Introduction

The location of services and facilities in relation to the distribution of the population is an important indicator of accessibility. Unfortunately the data currently available as to the location of health, welfare and other services and facilities are limited. This is true even for data at the SLA level: the range of data by actual address location that can be mapped precisely are even more limited.

Greater interest is, however, being shown in establishing databases of services by exact location. Such databases can assist in developing a better understanding of the patterns of provision, access to and use of services and inform policy development and strategic planning processes for the location and delivery of health services. These initiatives are being aided by the use of Geographical Information Systems (GIS) techniques¹.

In this chapter data are mapped at the SLA level for general medical practitioners (GPs), hospital beds (public acute and private hospitals) and residential aged care facilities (nursing home places and hostel places). The data for GPs are for the 1996/97 financial year and for public acute hospital beds they are for 1995/96; the remaining data are at 30 June 1997.

Data mapped

Population per GP

The spatial distribution of GPs has been illustrated by mapping the population per GP in each area.

Data are of the number of full-time equivalent (FTE) GPs^2 per practice site. Data were available for postcode areas and were converted to SLA.

The rate of population per GP was calculated for each SLA and is mapped over five ranges. In many non-metropolitan SLAs the rate was very high, because the denominator, the FTE number of GPs, was very small. An examination of the distribution of rates across all non-metropolitan areas in Australia revealed that a sensible cut-off would be where the rate of population per GP exceeded 10,000 people per GP. Most of the SLAs with rates of this size had fewer than 0.3 FTE GPs. On the maps, these areas are shown as having 'No GP' (or fewer than 10,000 people per GP) even though they may have a GP practising for one session per week. The other SLAs are mapped across the remaining four ranges.

The GPs included in this analysis exclude GPs working in salaried practice who do not submit accounts to Medicare. Examples

include GPs working for the Royal Flying Doctor Service and the Aboriginal Medical Service, those working in specialist services such as low vision clinics, as well as in a small number of community health centres (see comments on page 309 in relation to GP services not included in the data mapped). If, however, these GPs meet the definition quoted above for work performed in another practice, they will be included as practising from that location.

Users should be cautious not to place too heavy an emphasis on the population per GP in any one SLA, as the location of the principal practice in an SLA may be close to the population of a neighbouring SLA and provide a significant number of services to people in this neighbouring SLA. This is less of a problem for the larger areas (SSDs) mapped in the Australian atlas.

It is not possible to directly compare the data shown here with that in the first edition of the atlas because of the use in this edition of the more accurate FTE measure. In the first edition GPs were defined as the number of medical practitioners who performed (during 1990/91) at least 1,000 GP services (based on selected items in the Commonwealth Medical Benefits Schedule) for which Medicare benefits were paid, and who received more than 50 per cent of fee-charged income from those items (ie. they were charging patients for services appropriate for a GP for more than 50 per cent of the income they derived from Medicare). This was a relatively small number of services and, as such allowed for the inclusion, in the number of GPs, of many (but not all) of the medical practitioners who were practising parttime in medicine.

Despite this change in definition, the data for the earlier period have been shown below to allow users to examine variations in the rates between the States and Territories at each reference date.

Hospital beds

The number of beds in public acute hospitals and private hospitals has been mapped per 1,000 population of the area in which the hospital is located. The public hospital data were available at 30 June 1996 and the private hospital data at 30 June 1997.

Questions remain as to the accuracy of the data, even at this broad level of publication, as it is has not been used in this way before and has therefore not been subject to scrutiny. Although the public hospitals are referred to as 'acute' hospitals, they treat and care for patients with long term care needs, including for rehabilitation (leading to a return to life outside of a hospital or nursing home) and those who are unlikely to ever leave such care, whether in a hospital or nursing home (see below under *Residential aged care facilities*).

The data for some States is also likely to be more difficult to obtain in the future as the organisational arrangements for the management and delivery of health services changes, with hospital data being available only for areas or networks, and not by each service location. Some data are already supplied at the

¹ GIS is an organised collection of computer hardware and software designed to efficiently capture, store, update, manipulate, analyse and display all forms of geographically referenced information.

² In computing full-time equivalent GPs, use was made of a threshold of \$71,725 in Schedule fee income in 1995-96. Practitioners with a Schedule fee income above the average, were given a fraction of '1'. All other practitioners were given a proportion of 1, having regard to the Schedule fee income for the practitioner concerned relative to the threshold income of \$71,725.

establishment level, even when there are two or more separately located campuses operated by the establishment. In these cases the campus location without bed numbers was removed from the file before mapping.

Residential aged care facilities

Nursing home places and hostel places are mapped per 1,000 population aged 70 years and over, in line with the Commonwealth planning targets for residential care places of 90 places per 1,000 population aged 70 years and over. This target is comprised of 40 nursing home places and 50 hostel places per 1,000 population aged 70 years and over. Data for community aged care packages have not been mapped, as these packages are allocated on a regional basis that does fit well with the areas mapped.

In many areas (in particular areas away from the capital cities and other major regional centres) of Australia where there are few (or no) nursing home facilities, with people requiring long term intensive care often cared for in public hospitals (where they are classified as 'long stay nursing home type patients'). Overall, 12.6 per cent of patient days in public acute hospitals in New South Wales were for nursing home type patients, 25.9 per cent of bed days in the non-metropolitan areas, and 6.9 per cent in **Sydney (Table 7.1)**. New South Wales had 12.6 per cent of its bed days used by nursing home type patients, with 9.7 per cent in South Australia and 9.5 per cent in Tasmania. South Australia had the highest proportion in the non-metropolitan areas, with 30.8 per cent of bed days used by nursing home type patients; New South Wales had the second highest proportion, with 25.9 per cent.

As the number of beds used by these patients is not available, their details have not been included in the maps.

Table 7.1: Patient days for	r nursing home type	patients in public acute	hospitals, by area, S	States and Territories,	1997/98
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Location of hospital	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number				
Metropolitan	270,289	32,545	32,166	2,675	3,737	948	2,081	1,171	345,612
Non-metropolitan	442,350	41,602	136,682	21,380	128,382	30,746		388	801,530
Total	712,639	74,147	168,848	24,055	132,119	31,694	2,081	1,559	1,147,142
		Per cent	Nursing hon	ne type pati	ent bed days	as a proport	tion of all be	d days	
Metropolitan	6.9	1.2	2.1	0.3	0.4	0.6	0.8	1.1	3.3
Non-metropolitan	25.9	4.3	13.7	6.4	30.8	17.0		0.5	17.1
Total	12.6	2.0	6.6	1.8	9.7	9.5	0.8	0.8	7.5

Source: AIHW, unpublished data

The tables and maps of nursing home and hostel places show each of these variables separately. To assist readers in assessing the provision of residential care places in relation to the Commonwealth planning targets (90 places per 1,000 population aged 70 years and over) they have been combined in **Table 7.2**. In all capital cities, excluding **Darwin** (72 places per 1,000 population), the number of residential care places per 1,000 population was above the Commonwealth planning target. There were more places per 1,000 population in the capital cities than in the *Rest of State /Territory* areas of Australia in all but the Northern Territory and Victoria (where there were fewer).

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Capital city	101	91	103	105	102	99	72	96	99
Other major urban centres ²	84	96	74						82
Rest of State/Territory	81	94	88	74	75	87	72	_3	85
Whole of State/Territory	93	92	92	97	96	92	72	96	93

¹Includes Queanbeyan (C)

²Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld) ³Data unreliable: included with ACT total

Source: See Data sources, Appendix 1.3

Gaps and deficiencies in the data

In addition to the limitations noted above in the *Introduction* as to the small range of data available, the limitations of the choropleth mapping technique should also be kept in mind when reading this chapter.

For example, users should be cautious not to place too much emphasis on the population per GP in any one SLA, as the location of the practice in an SLA may be close to the population of a neighbouring SLA and provide a significant number of services to people in that neighbouring SLA. Other factors also impact on accessibility, including the availability of private and public transport. However, where a contiguous group of SLAs all have high populations per GP (high relative to the State or Territory average), it is likely that the level of provision is low. Similarly, where regional groupings of SLAs together have relatively low nursing home bed rates, provision of these care places is clearly low (although readers should be aware of the note above as to the use, in some instances, of hospital beds for long term care).

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Details of general medical practitioners (GPs) included in the following analysis, and the way in which the number of GPs has been calculated, are on page 325.

As can be seen from **Table 7.3**, the population per GP was highest in **Darwin** (1,642 people per GP) and **Canberra** (1,467 people per GP), (indicating that there were fewer GPs per head of population practising in these cities) and lowest in **Sydney** (1,118 people per GP) and **Adelaide** (1,145 people per GP).

Although calculated in a different way (see notes on page 325 under *Data mapped*), the 1990/91 figures can be used to examine the differences of rates between the capital cities. The earlier rates show that levels of provision of GPS in **Hobart**, **Brisbane** and **Darwin** have decreased between the periods shown, while levels of provision in Melbourne have moved closer to the *All capitals* average (**Table 7.3**).

Table 7.3: Population per general medical practitioner, capital cities

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ¹	All capitals
1996/97	1,118	1,181	1,182	1,145	1,259	1,167	1,642	1,467	1,169
1990/91	860	921	834	827	1,015	820	900	1,042	886

¹Includes Queanbeyan (C) Source: See *Data sources*, Appendix 1.3

Sydney

In 1996/97, there were 1,118 people per GP in **Sydney**. Of the total of 3,314 GPs, 2,397 were males (72.7 per cent) and 757 were females, a rate of 1,546 people per male GP and 4,108 people per female GP. In contrast to the overall predominance of male GPs in **Sydney** (2.7 male GPs to each female GP), it was estimated (as described on page 325) that Lane Cove had equal numbers of female and male GPs (a rate of 1.0 female to male GPs), although this was one of the smallest number of GPs in any SLA in **Sydney**. Other areas with relatively high proportions of female GPs practising were Hunter's Hill (with 0.9 female GPs per male GP), Leichardt (0.8) and North Sydney, Burwood (both with 0.7).

In general, the population per GP was highest in outer and middle metropolitan SLAs and lowest in and around the city centre (**Map 7.1**). The exceptions to this were the high rates recorded in Concord (a rate of 2,419 people per GP and 10 GPs) and Hunter's Hill (1,697 and 7) and the lower rates in Gosford (1,050 and 138) and Hornsby (1,154 and 118).

The SLAs mapped in the two highest class intervals included Wollondilly (with a rate of 2,157 people per GP and 15 GPs), Blue Mountains (1,549 and 46) and Camden (1,463 and 22), situated in the outer south-western and western regions; and Hawkesbury (1,722 and 33) and Ku-ring-gai (1,458 and 67), located north of the Parramatta River. Relatively high rates were also recorded in the SLA of Wyong (1,363 people per GP and 85 GPs), Liverpool (1,332 and 90), Campbelltown (1,327 and 108), Sutherland (1,318 and 147), Warringah (1.295 and 95), Blacktown (1,251 and 185) and Manly (1,250 and 28).

At the other end of the scale, there were only 366 people per GP in the City of Sydney, based on an estimated 47 GPs. Rates of below 1,000 people per GP were also recorded in the inner SLAs of Burwood (643 people per GP and 44 GPs), South Sydney (763 and 103), Waverley (777 and 78), Willoughby (819 and 65), North Sydney (906 and 58), Marrickville (924 and 82), Leichhardt (955 and 60), Randwick (980 and 120), Auburn (985 and 52), Drummoyne (989 and 30) and Strathfield (996 and 26).

The largest numbers of GPs were recorded in Blacktown (185 GPs), Fairfield (173), Bankstown (150), Sutherland (147), Penrith (139), Gosford (138), Parramatta (130), Canterbury (125) and Randwick (120).

There was no consistent evidence in the correlation analysis of an association at the SLA level between high rates of population per GP and socioeconomic status. There were, however, correlations of meaningful significance with the variables for dwellings without a motor vehicle (-0.64) and people born in non-English speaking countries and resident in Australia for less than five years (-0.57).

Newcastle

There were 1,366 people per GP in the major urban centre of **Newcastle**, 5,450 people per female GP and 1,846 per male GP. Females comprised 25.1 per cent of the estimated number of GPs in **Newcastle**. All of the SLAs within **Newcastle** recorded rates of above 1,000 people per GP, with the highest in Cessnock (a rate of 1,859) and the lowest in the City of Newcastle (1,214). Port Stephens, Maitland and Lake Macquarie had rates of 1,629, 1,406 and 1,330 respectively.

Wollongong

In 1996/97, there were 190 GPs in **Wollongong**, a rate of 1,293 people per GP (7,744 people per female GP and 1,552 per male GP). Again, all rates were above 1,000 people per GP, ranging from 1,158 in the City of Wollongong to 1,923 in Shellharbour. A low 16.7 per cent of GPs in **Wollongong** were females.

Map 7.1 Population per general medical practitioner, Sydney, Newcastle and Wollongong, 1996/97

number of people in each Statistical Local Area per general medical practitioner (GP)





The notes on page 325 as to the GPs and GP type services not covered by this data are of particular relevance to the data for the nonmetropolitan areas. The population per GP was higher in the non-metropolitan areas of the States and the Northern Territory than in the capital cities, indicating that there were fewer GPs in these areas (**Table 7.4**). The *Rest of State/Territory* figures ranged from 1,464 people per GP in Tasmania to a very high 3,604 people per GP in the Northern Territory. The rate of population to GPs in Western Australia was also well above the *Rest of State/Territory* average, at 1,968 people per GP.

Although calculated in a different way (see notes on page 325 under *Data mapped*), the 1990/91 figures show that New South Wales, South Australia, Tasmania and the Northern Territory had fewer people per GP in the *Rest of State/Territory* areas than the average for these areas (ie. more GPs) whereas in 1996/97 New South Wales had just above the average and the Northern Territory had a considerably higher rate.

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1996/97									
Capital city	1,118	1,181	1,182	1,145	1,259	1,167	1,642	$1,467^{1}$	1,169
Other major urban centres ²	1,339	1,337	1,188						1,278
Rest of State/Territory	1,656	1,559	1,616	1,517	1,968	1,464	3,604	_3	1,627
Whole of State/Territory	1,250	1,262	1,335	1,225	1,400	1,325	2,356	1,451	1,290
1990/91									
Rest of State/Territory	942	1,196	1,203	1,145	1,374	1,000	1,133	_3	1,147

¹Includes Queanbeyan (C)

²Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld)

³Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Rest of State

As expected, the population per GP was considerably higher in the non-metropolitan areas of New South Wales (1,656 people per GP) than in **Sydney** (1,118 people per GP). In 1996/97, there were 964 GPs outside of the major urban centres, almost one third the number recorded in **Sydney** (with 3,314 GPs).

Whereas just over one quarter (27.2 per cent) of GPs in **Sydney** were females, only 18.2 per cent were females in the nonmetropolitan areas of New South Wales.

As can be seen from **Map 7.2**, the most highly elevated rates generally occurred in the more remote areas of New South Wales, with the lowest rates (highest provision of GPs) in areas located nearest the major urban centres and extending to the north.

There were more than 10,000 people per GP in the SLAs of Central Darling (16,488 people per GP and 0.2 FTE GPs) and Gunning (11,024 and 0.2). The next highest rate of population per GP (indicating the lowest number of GPs) was recorded for Hume, where there were an estimated 5,056 people per GP, with a similarly high rate recorded in Wakool (4,435). Rates of more than 2,500 people per GP were also recorded in the central western SLAs of Blayney [Part A] (3,662 people per GP) and Oberon (3,526); in the south-western SLAs of Wentworth (3,382), Hay (3,208), Coolamon (2,890), Narrandera (2,884) and Jerilderie (2,716); in the south-eastern SLAs of Holbrook (3,363), Tallaganda (3,136), Snowy River (3,087) and Harden (2,652); in the northern SLAs of Guyra (2,893), Murrurundi (2,737), Dungog (2,698), Parry (2,559) and Ulmarra (2,557); and in the far northwestern SLA of Bogan (2,877). The only areas to record rates of below 1,000 people per GP were Lord Howe Island (917 people per GP and 0.4 FTE GPs) and Glen Innes (995 and 6). Relatively low rates were also recorded to the north of **Sydney** in Byron (with a rate of 1,107 people per GP), Ballina (1,157), Tweed Heads (1,158), Quirindi (1,161), Great Lakes (1,199), Severn (1,234), Bellingen (1,283), Inverell [Part B] (1,310), Hastings (1,317), Tweed [Part B] (1,436), Lismore (1,461), Yallaroi (1,478) and Gloucester (1,497).

In 1996/97 there were an estimated 48 GPs in the SLA of Shoalhaven: more than 20 GPs were also estimated for Hastings (44), Coffs Harbour (38), Tweed Heads (35), Ballina (30), Albury and Lismore (both 29), Wagga Wagga and Greater Taree (both with 25), Great Lakes and Byron (both 24) and Wingecarribee (22).

There was no consistent evidence in the correlation analysis of an association at the SLA level between high rates of population per GP and socioeconomic status.

Map 7.2 Population per general medical practitioner, New South Wales, 1996/97

number of people in each Statistical Local Area per general medical practitioner (GP)



Accessibility/Remoteness Index of Australia



The rate of population per general medical practitioner (GP) increases steeply, from 1,187 people per GP in the Very Accessible to 1,691 people per GP in the Accessible ARIA category, then icreases steadily to 1,903 people per GP in the Remote areas, an overall increase of 60.3 per cent. The rate then decreases to 1,819 people per GP in the Very Remote areas. Although levels of provision of GP services are low in the remote areas, readers should note the cautions (in the introduction to this section) as to the limitations of this data.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

In 1995/96, there were 3.1 beds (average available beds over 1995/96) per 1,000 population in public acute hospitals in the capital cities. There was little variation among the capital cities, with rates varying from 2.7 per 1,000 population in **Canberra** to 4.0 in **Hobart** (**Table 7.5**).

Over the period from 1989 to 1995/96, the rate of public acute hospital beds decreased in each of the capital cities for which data were available in the first edition of the atlas, with the exception of **Melbourne** (where the rate remained stable at 2.8 public hospital beds per 1,000 population) and **Adelaide** and **Sydney** (both with a small increase, from 3.1 beds to 3.2 per 1,000 population). The largest decline occurred in **Brisbane**, where the rate decreased from 4.1 public hospital beds per 1,000 population in 1989 to 3.4 in 1995/96.

Table	7.5:	Public	acute	hospital	beds	per :	1,000	population,	capital	cities
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	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ¹	All capitals
1995/96	3.2	2.8	3.4	3.2	3.1	4.0	3.5	2.7	3.1
1989	3.1	2.8	4.1	3.1	3.3	••	••	••	3.2
¹ Includes Q	ueanbeyan (C)							

Source: See *Data sources*, Appendix 1.3

Sydney

In 1995/96, there were 11,987 public acute hospital beds (average available beds over 1995/96) in **Sydney**, representing 3.2 beds per 1,000 population.

As can be seen from **Map 7.3**, high concentrations of public acute hospital beds were generally clustered in the inner city regions of Concord (26.6 public hospital beds per 1,000 population), South Sydney (16.9), Kogarah (13.5), Holroyd (13.3), Leichhardt (8.1) and Randwick (7.3) and just north of the Parramatta River in North Sydney (14.1) and Ryde (7.6). The SLAs of Sydney and Manly also had high rates, with 6.7 and 6.3 public hospital beds per 1,000 population respectively.

The map also identifies a band of SLAs with near average rates surrounding the inner city. These SLAs included Auburn (4.9 public hospital beds per 1,000 population), located in the central west; Liverpool (3.7) and Camden (3.6), situated south-west of **Sydney**; Gosford (3.5), Pittwater (3.1) and Hornsby (3.0), in the north; and Woollahra (3.2), situated in the east.

Rates of below 1.0 were recorded in the SLAs of Marrickville (0.5 public hospital beds per 1,000 population), Ku-ring-gai and Willoughby (both with 0.7) and Waverley (0.9). Relatively low rates were also recorded in the outer regions of Campbelltown (1.3 public hospital beds per 1,000 population), Hawkesbury (1.5), Wyong and Sutherland (both with 1.6) and Blue Mountains (1.7). In total 12 SLAs recorded no public hospital beds in 1995/96, including a number of the inner and northern SLAs of Ashfield, Baulkham Hills, Botany, Burwood, Drummoyne, Hunter's Hill, Mosman, Warringah and Wollondilly.

The largest number of public acute hospital beds was recorded in the SLA of South Sydney, with 1,325 beds. More than 500 beds were also recorded in Holroyd (1,063 beds), Randwick (857), North Sydney (743), Ryde (696), Kogarah (640), Concord (626) and Gosford (509).

The correlation analysis was not undertaken as there were too many SLAs with no data.

Newcastle

Newcastle recorded the highest rate among the major urban centres, with 3.5 public acute hospital beds per 1,000 population (a total of 1,583 beds). By far the highest rate was recorded in the City of Newcastle, with a rate of 9.2, followed by Cessnock (2.9) and Maitland (2.7). Rates of below 1.0 were recorded in the SLAs of Lake Macquarie and Port Stephens, with 0.5 and 0.2 public hospital beds per 1,000 population respectively.

Wollongong

There were 621 public acute hospital beds in **Wollongong** in 1995/96, representing 2.5 beds per 1,000 population. Near average rates were recorded in both the City of Wollongong (2.7) and Shellharbour (2.6), while there were no public hospital beds recorded in Kiama.

Map 7.3 Public acute hospital beds per 1,000 population, Sydney, Newcastle and Wollongong, 1995/96

number of public acute hospital beds^{*} in each Statistical Local Area per 1,000 population





There were more beds (average available beds over 1995/96) per 1,000 population in public acute hospitals in the *Rest of State /Territory* areas of Australia than in the capital cities in all but Tasmania and the Northern Territory (where there were fewer). The average *Rest of State /Territory* rate across Australia was 4.0 public acute hospital beds per 1,000 population, with similar rates recorded in most non-metropolitan areas excluding South Australia, where the rate was higher, at 5.9 beds per 1,000 population. The beds in the non-metropolitan areas include beds used by long stay patients (see page 325).

The non-metropolitan areas of New South Wales, Victoria and Queensland recorded similar rates in both periods as shown in **Table 7.6**. Western Australian recorded a considerable decrease, down from 6.4 public hospital beds per 1,000 population in 1989 to 3.6 public acute hospital beds in 1995/96, with a smaller decrease in South Australia.

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1995/96									
Capital city	3.2	2.8	3.4	3.2	3.1	4.0	3.5	2.7^{1}	3.1
Other major urban centres ²	3.2	3.3	2.2						2.8
Rest of State/Territory	4.6	3.6	3.7	5.9	3.6	2.6	2.7	_3	4.0
Whole of State/Territory	3.6	3.0	3.3	3.9	3.3	3.2	3.0	2.6	3.4
1989									
Rest of State/Territory	4.5	3.9	4.6	6.5	6.4				4.7

¹Includes Queanbeyan (C)

²Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld) ³Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Rest of State

In the non-metropolitan areas of New South Wales, there were 4.6 public acute hospital beds (average available beds over 1995/96) per 1,000 population based on a total of 150 hospitals with an average of 7,369 available beds.

The overall pattern of distribution of public hospital beds shows that the higher rates are in the outer parts of the State, particularly in the northern region (**Map 7.4**). SLAs mapped in the highest range included Cabonne [Part B] (259.9 public hospital beds per 1,000 population), Cabonne Pt C (10.6) and Bathurst (10.3), located in the central west; Mulwaree (26.9), Tallaganda (13.3), Bombala (12.7), Holbrook (11.1), Harden (8.3) and Goulburn (8.2), situated in the south-east; Conargo (21.9), Urana (14.2), Hay (10.8) and Albury (9.4), in the southwest; Inverell [Part A] (20.5), Bingara (10.1), Barraba (9.8), Walcha (9.4), Manilla (9.3), Tenterfield (9.0) and Glen Innes (8.7), located in the north-east; and Warren (18.3), Brewarrina (14.2), Bourke (13.3), Coonamble (11.5), Walgett (9.9), Coonabarabran (8.5) and Narromine (8.3), situated in the north-west.

There were 25 SLAs mapped in the middle class interval, ranging from a rate of 4.0 public hospital beds per 1,000 population in the south-eastern SLA of Young to 5.8 in both Leeton and Orange.

A number of SLAs throughout the non-metropolitan areas of New South Wales had no public hospital beds, including the southern areas of Gunning, Hume, Murray, Murrumbidgee, Snowy River, Windouran and Yarrowlumla [Part A] and [Part B]. Rates of below 2.0 were recorded in Great Lakes (0.3 public hospital beds per 1,000 population), Hastings and Unincorporated Far West (both 0.5), Parry (1.2), Ballina (1.3), Boorowa (1.7) and Dungog (1.8). In 1995/96 the largest numbers of public acute hospital beds were recorded in the towns of Albury (390 beds), Bathurst (295), Tamworth (260) and Wagga Wagga (240). More than 200 public hospital beds were also recorded in Lismore (230), Cabonne [Part B] (210) and Greater Taree (203).

The correlation analysis was not undertaken as there were too many SLAs with no data.

Map 7.4 Public acute hospital beds per 1,000 population, New South Wales, 1995/96

number of public acute hospital beds^{*} in each Statistical Local Area per 1,000 population



Accessibility/Remoteness Index of Australia



Beds in public acute hospitals are located throughout Australia, with higher levels of provision in the most remote areas. Rates vary from 3.3 average available beds per 1,000 population in the Very Accessible ARIA category, to 13.6 average available beds per 1,000 in the Very Remote category. The largest number of beds (and the wisest range of services) is, however, in the most accessible areas.

Source: Calculated on ARIA classification, DHAC

National Social Health Atlas Project, 1999

At 30 June 1997, there were 1.5 private hospital beds per 1,000 population in the capital cities. The majority of capital cities had near average percentages for this variable, with lower rates recorded in both **Canberra** (a rate of 0.5) and **Sydney** (a rate of 1.1). **Adelaide** and **Hobart** recorded the highest rates with 2.0 and 2.1 private hospital beds per 1,000 population, respectively (**Table 7.7**).

The *All capitals* rate increased slightly between the two periods for which data were analysed, rising from 1.4 private hospital beds per 1,000 population in 1989 to 1.5 in 1997.

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ¹	All capitals
1997	1.1	1.7	1.7	2.0	1.7	2.1	1.7	0.5	1.5
1989	1.2	1.6	1.5	1.8	1.5	••	••	••	1.4
¹ Includes	Queanbeyan ((C)							

Source: See *Data sources*, Appendix 1.3

Sydney

At 30 June 1997, there were 1.1 private hospital beds per 1,000 population in **Sydney** based on a total of 4,352 beds in 62 private hospitals.

As can be seen from **Map 7.5**, SLAs with high rates of private hospital beds were generally located in areas of higher socioeconomic status, with those mapped in the highest range including Burwood (6.6 private hospital beds per 1,000 population), Hunter's Hill (5.2), South Sydney (5.1), Kogarah (4.6), Lane Cove and North Sydney (both with 4.0). Relatively high rates were also recorded in the inner SLAs of Ashfield (with 3.7 private hospital beds per 1,000 population) and Woollahra (3.0) and in the northern areas of Hawkesbury and Ku-ring-gai (both 3.7).

A high concentration of SLAs located just north of the Parramatta River were mapped in the second lowest range, including Ryde and Willoughby (both with 1.9 private hospital beds per 1,000 population), Gosford and Manly (both with 1.5), Baulkham Hills (1.4) and Warringah (1.0). Also mapped in this class interval were the SLAs of Concord (1.7), Holroyd (1.3) and Hurstville, Liverpool and Marrickville (each with 1.0).

The lowest rates were distributed throughout the metropolitan region and included Blacktown (a rate of 0.2 private hospital beds per 1,000 population), Parramatta and Campbelltown (both with 0.3), Penrith and Bankstown (both with 0.4), Wyong (0.6), Waverley and Sutherland (both with 0.7), Hornsby (0.8) and Randwick (0.9). In total 13 SLAs recorded no private hospital beds in 1997.

There were 417 private hospital beds recorded in the SLA of South Sydney, and more than 150 beds were also recorded in Ku-ring-gai (388 beds), Kogarah (232), North Sydney (229), Hawkesbury and Gosford (both with 225), Burwood (198), Ryde (189), Baulkham Hills (175), Woollahra (160) and Ashfield (154).

The correlation analysis was not undertaken as there were too many SLAs with no data.

Newcastle

There were 518 private hospital beds in **Newcastle** in 1997, representing 1.1 private hospital beds per 1,000 population. Above average rates were recorded in both the City of Newcastle (a rate of 2.0 private hospital beds per 1,000 population) and Lake Macquarie (1.2), while the lowest rate was recorded in Maitland (0.7). No private hospital beds were recorded in Cessnock or Port Stephens.

Wollongong

Wollongong recorded the lowest rate among the major urban centres, with 0.7 private hospital beds per 1,000 population in 1997 with a total of 3 private hospitals with 187 beds. Average or above average ratios were recorded in Shellharbour (a rate of 1.1 private hospital beds per 1,000 population) and the City of Wollongong (0.7). No private hospital beds were recorded in Kiama.

Map 7.5 Private hospital beds per 1,000 population, Sydney, Newcastle and Wollongong, 1997

number of private hospital beds in each Statistical Local Area per 1,000 population





In 1997, rates of private hospital beds were higher in the capital cities than in the *Rest of State/Territory* areas, with the exception of the Northern Territory, with no private hospital beds in the non-metropolitan areas (**Table 7.8**). The highest non-metropolitan rate was recorded in Tasmania (1.9 private hospital beds per 1,000 population), while the lowest (excluding the Northern Territory) was recorded in South Australia and Western Australia (both with a rate of 0.4).

Rates of private hospital beds in the *Rest of State/Territory* remained reasonably consistent between 1989 and 1997, with slight decreases occurring in Victoria, Queensland and Western Australia. The rate recorded in New South Wales increased marginally from 0.6 private hospital beds per 1,000 population in 1989 to 0.7 in 1997, while the rate in South Australia remained consistent (0.4 private hospital beds per 1,000 population).

	NSW	Vic	Qld	SA	WA	Tas	NT	АСТ	Total
1997									
Capital city	1.1	1.7	1.7	2.0	1.7	2.1	1.7	0.5^{1}	1.5
Other major urban centres ²	1.0	1.3	2.0						1.4
Rest of State/Territory	0.7	0.8	1.2	0.4	0.4	1.9	0.0	_3	0.8
Whole of State/Territory	1.0	1.4	1.6	1.6	1.4	2.0	0.8	0.5	1.3
1989									
Rest of State/Territory	0.6	0.9	1.3	0.4	0.5				0.8

¹Includes Queanbeyan (C)

²Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld) ³Data unreliable: included with ACT total

Source: See Data sources, Appendix 1.3

Rest of State

There were relatively few private hospitals in the nonmetropolitan areas of New South Wales, a total of 15 hospitals with 1,079 beds at June 1997. These figures represented 0.7 private hospitals per 1,000 population.

Private hospitals were located in only fourteen of the nonmetropolitan SLAs (**Map 7.6**). These areas included the towns of Orange (with 1.9 private hospital beds per 1,000 population), Albury (1.8), Tamworth (1.7), Dubbo and Wagga Wagga (both with 1.4) and Bathurst (1.0). The remaining areas were Hastings (4.2 private hospital beds per 1,000 population), Lismore (3.5), Coffs Harbour and Great Lakes (both with 1.4) and Greater Taree (0.9), all of which were located on the coast north of **Sydney**; Wingecarribee (1.7) and Shoalhaven (1.1), just south of the city; and Cabonne Pt C (0.7), located in the central west.

By far the largest number of private hospital beds was recorded in the SLA of Hastings, with 245 beds. More than 60 beds were also recorded in Lismore (151 beds), Shoalhaven (88), Coffs Harbour and Wagga Wagga (both with 80), Albury (78), Orange (65) and Wingecarribee (64).

The correlation analysis was not undertaken as there were too many SLAs with no data.

Map 7.6 Private hospital beds per 1,000 population, New South Wales, 1997

number of private hospital beds in each Statistical Local Area per 1,000 population



Source: See Data Sources, Appendix 1.3

Accessibility/<u>Remoteness Index of Australia</u>



Private hospital beds were only located in the Very Accessible and Accessible ARIA categories. There were 5,672 private hospital beds in the Very Accessible category at 30 June 1997, a rate of 1.1 beds per 1,000 population and 464 beds in the Accessible category, a rate of 0.6 beds per 1,000 population.

Source: Calculated on ARIA classification, DHAC

National Social Health Atlas Project, 1999

There were 56 nursing home places per 1,000 population aged 70 years and over in the capital cities at 30 June 1997. The range of rates was from a high of 65 in **Sydney**, 58 in **Adelaide** and 57 in **Hobart**, to a low of 39 in **Canberra** and 41 in **Darwin** (**Table 7.9**).

The rates for all of the cities for which data were published in the first edition of the atlas have decreased, some more substantially than others. This is largely a result of moves to meet the target rate of 40 nursing home places per 1,000 population aged 70 years and over. At the same time, the number of hostel places has increased (page 344). The largest decrease was recorded in **Perth**, where the rate decreased from being equivalent to the *All capitals* average in 1992 to 7.1 per cent below in 1997, a drop of 24.6 per cent: the decrease of 23.9 in **Brisbane** was almost as marked.

Table	7.9: Nursing	home places	per 1,000	population a	aged 70	years and ov	er, capital cities
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	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ¹	All capitals
1997	65	48	54	58	52	57	41	39	56
1992	79	53	71	74	69	••	••	••	69
¹ Includes (Queanbeyan (C)							

Source: See Data sources, Appendix 1.3

Sydney

At 30 June 1997, there were 19,970 nursing home places (in 313 nursing home facilities) in **Sydney**, representing 65 places per 1,000 population aged 70 years and over.

As shown in **Map 7.7**, there was a wide variation in the provision of nursing home places at the SLA level within **Sydney**. A large number of inner areas had high rates, particularly those located on the southern side of the harbour. The exception was the SLA of Blue Mountains, with a rate of 116 located in the outer west. The inner SLAs of Ashfield (with 231 nursing home places per 1,000 population aged 70 years and over), Strathfield (179), Burwood (156), Marrickville (149) and Hunter's Hill (127) recorded the other highest rates for this variable.

The lowest rates were recorded in Woollahra (7 places per 1,000 population), Botany (30) and South Sydney (32). Relatively low rates were also recorded in North Sydney and Hawkesbury (both with 34 places per 1,000 population), Gosford (40), Wyong (41) and Ku-ring-gai and Manly (both with 43), located north of the Parramatta River; Drummoyne (40) and Auburn (51), situated in the inner city region; Penrith (40), in the west; and Kogarah (43), Sutherland (50), Camden (51) and Bankstown (45), all of which were located south-west of the city.

Parramatta recorded the largest number of nursing home places in **Sydney** in 1997 (1,083 places and 17 facilities), followed by Ashfield (963; 17), Warringah (873; 13), Randwick (832; 15), Rockdale (812; 14), Hornsby (789; 15) and Sutherland (755; 12). There were no nursing home places located in the SLA of Sydney.

The correlation analysis was not undertaken as there were too many SLAs with no data.

Newcastle

There were 33 nursing home facilities located in **Newcastle** in 1997, with a total of 2,106 places. This represented 48 nursing home places per 1,000 population aged 70 years and over. The SLAs of Cessnock (108 nursing home places per 1,000 population aged 70 years and over) and Lake Macquarie (54) recorded rates above the average, while Port Stephens (28), the City of Newcastle (33) and Maitland (45) recorded rates below the average.

Wollongong

Wollongong recorded the lowest rate among the major urban centres, with 39 nursing home places per 1,000 population aged 70 years and over. There were 12 nursing home facilities within this major urban centre, with a total of 797 places. By far the highest rate was recorded in Kiama, with 58 places per 1,000 population aged 70 years and over, with lower rates in Shellharbour (36) and the City of Wollongong (37 places).

Map 7.7 Nursing home places per 1,000 population aged 70 years and over, Sydney, Newcastle and Wollongong, 1997

number of nursing home places in each Statistical Local Area per 1,000 population aged 70 years and over





Readers should note the comments on page 325 under the heading *Data mapped* regarding the limitations of this data, especially in regard to the availability, in some instances, of beds in hospitals for long term aged care. Such beds are not included in this data.

There were fewer places per 1,000 population aged 70 years and over in the *Rest of State /Territory* areas of Australia than in the capital cities in all but the Northern Territory (where there were more places) (**Table 7.10**). The highest rates in the *Rest of State /Territory* areas were in Tasmania (49 places per 1,000 population aged 70 years and over) and Victoria (45 places).

Of the States and Territories for which data were published in the first edition of the atlas, South Australia had a very low rate of nursing home places per 1,000 population aged 70 years and over in the *Rest of State /Territory* areas in both periods (a rate of 27 in 1992 and 28 in 1997). In this context it is worthwhile noting that South Australia has the highest proportion of its inpatient bed days in non-metropolitan hospitals used by nursing home type patients (**Table 7.1**, page 326; New South Wales has second highest in the non-metropolitan areas). Western Australia had the only other rate below the *Rest of State /Territory* average for either period.

	0		-	-	0 0			v	
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
1997			•						
Capital city	65	48	54	58	52	57	41	39^{1}	56
Other major urban centres ²	45	55	35						42
Rest of State/Territory	39	45	40	28	31	49	44	_3	40
Whole of State/Territory	55	48	45	50	47	52	42	37	50
1992									
Rest of State/Territory	52	53	52	27	40				50

Table 7.10: Nursing home places per 1,000 population aged 70 years and over, State/Territory

¹Includes Queanbeyan (C)

²Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld) ³Data unreliable: included with ACT total

Source: See *Data sources*, Appendix 1.3

Rest of State

In 1997, there were 39 nursing home places per 1,000 population aged 70 years and over in the non-metropolitan areas of New South Wales: this represented a total of 5,984 places in 117 nursing home facilities.

The overall pattern of distribution of nursing home places is one of higher rates in the far north-eastern and southern regions and in the areas just to the west of **Sydney**. A large number of SLAs located in more remote areas had none of these facilities.

The highest rates were recorded in the southern SLAs of Narrandera (108 nursing home places per 1,000 population aged 70 years and over), Young (102 places), Murray (88), Cootamundra and Griffth (both with 67), Tumut (63), Queanbeyan and Cooma-Monaro (both with 62) and Holbrook (60); in the far north-eastern SLAs of Scone (103), Glen Innes (86), Casino (76), Lismore (74), Armidale (72), Inverell [Part B] (67) and Grafton (61); and just west of **Sydney** in the areas of Bathurst (91), Parkes (70), Forbes (68), Orange (66) and Cowra (61). Quirindi and Parry (located to the north of **Sydney**) also recorded a relatively high rate, with 69 and 60 nursing home places per 1,000 population aged 70 years and over, respectively.

Map 7.8 shows that the SLAs with the lowest rates were mainly distributed in the western region of the State, with no nursing home places located in more than half (50.7 per cent) of the non-metropolitan SLAs. Rates of below 30 were recorded in the SLAs of Corowa (13 nursing home places per 1,000 population aged 70 years and over), Muswellbrook (21 places), Bellingen and Byron (both with 24), Maclean, Great Lakes, Greater Lithgow

ay (88),

Dungog (both with 28).

many SLAs with no data.

Bathurst (190).

and Greater Taree (each with 26), and Coffs Harbour and

The largest numbers of nursing home places were located in the

SLAs of Hastings (316 places), Lismore (265), Shoalhaven (262),

Tweed Heads (240), Wagga Wagga (198), Orange (193) and

The correlation analysis was not undertaken as there were too

Map 7.8 Nursing home places per 1,000 population aged 70 years and over, New South Wales, 1997

number of nursing home places in each Statistical Local Area per 1,000 population aged 70 years and over



Accessibility/Remoteness Index of Australia



The provision of nursing home places drops off rapidly from 59 places per 1,000 population aged 70 years and over in the Very Accessible ARIA category to 8 places per 1,000 population aged 70 years and over in the Remote category. There were no nursing home places in the Very Remote catgeory.

Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

There were 43 hostel places per 1,000 population aged 70 years and over in the capital cities at 30 June 1997. The range of rates was from a high of 57 places in **Canberra**, 50 in **Perth** and 49 in **Brisbane** to a low of 30 in **Darwin** (**Table 7.11**).

The rates for all of the cities for which data were published in the first edition of the atlas have increased, some more substantially than others, in all of the capitals other than **Brisbane** (the city with the highest rate in 1992). This is largely a result of moves to meet the target rate of 50 hostel places per 1,000 population aged 70 years and over. At the same time, the number of nursing home places has decreased (page 340). The largest increase was recorded in **Sydney**, where the rate increased from 28 places per 1,000 population aged 70 years and over in 1992 to 36 in 1997, an increase of 22.2 per cent.

Table	7.11:	Hostel	places	per	1,000	populati	ion aged	70	years	and	over,	capital	cities	5
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	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra ¹	All capitals
1997	36	43	49	47	50	42	30	57	43
1992	28	35	55	43	45	••	••	••	37
¹ Includes Q)ueanbeyan (C)							

Source: See *Data sources*, Appendix 1.3

Sydney

There were 36 hostel places per 1,000 population aged 70 years and over in **Sydney** in 1997, a total of 206 hostel facilities and 11,032 places.

The highest rates are found in SLAs in a number of locations, including the inner suburbs; to the north of the Parramatta River; and in the south-west (**Map 7.9**).

By far the highest rates were recorded in Baulkham Hills and Hunter's Hill, with 151 and 140 hostel places per 1,000 population aged 70 years and over, respectively. Rates in the two highest ranges were also recorded in Leichhardt (with a rate of 89 places), Ashfield (69), Parramatta (48) and Waverley (42), located in the inner city region; Wollondilly (82), Liverpool (63) and Campbelltown (52), in the south-west; and Warringah (72), North Sydney (50) and Ku-ring-gai (45), situated to the north of the Parramatta River.

Rates of ten per cent or lower were recorded in the SLAs of Pittwater (6 hostel places per 1,000 population aged 70 years and over), Mosman (7) and the City of Sydney (10). Relatively low rates were recorded in the southern regions of Botany (17 places), Randwick (18), Hurstville and Rockdale (both with 21), Strathfield (22), Canterbury (23), Concord and Burwood (both with 24), Kogarah (25) and South Sydney (29).

More than 400 hostel places were located in the SLAs of Warringah (925 places), Baulkham Hills (886), Parramatta (591), Ku-ring-gai (500), Blacktown (480), Sutherland (464) and Gosford (408). At the other end of the scale there were no hostel places recorded in Camden.

The correlation analysis was not undertaken as there were too many SLAs with no data.

Newcastle

In 1997, there were 39 hostel places per 1,000 population aged 70 years and over in **Newcastle**, with 37 hostel facilities and 1,726 places. Maitland had the highest rate (58 hostel places per 1,000 population aged 70 years and over), followed by Cessnock (42), Lake Macquarie (40), the City of Newcastle (37) and Port Stephens (27).

Wollongong

Wollongong had 20 hostel facilities with 829 places in 1997, representing 40 hostel places per 1,000 population aged 70 years and over. The rates varied greatly, from a low 34 places in Shellharbour to 57 in Kiama. The City of Wollongong had a near average rate, with 39 hostel places per 1,000 population aged 70 years and over.

Map 7.9 Hostel places per 1,000 population aged 70 years and over, Sydney, Newcastle and Wollongong, 1997

number of hostel places in each Statistical Local Area per 1,000 population aged 70 years and over





There were fewer hostel places per thousand population aged 70 years and over in the Rest of State /Territory areas of Australia than in the capital cities in all but New South Wales and Victoria (with more places) and Queensland (with the same number of places) (Table **7.12**). The highest rates were in Victoria and Queensland and the lowest was in the Northern Territory.

Of the States/Territories for which data were published in the first edition of the atlas, the largest increase in the Rest of State /Territory areas was recorded for Victoria. There was a small increase in the rate in New South Wales and a small decrease for Western Australia: the rate in Queensland and South Australia remained the same.

	-	-		0	•			•		
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total	
1997										
Capital city	36	43	49	47	50	42	30	57^{1}	43	
Other major urban centres ²	40	42	39						40	
Rest of State/Territory	42	49	49	46	43	39	28	_3	46	
Whole of State/Territory	38	45	47	47	48	40	29	60	43	
1992										
Rest of State/Territory	39	40	49	46	45				42	
										•

Table	7.12:	Hostel	nlaces	ner 1	.000	nonulation	aged 70	vears and	over	State/Territor	v
I avie	1.16.	noster	places	per r	,000	μομαιιοπ	ageu /v	years and	Uver	, State/ Territor	y

¹Includes Queanbeyan (C)

²Includes Newcastle and Wollongong (NSW); Geelong (Vic); and Gold Coast-Tweed Heads and Townsville-Thuringowa (Qld) ³Data unreliable: included with ACT total

Source: See Data sources, Appendix 1.3

Rest of State

The rate recorded for the non-metropolitan areas of New South Wales was slightly higher than that recorded in Sydney, with 42 hostel places per 1,000 population aged 70 years and over. This represented a total of 203 hostel facilities with 6,537 places.

The distribution of hostel places per 1,000 population aged 70 years and over is shown in Map 7.10, from which it can be seen that SLAs with the highest rates were mainly concentrated in the central area of the State, while those with the lowest were located in the more remote regions.

Rates mapped in the highest range were recorded in the northern SLAs of Brewarrina (190 hostel places per 1,000 population aged 70 years and over) and Gilgandra (100 places); in the southeastern SLAs of Yass (111), Bombala (103), Young (89), Holbrook and Harden (both with 83); in the north-western SLAs of Warren (92), Coonamble (84) and Narromine (83); and in Blayney [Part B] (133) and Murrumbidgee (97).

In total, 39 SLAs were mapped in the middle range, with rates ranging from 59 hostel places per 1,000 population aged 70 years and over in Muswellbrook, Parkes, Bourke and Mulwaree to 40 in Hume.

The lowest rates, in areas where nursing home facilities were located, were recorded in Tweed [Part B] (with a rate of 18 places per 1,000 population and a total of 44 places), Walgett (19 and 8) and Snowy River (25 and 10). SLAs with 30 or fewer hostel places per 1,000 population aged 70 years and over included Parry and Scone (both with 27 places), Bega Valley, Greater Lithgow, Tweed Heads and Cooma-Monaro (each with 28) and Tumut, Dungog, Bellingen and Great Lakes (each with 30).

The largest numbers of hostel places were recorded in Hastings (322 places), followed by Shoalhaven (297), Tweed Heads (204), Coffs Harbour (202), Wagga Wagga (199), Orange (197), Albury (170), Greater Taree (166) and Lismore (164). No hostels were located in 22 of the non-metropolitan SLAs.

The correlation analysis was not undertaken as there were too many SLAs with no data.

Map 7.10 Hostel places per 1,000 population aged 70 years and over, New South Wales, 1997

number of hostel places in each Statistical Local Area per 1,000 population aged 70 years and over



Accessibility/Remoteness Index of Australia



The provision of aged care hostel places is the reverse of that for nursing home places, and much more like the distribution of public acute hospital beds. The rate of provision increases from 37 places per 1,000 population aged 70 years and over in the Very Accessible ARIA category to 88 places in the Very Remote category.

> Source: Calculated on ARIA classification, DHAC National Social Health Atlas Project, 1999

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