NSW RURAL DOCTORS NETWORK
MINIMUM DATA SET REPORT
30 NOVEMBER 2008

NSW RURAL DOCTORS NETWORK

NSW Rural Doctors Network 2009

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Suggested citation

NSW Rural Doctors Network (2009). Medical practice in rural and remote NSW: Minimum Data Set Report as at 30 November 2008. Newcastle: NSW Rural Doctors Network.

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Acknowledgements

We would like to thank all rural and remote general practices and staff, Divisions of General Practice, Regional Training Providers, NSW Medical Board and others for their time, patience and contributions in providing the data used in this report and their commitment to the compilation of this data set. We also appreciate the time spent in validating the data and providing feedback.

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1. Introduction

The NSW Rural Doctors Network regularly collects information on the GP Workforce from GPs and Practice Managers. We ask GPs to return an annual survey in August/September, and Practice Managers to return surveys in March and October. In addition, we collect information from Divisions of General Practice, Regional Training Providers, the NSW Medical Board and other sources. Data has been collected since 2001. This report is based on snapshot data as at 30 November 2008 and while it covers RRMAs 4 to 7 only (for ease of comparison with national figures), RRMA 3 results are also critical for our work.

The NSW Rural Doctors Network is required by the Federal Government to collect the data, which is used to help inform policy and programme development at state and national levels. The data is made available to each NSW rural Division of General Practice in respect of workforce in their division.

We appreciate the participation of GPs and Practice Managers and other organisations providing information in this process. For the 2008 GP Survey and Practice Manager Survey, the combined response rate for GPs in RRMAs 4 to 7 was 79.3%. Such a high response rate helps to ensure the accuracy of the reports that we publish on the GP workforce. Such high response rates also ensure the relevance and value of the data for planning and policy purposes.

Information provided as part of this report is also used in producing the National Minimum Dataset Report (available on the NSW Rural Doctors Network website at www.nswrdn.com.au and go to News & Publications, Publications, GP Workforce Data, Reports).

Some brief comparisons and trends in data since 2003 for the GP workforce in RRMAs 4 to 7 in NSW are presented in Appendix 1.

2. Demographics of the Rural and Remote GP Workforce

This section will enumerate the rural and remote medical workforce by RRMA, age and gender. Data indicated that as at 30 November 2008, the number of medical practitioners practicing in RRMA 4 to 7 locations was 1268. This represents an increase of 83 practitioners (7.0%) compared with numbers reported as at 30th November 2007. Table 1 presents the total number of medical practitioners working in RRMA 4 to 7 as at 30th November 2008. Note that there are no locations in NSW classified as RRMA 6. Note also that six GPs and 2 GP Registrars attached to the Royal Flying Doctor Service and based in Broken Hill have been included in RRMA 4 figures, but two GPs attached to the Service and based in Dubbo (RRMA 3) have not been included.

Table 2 provides a breakdown of this distribution by gender and RRMA.

Table 1 Practitioner numbers by RRMA

RRMA 4	RRMA 5	RRMA 7	Total
568	667	33	1268

Table 2 Gender by RRMA

RRMA	Male	Female	% Female	Total
4	373	195	34.3	568
5	477	190	28.5	667
7	28	5	15.2	33
Total	878	390	30.8	1268

Table 2 indicates that the proportion of female practitioners in RRMA 4 areas is comparatively higher than any other RRMA. Figure 1 displays the percentage of female practitioners by RRMA compared with the state average for rural and remote female practitioners. Figure 2 provides a breakdown of the number of rural and remote medical practitioners by gender and age categories. Figure 3 displays the proportion of male and female practitioners in age categories.

Figure 1 Percentage of female practitioners by RRMA

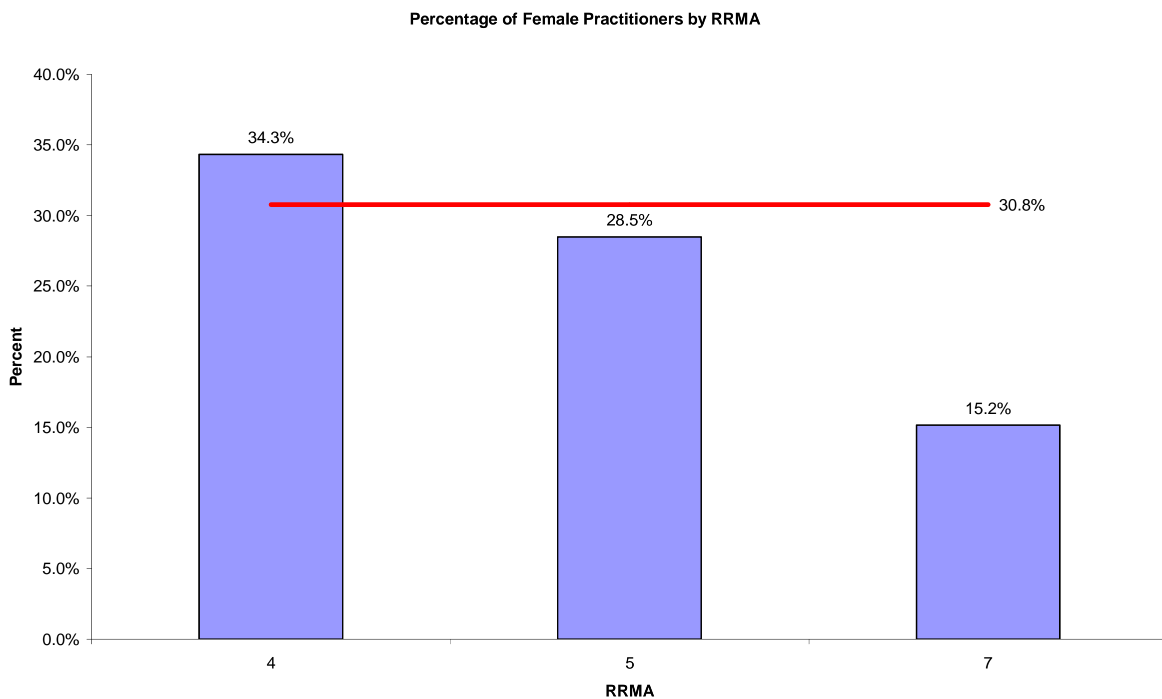
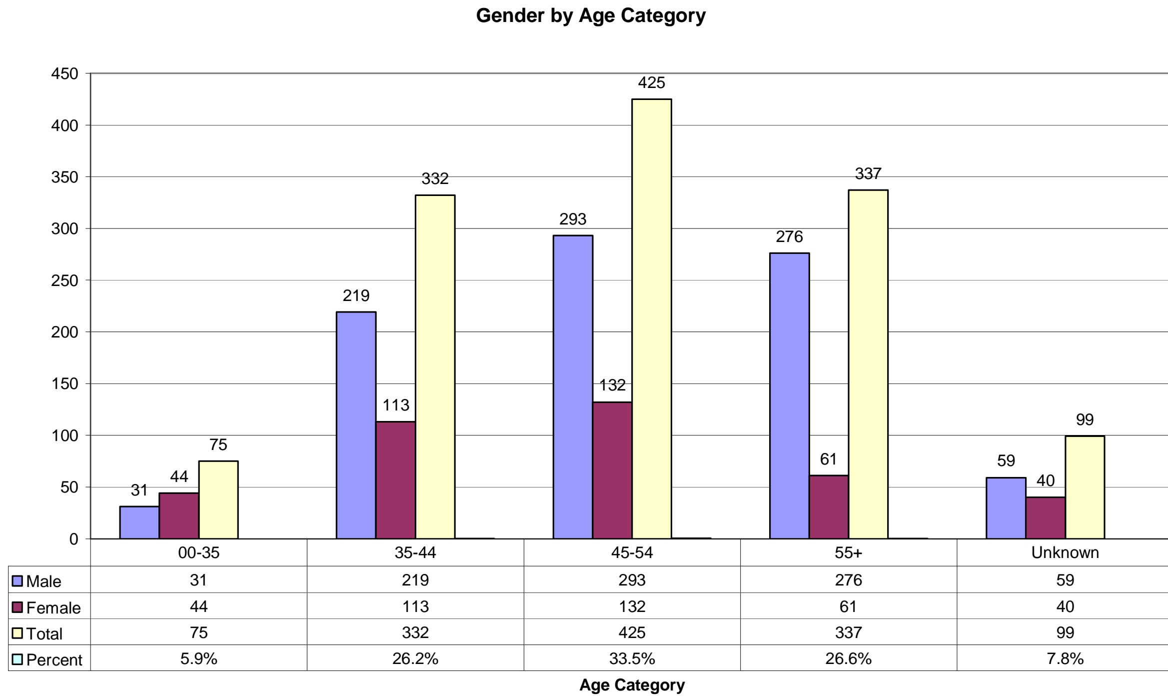
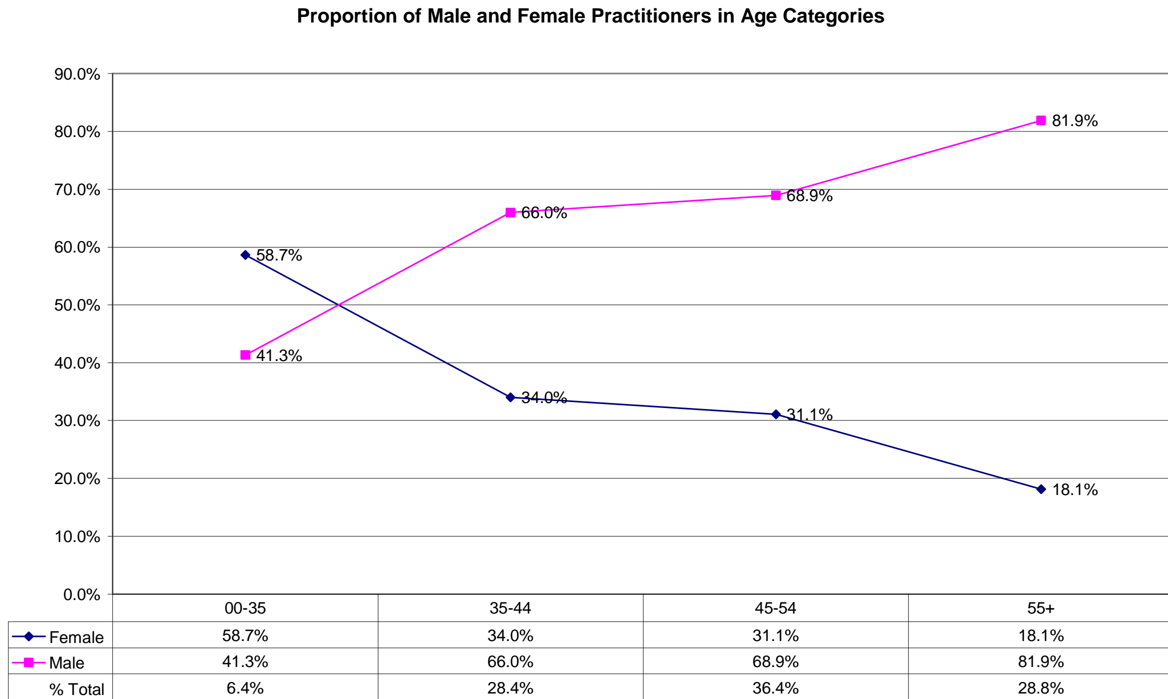


Figure 2 Number of rural and remote medical practitioners by age categories



	00-35	35-44	45-54	55+	Unknown
Male	31	219	293	276	59
Female	44	113	132	61	40
Total	75	332	425	337	99
Percent	5.9%	26.2%	33.5%	26.6%	7.8%

Figure 3 Proportion of male and female practitioners in five year age categories



	00-35	35-44	45-54	55+
Female	58.7%	34.0%	31.1%	18.1%
Male	41.3%	66.0%	68.9%	81.9%
% Total	6.4%	28.4%	36.4%	28.8%

The average age for male GPs was 51.1 (N819) years and 46.4 years for females (N350). The overall average age for all practitioners (N1169) was 49.7 years. Table 3 displays gender distribution by broad age categories by RRMA.

Table 3 Practitioner ages by gender and RRMA - broad age categories (N=1142)

Age Category	Gender	RRMA 4	RRMA 5	RRMA 7	Total
< 35	Male	11	17	3	31
	Female	20	23	1	44
	Total	31	40	4	75
35-44	Male	100	110	9	219
	Female	54	57	2	113
	Total	154	167	11	332
45-54	Male	116	173	4	293
	Female	68	62	2	132
	Total	184	235	6	425
55 +	Male	122	143	11	276
	Female	31	30	0	61
	Total	153	173	11	337
Unknown	Male	24	34	1	59
	Female	22	18	0	40
	Total	46	52	1	99
Total	Male	373	477	28	878
	Female	195	190	5	390
	Total	568	667	33	1268

3. Workloads

Estimates of Full Time Equivalents (FTEs) and Full Time Workload Equivalents (FWEs) as used by Medicare Australia (formerly HIC) 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 $86,727[1] (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]

[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

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 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 81.4% of the total number of GPs. Data as displayed in Table 4 indicates that 60.8% of respondents worked 35 hours a week or more in the provision of routine clinical GP services.

Table 4 Self-reported GP clinical hours

Hours	Frequency	Percent
Less than 20 hours	136	13.2%
20 to 35 hours	268	26.0%
35 hours plus	628	60.8%
Total	1032	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, supervision time etc. are not included. The average number of GP clinical hours reported was 36.3 hours per week (N1032).

A further breakdown of self-reported GP clinical hours by gender is displayed in Table 5 below.

Table 5 Self-reported GP clinical hours by gender

Clinical Hours	Male		Female	
	Number	Percent	Number	Percent
Less than 20 hours	57	8.0	79	24.6
20 to 35 hours	155	21.8	113	35.2
35 hours plus	499	70.2	129	40.2
Total	711	100.0	321	100.0

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 40.6% of practitioners. Table 6 displays self-reported total weekly hours while Table 7 displays total hours by gender. The average reported total hours were 44.7 hours per week (N=516).

Table 6 Self-reported total hours

Hours	Number	Percent
Less than 20 hours	31	6.0%
20 to 35 hours	81	15.7%
35 hours plus	404	78.3%
Total	516	100.0%

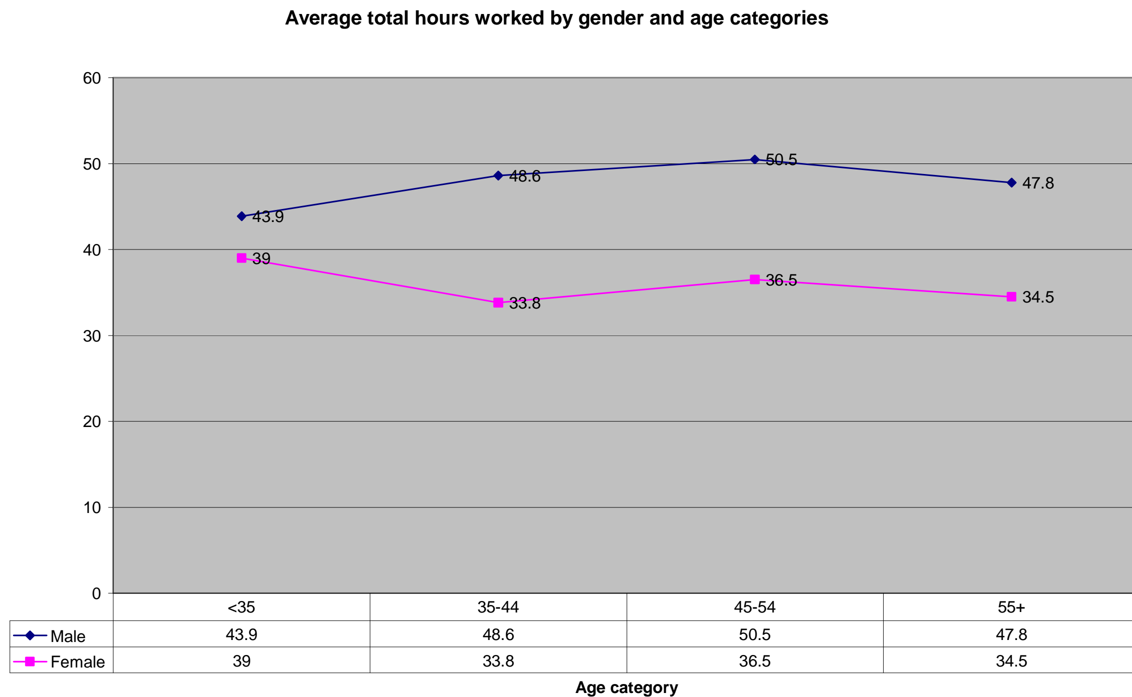
Data indicates that 21.7% of practitioners are currently working part time as defined by the ABS (i.e. less than 35 hours per week).

Table 7 Self-reported total hours by gender

Total Hours	Male		Female	
	Number	Percent	Number	Percent
Less than 20 hours	8	2.3%	23	13.7%
20 to 35 hours	29	8.3%	52	31.0%
35 hours plus	311	89.4%	93	55.3%
Total	348	100.0%	168	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.

Figure 4 Average total hours worked by gender and age categories



4. Length of Stay in Current Principal Practice

The average length of stay in current principal practice was 9.71 years. A more refined breakdown by duration and RRMA is provided in Table 8.

Table 8 Length of stay in current practice by RRMA

	Duration							
	< 6mths	6-12 mths	1-3 yrs	3-5 yrs	5-10 yrs	10-20 yrs	20 yrs +	Total
RRMA 4	58	57	98	42	99	111	103	568
RRMA 5	57	78	125	66	102	118	121	667
RRMA 7	9	2	7	5	3	6	1	33
Total	124	137	230	113	204	235	225	1268

Data indicates that while 79.4 % (N=1007) of respondents have practiced in their current rural and remote locations for more than a year, 20.6% (N=261) 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, 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 Table 9 and Table 10 (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 Table 9 and Table 10 (N=190) is therefore less than the total number of procedures documented (N=272). Of the 190 procedural practitioners, 61 (32.1%) 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 9 Number of practitioners undertaking procedural work by type

Procedure	Number
Anaesthetics General	92
Obstetrics Normal delivery	117
Surgery Operative	63
Known Proceduralists**	190
Total Practitioners	1268

Table 10 Number of practitioners undertaking procedural work by type and RRMA

	RRMA 4	RRMA 5	RRMA 7	Total*
Anaesthetics General	22	69	1	92
Obstetrics Normal Delivery	36	78	3	117
Surgery Operative	16	47	2	65
Known Proceduralists**	52	134	4	190
Total Practitioners	568	667	33	1268

* GPs practicing in RRMAs 4 - 7
** GPs practicing in at least one procedural field

Figure 5 Venn diagram illustrating numbers undertaking single or multiple procedures (N=190)

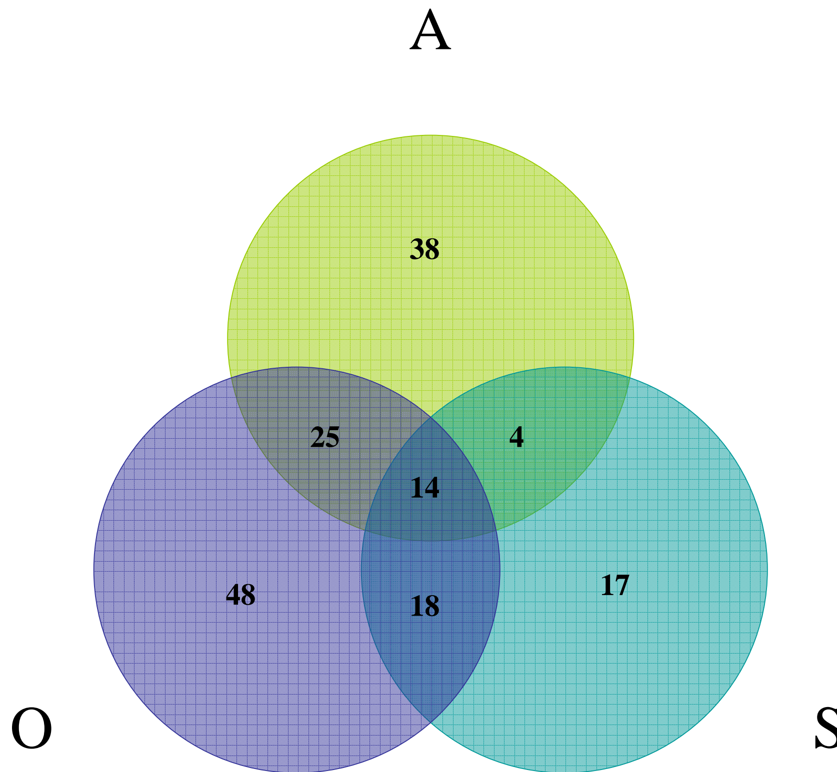
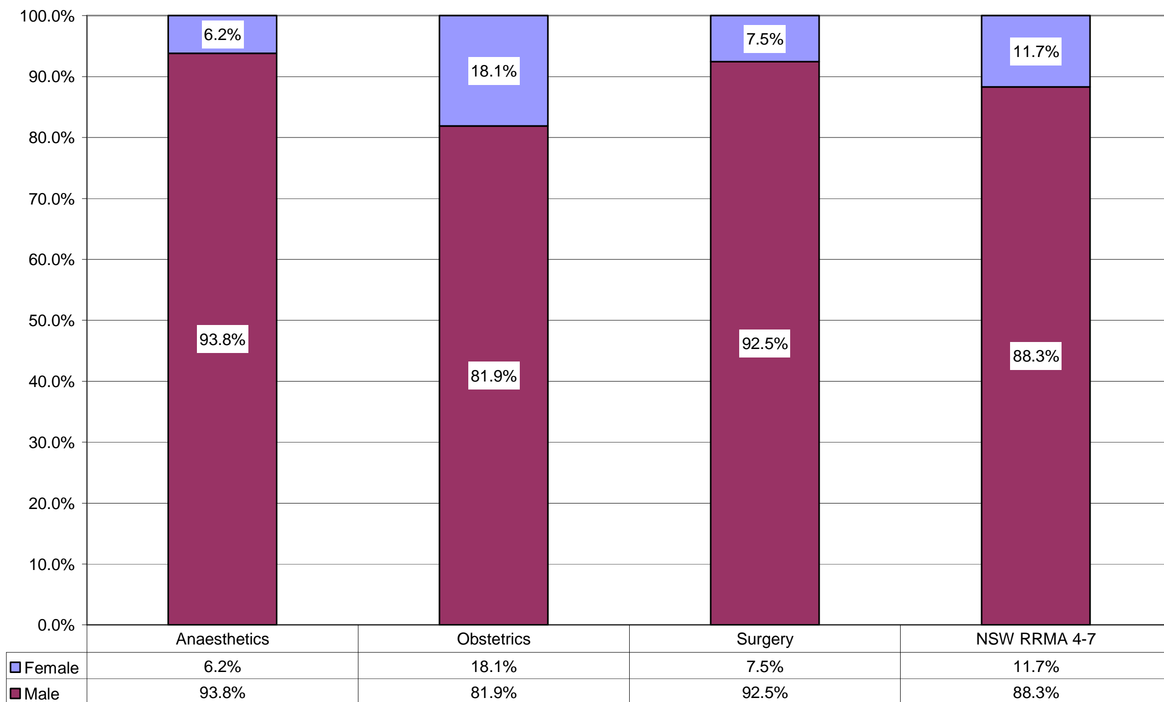


Figure 6 Gender composition of procedural practitioners (RRMA 4 to 7)



	Anaesthetics	Obstetrics	Surgery	NSW RRMA 4-7
Female	6.2%	18.1%	7.5%	11.7%
Male	93.8%	81.9%	92.5%	88.3%

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. Table 11 and Table 12 display these figures by RRMA.

Table 11 Number and proportions of practitioners providing emergency care services by RRMA

RRMA	Number	Percent
4	90	28.4%
5	218	68.8%
7	9	2.8%
Total	317	100.0%

Table 12 Number and proportions of practitioners providing Aboriginal health services by RRMA

RRMA	Number	Percent
4	66	36.9%
5	106	59.2%
7	7	3.9%
Total	179	100.0%

7. Types of Practice

The number of GPs working in each practice type by RRMA was also explored. Table 13 displays the number of doctors working in each practice type by RRMA. Data was missing or inadequately described for 28 practitioners. The number of practices known to be in business at 30 November 2008 in RRMAs 4 to 7 was 459.

Table 13 Practice type by RRMA

RRMA	Solo		Group	
	Number	Percent	Number	Percent
4	90	16.2%	466	83.8%
5	154	23.8%	493	76.2%
7	16	50.0%	16	50.0%
Total	260	21.1%	975	78.9%

8. Primary Income Source

Table 14 below displays self-reported data on primary income source. Data was available for 916 (72%) 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.

Table 14 Self-reported primary income source

Primary income source	Number	Percent
Fee for service	729	79.6%
Private practice wage or salary	132	14.4%
Non government wage or salary	15	1.6%
Aboriginal community controlled health service salary	23	2.5%
Other	17	1.9%
Total	916	100.0%

9. Primary Model of Service Provision

Table 15 below displays self-reported data on primary models of service provision. Data was available for 1211 (96%) 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 15 Primary model of service provision

Primary model of service provision	Number	Percent
Resident GP	1038	85.71%
"Fly in Fly Out"'	6	0.50%
Member of a Primary Health Care Team	9	0.74%
Hospital based GP	5	0.41%
Registrar	145	11.97%
Other	8	0.67%
Total	1211	100.00%

10. Registrars

The number of registrars currently working in RRMA 4 to 7 locations was 145. Data indicates that registrars comprise approximately 11.4% of the rural and remote medical workforce.

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 16 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 on call.

Table 16 Average hours available on call and average hours on call worked

	Number	Minimum	Maximum	Average
Hours per week on call worked	338	0.5	40	11.9
Hours per week available on call	395	0.5	168	68.9

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 2.7 week deficit between annual leave wanted and annual leave taken.

Table 17 Average leave wanted and average leave taken (weeks)

	Number	Minimum	Maximum	Mean
Annual leave taken	488	1.0	10.0	4.9
Annual leave wanted	422	1.0	10.0	6.1
Deficit	462	0.0	8.0	2.7

13. Citizenship, Qualifications and Registration

Respondents were asked to indicate their citizenship status. Information was provided by 875 respondents. A breakdown by RRMA reveals that RRMA 7 locations have a heavy reliance on temporary resident doctors.

Table 18 Citizenship by RRMA

Citizenship	RRMA 4	RRMA 5	RRMA 7	Total
Australian	320	428	11	759
New Zealand	2	6	2	10
Permanent Resident	30	43	2	75
Temporary Resident	13	13	5	31
Total	365	490	20	875
Percent Temporary	3.6	2.7	25.0	3.5

Respondents were asked to indicate the university of their primary medical degree. The following tables show that more than a third of the doctors have qualifications from overseas, with the most prominently represented global regions being Southern Asia, Western Europe and Africa. It should be noted that many respondents with overseas qualifications migrated to Australia many decades ago. Amongst Australian trained doctors, the majority had degrees from Sydney University, the University of New South Wales and the University of Newcastle. The majority gained their qualifications in the 1970s and 1980s.

Table 19 Number and percent by location of training

Place of Training	Number	Percent
Overseas	473	37.3
Australia	757	59.7
Unknown	38	3.0
Total	1268	100.0

Table 20 Origin of primary medical degree by RRMA (excluding Australia)

Global Region	RRMA 4	RRMA 5	RRMA 7	Total
Africa	30	47	7	84
Australasia (excluding Australia)	12	13	1	26
Central America	0	2	0	2
East Asia	4	8	0	12
Eastern Europe	14	11	2	27
Middle East	19	21	1	41
North America	4	5	0	9
Pacific	1	1	0	2
South America	4	1	0	5
South East Asia	13	10	1	24
Southern Asia	56	72	5	133
Western Europe	38	65	5	108
Total	195	256	22	473

Table 21 University and decade of graduation (Australian trained only)

University	1940s	1950s	1960s	1970s	1980s	1990s	2000 +	Total
Adelaide	0	0	3	4	9	7	6	29
Brisbane	0	0	0	3	0	1	0	4
Flinders	0	0	0	0	4	12	8	24
Melbourne	0	0	4	10	11	4	3	32
Monash	0	0	2	7	5	7	0	21
Newcastle	0	0	0	0	31	31	14	76
New South Wales	0	0	1	81	74	38	27	221
Queensland	0	0	5	18	13	7	14	57
Sydney	2	6	33	92	80	38	19	270
Tasmania	0	0	0	4	3	7	3	17
Western Australia	0	0	0	1	2	3	0	6
Total	2	6	48	220	232	155	94	757

Respondents were asked to provide information regarding registration status. About 10% of respondents had conditions on their registration.

Table 22 Registration status

Registration Status	Number	Percent
Full	1104	87.1
Conditional	129	10.2
Unknown	35	2.7
Total	1268	100.0

There were 78 international medical graduates with Area of Need registration and 50 overseas trained GPs working in RRMAs 4 to 7 at 30 November. At least 62% of doctors working in general practice in RRMAs 4 to 7 were vocationally registered.

14. Visiting Medical Officers

Respondents were asked to indicate if they held Visiting Medical Officer status at any hospitals. Overall, about half of the doctors had appointments. RRMA 7 had the greatest reliance on VMOs. Amongst Area Health Services, Hunter New England had the greatest reliance on VMOs. Significant numbers of registrars also had appointments.

Table 23 VMO by RRMA at 30 November 2008

RRMA	Number of VMOs	Number of GPs	Percent VMO
4	235	568	41.4
5	370	667	55.5
7	20	33	60.6
Total	625	1268	49.3

Table 24 RRMA 4 to 7 VMOs trend

Date	Number of VMOs
30 Jun 2006	709
31 Dec 2006	687
30 Jun 2007	691
31 Dec 2007	639
30 Jun 2008	630
31 Dec 2008	624

Table 25 VMO and Registrar by Area Health Service

Area Health Service	VMO, not Registrar	VMO and Registrar	Not VMO and not Registrar	Not VMO and Registrar	Total	Percent VMO
South Eastern Sydney & Illawarra	30	5	50	10	95	36.8
Greater Western	107	13	89	18	227	52.9
Hunter New England	131	15	103	9	258	56.6
Greater Southern	132	13	128	17	290	50.0
North Coast	133	10	163	32	338	42.3
Total	533	56	533	86	1208	48.8

15. 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 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, NSW Rural Doctors Network is satisfied that the data provides a relatively accurate portrayal of medical service provision in rural and remote areas of the state as at the 30th November 2008 reporting date.

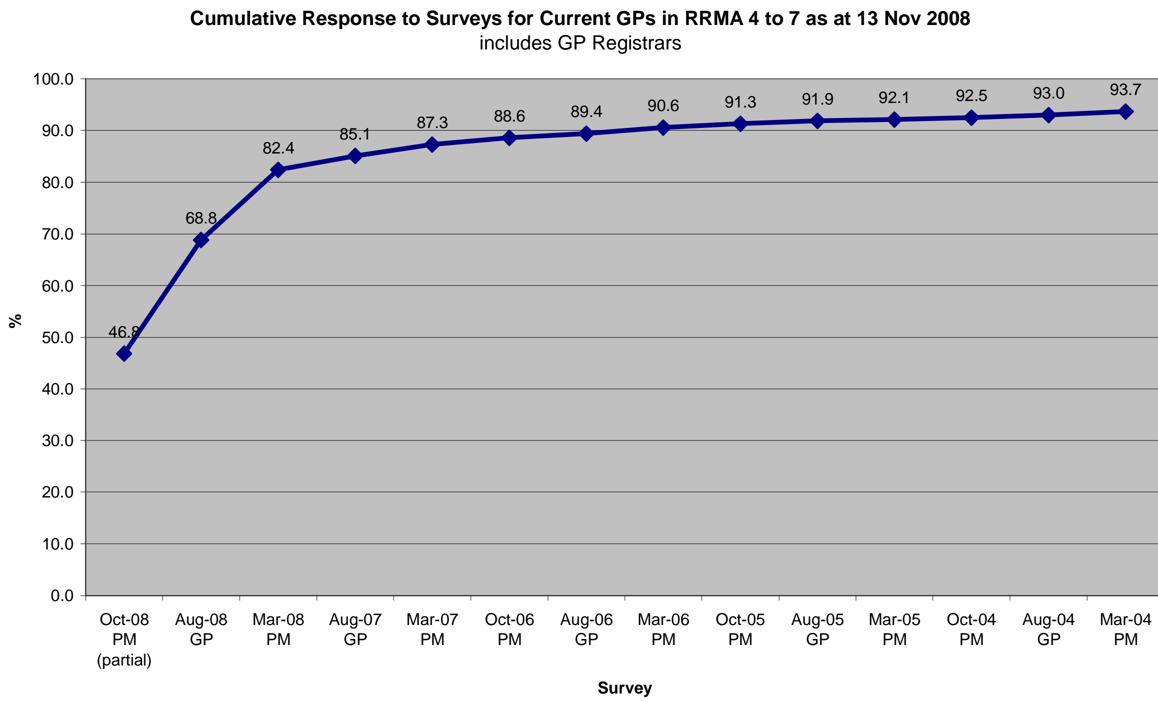
As indicated in the introduction, many aspects of the data contained in this report are not solely dependent on survey response but are derived from known working data maintained by NSW Rural Doctors Network. Survey responses are largely used to validate and update known data. The response rate for the current data collection period was 79.34%. Figure 7 indicates that a cumulative response rate of over 90% is achieved when responses for the previous three years are considered. This indicates that while not all GPs respond in each year, the majority will return at least one recent survey.

Trends evident in this report include:

- An increase of 7.0% (N=83) in rural practitioner numbers between 30 November 2007 and 30 November 2008.
- A small change in the percentage of female practitioners working in RRMA 4 to 7 locations.
- A reduction in the number of rural and remote practitioners working in sole practice situations (21.1% as opposed to 21.4% in 2007).
- A continuation of the 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 slight increase in the average number of clinical hours worked per week. Average clinical hours reported in November 2007 were 34.6. For 2008, the average clinical hours reported was 36.3 hours.
- A decline in the proportion of rural and remote practitioners providing procedural services.
- A continuing decline in the number of GPs holding VMO appointments.

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

Figure 7 Cumulative survey response



16. Terminology

ABS	Australian Bureau of Statistics
ACCHS	Aboriginal Community Controlled Health Service
AMWAC	Australian Medical Workforce Advisory Committee
CDHAC	Commonwealth Department of Health and Aged Care (now Australian Government Department of Health and Ageing)
AGDoHA	Australian Government Department of Health and Ageing
FTEs	Full-time equivalents (calculated on HIC billings of $82,414 or more)
FWEs	Full-time workload equivalents (calculated on average HIC billings for full-time doctors ($221,864 for 2002-2003 reference period)
HIC	Health Insurance Commission (now Medicare Australia)
RHWA	Rural Health Workforce Australia (formerly Australian Rural and Remote Workforce Agencies Group)
RFDS	Royal Flying Doctor Service
RRMA	Rural Remote and Metropolitan Area Classification
RWA	Rural Workforce Agency

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Appendix 1

Trends or changes November 2003 to November 2008

	2003	2004	2005	2006	2007	2008
Total practitioners (including registrars)	1126	1164	1198	1173	1185	1268
Percent female	26.9	28.4	28.3	29.1	30.0	30.8
Percent male	73.1	71.6	71.7	70.9	70.0	69.2
Average age female	44.5	45.2	45.9	45.8	47.0	46.4
Average age male	49.7	50.1	50.7	50.4	51.9	51.1
Average age (all)	48.4	48.8	49.4	49.1	50.5	49.7
Average GP clinical hours	33.9	33.0	33.6	35.2	34.6	36.3
Average total hours	45.9	44.9	46.2	44.8	47.1	44.7
Average length of stay in current practice (years)	9.9	9.9	10.1	10.2	11.03	9.71
*Proceduralists General Anaesthetics	103	99	100	88	84	92
*Proceduralists Obstetrics (Normal delivery)	154	152	149	122	113	117
*Proceduralists Operative surgery	61	67	62	61	56	63
* Proceduralists (practising in at least one procedural field)	239	233	230	201	185	190
* Proportion of rural practitioners providing procedural services	21.2	20.0	19.2	17.1	15.6	15.0
Proportion of GPs working in solo practices	21.8	25.7	24.6	23.1	21.4	21.1
Proportion of GPs working in group practices	78.2	74.3	75.4	76.9	78.6	78.9

Appendix 2

Rural, Remote and Metropolitan Area Classification (RRMA) and Accessibility/Remoteness Index of Australia (ARIA)[3]

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 meet the need for programs being able to identify the RRMA-like categories, each of the 1996

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[3] 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

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 remoteness[4].

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 Structure[5].

Remoteness classifications

RRMA				DoHA ARIA			ASGC Remoteness		
Broad Category	**Fine Category**	**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	3.8	21
	Small Rural centres	1.2	7				Outer Regional	2.0	11
	Other Rural centres	2.4	13	Moderately Accessible	0.8	4			
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
							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.

[4] Australian Institute of Health and Welfare (2002). Australia's Health 2002. Canberra: AIHW
[5] Australian Bureau of Statistics (2001). Outcomes of ABS views on remoteness consultation, Australia. ABS Cat No 1244.0.00.001. Canberra, ABS.

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