

age standardisation: a method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure, then the disease rates that would have occurred with that structure are calculated and compared.

antenatal: the period covering conception up to the time of birth. Synonymous with prenatal.

long-term condition: a term used in the ABS National Health Surveys to describe a health condition that has lasted, or is expected to last, at least 6 months.

low birthweight: weight of a baby at birth that is less than 2,500 grams.

Indicator: a key statistical measure selected to help describe (indicate) a situation concisely; to track change, progress and performance; and to act as a guide to decision-making. It may have an indirect meaning as well as a direct one; for example, Australia's overall death rate is a direct measure of mortality but is often used as a major indicator of population health.

Indigenous: a person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also **Aboriginal or Torres Strait Islander**.

morbidity: refers to ill health in an individual and to levels of ill health in a population or group.

mortality: death.

non-Indigenous: people who have declared they are not of Aboriginal or Torres Strait Islander descent. Compare with **other Australians**.

Other Australians: people who have declared they are not of Aboriginal or Torres Strait Islander descent, and those for whom their Indigenous status is unknown. Compare with **non-Indigenous**.

outcome (health outcome): a health-related change due to a preventive or clinical intervention or service. (The intervention may be single or multiple, and the outcome may relate to a person, group or population, or be partly or wholly due to the intervention).

perinatal: pertaining to, or occurring in, the period shortly before or after birth (usually up to 28 days after).

risk factor: any factor which represents a greater risk of a health disorder or other unwanted condition or event. Some risk factors are regarded as causes of disease, others are not

necessarily so. Along with their opposites, protective factors, risk factors are known as determinants.

separation: the formal process where a hospital records the completion of an episode of treatment and/or care for an admitted patient. In this report, described by the term hospitalisation.

statistical significance: an indication from a statistical test that an observed difference or association may be significant or 'real' because it is unlikely to be due just to chance. A statistical result is usually said to be 'significant' if it would occur by chance less than once in 20 times.

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List of tables

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Related publications

The following AIHW publications relating to Indigenous health might also be of interest:

- AIHW 2013. Indigenous Early Childhood Development National Partnership Agreement: First annual report on health performance indicators. Cat. no. IHW 101. Canberra: AIHW.
- Australian Government 2014. National Partnership Agreement on Remote Service Delivery Evaluation 2013. Viewed 29 August 2014, http://www.dpmc.gov.au/publications/index.cfm.

This report provides information on antenatal care, live births, low birthweight babies, hospitalisations (all and selected causes), disability, mortality, child protection, juvenile justice, alcohol and other drug use and aged care for 29 remote Indigenous communities. Where possible, data are presented at the jurisdictional and national level, and time series data provided for comparison. This information was compiled to inform an evaluation of the National Partnership Agreement on Remote Service Delivery (NPA RSD), conducted in 2013.