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Report 2008



Medical Practice in Rural & Remote Australia: National Minimum Data Set (MDS) Report as at 30th November 2008

rural health workforce
australia 



Health Workforce Queensland and New South Wales Rural Doctors Network 2009

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Rural Workforce Agencies National Minimum Data Set Report – 30 November 2008

1. Introduction

During the 2001-2004 triennium, as a part of their contractual agreement with the Australian Government Department of Health and Ageing (DoHA), Rural Workforce Agencies (RWAs) in all states and the Northern Territory were required to collect and report a minimum, specified set of data in relation to the rural and remote general practice workforce in locations classified RRMA 4 through RRMA 7.

Undertaken individually by each RWA, deidentified data were compiled nationally through the Australian Rural and Remote Workforce Agencies Group (now Rural Health Workforce Australia) to provide a comprehensive portrayal of the Australian rural and remote medical workforce.

The requirement to collect and report a minimum data set and compile these were not included in DoHA's specifications for the 2004-2007 triennium. However, the RWAs in all states and territory appreciated the utility of maintaining a core set of data in relation to the rural and remote medical workforce that was current and based on operational information systems maintained by the RWAs. As such it was decided that the RWAs would continue to collect and compile a national Minimum Data Set for RRMA 4 to 7 locations. For the 2007-2010 triennium, the collection and compilation of a national Minimum Data Set was again a contractual requirement.

The data were first compiled at a national level in December 2001 and are updated on an annual basis as at 30th November each year. Data in relation to numbers of GPs, age, gender, procedural skills and length of stay in current location are largely derived from databases maintained by each RWA. Data in relation to primary income source, models of service provision, hours of work and types of practice are largely self-reported.

Most RWAs survey rural and remote medical practitioners in their state or territory in the third quarter each year. All RWAs extract workforce data at the agreed date each year. Core questions for the Minimum Data Set have been developed and standardised among the states and territory. In addition, states and territory have the flexibility to incorporate additional questions should they wish. While the annual MDS survey is a major component of the data reported, all RWAs utilise additional methods and resources to update, verify and validate their data. It should also be noted that the number of doctors reported reflect the more stable elements of the rural and remote medical workforce and do not normally include transient, short term service providers (e.g. locum tenens).

Data provided in this report are a compilation of core data provided by Rural Workforce Agencies in all states and territory and was current as at 30th November 2008.

2. Demographics of the rural and remote GP workforce

This section will enumerate the rural and remote medical workforce by state, RRMA, (Rural, Remote, Metropolitan Areas) age and gender.

Data indicated that as at 30 November 2008, the number of medical practitioners practicing in RRMA 4 to 7 locations was 4682. This represents an increase of 200 practitioners (4.46%) compared with numbers reported as at 30th November 2007. Table 1 presents the total number of medical practitioners working in RRMA 4 to 7 by state or territory as at 30th November 2008.

Table 2 provides a breakdown of this distribution by gender and RRMA while Table 3 displays gender composition by state.

Table 1: Practitioner numbers by State or Territory and RRMA

State	RRMA 4	RRMA 5	RRMA 6	RRMA 7	Total
NSW	568	667	0	33	1268
NT	0	6	54	26	86
QLD	414	526	97	93	1130
SA	103	286	0	22	411
Tas	54	138	0	4	196
VIC	306	648	0	8	962
WA	199	189	135	106	629
Total	1644	2460	286	292	4682

Table 2: Gender by RRMA

RRMA	Male	Female	% Female	Total
RRMA 4	1109	535	32.5%	1644
RRMA 5	1648	812	33.0%	2460
RRMA 6	179	107	37.4%	286
RRMA 7	202	90	30.8%	292
Total	3138	1544	33.0%	4682

Table 3: Gender by State or Territory

State/Territory	Male	Female	% Female	Total
NSW	878	390	30.8%	1268
NT	50	36	41.9%	86
QLD	747	383	33.9%	1130
SA	290	121	29.4%	411
Tas	117	79	40.3%	196
VIC	633	329	34.2%	962
WA	423	206	32.8%	629
Total	3138	1544	33.0%	4682

Table 3 indicates that the proportion of female practitioners in the Northern Territory and Tasmania are comparatively higher than any other state. Figure 1 displays the percentage of female practitioners by state compared with the national average for rural and remote female practitioners. Figure 2 provides a breakdown of the number of rural and remote medical practitioners by gender and 5 year age categories. Figure 3 displays the proportion of male and female practitioners in five-year age categories.

Figure 1: Percentage of female practitioners by state or territory

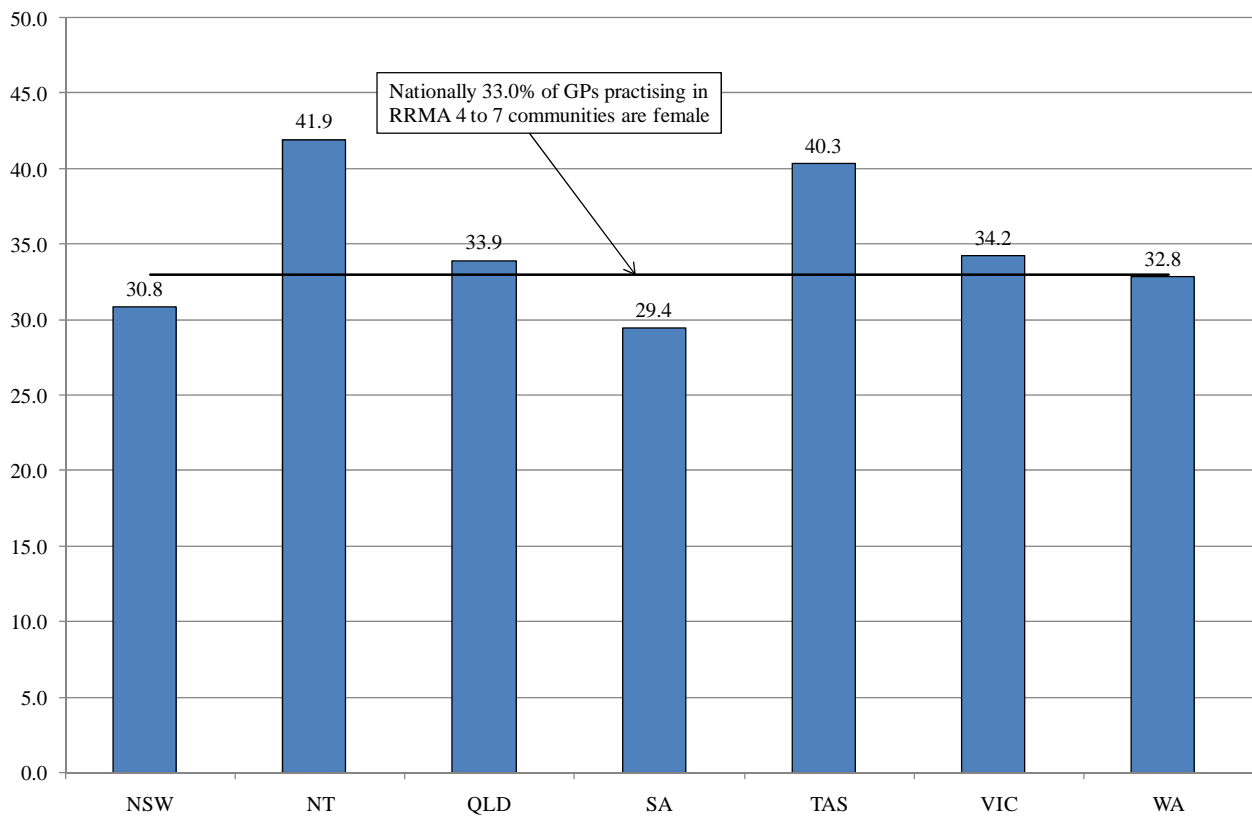


Figure 2: Number of rural and remote medical practitioners by 5 year age categories (N=4107)

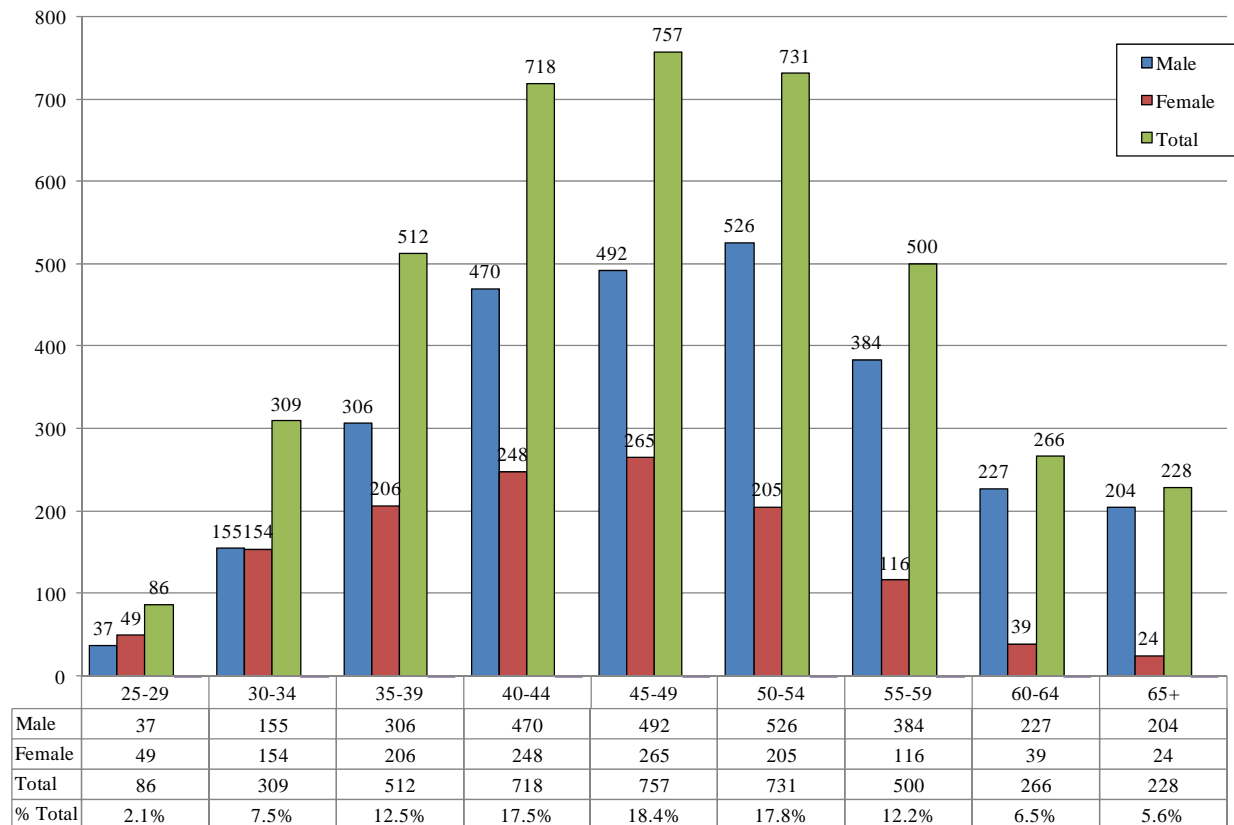
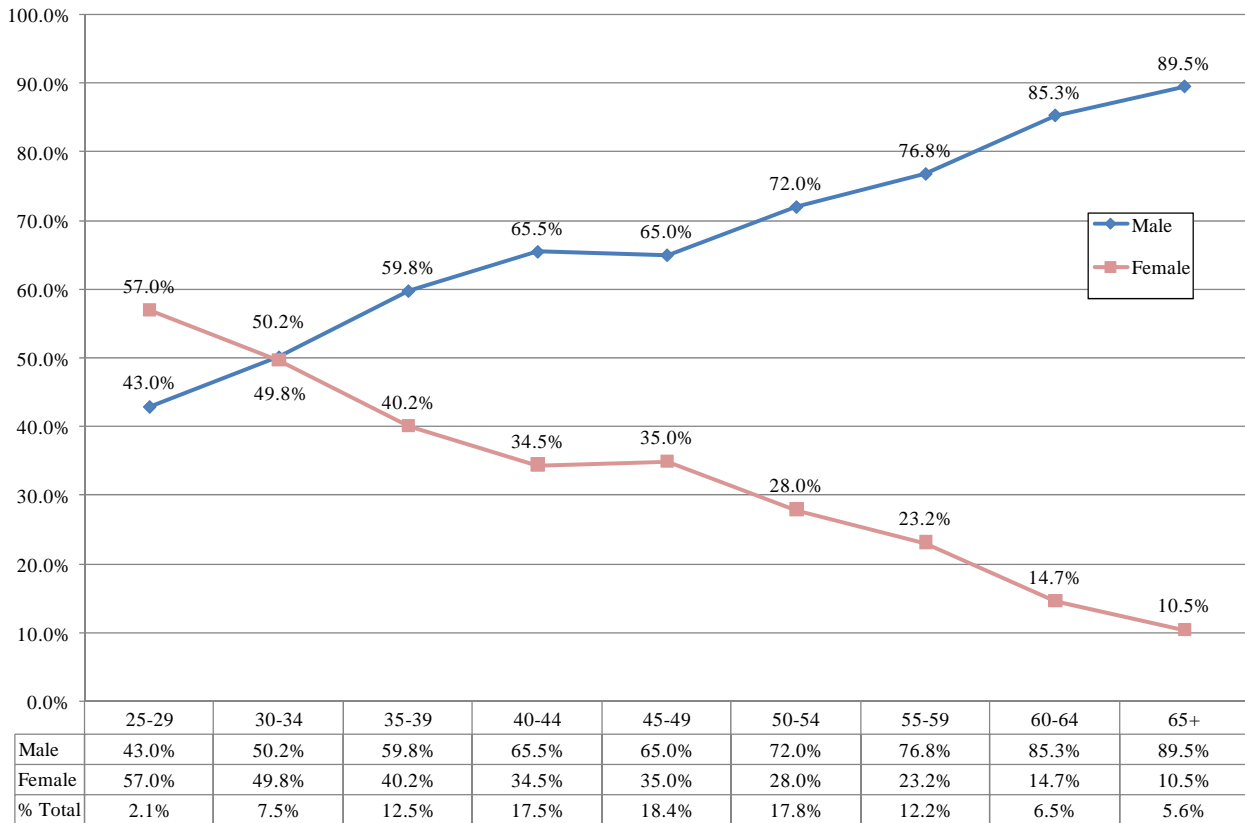


Figure 3: Proportion of male and female practitioners in five-year age categories (N=4107)



Nationally, the average age for male GPs was 49.73 years (N=2801) and 44.97 years for females (N=1306). The overall average age for all practitioners (N=4108) was 48.21 years. Table 4 displays gender distribution by broad age categories by RRMA.

Table 4: Practitioner ages by gender and RRMA - broad age categories (N=4107)

Age Category	Gender	RRMA 4	RRMA 5	RRMA 6	RRMA 7	Total
25-34	Male	59	81	23	29	192
	Female	52	111	25	15	203
	Total	111	192	48	44	395
35-44	Male	272	384	52	68	776
	Female	148	230	43	33	454
	Total	420	614	95	101	1230
45-54	Male	345	575	53	45	1018
	Female	169	250	27	24	470
	Total	514	825	80	69	1488
55-64	Male	224	322	31	34	611
	Female	67	79	1	8	155
	Total	291	401	32	42	766
65 plus	Male	73	115	6	10	204
	Female	7	16	1	0	24
	Total	80	131	7	10	228

3. Workloads

Estimates of Full Time Equivalents (FTEs) and Full Time Workload Equivalents (FWEs) as used by Medicare Australia in calculating GP medical service provision are based solely on the number and the dollar value of claims made by a provider over a given reference period (usually 12 months). While these can be useful measures of overall service provision under Medicare, they do not reflect the number of hours worked in providing medical services or services provided that are not claimed or are not claimable through Medicare Australia. For example, a medical practitioner is classified as full-time by Medicare Australia if the Schedule fee value of services processed over a 12 month period is \$86,727¹¹ (2003-2004) or more for that practitioner. Similarly, a Full Time Workload Equivalent (FWE) value is calculated for each doctor by dividing the doctor's Medicare billing (Schedule fee value of claims processed by Medicare Australia during the reference period) by the mean billing of full-time doctors for reference period. For the 2002-2003 reference period, this value for vocationally registered doctors was \$221,864.²

An alternative measure of service provision is number of hours worked. The Australian Bureau of Statistics (ABS) defines full-time work as being 35 hours per week or more and part-time work as less than 35 hours. It is this measure that has been chosen by RWAs to differentiate between full-time and part-time service provision.

An estimate of full-time or part-time medical service provision utilising ABS benchmark was undertaken based on self reported GP clinical hours worked. Data was available for 68.0% of the total number of GPs. Data as displayed in Table 5 indicates that 62.1% of respondents worked 35 hours a week or more in the provision of routine clinical GP services.

Table 5: Self-reported GP clinical hours

Hours	Frequency	Percent
Less than 20 hours	363	11.4
20 to 35 hours	844	26.5
35 hours plus	1976	62.1
Total	3183	100.0

It should be noted that hours reported are for those worked in GP practice only and should not be interpreted as total hours since hospital hours, travel, teaching and supervision time for example are not included. The average number of GP clinical hours reported was 35.9 hours per week (N=3183).

A further breakdown of self-reported GP clinical hours by gender is displayed in Table 6 below.

Table 6: Self-reported GP clinical hours by gender

Clinical Hours	Male		Female	
	Number	Percent	Number	Percent
Less than 20 hours	145	6.8	218	20.7
20 to 35 hours	465	21.8	379	36.0
35 hours plus	1520	71.4	456	43.3
Total	2130	100.0	1053	100.0

¹ Australian Government Department of Health and Ageing. (2005). *RFT 127/0405 - Request for tender for a medical workforce profile project*. Canberra: ADoHA

² Ibid

Self reported total hours were also explored. In addition to clinical hours, these hours may include hospital hours, time spent in travel between practices, population health, teaching, administrative or representative work. Data were available for 71.4% of practitioners. Table 7 displays self-reported total weekly hours while Table 8 displays total hours by gender. The average reported total hours were 43.67 hours per week (N=3343).

Table 7: Self-reported total hours

Hours	Number	Percent
Less than 20 hours	237	7.1
20 to 35 hours	539	16.1
35 hours plus	2567	76.8
Total	3343	100.0

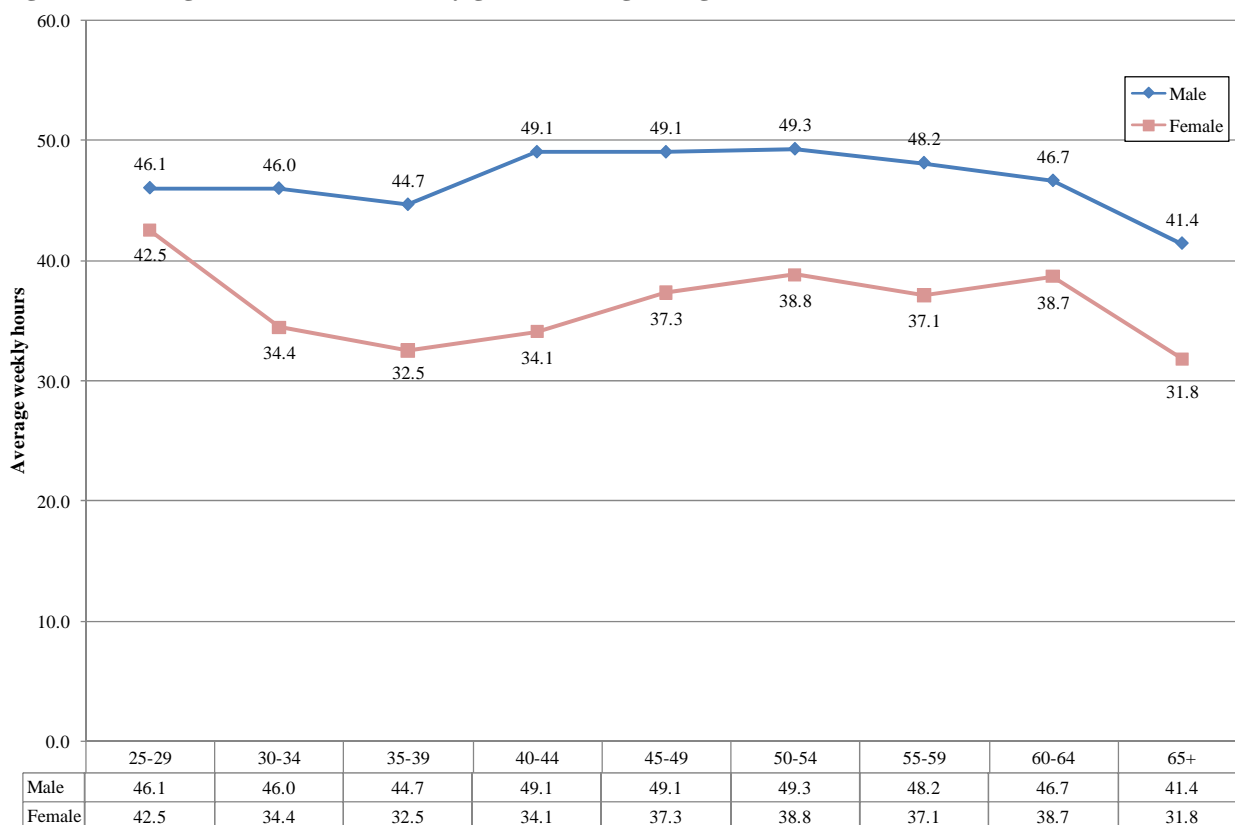
Data indicates that 23.2% of practitioners are currently working part time as defined by the ABS (i.e. less than 35 hours per week).

Table 8: Self-reported total hours by gender

Total Hours	Male		Female	
	Number	Percent	Number	Percent
Less than 20 hours	79	3.5	158	14.5
20 to 35 hours	237	10.5	302	27.7
35 hours plus	1937	86.0	630	57.8
Total	2253	100.0	1090	100.0

Data for both self reported GP and self reported total hours, appears to be in line with national trends that suggest that female practitioners tend to work less hours compared with their male counterparts (AMWAC, 2005; CDHAC, 2001). A more refined breakdown of average total hours by gender and age categories is presented in Figure 4. Additional, detailed data in relation to hours worked is presented in Appendix 1.

Figure 4: Average total hours worked by gender and age categories (N=3185)



4. Length of stay in current principal practice

Nationally, the average length of stay in current principal practice was 8.17 years. A more refined breakdown by duration and RRMA is provided in Table 9.

Table 9: Length of stay in current practice by RRMA

RRMA	Duration								Total
	< 6 mths	6-12 mths	1-2 yrs	2-3 yrs	3-5 yrs	5-10 yrs	10-20 yrs	20 yrs +	
RRMA 4	150	173	209	131	185	298	244	238	1628
RRMA 5	246	242	282	195	258	437	403	359	2422
RRMA 6	44	38	57	25	41	39	28	14	286
RRMA 7	40	56	54	27	39	37	26	11	290
Total	480	509	602	378	523	811	701	622	4626

Data indicates that while 78.6 % (N=3637) of respondents have practiced in their current rural and remote locations for more than a year, 21.4% (N=989) are relatively new to their current practice and have been practising in these locations for less than 12 months.

5. Known number of proceduralists

The MDS survey further seeks to enumerate the number of rural and remote non-specialist practitioners providing procedural services in RRMA 4 to 7 locations. However, national data in relation to the provision of procedural services in rural and remote Australia may be incomplete due to non-respondents. The known number and proportions of practitioners providing specified procedural services as at 30 November 2008 is detailed in Tables 10 to 13 (below). In many cases it is possible for a practitioner to perform a number of procedures e.g., Anaesthetics and Obstetrics or Obstetrics and Surgery. The number of known procedural practitioners as detailed in Tables 10 and 11 (N=934) is therefore less than the total number of procedures documented (N=1393). Of the 934 procedural practitioners, 360 (38.5%) perform multiple procedures. A Venn diagram illustrating practitioners undertaking single or multiple procedures is displayed in Figure 5. Gender composition of proceduralists compared to the general rural and remote medical workforce is displayed in Figure 6.

Table 10: Number of practitioners undertaking procedural work by type and state or territory

Procedure	NSW	NT	QLD	SA	Tas	VIC	WA	National*
Anaesthetics General	92	2	88	74	1	126	105	488
Obstetrics Normal delivery	117	9	132	99	7	126	133	623
Surgery Operative	63	7	67	30	4	70	41	282
Known Proceduralists**	190	13	186	138	9	198	200	934
Total Practitioners	1268	86	1130	411	196	962	629	4682

Table 11: Number of practitioners undertaking procedural work by type and RRMA

Procedure	RRMA 4	RRMA 5	RRMA 6	RRMA 7	National*
Anaesthetics General	112	304	34	38	488
Obstetrics Normal Delivery	164	337	61	51	623
Surgery Operative	75	175	19	13	282
Known Proceduralists**	237	541	80	76	934
Total Practitioners	1644	2460	286	292	4682

* GPs practicing in RRMA 4 - 7

** GPs practicing in at least one procedural field

Figure 5: Venn diagram illustrating numbers undertaking single or multiple procedures (N=934)

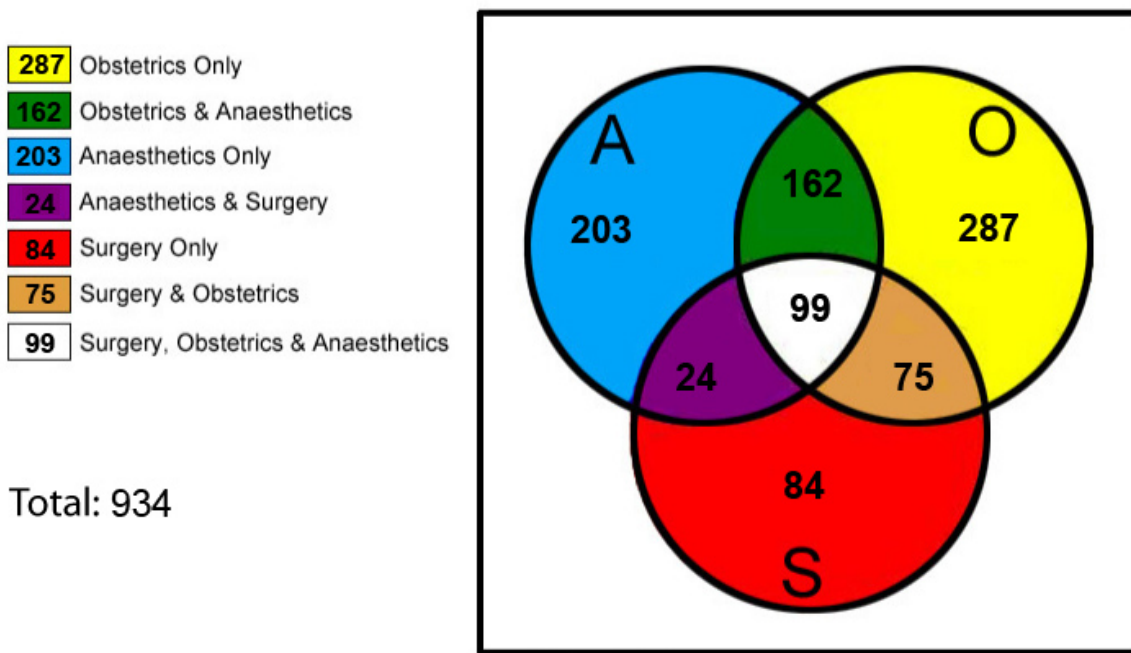
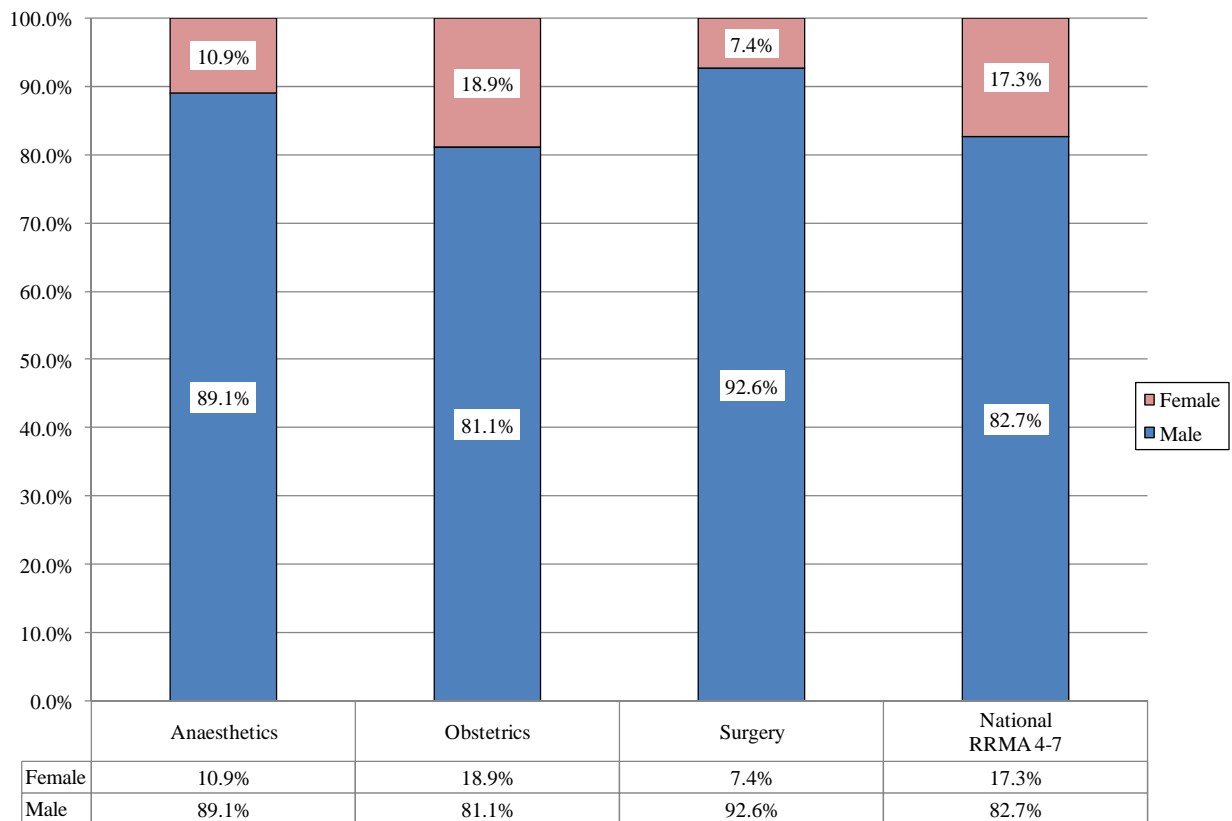


Figure 6: Gender composition of procedural practitioners (RRMA 4 to 7)



6. Emergency care and Aboriginal health

The survey further sought to enumerate the number of rural and remote practitioners who provide regular emergency care or Aboriginal health services. Tables 12 to 15 display these figures by state or territory and RRMA.

Table 12: Number and proportions of practitioners providing emergency care by state or territory

State	Number	Percent
NSW	317	25.0
NT	25	29.1
QLD	611	54.1
SA	193	47.0
Tas	69	35.2
VIC	325	33.8
WA	418	66.5
Total	1958	41.8

Table 13: Number and proportions of practitioners providing emergency care services by RRMA

RRMA	Number	Percent
RRMA 4	490	29.8
RRMA 5	1111	45.2
RRMA 6	161	56.3
RRMA 7	196	67.1
Total	1958	41.8

Table 14: Number and proportions of practitioners providing Aboriginal health services by state territory

State	Number	Percent
NSW	179	14.1
NT	42	48.8
QLD	410	36.3
SA	44	10.7
Tas	16	8.2
VIC	91	9.5
WA	294	46.7
Total	1076	23.0

Table 15: Number and proportions of practitioners providing Aboriginal health services by RRMA

RRMA	Number	Percent
RRMA 4	268	16.3
RRMA 5	459	18.7
RRMA 6	179	62.6
RRMA 7	170	58.2
Total	1076	23.0

7. Types of practice

The number of GPs working in each practice type by RRMA was also explored. Table 16 displays the number of doctors working in each practice type by RRMA for the period ending 30th November 2008. Data was missing or inadequately described for 47 practitioners.

Table 16: Practice type by RRMA

RRMA	Solo		Group	
	Number	Percent	Number	Percent
RRMA 4	148	9.1	1483	90.9
RRMA 5	364	15.0	2068	85.0
RRMA 6	16	5.6	270	94.4
RRMA 7	80	28.0	206	72.0
Total	608	13.1	4027	86.9

8. Primary income source

Table 17 below displays self-reported data on primary income source. Data was available for 3594 (76.8%) respondents. Caution should be exercised in interpreting these data as a significant number of practitioners had more than one income source and in some cases the option selected was not always consistent with known data. For example, in Queensland, some Medical Superintendents with Right to Private Practice described their primary income source as 'Fee for service' while others chose the 'State salaried with rights to private practice' option.

Table 17: Self -reported primary income source

Primary Income Source	Number	Percent
Fee for service	2376	66.1
State salaried with rights to private practice	130	3.6
State salaried without right to private practice	266	7.4
Private practice wage/salary	573	15.9
Local government wage/salary	8	0.2
Non government wage/salary	88	2.4
Aboriginal Community Controlled Health Service salary	117	3.3
Other	36	1.0
Total	3594	100.0

9. Primary model of service provision

Table 18 below displays self-reported data on primary models of service provision. Data was available for 3704 (79.1%) respondents. Again, caution needs to be exercised in the interpretation of these data as many practitioners have several models of service provision and in some instances, the option chosen was not always consistent with known data. For example, the number of Registrars is understated as many described their primary model as 'Resident GP' or 'Hospital Based GP'.

Table 18: Primary model of service provision

Primary model of service provision	Frequency	Percent
Resident GP	2978	80.4
"Fly in Fly Out"	56	1.5
Member of a Primary Health Care Team	83	2.2
Hospital Based GP	208	5.6
Registrar	343	9.3
Other	36	1.0
Total	3704	100.0

10. Registrars

The number of registrars currently working in RRMA 4 to 7 locations by state was also explored. These data differ somewhat from self-reported data as shown in Table 18. This is largely due to the tendency of some respondents to describe their primary model of service provision differently to known data maintained by RWAs. Data as displayed in Table 19 indicates that nationally, registrars comprise approximately 11.0% of the rural and remote medical workforce.

Table 19: Registrars in rural practice by state or territory – number and percent

State	Number	Percent	Total
NSW	148	11.7	1268
NT	9	10.5	86
QLD	141	12.5	1130
SA	46	11.2	411
Tas	25	12.8	196
VIC	95	9.9	962
WA	50	7.9	629
Total	514	11.0	4682

11. On-call hours available and worked

Respondents were also asked the number of hours they were available on-call each week at their practice or hospital and the number of on-call hours actually worked. As many practitioners in small communities and solo doctor towns consider that they are on call 24 hours per day, 7 days a week, the number of on-call hours available was allowed a maximum of 168 hours. Due to a number of erratic responses in relation to on-call hours actually worked, the maximum number of hours allowed was restricted to 40 hours. Table 20 displays the responses that satisfied both these

conditions and shows the average number of hours reported as being worked and the average number of hours reported as being available for on-call for 2070 respondents.

Table 20: Average hours available on-call and average hours on-call worked

	Number	Minimum	Maximum	Average	Std. Deviation
Hours per week on call worked	1677	0.8	40	8.9	8.3
Hours per week available on call	2070	1	168	58.9	53.8

12. Leave wanted versus leave taken

Respondents were asked to indicate the number of weeks leave desired each year and the number of weeks actually taken. As a significant number indicated 26 to 52 weeks leave desired, it was decided to set a more realistic maximum of 10 weeks for both leave wanted and desired. All other responses have been filtered out. Data for the valid responses indicate that there is an average 1.5 week deficit between annual leave wanted and annual leave taken.

Table 21: Average leave wanted and average leave taken (weeks)

	Number	Minimum	Maximum	Mean	Std. Deviation
Annual leave taken	1998	0.71	10	4.56	2.03
Annual leave wanted	1753	1.00	10	6.10	1.9

13. State or Territory variations

Queensland:

Queensland data includes 211 state salaried doctors (Residential Medical Officers, Senior Medical Officers and Medical Superintendents) who do not have the right of private practice. However, due to the differing nature of medical service provision in Queensland, it is estimated that 60 to 70 percent of these doctors provide primary care or GP type services in their communities. In the absence of a reliable method of differentiating their degree of primary care provision, they have been included in the current dataset. The negative aspect of this inclusion is that it probably does provide an overestimate of primary care or GP type services currently available in rural and remote Queensland. The data do not include Senior Medical Officer employed by Queensland Health in Maryborough, Hervey Bay or Mount Isa. Due to the size and nature of these hospitals, it is considered that these SMOs are providing non GP type services. Additionally, RFDS Medical Officers working from the Cairns base have been reclassified as RRMA 7 in light of the communities they service.

Western Australia:

Twenty-six RFDS doctors have been included in RRMA 7 due to the communities they service. Western Australian data do not include salaried Medical Officers employed by the Western Australian Country Health Service in Bunbury or Mandurah hospitals as it is considered that these doctors are not providing GP type services.

Northern Territory:

The NT data for 2008 have been collected by the new organisation GPNNT utilising some new strategies. The response rate has increased dramatically to 61%. It is important to note that 93%

NT GPs work in RRMA 6 or 7 in contrast to the majority of rural GPs in the other states (e.g. GPs in RRMA 6/7 in NSW 2.6%, Tas 2% and Vic 0.8%). As such, the national averages of workforce characteristics do not necessarily apply in the NT.

14. Summary

The data provided in this report has been based on agreed elements for a national Minimum Data Set for Rural Workforce Agencies. While the data may differ to that produced by the Medicare Australia, we believe that it is probably as valid since numbers reported reflect 'on ground' realities and are based on local knowledge of medical provision in communities. Measures such as FTE and FWE are based on the number and dollar value of claims processed by the Medicare Australia and often do not capture the full complexity of medical service provision in rural and remote communities.

While the data do have some limitations particularly in relation to self-reported hours worked, on-call hours and missing data, state and territory Rural Workforce Agencies are satisfied that the collated data provides a relatively accurate portrayal of medical service provision in their areas as at the 30th November 2008 reporting date.

As indicated in the introduction, many aspects of the data contained in this report are not solely dependent on survey response but are derived from known working data maintained by Rural Workforce Agencies in their individual state or territory. Survey responses are largely used to validate and update known data. Response rates for the current data collection period were; NSW 79.3%, NT 61.6%, QLD 53.0%, SA (not applicable for 2008 data set³), TAS 35.2%, VIC 48.8%, WA 76.6%.

Trends evident in this report include:

- An increase of 4.46% (N=200) in rural practitioner numbers nationally between 30th November 2007 and 30th November 2008.
- A small change in the percentage of female practitioners working in RRMA 4 to 7 locations.
- A small increase in the number of rural and remote practitioners working in sole practice situations (13.1% as opposed to 12.7% in 2007).
- A continuation of national trends with increasing number of female practitioners in lower age groups.
- A continuation of trends that suggest that female practitioners tend to work less hours compared with their male counterparts.
- A reduction in the average number of clinical hours worked per week. Average clinical hours reported in November 2007 were 36.1. For 2008, the average clinical hours reported was 35.9 hours.
- A small increase in the number, but a slight decline in the proportion of rural and remote practitioners providing procedural services.

A table outlining these trends or changes is provided in Appendix 1.

³ South Australia undertakes three years cycles of surveying rural GPs and achieves response rate of 80%. Workforce data is maintained between survey years through administrative means.

15. Terminology

ABS	Australian Bureau of Statistics
ACCHS	Aboriginal Community Controlled Health Service
DoHA	Department of Health and Ageing
FTEs	Full-time equivalents (calculated on Medicare billings of \$82,414 or more for 2002-2003 reference period)
FWEs	Full-time workload equivalents (calculated on average Medicare billings for full-time doctors - (\$221,864 for 2002-2003 reference period)
RFDS	Royal Flying Doctor Service
RHWA	Rural Health Workforce Australia
RRMA	Rural Remote and Metropolitan Area Classification
RWA	Rural Workforce Agency

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Appendix 1

Trends or changes November 2002 to November 2008

	2002	2003	2004	2005	2006	2007	2008
Total practitioners	3903	4074	4186	4317	4345	4482	4682
Percent female	28.4	29.7	29.7	30.0	30.5	32.2	33.0
Percent male	71.6	70.3	70.3	70.0	69.5	67.8	67.0
Average age female	42.19	42.6	43.4	43.9	44.3	44.7	45.0
Average age male	47.72	48.01	48.6	49.0	49.2	49.5	49.7
Average age (all)	46.65	46.44	47.1	47.5	47.7	48.0	48.2
Average GP clinical hours	37.67	37.08	36.54	36.2	36.7	36.1	35.9
Average total hours	46.65	46.65	43.68	44.1	44.4	44.4	43.7
Average length of stay in current practice (years)	8.29	9.15	8.25	8.1	8.27	8.20	8.17
*Proceduralists General Anaesthetics	456	435	459	463	445	431	488
*Proceduralists Obstetrics (Normal delivery)	706	638	657	661	622	599	623
*Proceduralists Operative surgery	287	287	304	283	275	268	282
*Known Proceduralists (practising in at least one procedural field)	935	902	933	929	907	896	934
* Proportion of rural practitioners providing procedural services	24.0	22.1	22.3	21.5	20.9	20.0	19.9
Proportion of practitioners providing emergency care services	41.70	46.60	46.85	41.4	49.5	48.5	41.8
Proportion of practitioners providing Aboriginal health services	20.50	22.8	19.0	21.4	23.6	23.7	23.0
Proportion of GPs working in solo practices	16.6	15.8	15.7	14.5	14.6	12.7	13.1
Proportion of GPs working in group practices	83.4	84.2	84.3	85.5	85.4	87.3	86.9

Appendix 2

Rural, Remote and Metropolitan Area Classification (RRMA) and Accessibility/Remoteness Index of Australia (ARIA)⁴

Many regional programs are targeted at areas of geographic disadvantage and the convenient label of being 'rural' areas often refers to these areas. However, there is not a generally accepted or generally applicable definition for the Australian context that can be used to identify rural areas. As a result, the RRMA classification has been widely used to determine eligibility of an area for program funding. The RRMA classification was used to assign each SLA (based on 1991 boundaries) to one of 7 categories that were further aggregated into three basic zones (Metropolitan, Rural, and Remote).

The seven RRMA categories are:

1. Capital Cities (Metropolitan Zone)
2. Other Metropolitan Centres (Metropolitan Zone)
3. Large Rural Centres (Rural Zone)
4. Small Rural Centres (Rural Zone)
5. Other Rural Areas (Rural Zone)
6. Remote Centres (Remote Zone)
7. Other Remote Areas (Remote Zone)

The use of the word 'rural' in several of the category names of the RRMA classification was not originally intended to be a definition of rurality. However, over time, RRMA category names have evolved into a simple and convenient way of interpreting rurality. Many programs that have to make decisions on eligibility for assistance are constrained by legislation and policy to using RRMA categories that 'define' rural areas. Within the Commonwealth Department of Health and Ageing administration of regional assistance will move from the use of the RRMA classification to use of ARIA over time.

ARIA stands for Accessibility/Remoteness Index of Australia. During 1998, the Commonwealth Department of Health and Aged Care commissioned a project to measure and classify the remoteness of populated localities in relation to 'service centres' of various sizes (based on the 1996 Census). The result was the ARIA index developed by the National Key Centre for Social Applications of Geographical Information Systems (GISCA) at the University of Adelaide. ARIA uses Geographic Information System (GIS) technology to provide a measure of remoteness (from service centres) for all places and points in Australia.

The development of the ARIA index deliberately avoided defining 'rural' areas. In many cases the term 'rural' is used when people are really referring to regional or non-metropolitan Australia. In these situations regional or non-metropolitan areas can be interpreted based on the degree of remoteness of an area (as measured in ARIA by accessibility to service centres). However in other situations a pure remoteness measure may not be the preferred approach. It may be more appropriate to take into account the population size of nearby urban centres and the use of RRMA categories is an accepted way of doing this. Thus it is acknowledged that some program areas rely on RRMA categories to determine eligibility for funding and there is a need to overlay the RRMA categories to current geographic boundaries and use this approach in conjunction with ARIA. To

⁴ Measuring Remoteness: Accessibility/Remoteness Index of Australia (ARIA). Occasional Papers: New Series No. 14. Commonwealth Department of Health and Aged Care. Further information is available from the department website <http://www.health.gov.au/ari/aria.htm>

meet the need for programs being able to identify the RRMA-like categories, each of the 1996 SLAs have been allocated a RRMA category code, with categories 6 and 7 being collapsed into a single group for the remote zone.

ARIA defines **five categories** of remoteness based on road distance to service centres, and is available for a variety of geographical units including localities, Census Collection districts (CCDs), Statistical Local Areas (SLAs) and postcodes. The five categories are:

1. **Highly Accessible** (ARIA score 0 - 1.84) - relatively unrestricted accessibility to a wide range of goods and services and opportunities for social interaction
2. **Accessible** (ARIA score >1.84 - 3.51) - some restrictions to accessibility of some goods, services and opportunities for social interaction
3. **Moderately Accessible** (ARIA score >3.51 -5.80) - significantly restricted accessibility of goods, services and opportunities for social interaction
4. **Remote** (ARIA score >5.80 - 9.08) - very restricted accessibility of goods, services and opportunities for social interaction
5. **Very Remote** (ARIA score >9.08 - 12) - very little accessibility of goods, services and opportunities for social interaction

Until recently, rurality has been described almost exclusively by the seven level Rural, Remote and Metropolitan Areas (RRMA) classification. This classification is based on the size of the local population centre as well as a measure of remoteness⁵.

Work by the National Key Centre for the Social Applications of Geographical Information Systems (GISCA) from 1996 saw the development of improved measures of remoteness: the Accessibility/Remoteness Index of Australia (ARIA), a continuous variable with a remoteness score of 0-12; and its successor, ARIA+ (similar to ARIA, but with a remoteness score of 0-15).

From ARIA, the department of Health and Ageing developed its five-level classification (also called ARIA), and from ARIA+, the Australian Bureau of Statistics developed its six-level classification, the Australian Standard Geographic Classification (ASGC) Remoteness Structure⁶.

Remoteness classifications

Broad Category	Fine Category	RRMA		DoHA ARIA			ASGC Remoteness		
		Population (000,000)	%	Category	Population (000,000)	%	Category	Population (000,000)	%
Metropolitan	Capital Cities	11.6	64	Highly Accessible	14.9	81	Major Cities	12.1	66
	Other Metropolitan centres	1.4	8						
Rural	Large Rural centres	1.1	6	Accessible	2.2	12	Inner Regional Outer Regional	3.8	21
	Small Rural centres	1.2	7						
	Other Rural centres	2.4	13	Moderately Accessible	0.8	4		2.0	11
Remote	Remote centres	0.2	1	Remote	0.2	1	Remote	0.3	0.3
	Other Remote areas	0.3	2	Very Remote	0.2	1	Very Remote	0.2	0.2
				Remote			Remote Migatory	<0.1	

Note: This table is a rough guide only; the various classes in each classification are not equivalent.
Sources: AIHW Population Estimates; AIHW Australia's Health 2002.

⁵ Australian Institute of Health and Welfare (2002). Australia's health 2002. Canberra: AIHW

⁶ Australian Bureau of Statistics (2001). Outcomes of ABS views on remoteness consultation, Australia. ABS Cat No 1244.0.00.001. Canberra, ABS.