

Rural, regional and remote health

Indicators of health system performance

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RURAL HEALTH SERIES

Number 10

Rural, regional and remote health

Indicators of health system performance

September 2008

Australian Institute of Health and Welfare

Canberra

Cat. no. PHE 103

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This publication is part of the Australian Institute of Health and Welfare's Rural Health Series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 1448-9775

ISBN 978 1 74024 827 3

Suggested citation

Australian Institute of Health and Welfare 2008. Rural, regional and remote health: indicators of health system performance. Rural Health Series no. 10. Cat. no. PHE 103. Canberra: AIHW.

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Published by the Australian Institute of Health and Welfare

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Acknowledgments

This report was commissioned by the Rural Health Branch in the Australian Government Department of Health and Ageing. It is the 10th in a series of Australian Institute of Health and Welfare (AIHW) rural health reports.

The report was authored by Sally Bullock.

Several AIHW staff members assisted in the extraction and analysis of data: Ilona Brockway (National Health Survey Data), Robert Long and Christina Barry (National Hospital Morbidity Database and National Public Hospital Establishment Database).

The following AIHW units provided specific subject area expertise: Ageing and Aged Care Unit; Aboriginal and Torres Strait Islander Health and Welfare Cluster; Health Registers and Cancer Monitoring Unit; Hospitals Unit.

The Australian Government Department of Health and Ageing (DoHA) also provided assistance: Dr Rosemary Smith and Ian Titulaer of the Pharmaceutical Policy and Analysis Branch provided Pharmaceutical Benefits Scheme data, and James Sizer of the Community Care Branch provided Home and Community Care data.

Mark Cooper-Stanbury, Andrew Phillips, Ilona Brockway and Louise York provided valuable comments on all aspects of the project.

Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ASGC	Australian Standard Geographical Classification
CACP	Community Aged Care Packages
CSTDA	Commonwealth State/Territory Disability Agreement
DoHA	Department of Health and Ageing
EACH	Extended Aged Care at Home
FTE	full-time equivalent
HACC	Home and Community Care
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification
IR	Inner Regional
MC	Major Cities
NMDS	National Minimum Data Set
OR	Outer Regional
PBS	Pharmaceutical Benefits Scheme
R	Remote
RPBS	Repatriation Pharmaceutical Benefits Scheme
SDAC	Survey of Disability, Ageing and Carers
VR	Very Remote

Symbols

—	nil or rounded to zero
..	not applicable
*	statistically significant

Summary

In 2003, a Rural Health Information Framework was established to help understand and to monitor the health of regional and remote populations. Indicators were identified across three areas: health status and outcomes; health determinants; and health system performance. This report publishes selected indicators relating to health system performance. A complementary report focusing on indicators of health status and determinants of health was published in March 2008.

The indicators presented here illustrate differences between Australia's health system performance in rural and major urban centres.

In regards to effectiveness

Compared with Major Cities, participation in breast cancer screening among women in the target age group (50–69 years) was significantly higher in all, except Very Remote, areas.

Indigenous Australian women were significantly less likely to participate in breast screening than non-Indigenous women, but rates of Indigenous participation have increased over time.

In regards to appropriateness

With the exception of dialysis, hospitalisation rates for common procedures were significantly lower for people living in Remote areas than for those living in Major Cities.

In particular, separation rates for procedures used in the management of heart disease were significantly lower for people living in Remote areas. This finding is particularly noteworthy as death rates from coronary heart disease were significantly higher in these areas.

The provision of aged care places and support packages was above the planning target ratio in all, except Major City and Outer Regional areas.

In regards to accessibility

The per-person supply of employed medical practitioners and dentists decreased with remoteness. The supply of nurses and general practitioners was more evenly distributed across regions.

People living in remote areas had higher rates of hospitalisation than those living in Major Cities.

Prescription rates were slightly higher in regional areas and lower in remote areas for the majority of pharmaceutical groups analysed.

In 2005–06, people with disability living outside Major Cities were significantly less likely to access disability support services than those living within Major Cities.

In regards to capability, safety and sustainability

Hospitals outside Major Cities were less likely to be accredited. However, this may partly reflect the varied, and sometimes voluntary, accreditation practices across jurisdictions.

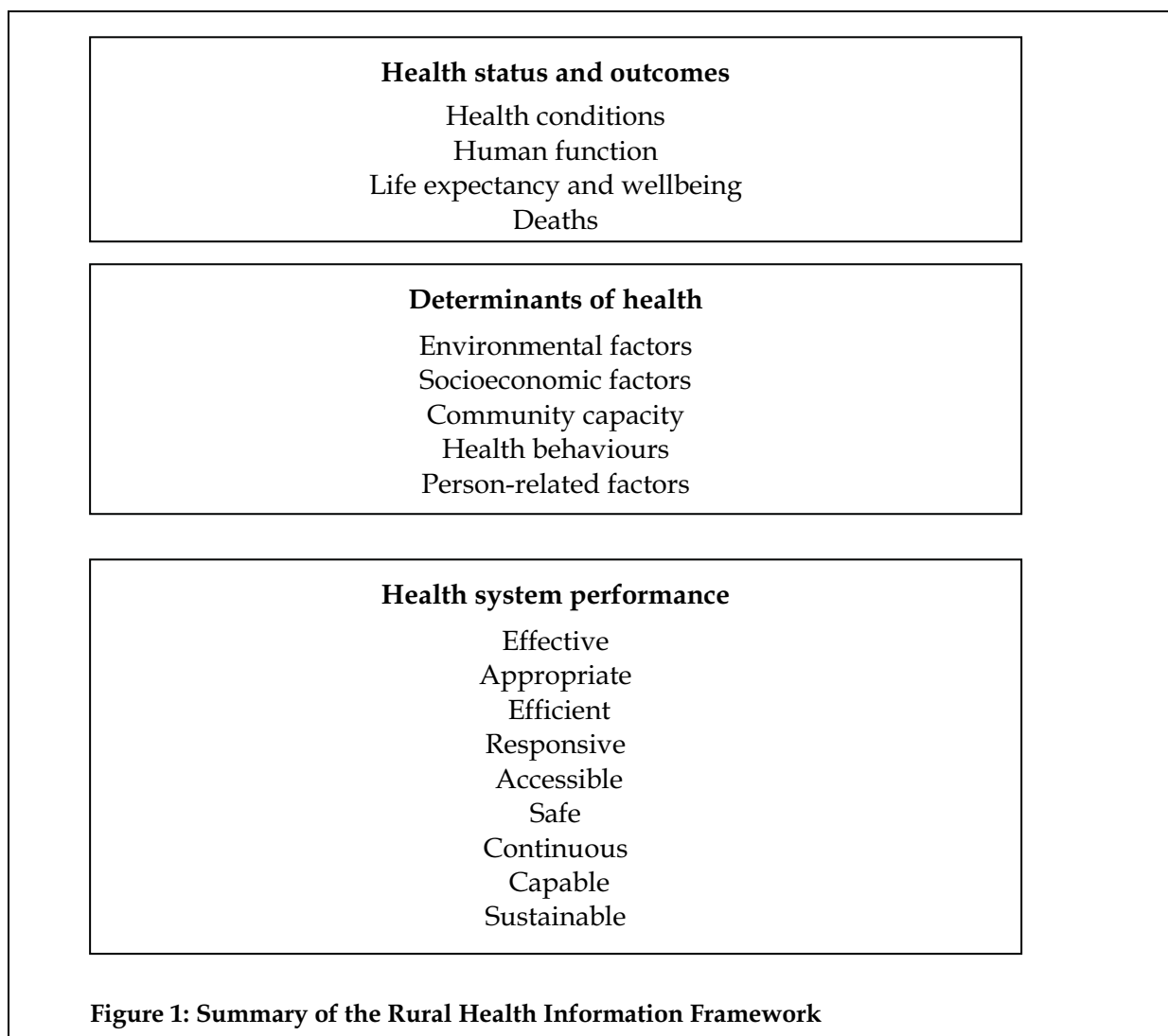
1 Introduction

Australians living in regional and remote areas generally have poorer health than their major city counterparts. This is illustrated most robustly in measures of mortality. In 2002–2004, death rates in regional and remote areas were between 10% and 70% as high as in Major Cities (AIHW 2007a). It is also true that, on average, people living in more inaccessible regions of Australia are disadvantaged with regard to educational and employment opportunities, income, access to goods and services, and in some areas access to basic necessities, such as clean water and fresh food (AIHW 2008a). Indicators describing the nature and extent of health dimensions across regions and time provide a systematic set of measures that can inform rural health policy.

1.1 Background

In 2003, the Australian Institute of Health and Welfare (AIHW) released a Rural Health Information Framework (AIHW 2003a). This framework sought to identify every type of information important to understanding and monitoring the health of rural, regional and remote populations. Consistent with the National Health Performance Framework, the Rural Health Information Framework consists of three tiers: Health status and outcomes; Determinants of health; and Health system performance (Figure 1). Within each of these tiers are a number of dimensions (for example, Determinants of health includes environmental factors, socioeconomic factors, community capacity, health behaviours and person-related factors).

In 2005, the framework was updated to reflect data availability and improved statistical methods (AIHW 2005a).



1.2 Purpose, scope and structure of this report

The first publication to report on the indicators in the Rural Health Information Framework was published in 2005 (AIHW 2005b). The present report updates key indicators, where possible, relating to how Australia's health system is performing in regional and remote areas. A report updating indicators on health status and determinants of health was released in March 2008.

This report will be particularly useful to readers interested in knowing how health system performance varies across geographic regions, and whether this performance has varied over time. An accompanying short publication, summarising the key findings of this report, is also available free on the AIHW website <www.aihw.gov.au> or in hard copy from the AIHW.

Health system performance indicators help interpret many factors associated with good health, such as accessibility, availability, responsiveness and safety of health services. However, the interpretation of these indicators should occur in conjunction with information on health status and an appreciation of the complexities of health service use. Increased

service use may reflect a combination of factors, such as higher demand (more disease, for example), greater accessibility and availability of services or administrative practices (such as precautionary admissions to hospital). Also, increased service use by people living in remote areas does not establish whether substantial travel was required to access the service or whether personal need for services is being met.

This report provides detailed statistical findings on a select number of indicators. Several indicators specified in the Rural, Regional and Remote Health Information Framework are not yet able to be quantified because:

- the data do not exist
- the data exist, but they are considered to be inaccurate
- the data are available for some jurisdictions, but not nationally
- the data do not contain a geographic identifier (for example, postcode) with which to allocate a remoteness category.

In addition, some data may not have been provided by data suppliers before finalisation of the report. These include indicators relating to immunisation and primary care consultations. It is envisaged that these data will be reported on in future publications within the AIHW rural health series.

The body of this report consists of indicators relating to the following dimensions of health system performance: effectiveness; appropriateness; accessibility; safety; capability and sustainability. The Appendixes contain details of the data sources and statistical methods used.

1.3 Defining regional and remote

This report classifies the areas where we live using the Australian Standard Geographical Classification (ASGC) Remoteness Areas classification (Figure 2). The classification allocates one of five remoteness categories to areas depending on their distance, from a range of five types of population centre. Areas are classified as Major Cities, Inner Regional, Outer Regional, Remote and Very Remote. Further information on how this terminology is used is provided in section 1.4.

The ASGC Remoteness Areas was selected as the geographic classification for this report in preference to the Accessibility/Remoteness Index of Australia, and the Rural, Remote and Metropolitan Areas classification. One major advantage of the ASGC Remoteness Areas classification is that it defines the least remote areas more tightly than the Accessibility/Remoteness Index of Australia classification (AIHW 2004).

For more information on the various remoteness classifications please refer to, *Rural, regional and remote health: a guide to remoteness classifications* (AIHW 2004).

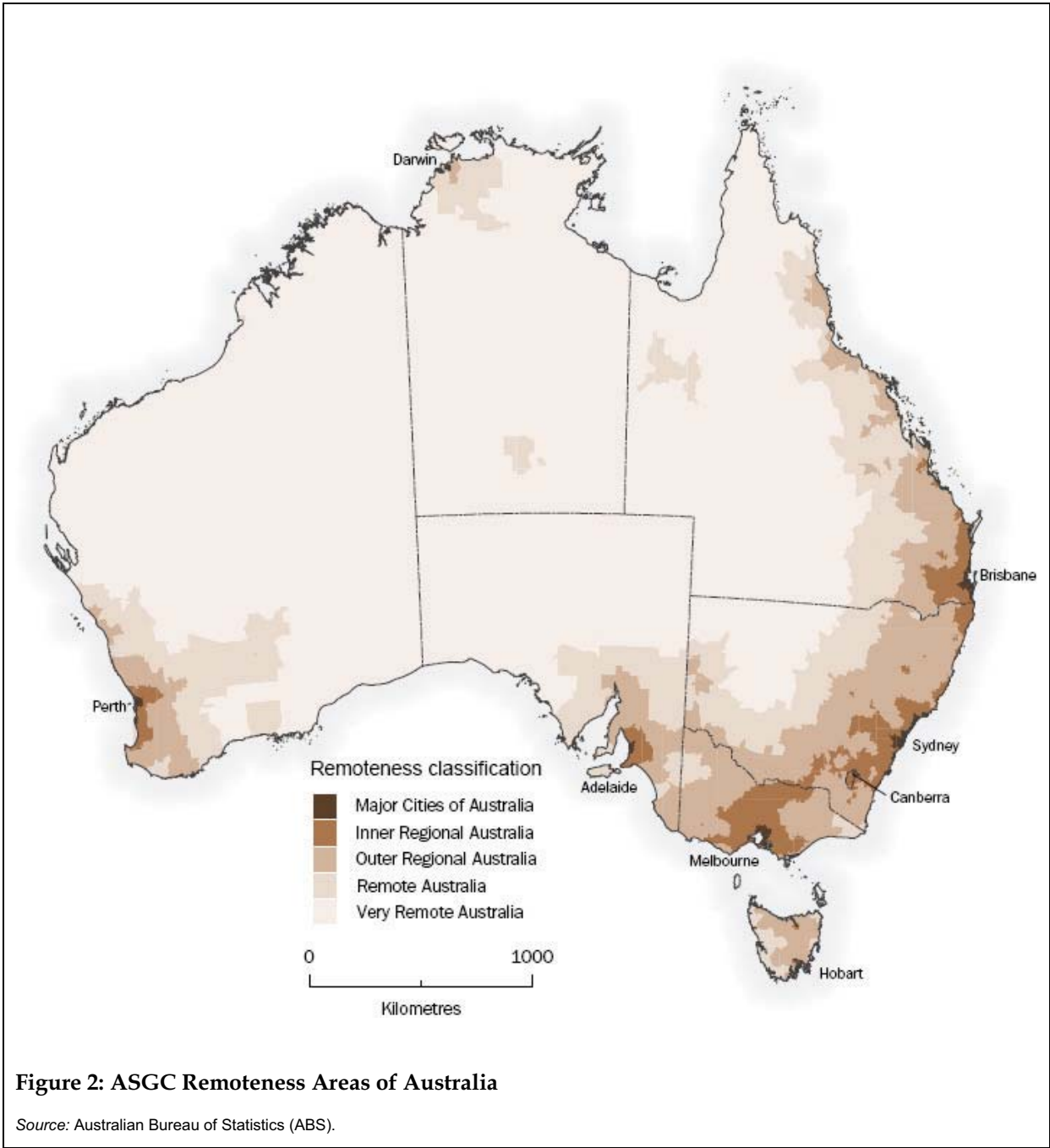


Figure 2: ASGC Remoteness Areas of Australia

Source: Australian Bureau of Statistics (ABS).

1.4 Data methodology and interpretation

This section provides guidance for interpreting the findings presented in this report. Two statistical methods – age standardisation and statistical significance (including 95% confidence intervals) – have been used to explore the difference in health conditions and health determinants across regions.

Age standardisation is needed, as patterns of illness and death are age-related, and each population has its own demographic characteristics. For example, Aboriginal and Torres Strait Islander populations tend to have proportionally larger numbers of children and young people, and smaller numbers of older people than non-Indigenous populations. Similarly, there are differences between the age structure and the proportions of males and females living in different geographic areas. Comparison of crude rates, percentages and means may simply reflect the different age and sex structures of populations rather than any difference in the underlying likelihoods of death, illness or access to services. Age standardisation can be used to adjust for such differences. For this report, the indirect method of standardisation has been used, because several of the populations of interest are small and for some ‘events’ – the number of cases in these areas – are also relatively small (see Appendix C for more specific information).

In most cases, indirect age-standardised rates (or ratios of observed to expected events) are used to investigate differences in regional and remote areas compared with Major Cities and differences across time. A ratio of observed to expected cases is the actual number of events (for example, dental consultations) to the number expected if Major Cities rates had applied in the area. The resultant statistic is a ratio (standardised rate ratio), which in Major Cities will, by definition, be 1.0. A ratio of 0.5 would indicate the area had half the rate in Major Cities, and a ratio of 2.0 would indicate the area had double the rate in Major Cities. All statements about rates in this report are based on the ratio of observed to expected events. In this report, the standardised rate ratio is assessed by a 95% confidence interval (see Appendix C).

Where possible, analysis of indicators by sex and Indigenous status has been completed, as differentials may have been affected by Indigenous issues rather than issues of remoteness per se, and health outcomes in an area may differ by sex.

Terminology used in the report

In figures and tables throughout this report, Major Cities, Inner Regional, Outer Regional, Remote and Very Remote categories have been abbreviated as MC, IR, OR, R and VR. In the majority of cases, when considered together, Inner Regional and Outer Regional areas are referred here as ‘All regional’ and Remote and Very Remote, as ‘All remote’.

However, data for this report were sourced from several administrative and survey sources, and in some cases data were not available for Very Remote areas, particularly for surveys such as the National Health Survey. Varied terminology has been used to reflect this (Table 1.1).

Table 1.1: Summary of terminology used in this report

Remoteness Area	Grouping terms			Demographic information ^(a)		
	Level 1	Level 2	Level 3	Population (number)	Population distribution (per cent)	Population in each area who are Indigenous Australian (per cent)
Major Cities	Major Cities	Major Cities	Major Cities	13,600,000	68.4	1.1
Inner Regional	All regional	Inner Regional	All regional/ Remote ^(b)	3,900,000	19.7	2.5
Outer Regional		Other ^(b)		1,900,000	9.4	5.3
Remote	All remote			290,000	1.5	13.4
Very Remote		..	..	15,000	0.8	44.8

(a) AIHW unpublished analysis of ABS Census 2006.

(b) In some data sources, the categories 'Other' and 'All regional/Remote' may contain some data from Very Remote areas.

Box 1: Technical notes on data presentation

- Percentages or numbers in tables may not add to 100 or their totals due to rounding.
- Where rates are statistically significantly different from one another, they are referred to in the text as 'significantly' different; if rates are not statistically significantly different, they are not said to be statistically different. Statistical significance is at the 95% level.
- Where there is some suggestion that real differences exist but the differences just fail to be statistically significant at the 95% level, the differences have been described as 'apparent' rather than 'significant' differences.
- Statistically significant figures are indicated in tables with an asterisk (*).

2 Health system performance

The nine dimensions of this tier are:

- 3.1 Effective (intervention achieves desired outcome)
- 3.2 Appropriate (care is relevant to the client's needs and based on established standards)
- 3.3 Efficient (desired results achieved cost-effectively)
- 3.4 Responsive (service has respect for people and is client orientated)
- 3.5 Accessible (ability of people to obtain health care at the right place and right time irrespective of income, cultural background or physical location)
- 3.6 Safe (avoidance or reduction of harm associated with health care management)
- 3.7 Continuous (service can provide uninterrupted, coordinated care)
- 3.8 Capable (skilled and knowledgeable workforce)
- 3.9 Sustainable (capacity to provide infrastructure, such as workforce, facilities and equipment, and to be innovative and respond to emerging issues, such as through monitoring and research) (NHPC 2001).

This chapter presents information in all dimensions where agreed indicators had been established and suitable data could be sourced (dimensions 3.1, 3.2, 3.5, 3.6, 3.8 and 3.9).

No information is presented about the efficiency dimension (3.3), as agreed indicators are not available.

Effective dimension

Indicator 3.1.2 Breast cancer screening participation rates

Summary of findings

In 2004–2005, participation among women in the target age group (50–69 years) was significantly higher in All regional and Remote areas than in Major Cities.

Aboriginal and Torres Strait Islander women were significantly less likely to participate in breast screening than non-Indigenous women. However, rates of Indigenous Australian breast screening participation have increased over time.

Between the periods 1998–1999 and 2004–2005, participation of the target population in breast screening has remained relatively stable in all geographic areas.

Background

Breast cancer screening has the potential to provide early detection of breast cancer, and is associated with better health outcomes for affected women. BreastScreen Australia – a program jointly funded by the Australian and state and territory governments – comprises a network of screening and assessment services throughout Australia (AIHW 2008b). The program is aimed specifically at women aged 50–69 years.

Data for indicator 3.1.2 were sourced from the BreastScreen Australia state and territory program. The BreastScreen Australia data set contains information on the client, screening process assessment and diagnosis. A reporting interval of 2 years is used, because it corresponds with the recommended interval between screens for asymptomatic women in the target age group. The participation rate measures the proportion of the eligible population attending the screening program within the recommended screening interval.

Within the Rural Health Information Framework, cervical screening participation is also stipulated in indicator 3.1.2. However, time series data on geographic location of cervical screening participants were not available during preparation of this report. They are presented for the first time in the *Cervical screening in Australia 2005–06* report (AIHW 2008c).

Refer to section 1.4 for guidance in interpreting the tables, and to Appendix B for scope and coverage of data sources.

Detailed results

Table 2.1: Participation of women aged 50–69 years in BreastScreen Australia, by Remoteness Area of client, 1998–1999, 2000–2001, 2002–2003 and 2004–2005

Year of screening	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Indigenous Australian women
Standardised rate ratio						
1998–1999	1.00	*1.11	*1.10	*1.06	*0.83	*0.71
2000–2001	1.00	*1.09	*1.08	*1.03	*0.83	*0.75
2002–2003	1.00	*1.08	*1.09	*1.04	*0.83	*0.70
2004–2005	1.00	*1.07	*1.09	*1.06	*0.84	*0.64

* Denotes statistical significance.

Notes

1. The presented statistic is the ratio of the participation rate in each area divided by the participation rate in Major Cities. Participation rates were calculated using the average of the estimated female population in 2 years.
2. For Indigenous Australian women, the presented statistic is the participation rate for Indigenous Australian women divided by the participation rate for non-Indigenous women. The Indigenous Australian female population for 2002–2003 and 2004–2005 was based on ABS experimental Indigenous population projections (ABS 2004).
3. Period covers 1 January to 31 December of stated years.

Sources: AIHW analysis of BreastScreen Australia data; ABS estimated resident population 1998–1999, 2000–2001, 2002–2003 and 2004–2005.

- In 2004–2005, women in the target group (50–69 years) living in All regional areas were significantly more (1.1 times as) likely, and women living in Very Remote areas were significantly less (0.8 times as) likely to participate in breast screening compared with those in Major Cities (Table 2.1). The lower participation rate in Very Remote areas may be due to unavailability of BreastScreen Australia services in some areas of the Northern Territory, and to lower participation rates by Indigenous Australian women

(AIHW 2008b). Indigenous Australian women were significantly less (0.6 times as) likely to participate in breast screening than non-Indigenous women.

- Relative to Major Cities, rates of participation in all areas were similar across the 1998–1999 and 2004–2005 reporting periods.

Table 2.2: Changes in participation of women aged 50–69 years in BreastScreen Australia, by Remoteness Area of client, 1998–1999 to 2000–2001, 2002–2003 and 2004–2005

Year of screening	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Indigenous Australian women
1998–1999 to:						
Standardised rate ratio						
2000–2001	*1.03	*1.02	*1.01	1.00	1.02	*1.09
2002–2003	*1.01	*0.99	1.00	1.00	1.00	*1.14
2004–2005	*1.02	*0.98	1.01	1.01	1.02	*1.17

* Denotes statistical significance.

Notes

1. This table compares rates of breast screening participation in 2000–2001, 2002–2003 and 2004–2005 with those in 1998–1999, using 1998–1999 participation rates in each area as the standard.
2. For Indigenous Australian women, rates of Indigenous breast screening participation in 2000–2001, 2002–2003 and 2004–2005 are compared with Indigenous Australian women participation rates in 1998–1999.
3. Period covers 1 January to 31 December of stated years.

Sources: AIHW analysis of BreastScreen Australia data; ABS estimated resident population 1998–1999, 2000–2001, 2002–2003 and 2004–2005.

- Between 1998–1999 and 2004–2005 the rate of participation in breast screening for women in the target population remained relatively stable across geographic areas (Table 2.2).
- Overall, rates of participation for Aboriginal and Torres Strait Islander women increased significantly; 2004–2005 participation rates for Indigenous Australian women were 1.2 times as high as those in 1998–1999.

Appropriate dimension

Indicator 3.2.2 Specialist hospital procedures

Summary of findings

With the exception of dialysis, hospitalisation rates for common procedures were significantly lower for people living in Remote areas than for those living in Major Cities.

Compared with Major Cities, separation rates of procedures used in the management of heart disease – that is coronary artery bypass and coronary angioplasty – were significantly lower for residents of Remote areas. This finding is particularly noteworthy, as death rates from coronary heart disease were significantly higher outside Major Cities.

Separation rates for chemotherapy, hip replacement, tonsillectomy and hysterectomy were higher for residents in All regional areas and lower for residents in All remote areas, when compared with those in Major Cities.

Background

Hospital procedures can be surgical procedures, non-surgical investigative and therapeutic procedures, such as X-rays and chemotherapy, and non-surgical client support interventions, such as anaesthesia (AIHW 2007b). Rates of surgical procedure are likely to be affected by issues such as need and access, both financial and physical (AIHW 2008a). The remoteness of major hospitals and specialists from regional and remote populations may influence residents' access to procedures.

This indicator compares the rate of eight specific procedures for residents in regional and remote areas with those for residents of Major Cities. Each procedure has been chosen for one or more of the following reasons: association with health conditions more prevalent in regional and remote areas; frequency with which they are done; an elective or discretionary nature; or the availability of possible alternative treatment options. Box 2 summarises each of the procedures analysed.

Data for indicator 3.2.2 are derived from the National Hospital Morbidity Database for the reporting periods 2004–05 and 2005–06, and ABS estimated resident population data. The National Hospital Morbidity Database includes data relating to admitted patients in almost all public and private hospitals. It is a compilation of episode-level records, which are completed when a patient separates from hospital (that is discharged, transferred, dies or has a change in care type). An episode of admitted patient care is referred to as a separation. A record is included for each separation, not for each patient, so patients who separated more than once a year have more than one record in the database. Separation data for each selected procedure were analysed based on the Remoteness Area of usual residence of the patient, and the separation rate represents the number of hospital separations as a proportion of the total population.

Table 2.3 should be interpreted in conjunction with relevant available data on health status, outcomes and demographics. It is possible that a statistically significant difference in rates of selected procedures across areas may reflect levels of need or demand, and not necessarily unequal access to procedures.

Refer to section 1.4 for guidance in interpreting the tables, and Appendix B for scope and coverage of data sources.

Box 2: Definitions of selected hospital procedures

Coronary angioplasty is a technique that improves the flow of blood to the heart without heart surgery. Blocked arteries are cleared with a surgical balloon and a stent is inserted into the artery to maintain arterial expansion.

Coronary artery bypass graft is an operation that bypasses the narrow areas in the coronary arteries to get blood to the heart. The bypass is constructed by a graft of an artery from another part of the body.

Chemotherapy is a standardised regime of drugs used to treat cancer.

Dialysis is an artificial replacement for lost kidney function due to renal failure.

Hip replacement surgery involves the replacement of damaged cartilage and bone from the hip with artificial parts.

Tonsillectomy is the surgical removal of the tonsils.

Hysterectomy is the surgical removal of the uterus.

Myringotomy is a surgical procedure to relieve pressure in the eardrum from excessive build up of fluid.

Source: Warrell 2003.

Detailed results

Separations rates varied between areas for each procedure in the periods 2004–05 and 2005–06 (Table 2.3).

- Compared with Major Cities, separation rates for hysterectomy, hip replacement, tonsillectomy and chemotherapy were significantly higher for residents living in All regional areas and significantly lower for residents of All remote areas.
- Separation rates for dialysis were significantly higher for All remote residents than for residents of Major Cities.
- Compared with Major Cities, separation rates for coronary artery bypass graft appeared similar for residents of All regional areas and significantly less for residents of Remote areas. This finding, in addition to lower separation rates for coronary angioplasty outside Major Cities, is particularly noteworthy, as coronary heart disease is the largest contributor to elevated death rates outside Major Cities (Figure 3; AIHW 2007a).
- For residents in All regional areas, separation rates for chemotherapy were slightly, but still significantly, higher than for Major City residents, and rates for people living in All remote areas were significantly lower. This is consistent with the pattern of incidence of cancer, which rises in All regional areas and falls in All remote areas (AIHW 2008d).
- For people living in Remote and Very Remote areas in 2005–06, separation rates for dialysis were, respectively, 1.5 and 4.0 times as high as the Major Cities rates. It is likely that the high Indigenous separation rates involving dialysis care (around 10 times as high as non-Indigenous Australians), and the relatively higher proportion of Aboriginal and Torres Strait Islander peoples living in All remote areas can explain these findings. Care

involving dialysis represented approximately 46% of all hospital separations for patients identified as Indigenous in 2005–06 (AIHW 2007b).

- Dialysis is a critical procedure for people who have lost kidney function due to renal failure. Higher rates of separation involving dialysis for All remote residents is consistent with higher death rates due to diabetes in these areas, and higher death rates due to renal failure in Very Remote areas (AIHW 2007a). Interestingly, in 2004–05, death rates due to diabetes were significantly higher in All regional areas than in Major Cities, while separation rates for dialysis were significantly lower for residents of All regional areas than for residents of Major Cities (Figure 4).
- When compared with Major Cities rates, separation rates for most procedures remained relatively stable across areas between 2004–05 and 2005–06. For patients living in All regional areas, separation rates for hysterectomy and hip replacement rose slightly between 2004–05 and 2005–06, relative to rates for people living in Major Cities.

Table 2.3: Separation rate for selected procedures, by ASGC Remoteness Area of client, 2004–05 and 2005–06

Procedure	Year	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
Standardised rate ratio						
Coronary angioplasty	2004–05	1.00	*0.81	*0.76	*0.71	*0.64
	2005–06	1.00	*0.87	*0.79	*0.70	*0.72
Coronary artery bypass graft	2004–05	1.00	*1.03	1.02	*0.84	0.92
	2005–06	1.00	*1.03	1.02	*0.84	0.92
Chemotherapy	2004–05	1.00	*1.03	*1.02	*0.84	*0.92
	2005–06	1.00	*1.03	*1.02	*0.84	*0.92
Dialysis	2004–05	1.00	*0.69	*0.84	*1.56	*3.62
	2005–06	1.00	*0.72	*0.89	*1.51	*3.98
Hip replacement	2004–05	1.00	*1.10	*1.04	*0.82	*0.50
	2005–06	1.00	*1.15	*1.12	0.99	*0.59
Tonsillectomy	2004–05	1.00	*1.20	1.00	*0.90	*0.53
	2005–06	1.00	*1.19	*1.09	*0.81	*0.56
Hysterectomy	2004–05	1.00	*1.11	*1.22	0.94	*0.77
	2005–06	1.00	*1.31	*1.40	1.05	0.91
Myringotomy	2004–05	1.00	*0.90	*0.84	*0.63	*0.51
	2005–06	1.00	*0.95	*0.85	*0.74	*0.52

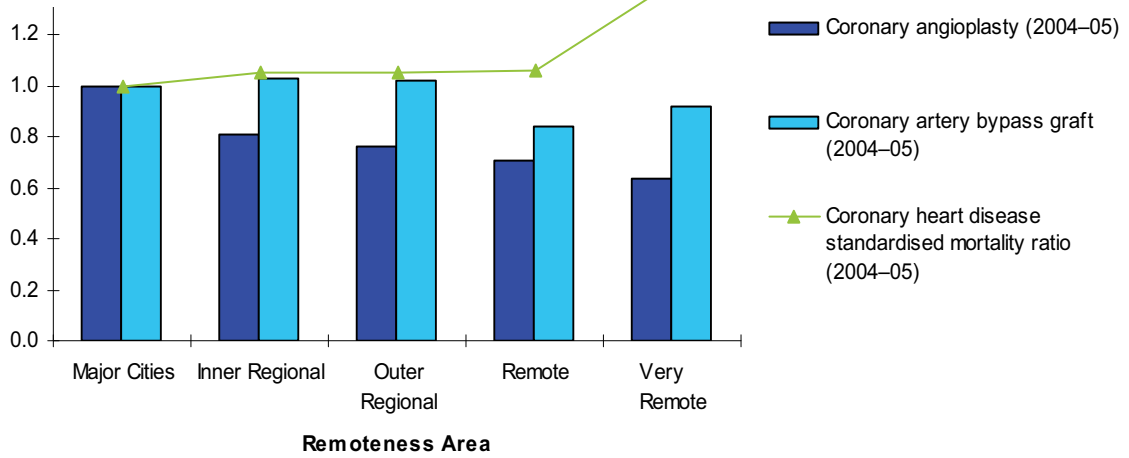
* Denotes statistically significant.

Notes

1. The presented statistic is the separation rate for each area divided by the separation rate for Major Cities in each reporting period.
2. Separations including the selected procedures were identified using International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification (ICD-10-AM). Refer to Table A1.9 in AIHW 2007b for specific codes used.
3. Separations for which care type was reported as Newborn with no qualified days, Hospital boarder or Posthumous organ procurement have been excluded.

Sources: AIHW analysis of National Hospital Morbidity Database; ABS estimated resident population at 30 June 2005 and 30 June 2006.

Standardised rate ratio

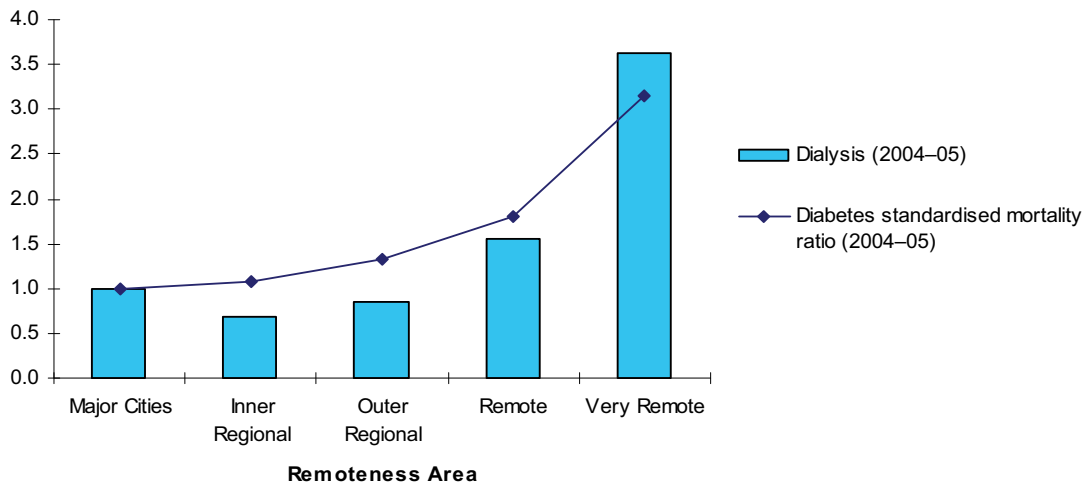


Source: Table 2.3; National Mortality Database.

Note: Standardised mortality ratio is the ratio of the actual number of deaths in an area to the number expected if Major Cities death rates for coronary heart disease had applied in each area.

Figure 3: Comparison rates for coronary angioplasty and coronary artery bypass graft procedures and standardised mortality ratios for coronary heart disease, by ASGC Remoteness Area of usual residence, 2004-05

Standardised rate ratio



Source: Table 2.3; National Mortality Database.

Note: Standardised mortality ratio is the ratio of the actual number of deaths in an area to the number expected if Major Cities death rates for diabetes had applied in each area.

Figure 4: Comparison rates of dialysis procedures and standardised mortality ratios for diabetes, by ASGC Remoteness Area of usual residence, 2004-05

Indicator 3.2.4 Aged care

Summary of findings

In 2006, the provision of:

- residential aged care places was lowest in Remote areas (74 places per 1,000 persons) and highest in Very Remote areas (111 places per 1,000 persons)
- Community Aged Care Packages (CACP) was highest in Very Remote areas, at 105 per 1,000 population, compared with 18 per 1,000 population in Major Cities.

Outside Major Cities, the provision of aged care places and support packages was above the planning target ratio in all except Outer Regional areas.

As a result of their poorer health status, Aboriginal and Torres Strait Islander peoples access aged care services at a younger age, and have higher use rates than non-Indigenous people.

Background

Australians are living longer and healthier lives than previous generations, and the care and housing of Australia's aged is an important health and welfare issue. Older Australians, defined in this section as people aged 70 years and over, currently comprise 10% of Australia's population (Table 2.4); this proportion is expected to rise in the future. Because of the life expectancy gap between Indigenous and non-Indigenous Australians, and the very low proportion of the Indigenous population who are aged 70 years and over, the 'older Indigenous' population is generally considered to include all those aged 50 years and over. In 2006, 11% of Indigenous Australians were aged 50 years and over (AIHW 2007c).

Indicator 3.2.4 provides information on the number of places provided for the care and accommodation of older people. Data are provided on accommodation in residential aged care services, and packages considered to help older people to continue living and participating in the community. These packages include Extended Aged Care at Home (EACH) program, EACH Dementia program, CACPs, Transition Care Program, and Home and Community Care (HACC) (Box 3). Data on residential aged care services and community support packages (except HACC) are presented as provision ratios – the number of places or packages available per 1,000 persons aged 70 years and over.

Box 3: Residential aged care and community care packages

Residential aged care services provide accommodation and care services to people who are no longer able to support themselves or be supported by others in their own homes.

The Home and Community Care (HACC) program provides the majority of home-based services, and includes a wide range of maintenance and support services to help older people be independent in their home and community.

Community Aged Care Packages (CACPs) provide home-based care for frail or disabled older people whose dependency and complex care needs would qualify them for entry to an aged care service, at least for low-level care.

The Extended Aged Care at Home (EACH) program aims to deliver care at home to people who are otherwise eligible for high-level residential care.

The EACH Dementia program provides the equivalent of high-level residential aged care in the home to frail older people who have behaviours of concern and psychological symptoms associated with dementia. The EACH Dementia program is a new program implemented from March 2006.

The Transition Care Program provide short-term support and active management for older people at the interface of the acute/sub-acute and residential aged care sectors.

Source: AIHW 2007c; AIHW 2007d; AIHW 2007e; DoHA 2007.

Information is also provided on separations approximating older people in hospital who are suitable for a nursing home. These separations are defined here by a maintenance or psychogeriatric care type for patients aged 70 years and over if non-Indigenous, and older than 50 years if Aboriginal or Torres Strait Islander. The separation rate represents the number of hospital separations as a proportion of the total population in these age groups. Maintenance care is provided to prevent deterioration in the function and health status of a patient with disability; it is care that could be provided to a patient in another setting, such as residential aged care or the patient's home. Psychogeriatric care aims to improve health and functioning for patients with an age-related organic brain impairment or a physical condition with significant associated behavioural or psychiatric disturbance.

Separations involving maintenance and psychogeriatric care are considered a more accurate approximation of patients suitable for a nursing home than the concept of nursing home-type patients, which is related to charging long-stay patients a co-payment to cover hospital costs.

Data on the number of patient days for patients suitable for a nursing home are also presented. Patient days represent the number of full or partial day stays for patients who separated from a hospital. The patient day rate represents the number of patient days as a proportion of the total population. The data presented here underestimates total patient days, as patients remaining in hospital after the reporting period are not captured. Variation in separations and length of hospital stay may reflect a number of factors, such as availability of other health services in the area or hospital administrative practices.

Data for this indicator are sourced from the Home and Community Care National Minimum Data Set, the Aged and Community Management Information System Database (other support packages), and the National Hospital Morbidity Database (approximated patients suitable for nursing home). In all cases, remoteness of clients' usual residence has been used as the basis for analysis.

Refer to section 1.4 for guidance on interpreting the tables, and Appendix B for scope and coverage of data sources.

Detailed results

- As at 30 June 2006, the majority (67%) of older Australians resided in Major Cities, 428,000 (22%) resided in Inner Regional areas, 182,000 (10%) in Outer Regional areas and 25,700 (less than 2%) in All remote areas (Table 2.4).
- The proportion of older Australians aged 85 years and over decreases with increasing remoteness; this group comprised 17% of the older Australian population in Major Cities, and 12% of the population in Very Remote areas.

Table 2.4: Population of persons aged 70 years and over^(a), by ASGC Remoteness Areas, 30 June 2006

Characteristics	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total 70+	All older Australians (70+ and Indigenous Australians aged 50–69 years)
Number of people aged 70 years and over (older Australians)							
Number 70+	1,272,000	428,000	182,000	19,400	6,300	1,908,000	1,962,000
Percentage distribution of older Australians across Australia							
Per cent (Australia)	66.7	22.4	9.5	1.0	0.3	100.0	..
Percentage distribution of older Australians in each area							
Per cent (regions)	9.0	10.5	9.3	6.1	3.7	9.2	9.5
Number of Australians aged over 85 years across Australia							
Number 85+	221,000	69,300	28,200	2,800	800	322,000	..
Percentage of older Australians aged over 85 years in each area							
Per cent (regions)	17.4	16.2	15.5	14.3	12.1	16.9	..

(a) ABS estimated resident population and experimental estimated resident Indigenous population at 30 June 2006 (preliminary).

Source: ABS 2007a.

Table 2.5 shows the provision ratio of aged care places and packages per 1,000 persons aged 70 years and over in each geographic area in 2002 and 2006.

- In 2006, the planning target ratio for residential aged care services was 88, and for residential places and packages combined, 108 (AIHW 2007e).
- In 2006, provision of residential aged care places was lowest in Outer Regional and Remote areas (84 and 74 places per 1,000 population, respectively), and highest in Very Remote areas (111 places per 1,000 persons).
- Relatively more CACP packages were provided in Remote (35 packages per 1,000 persons) and Very Remote (105 per 1,000 persons) areas, compared with 18 in Major Cities.
- The provision of EACH packages was similar in Major Cities and All regional areas (around 2 packages per 1,000 persons in each area), with few packages available per 1,000 population in All remote areas.

- Transition care packages, available in Major Cities and Inner Regional areas only, comprise a very small proportion of the total residential and aged care support available (0.3 of the total provision ratio).
- Taking into account all aged care places and packages, the combined ratio per 1,000 persons aged 70 years and over increased from 96 at 30 June 2002 to 108 at 30 June 2006, with the greatest increase occurring in Very Remote areas (144 to 216 per 1,000 persons).

Table 2.5: Residential aged care and transition care places, CACPs and EACH packages per 1,000 persons aged 70 years and over, by ASGC Remoteness Area, 30 June 2002 and 30 June 2006

Aged care places and packages	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total 70+	All older Australians (70+ and Indigenous Australians aged 50–69 years)
30 June 2002							
Residential aged care places	79.6	91.6	73.7	69.2	78.5	81.6	79.9
Aged care packages ^(a)	13.9	16.7	12.5	30.0	65.6	14.7	14.4
Total 70+	93.4	108.4	86.2	99.2	144.1	96.4	94.3
30 June 2006							
Residential aged care places	86.2	91.6	84.0	73.8	111.0	87.2	84.7
CACP packages	17.9	19.0	17.5	34.5	105.2	18.5	18.0
EACH packages ^(b)	1.7	1.7	1.8	0.2	—	1.7	1.6
Transition care packages	0.4	0.2	—	—	—	0.3	0.3
Total 70+	106.1	112.5	103.2	108.4	216.2	107.7	104.7
All older Australians (70+ and Indigenous Australians aged 50–69 years)	104.8	109.7	96.6	84.0	91.7	104.7	..

(a) Only CACP were available at 30 June 2002.

(b) Includes 601 EACH Dementia packages.

Notes

1. These figures include places and packages provided by Multi-Purpose Services and places and packages funded under the National Aboriginal and Torres Strait Islander Flexible Aged Care Program.
2. The 2006 ASGC Remoteness population numbers were sourced from the ABS estimated resident population 30 June 2006 (ABS 2007a). The 2006 ASGC Remoteness Indigenous population numbers were sourced from the preliminary estimated resident population 30 June 2006 (ABS unpublished data). Refer to Table 1.4 notes (AIHW 2003b) for source of 2002 population numbers.
3. 2006 figures vary from those published in *Residential aged care in Australia 2005–06* as revised population estimates based on 2006 Census have been used.

Sources: AIHW 2003b; AIHW 2007d; ABS 2007a.

It is not possible to report on provision outcomes for the HACC program, as discrete places and packages have no meaning in the provision of HACC services.

- In 2005–06, the majority (61%) of HACC clients aged 70 years and over resided in Major Cities, 25% resided in Inner Regional, 12% in Outer Regional and 2% in Remote and Very

Remote areas (Table 2.6). However, the proportion of the population aged 70 years and over accessing HACC services in each region increased with increasing remoteness, from 25% in Major Cities to 42% in Very Remote areas.

- In all areas, the proportion of people aged 70 years and over who were HACC clients was higher in 2005–06 compared with 2002–03.

Table 2.6: HACC clients aged 70 years and over, by ASGC Remoteness Areas, 2002–03 and 2005–06

Characteristics	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Australia
2002–03						
HACC clients 70+ (number)	277,000	112,000	57,700	6,300	2,400	456,000
HACC clients (per cent)	60.8	24.6	12.7	1.4	0.5	100.0
Population 70+ ^(a)	1,187,000	425,000	186,000	19,900	7,000	1,825,000
Proportion of older Australians who are HACC clients	23.3	26.4	31.0	31.7	34.4	25.0
2005–06						
HACC clients 70+ (number)	321,000	131,000	63,300	7,000	2,600	525,000
HACC clients (per cent)	61.2	24.9	12.1	1.3	0.5	100.0
Population 70+ ^(b)	1,272,000	428,000	182,000	19,400	6,300	1,908,000
Proportion of older Australians who are HACC clients	25.2	30.6	34.8	36.2	41.7	27.5

(a) ABS estimated resident population at 30 June 2003.

(b) ABS estimated resident population at 30 June 2006.

Sources: DoHA Home and Community Care National Minimum Data Set; ABS 2007a.

Aboriginal and Torres Strait Islander peoples

Because of the life expectancy gap between Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians, and the very low proportion of Indigenous Australians who are aged 70 years and over, the older Indigenous population is generally considered to include people who are aged 50 years and over. As a result of their poorer health status, older Indigenous Australians access aged care services at a younger age, and have higher use rates, than non-Indigenous people (AIHW 2007c).

If the population denominator used to calculate the provision ratio for residential and aged care packages includes Indigenous Australians aged 50–69 years as well as all people aged 70 years and over, the provision ratio of total aged care services can change. For example, the provision ratio for all aged care places and packages at 30 June 2006 changed from 108 to 105 per 1,000 people (Table 2.5). This is particularly likely to occur in the more remote areas where Indigenous Australians comprise a larger proportion of the population. For example, the total provision ratio of aged care services in Very Remote areas decreased from 216 to 92 (Table 2.5).

Hospital separations involving maintenance and psychogeriatric care

- Compared with Major Cities, residents of All remote areas had significantly higher rates of separations involving maintenance and psychogeriatric care. For Remote and Very Remote residents, separation rates were, respectively, 1.9 and 2.0 times as high as the rate for Major City residents (Table 2.7).
- Compared with Major Cities, rates of patient days for patients receiving maintenance and psychogeriatric care were highest (significantly, 9 times as high) in Remote areas.

Table 2.7: Separations and patient days provided by hospitals for patients receiving maintenance and psychogeriatric care^(a), by ASGC Remoteness Area of client, 2005–06

Measure and sex	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
Standardised rate ratio					
Separations^(b)					
Males	1.00	*1.13	*1.55	*2.03	*2.39
Females	1.00	1.01	*1.22	*1.73	*1.72
Persons	1.00	*1.05	*1.35	*1.85	*2.01
Patient days^(c)					
Males	1.00	*1.54	*3.33	*6.88	*6.86
Females	1.00	*2.11	*5.21	*10.87	*4.86
Persons	1.00	*1.86	*4.36	*9.00	*5.84

* Denotes statistical significance.

(a) Approximated by separations for patients 70 years and over if non-Indigenous Australian, and older than 50 years if Indigenous Australian with a maintenance or psychogeriatric care type. See Glossary for definition of these care types. Separations involving psychogeriatric care represent approximately 30% of separations analysed.

(b) The presented statistic is the separation rate for each area divided by the separation rate for Major Cities.

(c) Patient days represent the number of full or partial day stays for patients who separated from hospital during the reporting period. The presented statistic is the patient day rate for each area divided by the patient day rate for Major Cities. Due to the generally lengthy stay associated with psychogeriatric and maintenance care, some separations may include patient days from the previous reporting period.

Sources: AIHW analysis of National Hospital Morbidity Database; ABS estimated resident population as at 30 June 2006.

Accessible dimension

Indicator 3.5.2 Numbers of health workers

Summary of findings

From 1997 to 2005, the number of employed medical practitioners in Australia increased by 25% and the number of employed nurses increased by 10%.

The overall supply of employed medical practitioners varied considerably across regions in 2005, estimated to be 335 full-time equivalent (FTE) per 100,000 population in Major Cities, 181 FTE in Inner Regional, 153 in Outer Regional and 148 in Remote/Very Remote regions. This variation reflects the lower number of specialists practising in more remote areas.

Primary care practitioners were more evenly distributed. In 2005, an estimated 100 FTE primary care practitioners were employed per 100,000 population in Major Cities, 88 in Inner Regional, 84 in Outer Regional and 92 in Remote/Very Remote regions.

Similarly, nursing supply was evenly distributed across regions, ranging from 1,177 FTE nurses per 100,000 population in Very Remote areas to 1,074 in Major Cities.

In 2005, the supply of dentists varied across regions, from 59 per 100,000 population in Major Cities to 20 in Remote/Very Remote regions.

Background

Current national debate about Australia's health workforce includes a focus on the supply of health workers in rural and remote areas. Access to services is at least partially affected by the number of available health workers per population.

Data from this indicator is sourced from labour force surveys done by the states and territories, usually in conjunction with the registration of health professionals. The AIHW compiles the surveys of medical, nursing, dental and allied health workers. These are completed yearly for nursing, medicine and dentistry, and less regularly for other professions. The AIHW health labour force surveys are usually of all people registering with the relevant registration boards for that profession, regardless of employment status. Information is collected on demographic characteristics, labour force status, type of work and location, specialty fields and qualifications of health professionals. However, the AIHW surveys are not compulsory, and response rates vary between occupations and state/territories, and over time. The most recent information on the medical, nursing and dental workforces, as reported here, is from the 2005 AIHW surveys. Data for the allied health professions are not presented due to the lack of data available in some jurisdictions, which would affect regional and remote comparisons (see AIHW 2008a).

Care should be taken in comparing these regional figures, as not all health professionals reported their main work location. For example, in the years presented, a greater number of medical practitioners and nurses could not be allocated to a region than the number who reported their main location was in a Remote/Very Remote area.

Where the data were available, full-time equivalent rates are presented. These rates take into account both the absolute number of workers and the average hours per week that they work.

Refer to Appendix B for scope and coverage of data sources.

Detailed results

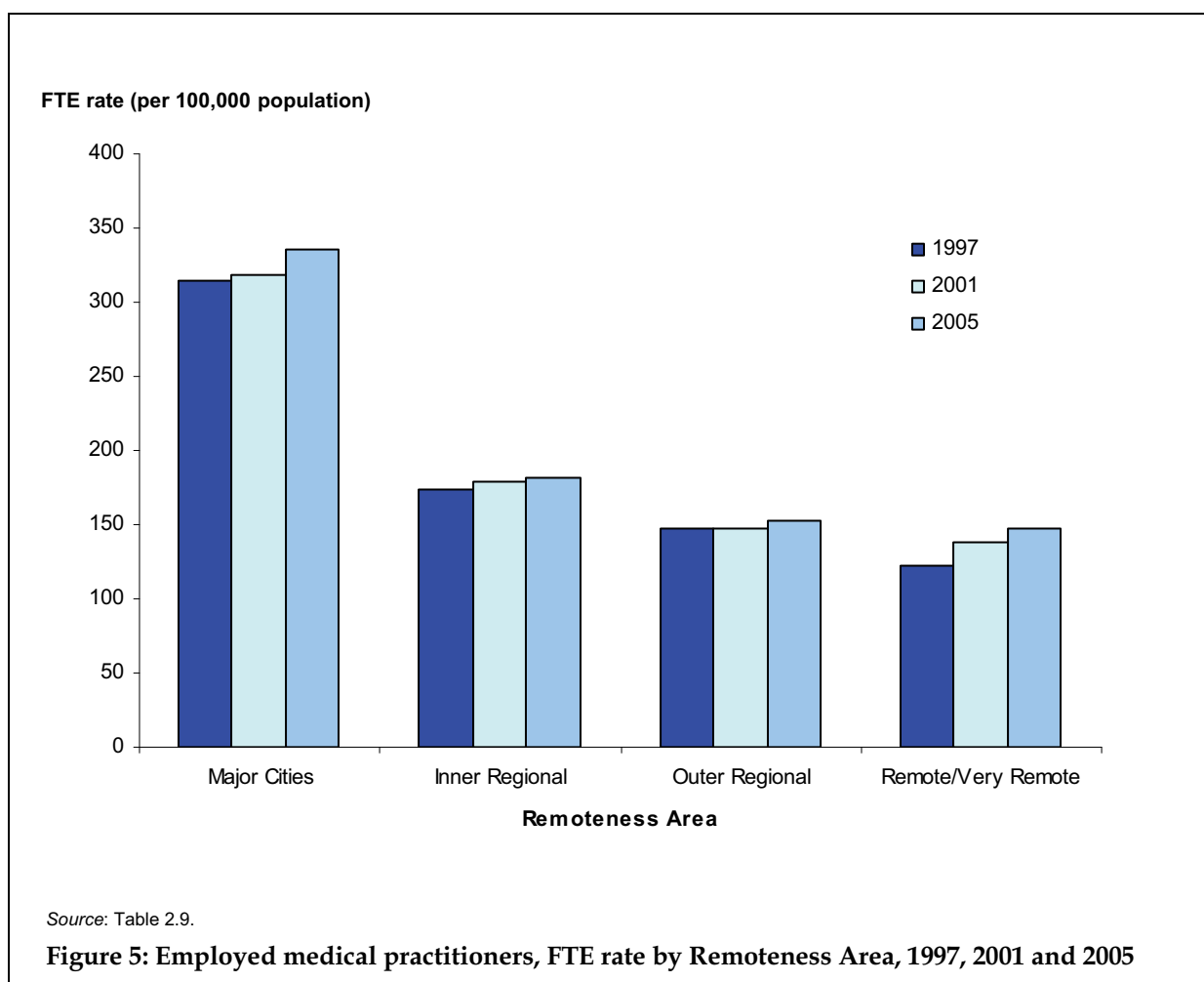
- The number of employed medical practitioners in Australia increased by 25% from 1997 to 2005. Across areas, the increase in practitioners across areas was, respectively: Major Cities 27%, Inner Regional 30%, Outer Regional 21% and Remote/Very Remote areas 32% (Table 2.8).

Table 2.8: Employed medical practitioners, number by Remoteness Areas, 1997^(a), 2001 and 2005

Type of practitioner	Major Cities	Inner Regional	Outer Regional	Remote/Very Remote	Not stated	Total
1997						
Clinicians	33,437	5,835	2,486	509	1,927	44,194
Primary care practitioners	14,206	3,425	1,574	357	572	20,134
Hospital non-specialist	3,190	419	228	84	401	4,321
Specialist	12,198	1,770	585	52	550	15,155
Specialist-in-training	3,843	221	99	16	404	4,584
Non-clinicians	3,344	290	133	32	206	4,004
Total	36,780	6,125	2,619	541	2,133	48,198
2001						
Clinicians	37,525	6,715	2,689	592	1,871	49,392
Primary care practitioners	15,140	3,749	1,698	416	668	21,671
Hospital non-specialist	3,880	666	233	96	294	5,169
Specialist	13,856	1,944	593	63	668	17,124
Specialist-in-training	4,649	357	165	18	240	5,429
Non-clinicians	3,392	290	132	35	142	3,991
Total	40,916	7,005	2,822	627	2,014	53,384
2005						
Clinicians	43,105	7,638	2,986	644	1,710	56,084
Primary care practitioners	15,614	4,113	1,772	452	638	22,589
Hospital non-specialist	5,273	752	276	102	229	6,632
Specialist	16,180	2,305	749	74	635	19,943
Specialist-in-training	6,038	467	189	17	209	6,920
Non-clinicians	3,475	344	189	67	93	4,168
Total	46,579	7,982	3,175	712	1,803	60,252

(a) 1997 is the earliest year for which comparable estimates to 2005 are available, due to changes in estimation processes.

Sources: AIHW Medical Labour Force surveys, 1997, 2001 and 2005.



- The overall supply of medical practitioners is increasing in Australia, from 275 FTE practitioners per 100,000 population in 1997 to 287 in 2005 (Figure 5).
- Supply varied across geographic regions, most recently estimated to be 335 FTE per 100,000 population in Major Cities, 181 FTE in Inner Regional, 153 in Outer Regional and 148 in Remote/Very Remote regions. This variation reflects the decreased number of specialists practising in more remote areas.
- Primary care practitioners were more evenly distributed. In 2005, an estimated 100 FTE primary care practitioners were employed per 100,000 population in Major Cities, 88 in Inner Regional, 84 in Outer Regional and 92 in Remote/Very Remote regions (Table 2.9).
- In contrast to the trend of total medical practitioner supply, the supply of primary care practitioners decreased from 108 FTE per 100,000 in 1997 to 98 in 2005.
- Some care should be taken in interpreting changes in the Remote/Very Remote region due to the relatively small number of employed medical practitioners who stated that their main job was located in this region, and the estimation method and low response rate for the Northern Territory in 2005.

Table 2.9: Employed medical practitioners, FTE rate^(a) by Remoteness Areas, 1997^(b), 2001 and 2005

Type of practitioner	Major Cities	Inner Regional	Outer Regional	Remote/ Very Remote	Total ^(c)
1997					
Clinicians	290	167	141	116	255
Primary care	112	94	88	80	108
Hospital non-specialist	29	12	13	20	26
Specialist	110	53	34	12	91
Specialist-in-training	37	7	6	4	30
Non-clinicians	26	7	7	7	20
Total	315	174	148	123	275
2001					
Clinicians	293	172	142	130	258
Primary care	106	91	87	90	104
Hospital non-specialist	31	17	12	22	28
Specialist	115	54	33	14	95
Specialist-in-training	41	11	9	5	32
Non-clinicians	25	7	7	8	20
Total	319	179	148	138	277
2005					
Clinicians	311	174	145	133	268
Primary care	100	88	84	92	98
Hospital non-specialist	40	18	13	22	33
Specialist	122	56	38	16	99
Specialist-in-training	49	12	10	4	37
Non-clinicians	24	7	8	14	19
Total	335	181	153	148	287

(a) Based on a standard full-time working week of 45 hours.

(b) 1997 is the earliest year for which comparable estimates to 2005 are available, due to changes in estimation processes.

(c) Includes medical practitioners who did not provide information on their main job location.

Sources: AIHW Medical Labour Force surveys, 1997, 2001 and 2005.

- The number of employed registered and enrolled nurses in Australia increased by 10% from 1997 to 2005. The increase in nurses across areas was, respectively: Major Cities 20%, Inner Regional 18%, Outer Regional 23%, Remote 4% and Very Remote areas 12% (Table 2.10).
- In 2005, nursing supply appears to have been evenly distributed across regions, ranging from 1,074 FTE nurses in Major Cities per 100,000 population to 1,177 in Very Remote areas (Table 2.11; Figure 6).

Table 2.10: Employed registered and enrolled nurses, number by Remoteness Area, 1997^(a), 2001 and 2005

Type of nurse	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Not stated	Total
1997							
Registered	105,653	32,606	14,141	2,400	1,365	20,052	176,217
Enrolled	21,910	11,316	5,952	1,018	367	5,747	46,311
Total	127,563	43,922	20,093	3,419	1,732	25,799	222,528
2001							
Registered	114,295	33,693	15,200	2,364	1,336	16,343	183,269
Enrolled	22,258	10,934	6,119	970	373	4,344	44,961
Total	136,553	44,627	21,319	3,334	1,709	20,687	228,230
2005							
Registered	128,953	39,864	18,156	2,635	1,548	7,160	198,315
Enrolled	23,937	11,747	6,501	908	388	2,564	46,044
Total	152,889	51,610	24,657	3,543	1,936	9,725	244,360

(a) 1997 is the earliest year for which comparable estimates to 2005 are available, due to changes in estimation processes.

Sources: AIHW Nursing Labour Force surveys, 1997, 2001 and 2005.

Table 2.11: Employed registered and enrolled nurses, FTE rate^(a) by Remoteness Area, 1997^(b), 2001 and 2005

Type of nurse	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total ^(c)
1997						
Registered	772	736	629	676	779	843
Enrolled	152	242	250	262	191	209
Total	926	975	879	939	971	1,054
2001						
Registered	792	722	658	658	736	833
Enrolled	149	225	252	238	188	196
Total	940	947	910	896	925	1,031
2005						
Registered	912	866	849	827	963	928
Enrolled	162	242	288	255	213	204
Total	1,074	1,107	1,139	1,081	1,177	1,133

(a) Based on a standard full-time working week of 35 hours.

(b) 1997 is the earliest year for which comparable estimates to 2005 are available, due to changes in estimation processes.

(c) Includes nurses who did not provide information on their main job location.

Sources: AIHW Nursing Labour Force surveys, 1997, 2001 and 2005.



- Between 2000 and 2005 the practising rate of dentists increased across all Remoteness Areas with the exception of Outer Regional where the rate remained stable.
- In 2005, the supply of dentists varied across regions, from 59 per 100,000 in Major Cities to 20 in Remote/Very Remote regions (Table 2.12). This pattern was similar in 2003 for dental hygienists. In contrast, dental therapists and dental prosthetists were more evenly spread across geographic regions.

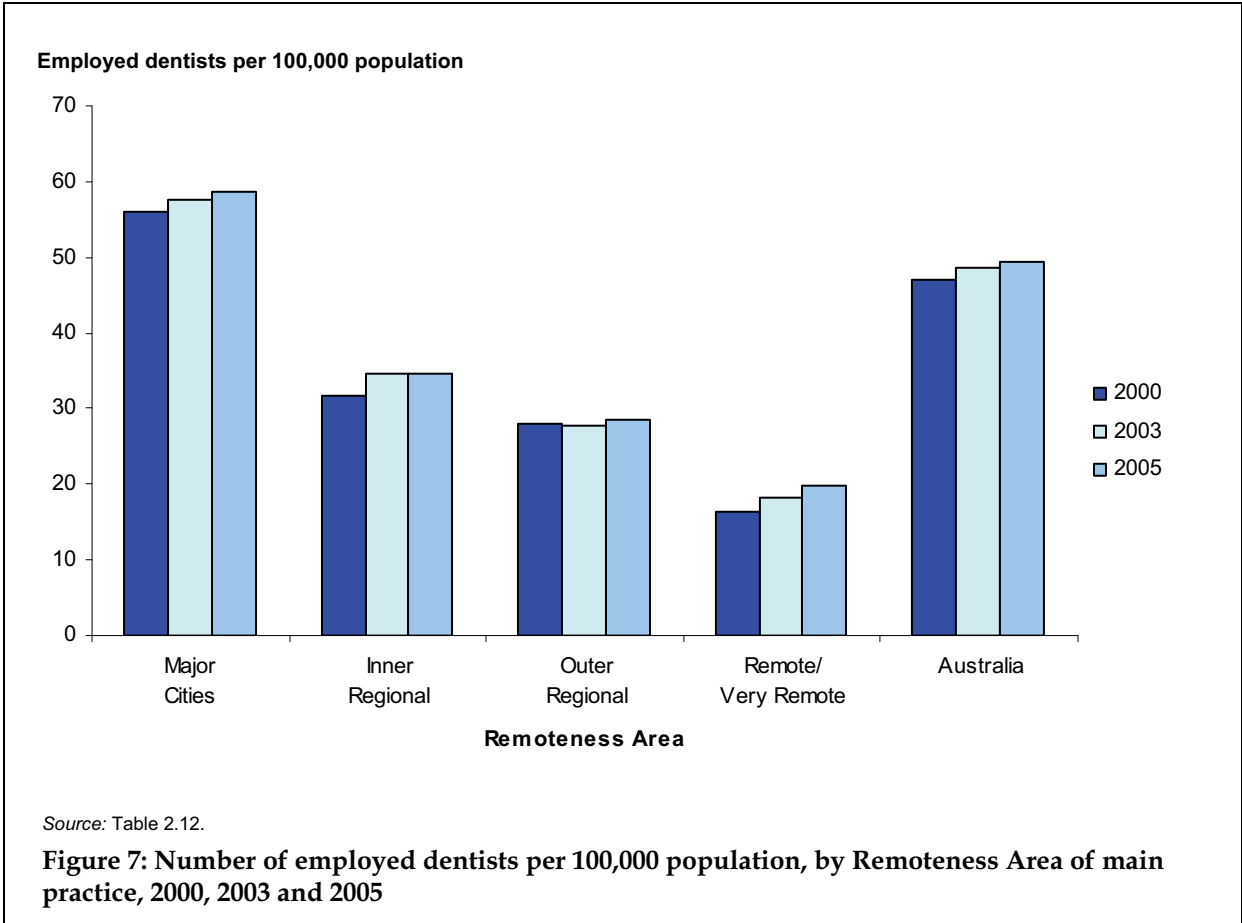


Table 2.12: Employed dental labour force, by Remoteness Area of main job, 2000, 2003 or 2005^(a)

Dental professional	Major Cities	Inner Regional	Outer Regional	Remote/ Very Remote	Total ^(b)
	Number				
Dentists 2000	7,097	1,255	557	82	8,991
Dentists 2003	7,588	1,435	564	91	9,678
Dentists 2005 ^(b)	7,889	1,488	591	100	10,074
Dental therapists 2003	720	322	173	28	1,242
Dental hygienists 2003	502	51	23	—	577
Dental prosthetists 2003	542	194	53	5	794
	Number per 100,000				
Dentists 2000	55.9	31.6	27.9	16.4	46.9
Dentists 2003	57.6	34.5	27.7	18.1	48.7
Dentists 2005	58.6	34.6	28.5	19.8	49.5
Dental therapists 2003	5.5	7.8	8.5	5.6	6.2
Dental hygienist 2003	3.8	1.2	1.1	—	2.9
Dental prosthetists 2003	4.1	4.7	2.6	1.0	4.0

(a) Data for allied dental practitioners were not available for 2005 and therefore 2003 data have been reported.

(b) In 2005, no specialist dentists responded to the survey in the Northern Territory. According to the Dental Board there were 14 specialists registered in 2005. These have been added to the total, but excluded from the regional figures.

Notes

1. Region is based on the main practice location.
2. In 2003, there was no data collection in the NT and no collection of prosthetists in WA; results cited are based on data from the 2002 collection.
3. Dental prosthetists were not permitted to practise in the NT; the NT population was excluded in the calculations of practising prosthetists per 100,000 population.
4. In 2003, there were 71 dual registered dental therapists and hygienists in Australia; some of these are included in both the dental therapist and hygienist numbers.

Source: AIHW Dental Statistics Research Unit Dental Labour Force data collection 2000, 2003 and 2005.

Indicator 3.5.3 Hospital separations and patient days

Summary of findings

Hospital separation rates were significantly higher (up to 1.6 times as high) for people living in All remote areas than for those living in Major Cities.

Rates of hospital separations relating to injury and poisoning increased significantly with increasing remoteness; from 1.2 times as high as Major Cities for people living in Inner Regional areas to 2.4 times as high for people living in Very Remote areas.

Rates of patient days were higher for residents of Outer Regional, Remote and Very Remote areas than for Major City residents.

Across all areas, those identifying as Aboriginal and/or Torres Strait Islander peoples had significantly higher separation rates and rates of patient days than non-Indigenous Australians residing in Major Cities.

Background

Hospital separation rates are often used to demonstrate the differences in health status or access to health services for people who live outside Major Cities. This indicator compares rates of hospital admissions and patient days for separations of different care types (see Box 4).

Separations where injury and poisoning is the principal diagnosis have also been considered, but separately due to their significantly large contribution to mortality and morbidity in more remote populations. In 2002–2004, death rates due to injury and poisoning in Outer Regional and Very Remote areas were, respectively, 1.5 and 3.1 times as high as Major Cities (AIHW 2007a).

Box 4: Hospital care types

Hospital care type defines the overall nature of a clinical service provided to an admitted patient during an episode of care, or the type of service provided by the hospital for boarders or posthumous organ procurement (other care).

***Acute care** is care in which the clinical intent or treatment goal is to: manage labour (obstetric); cure illness or provide definitive treatment of injury; perform surgery; relieve symptoms of illness or injury (excluding palliative care); reduce severity of an illness or injury; protect against exacerbation and/or complication of an illness and/or injury that could threaten life or normal function; perform diagnostic or therapeutic procedures.*

***Non-acute care** comprises a range of other care types, including rehabilitation, palliative, psychogeriatric, geriatric evaluation and management, and maintenance.*

***Other types of care** include posthumous and hospital boarder organ procurement.*

Source: AIHW 2008e.

Data for indicator 3.5.3 are derived from the National Hospital Morbidity Database for the reporting period 2005–06, and ABS estimated resident population data. The National

Hospital Morbidity Database includes data relating to admitted patients in almost all public and private hospitals. It is a compilation of episode-level records, usually completed when a patient completes an episode of care. Separation data for each care type were analysed based on the Remoteness Area of usual residence of the patient. Patient days represent the number of full or partial day stays for patients who separated from hospital.

Differences in rates of separation across geographic areas does not necessarily indicate greater accessibility to hospitals, as more centrally-based hospitals can also provide services for people who reside in other areas. The number of patient days across geographic areas may reflect different factors, including patterns of availability of other health care services, patterns of disease and injury, administrative practices of hospitals, and the relatively poor health of Aboriginal and Torres Strait Islander peoples who are more concentrated in more remote areas.

Refer to section 1.4 for guidance on interpreting the tables, and Appendix B for scope and coverage of data sources.

Detailed results

- In 2005–06, the overall nature of care provided to admitted patients was similar across all areas, with a slightly greater proportion of separations classified as acute for residents in All remote areas compared with Major Cities (Table A1).
- Hospital separation rates were significantly higher (up to 1.6 times as high) for residents of All remote areas than for those living in Major Cities (Table 2.13).
- Rates of hospital separations for acute care were significantly higher for residents of All remote areas than for residents of Major Cities, increasing from 1.1 times as high in Remote areas to 1.6 times as high in Very Remote areas.
- In contrast, rates of non-acute separations were significantly lower for residents of All regional and All remote areas than for those living in Major Cities.
- Across all areas, those identifying as Aboriginal and/or Torres Strait Islander peoples had significantly higher separation rates than non-Indigenous Australians residing in Major Cities. Separation rates for Indigenous Australians residing in Very Remote areas were 2.4 times as high as rates for non-Indigenous Australians residing in Major Cities.

Table 2.13: Rates of hospital separations, by care type and ASGC Remoteness Area of client, 2005–06

Care type	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
Standardised rate ratio					
Separations					
All acute separations					
Males	1.00	*0.96	*1.01	*1.03	*1.47
Females	1.00	*0.99	*1.06	*1.17	*1.66
Persons	1.00	*0.98	*1.04	*1.10	*1.57
All non-acute separations					
Males	1.00	*0.70	*0.68	*0.67	*0.86
Females	1.00	*0.65	*0.56	*0.60	*0.63
Persons	1.00	*0.68	*0.62	*0.63	*0.75
All separations					
Males	1.00	*0.96	1.00	*1.02	*1.46
Females	1.00	*0.98	*1.04	*1.15	*1.64
Persons	1.00	*0.97	*1.03	*1.09	*1.55
Indigenous separations^(a)					
Males	*1.22	*1.36	*2.65	*2.65	*2.56
Females	*1.32	*1.35	*2.87	*3.03	*2.33
Persons	*1.28	*1.35	*2.77	*2.86	*2.43

* Denotes statistically significant.

(a) Data are for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory (public hospitals). The quality of Indigenous identification for these six jurisdictions is considered acceptable for the purpose of analysis. Data exclude private hospitals in the Northern Territory. Caution should be used in interpreting these data because of jurisdictional differences in data quality.

Notes

1. The presented statistic is the separation rate for each area divided by the separation rate for Major Cities in each reporting period. For Aboriginal and Torres Strait Islander peoples, the presented statistic is the participation rate for Indigenous Australians divided by the participation rate for non-Indigenous Australians in Major Cities.
2. Acute includes separations with care type: Acute; Newborn with qualified days; or Not stated.
3. Separations for which the care type was reported as Newborn with no qualified days, Hospital boarder or Posthumous organ procurement have been excluded.

Source: National Hospital Morbidity Database and ABS estimated resident population at 30 June 2006.

- Rates of patient days for hospital separations increased significantly with increasing remoteness of patient's residence; increasing from 1.1 times as high as the Major Cities rate in Outer Regional areas to 1.8 times as high in Very Remote areas (Table 2.14).
- Across all areas, rates of patient days for separations involving Indigenous Australians were significantly higher than rates of patient days for separations involving non-Indigenous Australians residing in Major Cities.

Table 2.14: Rates of hospital patient days, by care type and ASGC Remoteness Area of client, 2005-06

Care type	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
Standardised rate ratio					
Patient days					
All acute patient days					
Males	1.00	*1.00	*1.07	*1.13	*1.78
Females	1.00	1.00	*1.07	*1.19	*1.79
Persons	1.00	*0.99	*1.06	*1.15	*1.74
All non-acute patient					
Males	1.00	*0.93	*1.15	*1.49	*1.68
Females	1.00	*0.99	*1.29	*2.04	*1.37
Persons	1.00	*0.96	*1.22	*1.76	*1.55
All patient days					
Males	1.00	*0.99	*1.08	*1.18	*1.76
Females	1.00	*1.02	*1.12	*1.33	*1.80
Persons	1.00	*1.01	*1.11	*1.26	*1.78
Indigenous patient days^(a)					
Males	*1.54	*1.53	*2.79	*3.20	*3.46
Females	*1.40	*1.55	*2.56	*3.27	*3.07
Persons	*1.46	*1.54	*2.66	*3.24	*3.24

* Denotes statistically significant.

(a) Data are for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory (public hospitals). The quality of Indigenous identification for these six jurisdictions is considered acceptable for the purpose of analysis. Data exclude private hospitals in the Northern Territory. Caution should be used in interpreting these data because of jurisdictional differences in data quality.

Notes

1. Acute includes separations with care type: Acute care; Newborn with qualified days; or Not stated.
2. Separations for which the care type was reported as Newborn with no qualified days, Hospital boarder or Posthumous organ procurement have been excluded.

Source: National Hospital Morbidity Database and ABS estimated resident population at 30 June 2006.

- Separations relating to injury and poisoning increased with increasing remoteness of patient's residence, comprising 9-10% of the total separations in All remote areas compared with 6% in Major Cities (Table A2).
- In 2005-06, rates of separations involving injury and poisoning were significantly higher for Australians living outside Major Cities, than for those living within them (Table 2.15).

Table 2.15: Selected separation statistics for principal diagnosis of injury and poisoning^(a), by ASGC Remoteness Area of client, 2005–06

Separation statistics	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
Standardised rate ratio					
Separations					
Males	1.00	*1.23	*1.45	*1.70	*2.19
Females	1.00	*1.09	*1.24	*1.58	*2.71
Persons	1.00	*1.16	*1.36	*1.67	*2.40
Patient days					
Males	1.00	*1.13	*1.29	*1.52	*2.52
Females	1.00	1.00	*1.08	*1.22	*2.54
Persons	1.00	*1.06	*1.18	*1.39	*2.53
Indigenous separations^(b)					
Males	*1.23	*1.63	*2.37	*2.81	*3.14
Females	*1.40	*1.64	*2.68	*4.19	*4.47
Persons	*1.29	*1.64	*2.48	*3.34	*3.65
Indigenous patient days^(b)					
Males	*1.36	*1.84	*2.49	*3.46	*4.62
Females	*1.42	*1.34	*2.42	*3.58	*4.79
Persons	*1.38	*1.64	*2.46	*3.50	*4.68

* Denotes statistically significant.

(a) Includes separations where injury and poisoning was recorded as principal diagnosis (ICD-10-AM codes S00–T98).

(b) Data are for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory (public hospitals). The quality of Indigenous identification for these six jurisdictions is considered acceptable for the purpose of analysis. Data exclude private hospitals in the Northern Territory. Caution should be used in interpreting these data because of jurisdictional differences in data quality.

Notes

1. The presented statistic is the separation rate for each area divided by the separation rate for Major Cities in each reporting period. For Aboriginal and Torres Strait Islander peoples, the presented statistic is the participation rate for Indigenous Australians divided by the participation rate for non-Indigenous Australians in Major Cities.
2. Separations for which the care type was reported as Newborn with no qualified days, Hospital boarder or Posthumous organ procurement have been excluded.

Source: National Hospital Morbidity Database and ABS estimated resident population at 30 June 2006.

Indicator 3.5.5 Dental consultations

Summary of findings

Overall, there was no significant difference in the rate of dental consultations across geographic regions, although rates of consultation appear to decrease in Outer Regional and Remote (Other) areas.

Compared with Major Cities, people aged 25 years and over residing in Other areas were significantly less likely to visit a dentist.

Background

Children living outside major urban centres tend to have more decayed, missing and filled teeth than those living within them (AIHW 2008a). Access to dentists is important for dealing with dental conditions that affect oral health, wellbeing and self-perception.

This indicator compares rates of dental consultation across geographic areas using data from the 2004–05 National Health Survey.

Respondents of the National Health Survey were asked whether during the 2 weeks before the interview they had consulted a dentist or anyone about their teeth, dentures or gums.

Refer to section 1.4 for guidance on interpreting the tables, and Appendix B for scope and coverage of data sources.

Detailed results

- Overall, there was no significant difference in the rate of dental consultations across geographic regions, although rates of consultation appear to decrease in Outer Regional and Remote (Other) areas (Table 2.16).
- Compared with Major Cities, people aged 25 years and over residing in Other areas were significantly less likely to visit a dentist. In particular, those aged 25–44 years were 50% less likely, and people aged 45–64 years, 14% less likely.
- In Inner Regional areas, persons aged 45 years and over were significantly (between 20% and 30%) less likely to visit a dentist than those in Major Cities.

Table 2.16: Rates of dental consultation in previous 2 weeks^(a), by sex, age and ASGC Remoteness Areas, 2004–05

Sex and age (years)	Major Cities	Inner Regional	Other (Outer Regional & Remote)
Standardised rate ratio			
Males			
2–14	1.00	1.17	1.22
15–24	1.00	1.10	0.65
25–44	1.00	1.09	*0.48
45–64	1.00	*0.69	*0.80
65+	1.00	*0.76	*0.97
Total males	1.00	1.00	0.84
Females			
2–14	1.00	1.22	1.21
15–24	1.00	1.18	0.62
25–44	1.00	1.15	*0.52
45–64	1.00	*0.73	*0.88
65+	1.00	*0.82	*0.97
Total females	1.00	0.95	0.86
Persons			
2–14	1.00	1.18	1.21
15–24	1.00	1.16	0.63
25–44	1.00	1.12	*0.50
45–64	1.00	*0.71	*0.86
65+	1.00	*0.79	*0.97
Total persons	1.00	1.00	0.86

* Denotes statistically significant.

(a) Question asked of people aged 2 years and over.

Source: ABS National Health Survey 2004–05.

Indicator 3.5.6 Prescriptions

Summary of findings

Prescription rates were slightly higher in All regional areas and lower in All remote areas for the majority of pharmaceutical groups analysed.

Compared with Major Cities, prescription rates for drugs used in the treatment of heart disease (lipid modifying drugs), were significantly higher (1-2%) in All regional areas and significantly lower in Remote and Very Remote areas (10% and 40%, respectively).

For all the selected groups of pharmaceuticals analysed, prescription rates were significantly lower in Very Remote areas.

Background

Data on the use of pharmaceutical products are provided by two main sources in Australia. The Pharmaceutical Benefits Scheme (PBS) and the Repatriation Pharmaceutical Benefits Scheme (RPBS) provide data on pharmaceuticals that are subsidised by the Australian Government. The Pharmacy Guild Survey is an ongoing survey of the prescriptions issued by community pharmacies. This indicator is based on data from the 2006-07 PBS and RPBS only.

Under the PBS and RPBS the Australian Government subsidises pharmaceutical drugs that have sufficient clinical and cost-effective benefits. Each pharmaceutical drug has a standard dispensing cost. When this cost is above \$31.30 (the general co-payment threshold) the government contributes the difference in price paid by the patient and the dispensing cost. For completeness, the data presented here include only medications that were above the general co-payment threshold in 2006-07, as not all medicines with a dispensing cost below \$31.30 are in scope of the PBS (Appendix B provides further detail about the PBS).

Analysis was then limited to groups of drugs where the number of prescriptions subsidised by the government was sufficient for statistical analysis, and for which the majority (90-100%) of prescriptions in a group of drugs were above the general co-payment threshold. Table 2.17 provides a summary of these pharmaceutical groups.

No comparisons of prescription rates across time are provided, as the threshold for government subsidy and price of prescription drugs varies across time.

Data on private prescriptions, medicines dispensed from hospitals and PBS medicines dispensed through remote Aboriginal Health Services, under section 100 of the National Health Act, are not included. Given the high proportion of Aboriginal and Torres Strait Islander peoples living in more remote areas, and the relatively high hospital use rates in these areas (Indicator 3.5.3), prescription rates in more remote areas are likely to be an underestimate.

Rates of prescription should also be considered in context with the general health status of areas. For example, rates of prescription for drugs indicated in the treatment of arthritis would be expected to broadly reflect the prevalence of the disease in different areas. Other possible reasons prescription rates may vary across regions include access to pharmacists to dispense medicines, access to health professionals to prescribe medicines, and health-seeking behaviour.

Table 2.17: Selection of Anatomical Therapeutic Chemical classification Level 2 group used in analysis^(a)

Anatomical Therapeutic Chemical classification Level 2 group	Inclusions	Indication	Prescriptions above general co-payment threshold (per cent)
Lipid modifying drugs	Lipid modifying drugs, such as statins.	Used in the treatment of heart disease.	99
Endocrine therapy	Hormones, such as progestogens.	Treatment of some cancers, in particular, prostate and breast cancer.	100
Immunosuppressive agents	Drugs suppressing the immune system, such as Interleukin inhibitors.	Management of diseases such as rheumatoid arthritis, lupus and multiple sclerosis.	100
Drugs for treatment of bone disease	Drugs affecting bone structure and mineralisation, such as bisphosphonates.	Treatment of diseases such as osteoporosis and bone metastases.	100
Other nervous system drugs	Drugs used in the treatment of addictive disorders, such as nicotine transdermal patches, and parasympathomimetics.	Use in treatment of nicotine dependence and in association with counselling.	94

(a) The PBS and RPBS classify pharmaceutical drugs according to the Anatomical Therapeutic Chemical classification. The classification categorises substances at five levels according to the organ or system on which they act and their chemical, pharmacological and therapeutic properties (World Health Organization Collaborating Centre for Drug Statistics Methodology 2007).

Detailed results

- Compared with Major Cities, prescription rates for drugs used in the treatment of heart disease (lipid modifying drugs) were slightly significantly higher (1–2%) in All regional areas, and significantly lower in Remote and Very Remote areas (10% and 40% lower, respectively) (Table 2.18). This is inconsistent with patterns of mortality; rates of death due to coronary heart disease were up to 1.3 times as high as Major Cities in All regional areas and up to 3.4 times as high in Very Remote areas (AIHW 2007a).
- The majority of drugs listed as other nervous system drugs are used in the management of addictive disorders (such as nicotine and alcohol dependence). Compared with Major Cities, other nervous system drugs were prescribed at significantly higher rates in all areas, except Very Remote areas. Prescription rates were 1.3 to 1.4 times as high in All regional areas and 1.2 times as high in Remote areas.
- Compared with Major Cities, medicines for endocrine therapy were significantly more (1.1 times as) likely to be prescribed in Inner Regional areas and significantly less (respectively, 0.8 and 0.6 times as) likely to be prescribed in Remote and Very Remote areas. This is broadly consistent with the pattern of cancer incidence, which, compared with Major Cities, was significantly higher (1.1 times) in All regional areas and significantly lower (about 0.9 times) in Very Remote areas (AIHW 2008a).
- Prescription rates of immunosuppressive drugs were significantly higher in All regional areas than in Major Cities. In Inner Regional and Outer Regional areas, prescription rates were, respectively, 1.2 and 1.1 times as high as Major Cities. This group of medicines was significantly less likely to be prescribed in All remote areas than in Major Cities.

- The prescription rates of drugs for the treatment of bone disease, such as osteoporosis and bone cancer, decreased with increasing remoteness. Compared with Major Cities, prescriptions rates in Very Remote areas were significantly lower (70%).
- For all the selected groups of pharmaceuticals analysed, prescription rates were significantly lower in Very Remote areas. This may reflect the limited scope of the data which excludes drugs dispensed through hospitals or remote Aboriginal Health Services or, in some cases, the lower prevalence of specific health conditions or disease in those areas.

Table 2.18: Rates of prescription, by selected Anatomical Therapeutic Chemical classification Level 2 groups and ASGC Remoteness Area of client, 2006–07

Group of drug and sex	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
Standardised rate ratio					
Lipid modifying agents					
Males	1.00	*1.02	*0.98	*0.85	*0.57
Females	1.00	*1.02	*1.04	*0.95	*0.67
Persons	1.00	*1.02	*1.01	*0.90	*0.62
Endocrine therapy					
Males	1.00	*1.19	*1.13	0.96	*0.68
Females	1.00	*1.06	*0.99	*0.85	*0.56
Persons	1.00	*1.09	1.00	*0.84	*0.55
Immunosuppressive agents					
Males	1.00	*1.17	*1.05	*0.75	*0.39
Females	1.00	*1.18	*1.12	*0.88	*0.47
Persons	1.00	*1.18	*1.08	*0.81	*0.43
Drugs for treatment of bone disease					
Males	1.00	*0.93	*0.76	*0.47	*0.26
Females	1.00	*0.92	*0.83	*0.61	*0.34
Persons	1.00	*0.91	*0.79	*0.54	*0.29
Other nervous system drugs					
Males	1.00	*1.34	*1.23	*1.13	*0.62
Females	1.00	*1.44	*1.38	*1.16	*0.77
Persons	1.00	*1.39	*1.31	*1.16	*0.69

* Denotes statistical significance.

Source: AIHW analysis of 2006–07 PBS/RPBS data.

Notes

1. Includes PBS and RPBS data and excludes prescriptions dispensed at hospitals, private prescriptions and PBS medicines dispensed through remote Aboriginal Health Services, under section 100 of the National Health Act.
2. Data are restricted to Section 85 drugs (excluding doctor's bag) where the schedule fee was over the general co-payment for the entirety of the 2006–07 financial year.
3. Anatomical Therapeutic Chemical classification according to Department of Health and Ageing latest available Anatomical Therapeutic Chemical classification for PBS prescriptions.
4. The presented statistic is the ratio of prescription rate for each area divided by the prescription rate for Major Cities.

Indicator 3.5.7 Access to disability services

Summary of findings

In 2005–06, people with disability living outside Major Cities were significantly less likely to access disability support services than those living within Major Cities.

The most recent estimates available indicate that people living outside Major Cities were significantly more (1.1 times as) likely to have a severe/profound activity limitation than their Major Cities counterparts (AIHW 2008d).

In Inner Regional areas, women were significantly more (1.1 times as) likely to access disability services than their Major Cities counterparts in 2005–06.

Background

Indicator 3.5.7 provides information on the rate of disability service use. In 2003, there were an estimated 3.9 million people with disability (20% of the Australian population). Of these, 1.2 million (6% of the population) had a severe or profound activity limitation, meaning that they sometimes or always needed assistance with one or more activities of self-care, mobility and communication (AIHW 2007f). Indicator 1.2.1 provides further information on the prevalence of disability in geographic areas (AIHW 2008d).

In Australia, disability support services are funded through the Commonwealth State/Territory Disability Agreement (CSTDA). Services provided under this agreement aim to maximise the participation of people with disability in the community, and are aimed at people with a need for ongoing support in everyday activities. There are five main service groups for which user data are collected: accommodation support, community support, community access, respite and employment (AIHW 2007g). Other services, such as Home and Community Care packages, may provide support to people with disabilities but are not considered here (see indicator 3.2.4).

The CSTDA National Minimum Data Set (NMDS) contains data on disability support services receiving funding under this agreement and on the service users. A statistical linkage key enables the number of service users to be estimated through data collected from different service outlets. Data used to inform indicator 3.5.7 are from the CSTDA NMDS collection and the Survey of Disability, Ageing and Carers (SDAC) 2003. The rate of disability service use represents the number of people accessing disability services (CSTDA NMDS) as a proportion of the estimated number of people with a severe or profound activity limitation (SDAC). These results may not truly reflect levels of accessibility, as people with disabilities may move to less remote areas where they can access services.

Refer to section 1.4 for guidance on interpreting the tables, and Appendix B for scope and coverage of data sources.

Detailed results

- In 2005–06, people with disability living outside Major Cities were significantly less likely to access disability support services than those living within Major Cities (Table 2.19).

- With the exception of women living in Inner Regional areas, this pattern was consistent for men and women across all areas. In Inner Regional areas women were significantly more (1.1 times as) likely to access disability services than their Major Cities counterparts.
- In 2003–04, patterns of service use were similar to the 2005–06 reporting period.

Table 2.19: Use of CSTDA disability support services, by ASGC Remoteness Area of service user, 2003–04 and 2005–06

Year and sex	Major Cities	Inner Regional	Outer Regional, Remote and Very Remote
Standardised rate ratio			
2003–04			
Males	1.00	*0.73	*0.68
Females	1.00	*1.05	*0.85
Persons	1.00	*0.87	*0.77
2005–06			
Males	1.00	*0.76	*0.69
Females	1.00	*1.10	*0.86
Persons	1.00	*0.92	*0.78

* Denotes statistical significance.

Note: The presented statistic is the service use rate for each area divided by the service use rate for Major Cities. The population is based on the number of people with a severe/profound activity limitation (SDAC 2003). This population was not projected to 2006 for 2005–06 data analysis.

Sources: AIHW analysis of CSTDA NMDS (2003–04 and 2005–06 data); SDAC 2003.

Aboriginal and Torres Strait Islander peoples

Aboriginal and Torres Strait Islander peoples have been found to have a higher rate of disability than non-Indigenous people. Analysis of the 2002 National Aboriginal and Torres Strait Islander Social Survey and the 2002 General Social Survey completed by the AIHW estimates that Indigenous Australians have approximately 2.4 times the rate of disability than other Australians (AIHW 2006). This finding is consistent with data from the 2006 Census of Population and Housing, which showed the level of need for assistance with core activities (self-care, mobility or communication) among Indigenous Australians was almost twice as high as that among non-Indigenous Australians (ABS & AIHW 2008).

In 2005–06, Aboriginal and Torres Strait Islander peoples comprised 3% of all CSTDA service users. The identification of Indigenous Australians in the CSTDA NMDS is of insufficient quality to make comparisons of Indigenous service use across regions.

Safe dimension

Indicator 3.6.1 Surgical or medical misadventure

Summary of findings

Compared with Major Cities, rates of hospital separations that treated and/or involved a surgical or medical misadventure in 2005–06 were significantly higher for people living in Inner Regional areas and similar for residents of Outer Regional and All remote areas.

Background

Misadventure to patients during surgical or medical care is considered an adverse event and can include incidents such as a foreign object accidentally left in body, or failure in dosage during surgical and medical care. The data presented for this indicator relate to separations where a surgical or medical misadventure event was treated and/or occurred during the hospitalisation (identified by ICD-10-AM codes Y60–Y82). The separation rate represents the number of separations coded as medical misadventure as a proportion of the total number of separations.

As misadventure represents only a selection of adverse events, these data underestimate the total number of adverse events in hospitals. Also, rates of surgical or medical misadventure may differ across regions due to variation in recording practices, the range and type of patients treated, and the nature of hospitals available (for example, acute or multipurpose).

Analysis of changes over time in rates of separations involving or treating a misadventure should be interpreted cautiously, as the identification and coding of these events may have improved over the period.

Refer to section 1.4 for guidance interpreting the tables, and Appendix B for scope and coverage of data sources.

Detailed results

- Compared with Major City residents, rates of hospital separations that treated and/or involved a surgical or medical misadventure in 2005–06 were significantly higher (1.1 times as high) for people living in Inner Regional areas and similar for residents of Outer Regional and All remote areas (Table 2.20).
- In 2001–02, rates of hospitalisations involving or treating misadventure were also significantly higher for residents of All regional areas than for residents of Major Cities. Rates for Inner Regional and Outer Regional residents were, respectively, 1.3 and 1.1 times as high as those for Major Cities.

Table 2.20: Surgical or medical misadventure in hospitals, by ASGC Remoteness Area of client, 2001–02 and 2005–06

Year and sex	Major Cities	Inner Regional	Outer Regional	All remote ^(a)
Standardised rate ratio				
2005–06				
Males	1.00	*1.11	0.96	1.13
Females	1.00	*1.15	1.04	1.00
Persons	1.00	*1.13	1.00	1.05
2001–02				
Males	1.00	*1.23	*1.19	*1.25
Females	1.00	*1.28	1.06	0.91
Persons	1.00	*1.26	*1.11	1.03

* Denotes statistical significance.

(a) Includes Remote and Very Remote.

Notes

1. The presented statistic is the ratio of separation rate for each area divided by the separation rate for Major Cities. Only separations that included ICD-10-AM external cause codes that indicated a surgical or medical misadventure occurred (Y60–Y82) are included.
2. Separations for which the care type was reported as Newborn with no qualified days, Hospital border or Posthumous organ procurement have been excluded.

Source: AIHW analysis of National Hospital Morbidity Database.

- Hospital separations involving or treating a surgical or medical misadventure increased significantly across all areas between 2001–02 and 2005–06 (Table 2.21). For residents of All remote areas, misadventure separations were 1.3 times as high in 2005–06 as in 2001–02.
- Increases in the rate of misadventure may reflect improved awareness and identification of adverse surgical and medical events, rather than an actual increase in the frequency of these events occurring.

Table 2.21: Changes in surgical or medical misadventure in hospitals, by ASGC Remoteness Areas of client between 2001–02 and 2005–06

	Major Cities	Inner Regional	Outer Regional	All remote ^(a)
Standardised rate ratio				
Males	*1.33	*1.21	1.07	*1.23
Females	*1.25	*1.14	*1.23	*1.37
Persons	*1.29	*1.17	*1.16	*1.29

* Denotes statistical significance.

(a) Includes Remote and Very Remote.

Note: This table compares rates of surgical and medical misadventure in 2001–02 with rates in 2005–06, using 2001–02 rates in each area as the standard.

Source: AIHW analysis of National Hospital Morbidity Database.

Capable dimension

Indicator 3.8.1 Public hospital accreditation

Summary of findings

Compared with Major Cities, hospitals in All regional and All remote areas were less likely to be accredited. However, this may partly reflect the varied, and sometimes voluntary, accreditation practices across jurisdictions.

Background

Hospital accreditation is a measure of compliance with recommended standards. In Australia, accreditation can be obtained through the Australian Council on Healthcare Standards Evaluation and Quality Improvement Program, Business Excellence Australia, or the Quality Improvement Council, or, through compliance with the International Organization for Standardization’s (ISO) 9000 quality family. Accreditation at any point in time does not assume a fixed or continuing status as accredited.

Comparability of the data across regions is limited because of the voluntary nature of participation in the award schemes for hospitals in some jurisdictions.

This indicator refers to public hospitals and public psychiatric hospitals only; private hospitals are not included. Accreditation data is presented by hospital peer group – that is, groupings of hospitals, based on their volume of admitted patient activity and their geographical location (Table 2.22).

Table 2.22: Public hospital peer group classifications

Peer group	Subgroup	Definition
Principal referral and specialist women's and children's hospitals	Principal referral	Major City hospitals with >20,000 acute casemix-adjusted separations and All regional hospitals with >16,000 acute casemix-adjusted separations per year.
	Specialist women's and children's	Specialised acute women's and children's hospitals with >10,000 acute casemix-adjusted separations per year.
Large hospitals	Major City	Major City acute hospitals treating more than 10,000 acute casemix-adjusted separations per year.
	Regional and Remote	All regional acute hospitals treating >8,000 acute casemix-adjusted separations per year, and All remote hospitals with >5,000 casemix-adjusted separations.
Medium hospitals	Group 1	Medium acute hospitals in All regional and Major City areas treating between 5,000 and 10,000 acute casemix-adjusted separations per year.
	Group 2	Medium acute hospitals in All regional and Major City areas treating between 2,000 and 5,000 acute casemix-adjusted separations per year, and acute hospitals treating <2,000 casemix-adjusted separations per year but with >2,000 separations per year.

(continued)

Table 2.22 (continued): Public hospital peer group classifications

Peer group	Subgroup	Definition
Small acute hospitals	Regional	Small All regional acute hospitals (mainly small country town hospitals), acute hospitals treating <2,000 separations per year, and with less than 40% non-acute and outlier patient days of total patient days.
	Remote	Small All remote hospitals (<5,000 acute casemix-adjusted separations but not Multi-purpose Services and not Small non-acute). Most are <2,000 separations.
Sub-acute and non-acute hospitals	Small non-acute	Small non-acute hospitals, treating <2,000 separations per year, and with more than 40% non-acute and outlier patient days of total patient days.
	Multi-purpose Services	
	Hospices	
	Rehabilitation	
	Mothercraft	
	Other non-acute	For example, geriatric treatment centres combining rehabilitation and palliative care with a small number of acute patients
Unpeered and other hospitals		Prison medical services, special circumstance hospitals, Major city hospitals with <2,000 acute casemix-adjusted separations, hospitals with <2000 separations, etc.
Psychiatric hospitals		

In 2005–06, there were 755 public hospitals operating in Australia (Table A3). The highest number of hospitals was in Outer Regional areas (224), and the largest number of beds was in Major Cities (34,047). The ratio of public hospital beds in an area to the population of that area ranged from 2.5 beds per 1,000 residents in Major Cities to around 4.7 beds per 1,000 residents in Very Remote areas. This distribution of beds is reflected in higher hospital separation rates for residents of more remote areas (Indicator 3.5.3).

Refer to section 1.4 for guidance interpreting the tables, and Appendix B for scope and coverage of data sources.

Detailed results

- Compared with Major Cities, hospitals in All regional and All remote areas were less likely to be accredited (Table 2.23). In Very Remote areas, almost 70% of public hospitals, and 81% of public hospital beds were accredited, compared with over 99% of public hospitals and beds in Major Cities.

Table 2.23: Proportion of accredited public hospitals and public hospitals beds in each region, by hospital peer group, 2005–06 (per cent)

Peer group	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
Principal referral and specialist women's and children's hospitals						
Hospitals	100.0	100.0	100.0	100.0	..	100.0
Hospital beds	100.0	100.0	100.0	100.0	..	100.0
Large hospitals: Major Cities						
Hospitals	100.0	..	..	..	..	100.0
Hospital beds	100.0	..	..	..	..	100.0
Large hospitals: All regional and All remote						
Hospitals	..	84.6	100.0	100.0	..	88.9
Hospital beds	..	82.8	100.0	100.0	..	86.6
Medium hospitals: group 1						
Hospitals	100.0	88.9	85.7	..	..	93.1
Hospital beds	100.0	87.5	84.2	..	..	100.0
Medium hospitals: group 2						
Hospitals	90.0	91.4	93.3	..	..	91.7
Hospital beds	94.5	92.9	91.6	..	..	92.9
Small All regional acute						
Hospitals	..	88.2	81.4	..	..	84.5
Hospital beds	..	88.1	83.3	..	..	85.4
Small non-acute						
Hospitals	100.0	85.2	80.0	54.5	100.0	80.2
Hospital beds	100.0	88.7	84.6	55.7	100.0	84.5
Remote acute						
Hospitals	..	..	..	76.5	82.6	80.0
Hospital beds	..	..	..	82.9	87.1	85.1
Multi-purpose service						
Hospitals	..	66.7	75.0	81.5	62.5	75.3
Hospital beds	..	65.7	69.4	78.4	67.9	71.7
Hospice						
Hospitals	100.0	..	..	..	..	75.0
Hospital beds	100.0	..	..	..	..	94.8
Rehabilitation and Mothercraft						
Hospitals	100.0	100.0	..	..	..	100.0
Hospital beds	100.0	100.0	..	..	..	100.0
Other non-acute						
Hospitals	100.0	80.0	100.0	..	..	83.3
Hospital beds	100.0	73.7	100.0	..	..	92.0
Psychiatric						
Hospitals	100.0	71.4	100.0	..	..	89.5
Hospital beds	100.0	84.7	100.0	..	..	95.9
Unpeered and other acute						
Hospitals	100.0	81.8	78.4	63.9	62.2	76.1
Hospital	100.0	90.0	85.7	72.3	68.8	91.6
All public hospitals						
Hospitals	99.4	86.6	81.3	71.0	69.4	84.4
Hospital beds	99.9	91.7	88.3	78.2	80.7	95.8

Source: AIHW analysis of National Public Hospitals Establishment Database.

Sustainable dimension

Indicator 3.9.3 Hours worked and age of health workers

Summary of findings

In 2005, nurses and medical practitioners employed in Remote and Very Remote areas worked longer hours than those employed in other areas.

Background

The age of rural health workers and the hours they work have important effects on the sustainability of the provision of service.

Data from this indicator is sourced from medical and nursing labour force surveys done by the states and territories, usually in conjunction with the registration of health professionals. The surveys are usually of all people registered with the relevant registration boards for that profession, regardless of employment status. Information is collected on demographic characteristics, labour force status, type of work and location, specialty fields and qualifications of health professionals. However, the AIHW surveys are not compulsory and response rates vary between occupations and states/territories and over time. The most recent information on the medical and nursing workforces, as reported here, is from the 2005 AIHW surveys.

Refer to Appendix B for scope and coverage of data sources.

Detailed findings

- In 2005, the average age of medical practitioners was 45.1 years. Across the regions, the average age of practitioners was lowest in Major Cities (44.7 years) and highest in Outer Regional areas (46.4) (Table 2.24)
- Medical practitioners employed in Remote/Very Remote areas worked longer hours than other practitioners, an average of 45.0 hours per week in Outer Regional areas and 47.1 hours per week in Remote/Very Remote areas.
- Between 2001 and 2005, the national average weekly hours worked by medical practitioners decreased from 45.4 hours to 43.7 hours.

Table 2.24: Employed medical practitioners, average age and average weekly hours worked by Remoteness Area, 2001 and 2005

Year and type of practitioner	Major Cities	Inner Regional	Outer Regional	Remote/ Very Remote	Total
Average age (years)					
2001					
Clinicians	46.0	46.3	45.3	42.2	45.9
Primary care practitioners	48.8	47.1	46.6	42.9	48.3
Hospital non-specialist	33.7	36.2	33.3	37.1	34.0
Specialist	49.6	50.0	50.2	48.2	49.7
Specialist-in-training	33.0	33.4	32.9	31.5	33.1
Non-clinicians	47.9	51.9	46.8	48.5	48.2
Total	46.1	46.5	45.4	42.6	46.1
2005					
Clinicians	44.5	46.1	46.2	45.1	44.9
Primary care practitioners	49.1	47.3	47.7	46.1	48.6
Hospital non-specialist	31.6	34.5	34.8	38.2	32.2
Specialist	48.9	50.5	50.0	51.4	49.2
Specialist-in-training	32.1	32.4	33.5	32.8	32.2
Non-clinicians	48.0	50.7	48.3	45.6	48.3
Total	44.7	46.3	46.4	45.2	45.1
Average hours					
2001					
Clinicians	45.2	46.5	47.8	49.7	45.6
Primary care practitioners	40.7	43.8	46.5	48.8	41.9
Hospital non-specialist	46.8	47.5	48.5	51.3	47.1
Specialist	48.0	49.9	50.3	51.0	48.3
Specialist-in-training	50.5	54.9	51.1	57.7	50.8
Non-clinicians	43.3	42.1	44.8	48.3	43.2
Total	45.1	46.3	47.6	49.6	45.4
2005					
Clinicians	43.7	44.0	45.3	47.0	43.9
Primary care practitioners	38.9	41.2	44.4	46.1	39.9
Hospital non-specialist	46.2	46.2	44.6	49.8	46.2
Specialist	45.5	46.9	47.0	48.1	45.7
Specialist-in-training	49.0	51.3	47.8	50.6	49.1
Non-clinicians	41.8	39.4	40.6	48.3	41.6
Total	43.5	43.8	45.0	47.1	43.7

Source: AIHW Medical Labour Force surveys, 2001 and 2005.

- Across the regions, in 2005, employed nurses working in Inner Regional areas were, on average, older (46.1 years) than colleagues in other regions while those in Major Cities were younger (44.6 years) (Table 2.25).
- In 2005, nurses in Remote and Very Remote areas worked longer hours than other nurses, an average of 34.7 hours per week in Remote areas and 38.2 hours in Very Remote areas compared with the national average of 33.0 hours.
- Nurses in Remote and Very Remote areas also experienced larger apparent increases in average hours between 2001 and 2005, rising, on average, by 4.2 hours in Remote areas and 4.4 hours in Very Remote areas, compared with the national average of a rise of 2.3 hours.

Table 2.25: Employed nurses, average age and average weekly hours worked by Remoteness Area, 2001 and 2005

Type of nurse	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
Average age (years)						
2001 (all nurses)	41.9	43.2	43.0	42.8	41.7	42.2
2005 (all nurses)	44.6	46.1	46.0	45.2	45.3	45.1
Average hours						
2001						
Registered nurses	31.2	30.2	30.5	31.6	34.4	30.9
Enrolled nurses	30.1	29.0	29.0	27.9	31.5	29.6
All nurses	31.0	29.9	30.1	30.5	33.8	30.7
2005						
Registered nurses	33.3	32.7	33.9	35.7	39.1	33.3
Enrolled nurses	31.9	31.0	32.1	31.9	34.4	31.6
All nurses	33.1	32.3	33.5	34.7	38.2	33.0

Sources: AIHW Nursing Labour Force Survey 2001; AIHW Nursing and Midwifery Labour Force Census 2005.

Appendix A Detailed tables

Table A1: Hospital separations, by selected care type and ASGC Remoteness Areas of client usual residence, 2005–06

Care type	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Australia ^(a)
Number						
Acute separations	4,601,237	1,504,850	752,341	113,392	80,215	29,397
Non-acute separations	169,481	40,526	16,779	2,057	1,003	230,480
Other	26	14	2	2	1	2
Total separations	4,770,744	1,545,390	769,122	115,451	81,219	7,311,983
Per cent						
Acute separations	96.4	97.4	97.8	98.2	98.8	
Non-acute	3.6	2.6	2.2	1.8	1.2	3.2
Other	<1	<1	<1	<1	<1	<1
Total separations	100.0	100.0	100.0	100.0	100.0	100.0

(a) Includes unknown Remoteness Area, overseas residence and unknown state of residence.

Source: National Hospital Morbidity Database.

Table A2: Hospital separations with injury and poisoning principal diagnosis, by ASGC Remoteness Areas of client usual residence, 2005–06

Principal diagnosis	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Australia ^(a)
Number						
Injury and poisoning ^(b)	290,500	109,700	60,700	10,900	8,300	484,100
Total separations	4,770,700	1,545,400	769,100	115,500	81,200	7,312,000
Per cent						
Injury and poisoning	6.1	7.1	7.9	9.4	10.2	6.6
Total separations	100.0	100.0	100.0	100.0	100.0	100.0

(a) Includes unknown Remoteness Area, overseas residence and unknown state of residence.

(b) Injury and poisoning defined by principal diagnosis only.

Note: Numbers rounded to nearest 100.

Source: National Hospital Morbidity Database.

Table A3: Number of public hospitals^(a) and beds^(b), by peer group and Remoteness Area, 2005-06

Peer Group	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
Principal referral and specialist women's and children's hospitals						
Total hospital	57	16	5	1	..	79
Total beds	23,555	3,973	1,555	162	..	29,245
Large hospitals						
Total hospital	25	..	..	..	..	25
Total beds	4,091	..	..	..	..	4,091
Large hospitals: All regional and All remote						
Total hospital	..	13	4	1	..	18
Total beds	..	1,690	404	80	..	2,175
Medium: group 1						
Total hospital	13	9	7	..	..	29
Total beds	1,153	771	553	..	..	2,476
Medium: group 2						
Total hospital	10	35	15	..	..	60
Total beds	632	1,651	776	..	..	3,059
Small All regional acute						
Total hospital	..	51	59	..	..	110
Total beds	..	1,054	1,328	..	..	2,382
Small non-acute						
Total hospital	5	27	40	11	3	86
Total beds	262	690	1,062	264	44	2,322
Remote acute						
Total hospital	..	..	..	17	23	40
Total beds	..	..	..	452	490	942
Multi-purpose service						
Total hospital	..	6	40	27	8	81
Total beds	..	120	683	412	128	1,342
Hospice						
Total hospital	3	1	..	..	..	4
Total beds	183	10	..	..	..	193

(continued)

Table A3 (continued): Number of public hospitals^(a) and beds^(b), by peer group and Remoteness Area, 2005–06

Peer Group	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
Rehabilitation and Mothercraft						
Total hospital	14	2	..	..	..	16
Total beds	753	72	..	..	..	825
Other non-acute						
Total hospital	5	5	1	..	1	12
Total beds	319	133	23	..	3	478
Psychiatric						
Total hospital	10	7	2	..	..	19
Total beds	1,657	627	81	..	..	2,366
Unpeered and other						
Total hospital	30	22	51	36	37	176
Total beds	1,442	380	455	256	173	2,706
Total hospital	172	194	224	93	72	755
Total beds^(b)	34,047	11,170	6,920	1,626	838	54,601
Ratio of available beds in area to 1,000 population resident in area^(c)	2.5	2.6	3.3	5.0	4.7	2.7

(a) The number of hospitals reported can be affected by administrative and/or reporting arrangements and is not necessarily a measure of the number of physical hospital buildings or campuses. See Table 2.22 for a description of hospital peer group.

(b) The comparability of bed numbers can be affected by the casemix of hospitals including the extent to which hospitals provide same-day admitted services and other specialised services.

(c) Rate per 1,000 population was age-standardised using 30 June 2005 population.

Sources: AIHW National Public Hospitals Establishment Database; ABS estimated resident population June 2005.

Appendix B Data sources

Aged and Community Care Management Information System

Description: A data repository containing data about clients and providers of aged and community care places and packages.

Custodian: Australian Government Department of Health and Ageing.

Collection type: Administrative.

Frequency of collection: Continuous.

Scope/coverage: Information on all recipients and providers of residential aged care, CACP, EACH, EACH Dementia and (to a limited extent) Transition Care Program.

Rurality indicator: Postcode, ASGC.

Indigenous identifier: Yes.

Issues: Certain sociodemographic client characteristics are recorded at the time of application and hence may not reflect their true characteristics while receiving care from these programs.

AIHW Medical Labour Force Survey

Description: This survey collects information on the demographic and employment characteristics of medical practitioners registered in Australia. It is done annually by state and territory health departments, with the questionnaire administered by the medical registration boards in each jurisdiction, in conjunction with the registration renewal process.

Custodian: AIHW.

Collection type: Survey.

Frequency of collection: Annual.

Scope/coverage: The survey population is drawn from the medical registers maintained by each state and territory medical registration board or council. Each medical board conducts an annual renewal of registration and, as part of this process, questionnaires are sent to medical practitioners on the register at that time.

The survey questionnaire is sent to all registrants in New South Wales, Victoria, Western Australia, South Australia, the Australian Capital Territory and the Northern Territory. It is sent only to general registrants in Queensland. In Tasmania, only general registrants and conditionally registered specialists are surveyed.

Rurality indicator: ASGC (Remote and Very Remote aggregated).

Issues: As the response rate to the 2005 survey in the Northern Territory was very low (8%), the survey data could not be used to obtain estimates for 2005 for that jurisdiction. To provide some estimates for 2005, survey responses to the 2004 Northern Territory Medical labour force survey were weighted to 2005 registration benchmarking figures. Therefore, care should be taken when using averages or making comparisons over time for the

Northern Territory and in making comparisons between the Northern Territory and other jurisdictions.

AIHW Nursing and Midwifery Labour Force Census

Description: This census collects information on the demographic and employment characteristics of nurses and midwives who were registered or enrolled in Australia at the time of the survey.

Custodian: AIHW.

Collection type: Survey.

Frequency of collection: Annual.

Scope/coverage: The population for the survey is registered and enrolled nurses, and is drawn from the registration/enrolment files maintained by each state and territory registration board. Each nursing/midwifery board conducts an annual renewal of registration and enrolment. As part of this process, questionnaires are sent to nurses on renewal of their registration in all jurisdictions. In the Northern Territory in 2005, questionnaires were sent by the health authority as a separate exercise (rather than by the registration board). The results of the 2005 survey relate to the period when renewal notices and the survey were sent out in that year, with timing dependent on the licence renewal procedure operating in each state and territory.

Rurality indicator: ASGC Remoteness Areas.

AIHW Dental Labour Force Survey

Description: Information about dentists is collected annually from registration boards in each state and territory. The questionnaire asked about demographic characteristics, practice status, practice characteristics at up to three locations and hours worked.

Custodian: AIHW.

Collection type: Survey.

Frequency of collection: Annual.

Scope/coverage: The survey scope was estimated to be 86% of the Australian dental therapist labour force, and of those surveyed an overall response rate of 72.6% was achieved.

Rurality indicator: ASGC Remoteness Areas (Remote and Very Remote aggregated).

Issues: For allied dental practitioners, no uniform registration currently exists across jurisdictions. Therefore, information about dental occupations other than dentists is derived from a range of sources including professional associations, dental boards and state health departments.

BreastScreen Australia Data

Description: The BreastScreen Australia program aims to reduce mortality and morbidity from breast cancer by maximising early detection. The data collected through the program includes demographic and diagnostic characteristics, service provided and results.

Custodian: AIHW.

Collection type: Administrative.

Frequency of collection: Annual.

Scope/coverage: Women screened through the BreastScreen Australia program.

Rurality indicator: ASGC Remoteness Areas.

Indigenous identifier: Yes.

Commonwealth State/Territory Disability Agreement National Minimum Data Set

Description: This collection provides information relating to Commonwealth State/Territory Disability Agreement funded service outlets and users of these services, including support needs of users and informal carer arrangements.

Custodian: AIHW.

Collection type: Administrative.

Frequency of collection: Annual.

Scope/coverage: All services funded under the Commonwealth State/Territory Disability Agreement (CSTDA).

Rurality indicator: Postcode of service user from which ASGC Remoteness Area is derived.

Indigenous identifier: Yes, but quality varied.

Home and Community Care National Minimum Data Set

Description: The Home and Community Care program is the main provider of home-based care services in Australia. The HACC NMDS collects information on the agencies which provide care and their clients.

Custodian: Australian Government Department of Health and Ageing.

Collection type: Administrative.

Frequency of collection: Quarterly, but only annual data set produced.

Scope/coverage: All agencies providing home and community care.

Rurality indicator: ASGC Remoteness Area.

Indigenous identifier: Yes, but of poor quality.

National Health Survey (2004–05)

Description: The 2004–05 survey aimed to collect information about the health status of Australians, their use of health services and facilities and health-related aspects of their lifestyle.

Custodian: Australian Bureau of Statistics.

Collection type: Survey.

Frequency of collection: Triennial.

Scope/coverage: Approximately 25,900 persons in private dwellings. The survey did not sample in sparsely populated areas, so residents of Very Remote areas were excluded from the survey. It is possible that sampling in All regional areas is biased towards people who live in larger centres.

Rurality indicator: ASGC (Outer Regional and Remote aggregated).

Indigenous identifier: Yes.

Issues: Limited coverage of remote areas due to sampling frame.

National Hospital Morbidity Database

Description: The National Hospital Morbidity Database is a compilation of episode-level records from admitted patient morbidity data collection in Australia's hospitals. The database includes data relating to admitted patients in almost all hospitals including public acute hospitals, public psychiatric hospitals, private acute hospitals, private psychiatric hospitals and private free-standing day hospital facilities.

Custodian: AIHW.

Collection type: Administrative.

Frequency of collection: Annual.

Scope/coverage: Hospital-level data are available for the financial years 1993-94 to 2006-07.

Rurality indicator: Statistical Local Area of hospital and ASGC Remoteness Area.

Indigenous identifier: Yes.

National Public Hospital Establishment Database

Description: The National Public Hospital Establishments Database holds a record for each public hospital in Australia. It is collated from the routine administrative collections of public acute hospitals, psychiatric hospitals, drug and alcohol hospitals and dental hospitals in all states and territories.

Custodian: AIHW.

Collection type: Administrative.

Frequency of collection: Annual.

Scope/coverage: Hospital-level data are available for the financial years 1993-94 to 2006-07.

Rurality indicator: Postcode of hospital and ASGC.

Indigenous identifier: No, not applicable for establishment data.

Pharmaceutical Benefits Data System

Description: The Pharmaceutical Benefits Data System contains national prescribing information on medicines subsidised by the Pharmaceutical Benefits Scheme (PBS) and the Repatriation Pharmaceutical Benefits Scheme (RPBS).

Custodian: Australian Government Department of Health and Ageing.

Collection type: Administrative.

Frequency of collection: Ongoing.

Scope/coverage: For medicines in the PBS and RPBS, the patient pays for the cost of a medicine up to the co-payment amount, and the government pays the balance of the cost, if this is more than the co-payment amount. All prescriptions for which this government subsidy is paid are recorded in the database. Prescriptions that fall below the co-payment level, and therefore attract no subsidy, are not recorded.

The co-payment amount varies, depending on whether the patient is a government concession cardholder. In 2006–07, a concession cardholder paid a maximum of \$5.00 and patients without a concession card (general) paid a maximum of \$31.30. The PBS Data System therefore has a complete record of all prescription drugs that have a dispensing cost above \$31.30, and a partial record of prescription drugs that cost between \$5.00 and \$31.30 to dispense (that is, only those prescriptions provided to concession cardholders).

Rurality indicator: Postcode.

Indigenous identifier: Yes, but of insufficient quality to analyse across Remoteness Areas.

Population estimates

Description: The Australian resident population based on births, deaths and net migration.

Custodian: Australian Bureau of Statistics.

Collection type: Administrative.

Frequency of collection: Quarterly.

Scope/coverage: Total Australian population.

Rurality indicator: ASGC and other geographic classifications.

Indigenous identifier: Yes.

Issues: Between Census years these data are projected (estimated) and then revised when the latest Census data are available.

Appendix C Data and statistical methods

Population data

The estimated resident population were used to calculate rates (Appendix D). These figures are initially based on Census counts and then adjusted to account for unknown Indigenous status and undercount from the Census.

The estimated resident population for Aboriginal and Torres Strait Islander peoples is considered to be experimental because satisfactory data on births, deaths and migration are not generally available, and because of the volatility of counts of the Indigenous population between censuses (ABS 2004).

Age-specific rates

Age-specific rates are calculated by dividing the number of cases occurring in each specified age group by the corresponding population in the same age group expressed as a number per 100,000 persons. This rate may be calculated for particular age and sex groupings. For example:

Age-specific hospital separations for females aged 55–64 years	Number of female separations	
	<hr/>	
	Total women in this age group	X 100,000
	52,8814	
	<hr/>	
	1,126,611	X 100,000
Age-specific rate per 100,000 population =	46,938	

Age standardisation

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. For this report, the indirect method of standardisation has been used because several of the populations of interest are small, and the counts of events or services in these areas are also relatively small. Indirect standardisation involves the following steps:

1. Derive the observed number of events for the population of interest (for example, number of people who consulted a dentist in Remote areas) by age and sex.

2. Calculate age-specific rates for the standard population (usually the contemporary Major Cities population) using method described above.
3. Multiply the observed cases 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. Sum the age-specific expected numbers for each sex to get the total expected numbers.
5. The standardised rate ratio (the ratio of observed to expected events) was then calculated by dividing the total observed events by the total expected. A ratio of 1.0 indicates that there is no difference between the rate of event experienced by the population of interest and the standard population.

Because the ratio of the observed to expected events is exactly the same as the ratio of the indirect age-standardised rates in each area to that in Major Cities, the difference between the event in one area and that in Major Cities can be expressed either as:

- one rate is 'so many times as high as another' or
- there are 'so many times more events (for example, consultations) than expected'.

For example, if 2,000 dental consultations were observed in an area, and 1,000 were expected, then there were 2 times as many consultations as expected, or the adjusted rate of consultation in the area was 2 times that in Major Cities.

Where comparisons over time are made, the observed number of events in an area in one year (for example, 2001) is compared with the number expected if age-specific rates of that area in a previous year (for example, 1995) applied.

Confidence intervals

Because of the influence of chance and natural variation, the observed value of rates may vary. To help determine whether calculated rates are statistically different, between geographic areas or Indigenous and non-Indigenous Australians, confidence intervals have been calculated, and significant differences highlighted.

Confidence intervals for indirect age standardisation rates are calculated differently, depending on whether the data are administrative or survey; both methods are described below.

Calculation of confidence intervals for census-type (for example, hospital separations) data

Confidence intervals for rates were calculated on the basis of the number of observed events using the square-root transform described in Breslow & Day (1987). This method has been used where observed and expected cases have been actual counts.

$$\text{Ratio X} \quad 1 \pm \left[\frac{1.96}{2 \times \text{observed events}^{0.5}} \right]^2$$

Calculation of confidence intervals for expanded survey data

This method has been used where the available data are weighted estimates based on survey data (for example, National Health Survey).

The standard error of the estimate for O/E (Kendall & Stuart 1969) is calculated as:

$$SE = \sqrt{[(O/E)^2 \times VAR_e] + VAR_o/E^2}$$

where:

O/E = the ratio of the observed to expected number of cases

O = the number of synthetic observed rates. The ABS provided weighted estimates of the total number of cases (synthetic numbers), based on the number of cases in the survey and a weighting factor

E = the number of synthetic expected cases (based on the numbers of synthetic observed cases)

VAR_o = the variance for the synthetic total number of observed cases.

The variance is the square of the standard error associated with the observed or expected number, calculated by the ABS and provided with the base data they had provided:

$$VAR_e = \Sigma(\text{pop}/\text{POP})^2 \times (SE_e)^2$$

where:

pop = the population in each area in a specific age group

POP = the standard population in a specific age group

SE_e = the standard error of the expected synthetic number of cases in the area in a specific age group.

The lower 95% confidence limit (L95%CL) = (O/E) – (1.96*SE).

The upper 95% confidence limit (U95%CL) = (O/E) + (1.96*SE).

Where confidence intervals miss each other completely, the differences are considered to be 'significant'; that is, there is at least 95% confidence that the change in a rate is greater than could have occurred by chance.

To simplify the text, two rates that are statistically significantly different at the 95% level of confidence are described simply as 'significantly different'. The words 'significantly' and 'significant' have been used only in this way in this report. In tables presented in this report, estimates significantly different from those in Major Cities are accompanied by an asterisk.

Often, differences in the underlying condition of the population are not statistically significant. This can be due to the fact that there is in fact little difference, or because the numbers of cases or observations are so small as to make it difficult to discern any real statistically significant difference. All such non-significant differences should be treated cautiously, as, taken together, they may point to a pattern or a trend.

Appendix D Estimated resident population tables

Table D1: Estimated resident population, by Remoteness Areas, 30 June 2006

Sex and age (years)	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Australia
Males						
0-4	454,748	130,461	65,890	12,809	8,207	672,115
5-9	449,505	144,449	72,046	13,107	8,144	687,250
10-14	465,259	157,868	76,440	12,788	6,807	719,162
15-19	491,274	150,328	67,818	10,496	6,283	726,198
20-24	553,214	120,090	57,184	10,398	6,947	747,833
25-29	528,315	105,539	56,143	11,234	7,057	708,288
30-34	540,702	120,004	62,983	12,333	7,284	743,306
35-39	535,581	134,399	69,127	13,071	7,262	759,441
40-44	522,962	145,584	74,094	13,240	6,573	762,453
45-49	495,670	150,377	75,934	12,824	6,227	741,033
50-54	448,199	142,156	71,330	11,572	5,669	678,925
55-59	416,294	136,454	68,543	10,625	4,690	636,606
60-64	318,619	111,596	54,592	7,809	3,389	496,005
65-69	242,902	90,508	43,779	5,721	2,272	385,181
70-74	192,884	71,470	33,099	3,940	1,365	302,757
75-79	163,729	58,509	25,877	3,008	1,029	252,153
80-84	111,211	37,175	15,588	1,536	489	165,998
85+	70,792	22,711	9,547	955	325	104,330
<i>Total males</i>	<i>7,001,862</i>	<i>2,029,677</i>	<i>1,000,013</i>	<i>167,464</i>	<i>90,019</i>	<i>10,289,034</i>
Females						
0-4	430,781	123,402	62,439	12,077	7,679	636,377
5-9	429,098	136,699	67,685	12,312	7,528	653,322
10-14	441,917	149,830	71,456	11,672	6,485	681,360
15-19	471,632	140,476	61,356	9,039	5,837	688,341
20-24	540,010	112,964	51,974	9,724	6,761	721,433
25-29	521,001	104,376	55,054	10,822	6,769	698,022
30-34	545,012	123,674	62,592	11,653	6,761	749,692
35-39	541,831	139,621	68,171	11,923	6,233	767,780
40-44	531,396	151,382	72,015	11,600	5,640	772,033
45-49	511,898	153,332	72,339	11,225	5,266	754,059
50-54	463,368	140,829	66,004	9,876	4,482	684,559
55-59	425,757	134,622	62,410	8,400	3,599	634,788
60-64	322,065	110,645	50,089	6,371	2,568	491,738
65-69	256,980	90,380	40,246	4,615	1,701	393,921
70-74	216,017	74,230	31,465	3,462	1,175	326,349
75-79	202,120	66,146	27,387	2,744	926	299,323
80-84	164,995	51,377	20,503	1,933	518	239,326
85+	150,222	46,539	18,652	1,809	429	217,651
<i>Total females</i>	<i>7,166,100</i>	<i>2,050,525</i>	<i>961,836</i>	<i>151,257</i>	<i>80,357</i>	<i>10,410,074</i>
Total	14,167,961	4,080,202	1,961,849	318,721	170,375	20,699,108

Source: ABS 2007a.

Table D2: Estimated experimental Aboriginal and Torres Strait Islander resident population, by Remoteness Area, 30 June 2006

Sex and age (years)	Major Cities	Inner Regional	Outer Regional	Remote^(a)	Very Remote	Australia
Males						
0–4	8,348	5,644	5,677	2,355	3,973	25,997
5–9	10,301	7,244	7,469	3,057	5,268	33,339
10–14	10,384	7,550	7,652	3,107	4,485	33,178
15–19	9,749	6,670	6,526	2,734	4,138	29,817
20–24	7,793	4,881	4,644	2,063	3,892	23,273
25–29	6,197	3,775	3,721	1,841	3,404	18,938
30–34	5,548	3,304	3,812	1,772	3,243	17,679
35–39	5,455	3,390	3,692	1,707	2,950	17,194
40–44	4,641	2,903	3,261	1,622	2,496	14,923
45–49	3,857	2,744	2,918	1,241	1,956	12,716
50–54	3,095	2,092	2,323	1,129	1,580	10,219
55–59	2,242	1,634	1,676	724	1,164	7,440
60–64	1,468	1,073	1,190	535	828	5,094
65–69	945	653	758	353	506	3,215
70–74	570	444	493	189	314	2,010
75+	648	489	487	246	462	2,332
<i>Total males</i>	<i>81,241</i>	<i>54,490</i>	<i>56,299</i>	<i>24,675</i>	<i>40,659</i>	<i>257,364</i>
Females						
0–4	7,904	5,509	5,541	2,373	3,747	25,074
5–9	9,793	6,981	7,153	2,969	4,897	31,793
10–14	9,971	7,166	7,162	2,806	4,264	31,369
15–19	9,113	6,117	6,342	2,425	3,940	27,937
20–24	7,673	4,409	4,410	2,209	4,091	22,792
25–29	6,279	3,304	3,952	1,987	3,580	19,102
30–34	5,921	3,425	3,900	1,754	3,268	18,268
35–39	6,052	3,654	4,079	1,876	3,074	18,735
40–44	5,275	3,307	3,539	1,649	2,515	16,285
45–49	4,384	2,762	3,008	1,421	2,048	13,623
50–54	3,481	2,115	2,385	1,137	1,708	10,826
55–59	2,587	1,618	1,921	821	1,111	8,058
60–64	1,656	1,123	1,319	542	968	5,608
65–69	1,122	800	894	399	627	3,842
70–74	724	521	639	300	501	2,685
75+	1,101	692	758	339	692	3,582
<i>Total females</i>	<i>83,036</i>	<i>53,503</i>	<i>57,002</i>	<i>25,007</i>	<i>41,031</i>	<i>259,579</i>
Total	164,277	107,993	113,301	49,682	81,690	516,943

(a) Remote includes Tasmanian Very Remote regions.

Note: Table excludes data from other territories.

Source: Unpublished ABS experimental estimated resident population based on 2006 Census.

Glossary

Acute care	Care in which the clinical intent or treatment goal is to: <ul style="list-style-type: none">• manage labour (obstetric)• cure illness or provide definitive treatment of injury• perform surgery• relieve symptoms of illness or injury (excluding palliative care)• reduce severity of an illness or injury• protect against exacerbation and/or complication of an illness and/or injury which could threaten life or normal function• perform diagnostic or therapeutic procedures.
Age standardisation	A set of techniques used to remove as far as possible the effects of differences in age when comparing two or more populations.
Care type	The overall nature of a clinical service provided to an admitted patient during an episode of care (admitted care), or the type of service provided by the hospital for boarders or posthumous organ procurement (other care).
Length of stay	The length of stay of an overnight patient is calculated by subtracting the date the patient is admitted from the date of separation and deducting days the patient was on leave. A same-day patient is allocated a length of stay of 1 day.
Maintenance care	Care in which the clinical intent or treatment goal is prevention of deterioration in the functional and current health status of a patient with disability or severe level of functional impairment. Following assessment or treatment the patient does not require further complex assessment or stabilisation, and requires care over an indefinite period. This care includes that provided to a patient who would normally receive care in another setting, for example, at home or in a residential aged care service, by a relative or carer that is unavailable in the short term.
Non-acute care	A range of other care types, including rehabilitation, palliative, psychogeriatric, geriatric evaluation and management, maintenance.
Principal diagnosis	The diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care.

Procedure	A clinical intervention that is surgical in nature, carries a procedural risk, carries an anaesthetic risk, requires specialised training and/or requires special facilities or equipment available only in the acute care setting.
Provision ratio	The number of places or packages available per 1,000 population.
Psychogeriatric care	<p>Care in which the clinical intent or treatment goal is improvement in health, modification of symptoms and enhancement in function, behaviour and/or quality of life for a patient with an age-related organic brain impairment with significant behavioural or late onset psychiatric disturbance, or a physical condition accompanied by severe psychiatric or behavioural disturbance. The care is usually evidenced by multidisciplinary management and regular assessments against a management plan that is working towards negotiated goals within indicative timeframes. It includes care provided:</p> <ul style="list-style-type: none"> • in a psychogeriatric care unit • in a designated psychogeriatric care program • under the principal clinical management of a psychogeriatric physician • in the opinion of the treating doctor, when the principal clinical intent of care is psychogeriatric care.
Rate ratio	The rate of one population divided by the rate of another.
Remoteness Area	<p>A classification of the remoteness of a location using the Australian Standard Geographical Classification Remoteness Structure, based on the Accessibility/Remoteness Index of Australia which measures the remoteness of a point based on the physical road distance to the nearest urban centre. The categories are:</p> <p>Major Cities Inner Regional Outer Regional Remote Very Remote Migratory</p>
Separation	An episode of care for an admitted patients, which can be a total hospital stay (from admission to discharge, transfer or death), or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute to rehabilitation). Separation also means the process by which an admitted patient completes an episode of care either by being discharged, dying, or transferring to another hospital.

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