3 Health system performance

3.1 Effectiveness

3.1.1 Immunisation

Summary of findings

In 2002, 91%, 92%, 90%, 89% and 90% of 12–15-month-old children were fully immunised in, respectively, Major Cities, Inner Regional, Outer Regional, Remote and Very Remote areas.

In 2002, 88%, 90%, 90%, 88% and 85% of 24–27-month-old children were fully immunised in the five areas respectively.

Immunisation rates for the two age groups combined were higher in Inner Regional areas (91%) than in Major Cities (89%), but lower in Outer Regional (90%), Remote (88%) and Very Remote (87%) areas.

Background

Prior to universal immunisation, notifications of childhood infectious diseases like measles, diphtheria and pertussis were dramatically more numerous than they are today (NCIRS 2000). The number of deaths caused by diphtheria, pertussis, tetanus, poliomyelitis and measles 'declined by more than 99% from 9,300 in the decade 1926–1935 to 64 in the decade 1986–1995' (NCIRS 2000) as a consequence of the development and introduction of vaccines. Immunisation protects the individual child who has been immunised and also those around through 'herd immunity' (it is more difficult for the disease to spread when it meets so many immune children) (NHMRC 2000).

Because of the success of immunisation in drastically reducing the incidence of childhood infectious diseases, few parents have seen these diseases. Now, some parents fear the rare side-effects of the immunisation more than the diseases themselves, and may consequently choose not to have their children immunised.

A successful immunisation program requires large numbers of children to be vaccinated with viable vaccines. The viability of the vaccine is affected by the quality of the cold chain (the storage and handling of the vaccines at the correct temperature during transport and prior to vaccination). The further vaccines are transported in remote locations, the greater the care that needs to be taken with the cold chain and the greater the opportunity for vaccines to be less viable when administered.

Data have been provided by the Australian Childhood Immunisation Register (ACIR), maintained by the Health Insurance Commission (HIC). Children are enrolled on the database at birth and their immunisation status is updated with data provided by the doctor or nurse providing the immunisation. ACIR data are considered to be accurate. Percentages reported here are simple percentages.

Detailed results

Table 3.1.1.1: Immunisation rates as at 30 June 2002 by ASGC Remoteness Area

	MC	IR	OR	R	VR	Total
Age of child			**(per cent)**			
12–15 months	90.6	92.0	89.8	88.8	90.3	90.8
24–27 months	88.1	90.3	89.7	88.0	84.5	88.7
12–27 months	**89.3**	**91.2**	**89.8**	**88.4**	**87.3**	**89.7**

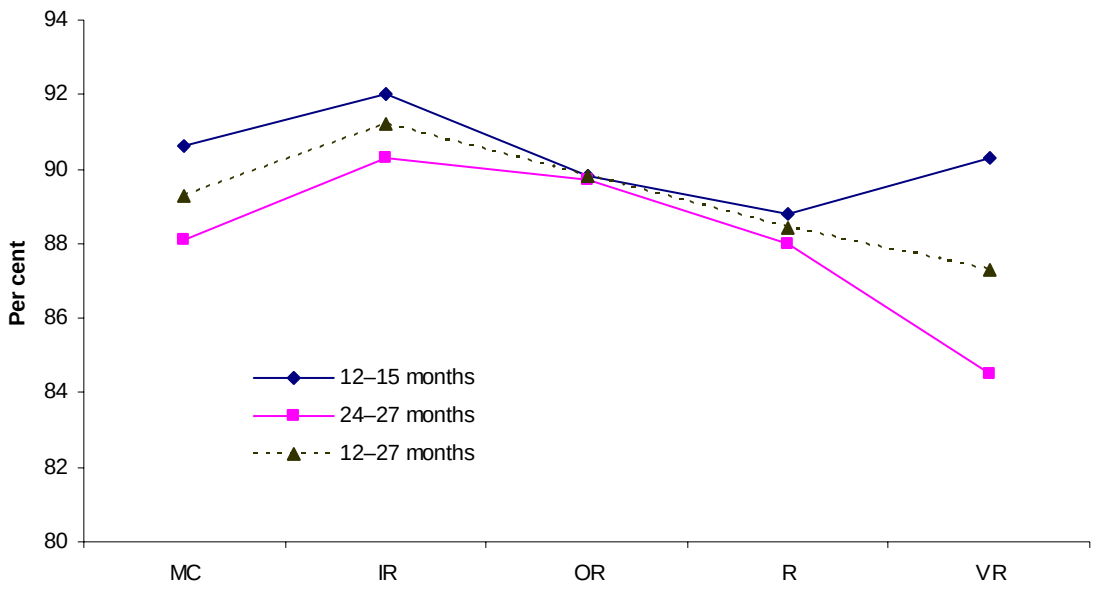
Source: Australian Childhood Immunisation Register.

As at 30 June 2002, 91% of children aged 12–15 months and 89% of children aged 24–27 months had been fully immunised against vaccine preventable diseases (Table 3.1.1.1 and Figure 3.1.1.1).

For children aged 12–15 months there was little difference between Remoteness Areas, with 91%, 92%, 90%, 89% and 90% fully immunised in Major Cities, Inner Regional, Outer Regional, Remote and Very Remote areas, respectively.

Slightly lower percentages of children aged 24–27 months were fully immunised, with 88%, 90%, 90%, 88% and 85% fully immunised, respectively, in the five areas.

Immunisation rates for the two age groups combined were higher in Inner Regional areas (91%) than in Major Cities (89%), declining in Outer Regional (90%), Remote (88%) and Very Remote (87%) areas.



Source: Australian Childhood Immunisation Register.

Figure 3.1.1.1: Immunisation rates as at 30 June 2002 by ASGC Remoteness Area

3.1.2 Breast cancer and cervical screening participation rate

Summary of findings

In 2001, women in regional areas were 1.10 times as likely as their counterparts in Major Cities to have had a mammogram in the previous 2 years.

Women in Inner and Outer Regional areas were 1.10 times as likely, and equally as likely, respectively, as those in Major Cities, to have had a Pap smear test within the previous 2 years.

The regional patterns for non-Indigenous women are indistinguishable from the pattern for all women.

Indigenous women in non-sparsely settled areas were about 0.9 times as likely as other women to have had a mammogram or a Pap smear test. Data were not available for sparsely settled areas.

Lack of data prevents a description of screening rates in remote areas generally.

The inter-regional pattern of screening for breast cancer broadly reflects that for death rate due to breast cancer. Breast cancer death and screening rates for Indigenous women are indistinguishable from those for non-Indigenous women.

Although the inter-regional pattern of Pap smear testing broadly reflects that for death rate due to cervical cancer in non-Indigenous women, this is not the case for the total population in each area, reflecting much higher cervical cancer death rates for Indigenous women. Indigenous women in non-sparsely settled areas were only slightly less likely (0.9 times as likely) to have regular Pap smear tests than non-Indigenous women, but they were much more likely (6.5 times as likely) to die as a result of cervical cancer. It is possible, but speculative, that screening rates for Indigenous women in sparsely settled areas may be lower than for those in non-sparsely settled areas, which could at least partly explain the higher overall cervical cancer death rate among Indigenous women.

Background

A number of substantial studies have demonstrated that early detection of breast cancer can reduce associated death rates, and consequently, a national program to implement breast cancer screening began in 1991 (AIHW 1998).

A major aim of the BreastScreen Australia Program is to maximise the early detection of breast cancer in women aged 50–69 years (AIHW 2000a) by screening at 2-yearly intervals.

A national cervical screening program began in Australia in 1991. Morbidity and mortality from invasive squamous cell cancer of the cervix has been shown to be considerably reduced by cervical cancer screening (AIHW 1998).

The aim of the National Cervical Screening Program is to 'reduce morbidity and deaths from cervical cancer by detecting treatable pre-cancerous lesions before their progression to cancer'. The program targets women who are between 20 and 69 years of age (AIHW 2003c) and recommends screening every 2 years.

The basic data from which these indicators have been calculated were provided by the Australian Bureau of Statistics from the 2001 ABS National Health Survey (NHS). About 26,000 people participated in this face-to-face survey. The ABS did not sample in sparsely populated areas. It is possible that sampling in regional areas is biased towards people who live in larger centres. NHS data for 1995 was not provided.

Responses relating to mammography and to Pap smear tests were elicited from a supplementary questionnaire, which approximately 90% of female respondents completed. Because of the way in which data have been provided by ABS, it is not possible to calculate the percentage of women in Major Cities in each category; instead, where percentages are reported here, they are national percentages calculated and reported by ABS in their literature.

Detailed results

Mammogram

In 2001, women in regional areas were 1.10 times as likely to have had a mammogram in the previous two years as those in Major Cities (Table 3.1.2.2). They were as likely as those in Major Cities to have been screened more than 2 years previously, and were 0.67 times as likely to fit into the broad group 'never been screened/refused to answer the question/not stated'. Nationally, 30% of women 18 years and over had regular mammograms (usually, but not necessarily within the previous 2 years) (ABS 2002b). Specifically, 74% of women aged 50–59 years and 60–69 years, and 41% of those 70 years and over, had regular mammograms (ABS 2002b).

Results for non-Indigenous women were indistinguishable from those reported above.

In 2001, the NHS indicated 43% of Indigenous women aged 40 years and over in non-sparsely settled areas (i.e. typically non-remote areas) reported having regular mammograms, compared with 46% of non-Indigenous women of this age (ABS 2002a).

In 1997–99, death rates in Inner and Outer Regional areas due to breast cancer (AIHW 2003a) were similar to those in Major Cities; rates in remote areas were similar or possibly lower (Table 3.1.2.1). Death rates for Indigenous women due to breast cancer appeared to be similar to rates for non-Indigenous women. These rates are broadly reflective of relatively similar rates of mammography in each area. It is interesting to note that breast cancer death rates increase with age, but that women over 70 years have relatively low rates of mammography.

Pap smear tests

In 2001, women in Inner Regional areas were 1.10 times as likely and women in Outer Regional areas were equally as likely as those in Major Cities to have had a Pap smear test in the previous two years (Table 3.1.2.2). Specifically, women in Inner Regional areas who were 18–24-years-old were 1.47 times as likely to have had a recent Pap smear test as their counterparts in Major Cities.

Women in Inner and Outer Regional areas were 1.17 and 1.21 times as likely to have been screened more than 2 years previously; they were also 0.66 and 0.83 times as likely to fit into the broad group 'never been screened/refused to answer the question/not stated'. Nationally, 61% of women 18 years and over had regular Pap smear tests (usually, but not necessarily within the previous 2 years). The proportion having regular tests was highest in the 30–39-year age group (82%) and lowest in the 70 years and over group (18%) (ABS 2002b).

Results for non-Indigenous women were indistinguishable from those reported above.

Published results from the NHS (ABS 2002a) indicated that 50% of Indigenous women aged 18 years and over in non-sparsely settled areas (i.e. typically non-remote areas) reported having regular Pap smear tests, compared with 55% of non-Indigenous women of this age (ABS 2002a). The method for calculating these published figures is different from that used

above, but the results do indicate that screening rates for Indigenous women were slightly lower (by 5 percentage points) than for non-Indigenous women.

'Regular' cervical screening rates of 41% have been reported for 20–69-year-old Indigenous women living in 13 discrete rural and remote Indigenous communities in Queensland in 1999–2001 (Coory et al. 2002). This rate was 30% lower than for other similar aged women in Queensland. Importantly, this paper noted substantial inter-community variation in participation rates, from 20% to 64%. The higher rates were in communities where cervical screening was seen as part of primary health care. This suggests substantial opportunity for increasing rates in other communities.

In 1997–99, death rates in Inner and Outer Regional areas due to cervical cancer (AIHW 2003a) were, respectively, similar to and 1.3 times those in Major Cities; rates in remote areas were up to 3.3 times as high as those in Major Cities (Table 3.1.2.1). Rates for non-Indigenous women in regional and remote areas were indistinguishable from those in Major Cities.

From the 2001 NHS data, women in regional areas were slightly more likely to be screened regularly than those in Major Cities. This is in contrast to mortality data which shows similar rates of cervical cancer death in Inner Regional areas and rates that are 30% higher in Outer Regional areas. The pattern for screening of non-Indigenous women, on the other hand, was reflective of regional patterns in cervical cancer death rates. This implies that death rates for Indigenous women were much higher than their screening rates would lead one to expect.

More specifically, the overall rate of Pap smear testing in Indigenous women could lie somewhere between the 0.7 of the non-Indigenous rate recorded for those in 13 Indigenous Communities in Queensland (Coory et al. 2002) and the 0.9 recorded by the NHS for all Indigenous women (except those living in sparsely settled areas). Given the inter-community variation, and the low rates in some communities, the overall rate could be even lower. The cervical cancer death rate for Indigenous women was 6.5 times higher, overall, than for non-Indigenous women (AIHW 2003a). The apparent disparity requires further investigation. Possible reasons may include:

- lower screening rates for Indigenous women in sparsely settled areas
- greater likelihood of positive results in Indigenous women generally
- for Indigenous women who tested positive, rates of follow-up treatment that may be lower as a result of cultural issues, or financial or physical access.

Table 3.1.2.1: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness Area, breast and cervical cancer, females, 1997–99

	IR	OR	R	VR	total
Age group (years)			**(ratio)**		
Breast cancer					
Total population	0.99	0.99	0.89	0.81	1.00
Non-Indigenous	0.99	0.99	0.86	0.73	1.00
Indigenous	n.a.	n.a.	n.a.	n.a.	1.15
Cervical cancer					
Total population	0.95	***1.27**	1.53	***3.32**	1.04
Non-Indigenous	0.94	1.18	1.15	1.07	1.01
Indigenous	n.a.	n.a.	n.a.	n.a.	***6.47**

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. Major Cities rates are expressed as deaths per 100,000 population per year. Total (crude) rates for Major Cities are largely meaningless and are not included in this table.

Source: AIHW National Mortality Database.

Table 3.1.2.2: Ratio of the number of women who participated in breast cancer and cervical screening to the number expected, 2001

	Screened within last 2 years					Screened longer than 2 years previously					Never screened, refused or not stated				
Age	**MC%**	**MC**	**IR**	**OR**	**Regional**	**MC%**	**MC**	**IR**	**OR**	**Regional**	**MC%**	**MC**	**IR**	**OR**	**Regional**
Mammography															
18–24	..	1.00	2.03	3.40	2.49	..	1.00	1.06	1.06	1.06	..	1.00	***0.33**	***0.11**	***0.26**
25–44	..	1.00	1.13	1.34	1.21	..	1.00	1.02	0.99	1.01	..	1.00	***0.66**	***0.65**	***0.66**
45–64	..	1.00	***1.11**	0.99	1.07	..	1.00	0.94	1.02	0.96	..	1.00	***0.52**	1.01	***0.69**
65+	..	1.00	1.09	1.04	1.07	..	1.00	1.06	0.99	1.04	..	1.00	***0.69**	0.94	***0.77**
Total	..	1.00	***1.11**	1.06	***1.10**	..	1.00	1.02	1.01	1.02	..	1.00	***0.60**	***0.80**	***0.67**
Pap smear test															
18–24	..	1.00	***1.47**	1.23	***1.39**	..	1.00	2.24	***1.24**	1.91	..	1.00	***0.53**	0.79	***0.62**
25–44	..	1.00	1.07	1.06	1.06	..	1.00	1.26	1.33	***1.29**	..	1.00	***0.56**	***0.58**	***0.57**
45–64	..	1.00	1.04	0.93	1.00	..	1.00	1.18	1.15	1.17	..	1.00	***0.62**	1.11	***0.78**
65+	..	1.00	1.19	0.95	1.11	..	1.00	1.06	1.20	1.11	..	1.00	0.85	0.88	***0.86**
Total	..	1.00	***1.10**	1.02	***1.07**	..	1.00	***1.17**	***1.21**	***1.18**	..	1.00	***0.66**	***0.83**	***0.72**

See notes on page 33.

Note: The percentage in each category has not been reported for Major Cities, because ABS data included non-responses among those who had never been screened. Subsequent calculation of percentages will therefore not agree with previously reported ABS statistics. This issue does not affect the calculation of ratios described in the table.

Source: ABS National Health Survey, 2001.

3.2 Appropriateness

3.2.1 Female general practitioners

Summary of findings

In 2001, about 35% of all GPs were female. However, whereas 37% and 40% of GPs in Major Cities and Very Remote areas were female, lower proportions (28% to 33%) of GPs in regional and remote areas were female.

Female GPs tended to be younger than male GPs by around 7 years, on average. Both male and female GPs in regional and remote areas were 5% and 10% younger, respectively, than those in Major Cities. The average age of male and female GPs decreased with remoteness.

The average hours worked by both male and female GPs increased with remoteness. Female GPs in Major Cities worked 32 hours per week on average and those in regional, Remote and Very Remote areas worked, respectively, 35–36, 38 and 51 hours per week.

The ratio of female GPs to females in the population was greater in Major Cities (86 per 100,000 females) than in regional (56–58), Remote (54) and Very Remote (73) areas.

Inter-regional comparison of female GP full-time equivalents (FTEs) to females showed a similar pattern, but with higher rates of female GP 'supply' in Very Remote areas, because of the longer hours worked by GPs generally in those areas.

Background

Some women may prefer to visit a female rather than a male GP, particularly for female-specific health conditions. Lack of local access to a female GP may necessitate a long trip to a location where one is available, consultation with a male GP or lack of consultation for that health condition.

This indicator describes the percentage of GPs and hospital non-specialists who are female, and the ratio of these workers to the population requiring them.

Data has been drawn from the 2001 AIHW Medical Labour Force Survey. Survey results are collected when medical practitioners register each year. The response rate in 2001 was 64.5%, and the results presented here have been adjusted to allow for non-respondents.

Detailed results

Females as a percentage of the GP workforce

Of all Australian GPs, 35% were female, this proportion varying from 37% of those in Major Cities to 28%, 31%, 33% and 40% in Inner Regional, Outer Regional, Remote and Very Remote areas respectively (Table 3.2.1.1).

The age distributions of male and female GPs were quite different. Whereas male GPs were more likely to be 45 years and over, there were relatively few older female GPs, with the bulk aged 35–54 years (Table 3.2.1.1 and Figure 3.2.1.1). Females made up more than half of 25–34-year-old GPs, the proportion declining with age to 17% of those 55 years and over.

Female GPs were, on average, 7 years younger than male GPs (between 4.5 and 6.5 years younger in regional and remote areas). Both male and female GPs were, on average, 5%

younger in regional and 10% younger in remote areas than those in Major Cities (Table 3.2.1.2). In terms of age structure, female GPs in regional and remote areas were more likely to be younger than 45 years (Table 3.2.1.1 and Figure 3.2.1.1) than female GPs in Major Cities.

Table 3.2.1.1: Age and sex of employed general practitioners, by ASGC Remoteness Area, 2001

	Per cent in each age group					
	< 25	25–34	35–44	45–54	55+	All ages
Males						
Major Cities	..	7	24	31	37	100
Inner Regional	..	8	31	34	26	100
Outer Regional	..	11	30	32	27	100
Remote	..	17	29	31	22	100
Very Remote	..	18	45	12	24	100
Unknown	..	6	20	29	45	100
Australia	..	8	26	31	34	100
Females						
Major Cities	..	16	39	31	14	100
Inner Regional	..	18	43	29	10	100
Outer Regional	..	23	41	29	7	100
Remote	..	28	39	25	7	100
Very Remote	..	33	48	17	2	100
Unknown	..	29	37	14	19	100
Australia	..	17	40	30	13	100
Females as a percentage of GPs						
Major Cities	..	55	49	37	18	37
Inner Regional	..	45	34	24	13	28
Outer Regional	..	48	38	28	11	31
Remote	..	45	40	28	14	33
Very Remote	..	55	42	47	6	40
Unknown	..	72	51	22	19	36
Australia	..	53	45	34	17	35

Notes

1. Excludes Tasmania.
2. Excludes those who provided insufficient information to allocate a Remoteness category, or who did not state their sex, or their age.

Source: AIHW Medical Labour Force Survey, 2001.

Females made up a greater percentage of the GP workforce in Major Cities than they did in regional or remote areas in practically every age group (Table 3.2.1.1 and Figure 3.2.1.2).

Ratio of female GPs to resident females

Table 3.2.1.3 and Figure 3.2.1.2 describe numbers and full-time equivalents (FTEs) of female GPs and hospital non-specialists in each area in relation to all workers, the population of resident females, and the total number of expected consultations for residents in each area.

Expected female consultations are the number of consultations that would occur if females in each age group in each area consulted a GP at the same rate as females in Major Cities. Expected consultations do not reflect demand or need in an area; they simply (in this indicator) attempt to account for the differences in the age structures of the five remoteness areas compared here.

Table 3.2.1.2: Average age of male and female GPs in each ASGC Remoteness Area, 2001

	MC	IR	OR	R	VR	Unknown	Australia
Males	51.3	48.6	48.5	45.3	45.4	54.6	50.6
Females	44.3	43.0	41.8	40.8	39.0	43.6	43.9
Persons	48.7	47.0	46.4	43.8	42.8	50.7	48.3

Notes

1. Excludes Tasmania.
2. Excludes those who provided insufficient information to allocate a Remoteness category, or who did not state their sex, or their age.

Source: AIHW Medical Labour Force Survey, 2001.

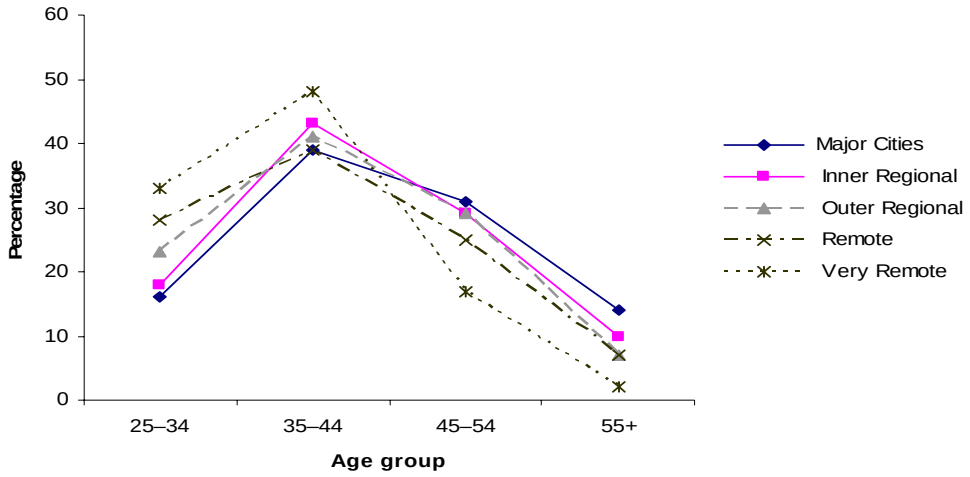
FTEs are calculated as the total number of hours worked each week, divided by 35 (the ABS definition of the number of hours in a standard full-time working week).

Like their male counterparts, female GPs worked longer hours in regional (35–36 hours), Remote (38 hours) and Very Remote (51 hours) areas, compared with those in Major Cities (32 hours).

Between 40% and 50% of all hospital non-specialists were female, and although there were differences between areas, there was no consistent systematic change with remoteness.

The ratio of female GPs to females in the population was greater in Major Cities (86 per 100,000 females) than in regional (56–58), Remote (54) and Very Remote (73) areas (Table 3.2.1.4 and Figure 3.2.1.3). Inter-regional comparison of rates using FTEs showed a similar pattern, but with higher rates of female GP 'supply' in Very Remote areas, because of the longer hours worked by GPs generally in those areas (Section 3.9.3).

The ratio of hospital non-specialists to females in the population was greater in Major Cities (27 per 100,000 females) than in regional (12–14), Remote (18) and Very Remote (17) areas (Table 3.2.1.4).

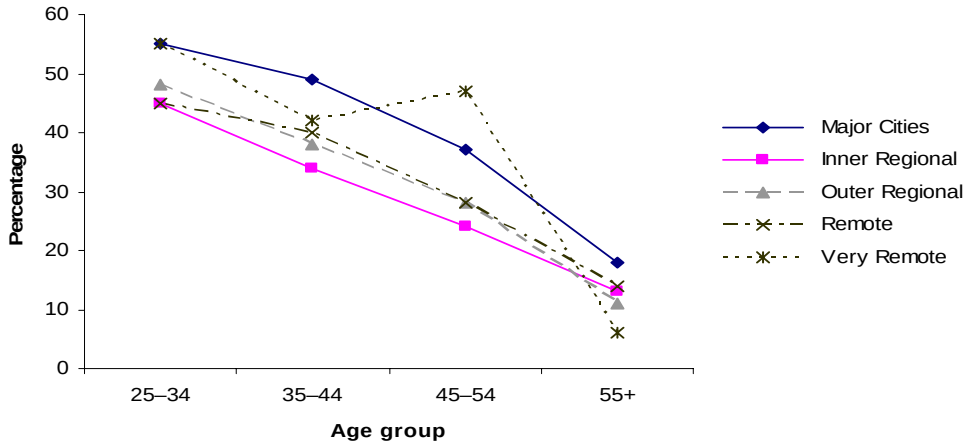


Notes

1. Excludes Tasmania.
2. Results from the 2001 survey have been weighed-up to account for non-responders.
3. Temporary resident doctors are not included in this table.
4. Records have been excluded from the analysis if sex and age were not reported, or information to allocate ASGC Remoteness Area is insufficient.

Source: AIHW Medical Labour Force Survey, 2001; Medicare GP consultations, 2001.

Figure 3.2.1.1: The age distribution of female GPs, within each ASGC Remoteness Area, 2001



Notes

1. Excludes Tasmania.
2. Results from the 2001 survey have been weighed-up to account for non-responders.
3. Temporary resident doctors are not included.
4. Records have been excluded from the analysis if sex and age were not reported, or information to allocate ASGC Remoteness Area is insufficient.

Source: AIHW Medical Labour Force Survey, 2001; Medicare GP consultations, 2001.

Figure 3.2.1.2: The percentage of GPs who are female, in each age group and ASGC Remoteness Area, 2001

Table 3.2.1.3: Female GPs and hospital non-specialists (HNSs), by ASGC Remoteness Area, 2001

	MC	IR	OR	R	VR	Unknown	Total
				Number of workers			
Female GPs	5,591	1,052	531	81	59	253	7,567
Female HNSs	1,743	259	110	26	14	153	2,306
All GPs	15,170	3,706	1,718	248	145	684	21,671
All HNSs	3,872	669	231	56	39	302	5,169
				Females as a percentage of workers			
GPs	37	28	31	33	40	37	35
HNSs	45	39	48	47	35	51	45
				FTEs			
Female GPs	5,094	924	500	86	85	129	6,818
Female HNSs	2,208	301	148	36	22	132	2,846
All GPs	17,563	4,125	2,064	319	212	405	24,688
All HNSs	5,143	795	308	78	62	256	6,641
				Female FTEs as a percentage of all FTEs			
GPs	29	22	24	27	40	32	28
HNSs	43	38	48	46	35	52	43

Notes

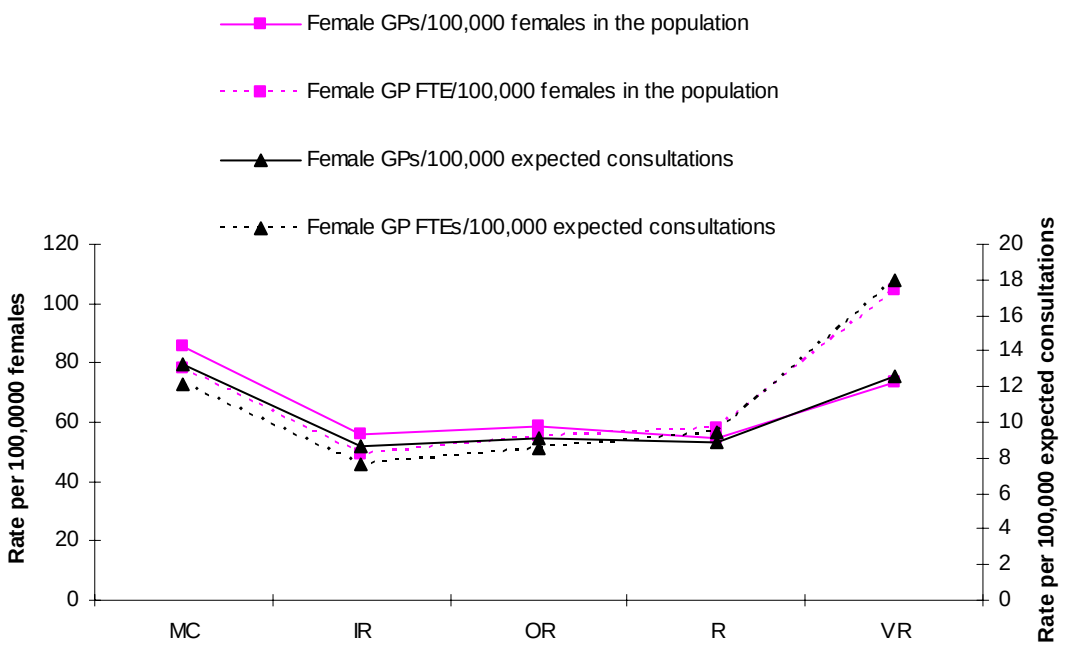
1. Excludes Tasmania.
2. Results from the 2001 survey have been weighed-up to account for non-responders.
3. FTEs are calculated as the total number of hours worked by practitioners based in each area, divided by 35.
4. Expected consultations are the number expected in each area in 2001, if age- and sex-specific consultation rates evident in Major Cities in 2001 were experienced. Rates of consultation in Major Cities in 2001 were calculated using Medicare data.
5. Temporary resident doctors are not included in this table.
6. Records have been excluded from the analysis if sex and hours worked are not reported, or if information to allocate ASGC Remoteness Area is insufficient.

Source: AIHW Medical Labour Force Survey, 2001; Medicare GP consultations, 2001.

Table 3.2.1.4: Prevalence of female GPs and HNSs, by ASGC Remoteness Area, 2001

	MC	IR	OR	R	VR	Unknown	Total
				Population of females living in each area			
	6,527,307	1,876,118	908,980	148,756	80,894		9,542,055
				Annual expected female GP consultations			
	42,139,234	12,176,460	5,820,041	908,543	471,424		61,515,702
				Rate per 100,000 resident females			
Female GPs	86	56	58	54	73	n.a.	79
Female GP FTEs	78	49	55	58	105	n.a.	71
Female HNSs	27	14	12	18	17	n.a.	24
Female HNS FTEs	34	16	16	24	27	n.a.	30
				Rate per 100,000 expected female GP consultations			
Female GPs	13	9	9	9	13	n.a.	12
Female GP FTEs	12	8	9	9	18	n.a.	11

See notes for Table 3.2.1.3.
Source: AIHW Medical Labour Force Survey, 2001; Medicare GP consultations, 2001.



See notes for Table 3.2.1.3.
Source: AIHW Medical Labour Force Survey, 2001; Medicare GP consultations, 2001.

Figure 3.2.1.1: The ratio of female GPs to females resident in each ASGC Remoteness Area, 2001

3.2.2 Hospital procedures

Summary of findings

For all of the hospital procedures reviewed, inter-regional differences in the rate of separation were evident, but the patterns were not consistent from procedure to procedure.

Rates of coronary artery bypass graft and coronary angioplasty were lower among people from regional and especially remote areas, whereas the reverse was the case for death rates due to coronary heart disease, which were higher in regional and especially remote areas.

Rates of diagnostic gastrointestinal endoscopy and myringotomy were also lower for residents of regional areas and substantially lower for residents of remote areas than for those in Major Cities.

Rates of appendectomy and lens insertion were higher for residents of regional and remote areas than residents of Major Cities.

Rates of cholecystectomy, hip replacement, revision of hip replacement, knee replacement, hysterectomy, tonsillectomy and arthroscopic procedures were typically higher for residents of regional areas and lower for residents of remote areas than for residents of Major Cities.

These findings were consistent in the 2 years for which inter-regional comparisons were made, 2001–02 and 2002–03.

Background

This indicator explores differences in the rate at which residents of each of the areas are admitted to hospital for various hospital procedures.

Poorer health outcomes in regional and especially remote areas may be due to increased risk factors (e.g. higher rates of smoking) or due to poorer access to health services. For example, higher rates of death due to circulatory diseases outside Major Cities may reflect lower levels of use of health services, or higher rates of smoking, or both.

This indicator essentially compares the rates of specific procedures for residents of each area with rates for residents of Major Cities.

The comparison statistic draws on the standardised separation rate ratios presented in *Australian Hospital Statistics 2001–02* (AIHW 2003e) and *Australian Hospital Statistics 2002–03* (AIHW 2004b).

The source data are routinely collected data on hospital-admitted patients, compiled as each patient completes an episode of care, generally at discharge or if the patient dies or is transferred. It captures all episodes from all public and most private hospitals.

The ratios presented in Table 3.2.2.1 are calculated as the SRR (standardised separation rate ratio) for residents of each area divided by the SRR for residents of Major Cities. The ratio for an area is said to be significantly different from that in Major Cities (1.00) if the 95% confidence intervals for the two ratios do not overlap.

Detailed results

There was considerable variation between areas (Table 3.2.2.1), but the inter-regional patterns for each procedure were similar in both 2001–02 and 2002–03, this consistency lending support to the overall findings.

For some types of procedures, separation rates were higher for residents of regional and remote areas than for residents of Major Cities; for example, appendectomy and lens insertion (although for the latter, the higher rates in remote areas were at a lower level of significance).

For others, the rate of separation was higher for residents of regional areas and lower for residents of remote areas than for residents of Major Cities. Examples are cholecystectomy, hip replacement, revision of hip replacement, knee replacement, hysterectomy, tonsillectomy, and arthroscopic procedures (including arthroscopies).

In others there was little difference in the rates of separation between the five areas. In the case of prostatectomy, rates for residents were similar in regional areas, lower (at a lower level of significance) in Remote areas, and significantly lower in Very Remote areas only in 2001–02.

For others, the rate of separation was lower for residents of regional and remote areas than for those in Major Cities, examples being coronary artery bypass graft, coronary angioplasty, myringotomy, and diagnostic gastrointestinal endoscopy.

With the exception of appendectomy and lens insertion, rates of separation for all of the selected procedures were lower for residents of Very Remote areas than for residents of Major Cities.

This was mirrored to some extent in Remote areas for the same conditions plus arthroscopic procedures.

In regional areas, rates of separation were higher for most of the selected procedures, being lower only for coronary angioplasty, diagnostic gastrointestinal endoscopy and myringotomy. In regional areas, rates for coronary artery bypass graft were similar to, or lower than, those in Major Cities.

The patterns for both coronary artery bypass graft (CABG) and coronary angioplasty are particularly noteworthy; separation rates for both of these procedures were lower for residents of areas outside Major Cities, and decreased with remoteness. Rates of separation for bypass graft were similar or slightly lower in Outer Regional areas, and 25–40% lower in remote areas, rates for angioplasty were 15–40% lower in regional areas and up to 40% lower in remote areas (Figure 3.2.2.1) than in Major Cities.

Coronary heart disease is the greatest contributor to higher death rates in regional and remote areas (AIHW 2003a). Death rates from coronary heart disease were 10% higher in areas outside Major Cities and 30% higher in Very Remote areas (Figure 3.2.2.1). This differential would be greater except for the low rates among older people in remote areas compared with those for their counterparts in Major Cities and regional areas (possibly a consequence of the migration of the frail aged to less remote areas to access services).

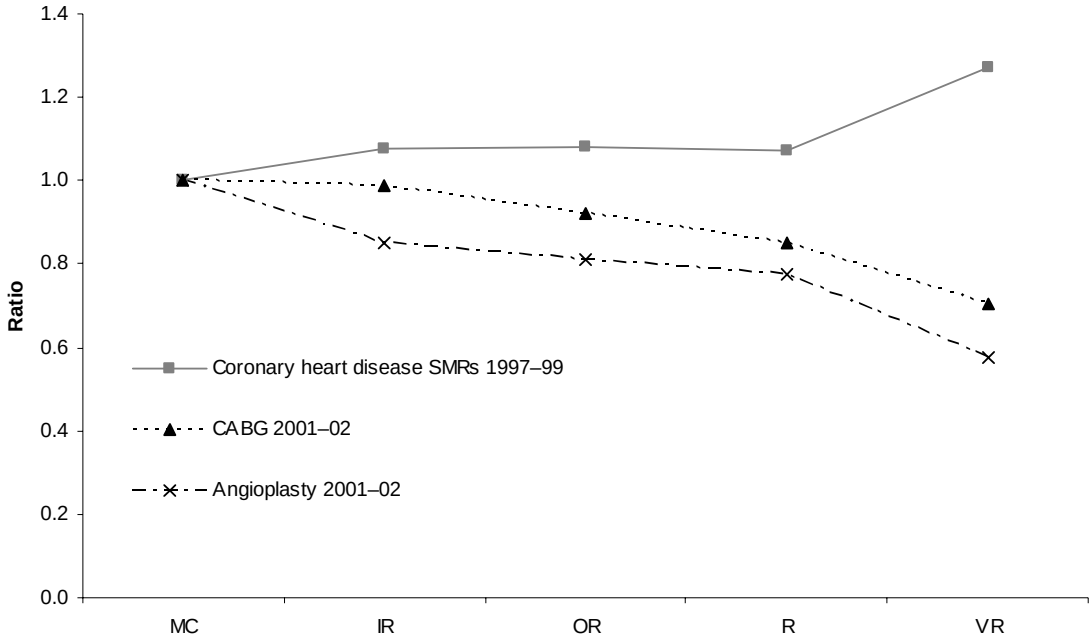
Higher coronary heart disease death rates in regional and remote areas may be related to lower levels of use of health services (for example CABG and angioplasty) and/or to the poorer health risk factor profile of residents of these areas. This indicator does not identify which has the greater effect, but both the poorer risk factor profile and lower rate of procedure have the potential to increase death rates in areas outside Major Cities.

Table 3.2.2.1: Ratio of the separation rate for selected procedures, by ASGC Remoteness Area of usual residence, 2001–02 and 2002–03

Procedure	Year	MC	IR	OR	R	VR
		Ratio				
Appendectomy	2001–02	1.00	***1.18**	***1.21**	***1.29**	1.06
	2002–03	1.00	***1.18**	***1.22**	***1.23**	1.09
Coronary artery bypass graft	2001–02	1.00	0.99	***0.92**	***0.85**	***0.70**
	2002–03	1.00	1.04	0.98	***0.86**	***0.76**
Coronary angioplasty	2001–02	1.00	***0.85**	***0.81**	***0.77**	***0.58**
	2002–03	1.00	***0.85**	***0.80**	***0.75**	***0.66**
Cholecystectomy	2001–02	1.00	***1.08**	***1.04**	0.94	***0.88**
	2002–03	1.00	***1.09**	***1.05**	0.96	***0.87**
Diagnostic gastrointestinal endoscopy	2001–02	1.00	***0.92**	***0.84**	***0.72**	***0.60**
	2002–03	1.00	***0.90**	***0.82**	***0.68**	***0.57**
Hip replacement	2001–02	1.00	***1.14**	***1.10**	1.08	***0.68**
	2002–03	1.00	***1.14**	***1.11**	0.96	***0.58**
Revision of hip replacement	2001–02	1.00	***1.23**	1.14	0.93	***0.49**
	2002–03	1.00	***1.21**	1.14	1.13	0.63
Hysterectomy, females aged 15–69	2001–02	1.00	***1.21**	***1.16**	0.99	***0.77**
	2002–03	1.00	***1.23**	***1.19**	1.09	***0.83**
Lens insertion	2001–02	1.00	***0.96**	***1.07**	1.00	1.05
	2002–03	1.00	0.98	***1.08**	1.05	1.06
Tonsillectomy	2001–02	1.00	***1.16**	***0.95**	***0.88**	***0.54**
	2002–03	1.00	***1.15**	***0.96**	***0.85**	***0.53**
Myringotomy	2001–02	1.00	***0.90**	***0.72**	***0.78**	***0.50**
	2002–03	1.00	***0.90**	***0.76**	***0.71**	***0.52**
Knee replacement	2001–02	1.00	***1.22**	***1.11**	1.10	***0.71**
	2002–03	1.00	***1.19**	***1.16**	1.02	***0.77**
Prostatectomy	2001–02	1.00	1.02	1.00	0.93	***0.73**
	2002–03	1.00	1.00	1.02	0.90	0.87
Arthroscopic procedures (includes arthroscopies)	2001–02	1.00	***1.16**	***1.11**	***1.24**	***0.73**
	2002–03	1.00	***1.17**	***1.17**	***1.25**	***0.80**

Note: The presented statistic is the ratio of the standardised separation rate ratio (SRR) for each area, divided by the SRR for Major Cities. In essence, a ratio greater than 1 indicates a higher rate of separation in the area than in Major Cities; a ratio less than 1 indicates a lower rate of separation in the area than in Major Cities. An asterisk indicates where rates of separation are significantly different from those in Major Cities.

Source: AIHW Australian Hospital Statistics 2001–02 and 2002–03.



Note: Coronary heart disease SMRs are calculated as the number of observed deaths divided by the number expected if Major Cities age-specific rates applied in each area (see indicator 1.4.3). The plots for coronary artery bypass graft (CABG) and Coronary angioplasty are calculated as the ratio of the standardised prevalence ratio (SRR) for each area, divided by the SRR for Major Cities. In essence, a ratio greater than 1 indicates a higher rate of separation in the area than in Major Cities; a ratio less than 1 indicates a lower rate of separation in the area than in Major Cities.

Source: AIHW Australian Hospital Statistics 2001–02 and 2002–03, AIHW mortality database, 1997–99.

Figure 3.2.2.1: Comparison of separation rates for CABG and coronary angioplasty procedures (2001–02), and SMRs for coronary heart disease (1997–99), by ASGC Remoteness Area of usual residence