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**Australian Institute of
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Medical workforce 2011

NATIONAL HEALTH WORKFORCE SERIES No. 3



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*Authoritative information and statistics
to promote better health and wellbeing*

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The work survey data were provided by the Australian Health Practitioner Regulation Agency.



Abbreviations

ABS	Australian Bureau of Statistics
AHMAC	Australian Health Ministers Advisory Council
AHPRA	Australian Health Practitioner Regulation Agency
AIHW	Australian Institute of Health and Welfare
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ASGC	Australian Standard Geographical Classification
ASGC RA	Australian Standard Geographical Classification Remoteness Area
COAG	Council of Australian Governments
FTE	full-time equivalent
HWA	Health Workforce Australia
MBA	Medical Board of Australia
NHWDS	National Health Workforce Data Set
NRAS	National Registration and Accreditation Scheme
RA	Remoteness area

Symbols

<	less than
+	and over
—	nil or rounded to zero
-	negative or minus value
..	not applicable (category / data item does not apply)
n.a.	not available
n.p.	not published (data cannot be released due to quality issues, confidentiality or permission not granted).

Technical notes

1. Numbers in tables may not sum to the totals shown due to the estimation procedure to adjust for non-response (see Appendix A). As a result, the estimated numbers of medical practitioners may be in fractions, but are rounded to whole numbers for publication.
2. Percentages in tables may not sum to 100 due to rounding.
3. *Italic type within a table denotes a subtotal.*
4. Explicit references to categories of data items are in quotation marks.

Summary

This report presents information on the medical workforce, based on estimates derived from the National Health Workforce Data Set: medical practitioners 2011, the second in this new series. The data set contains information on the demographic and employment characteristics of medical practitioners who were registered in Australia in 2011. Data are collected via registration forms and a survey instrument administered by the Australian Health Practitioner Regulation Agency, in conjunction with the annual registration renewal process for medical practitioners.

The main findings of the report are:

- In 2011, there were 87,790 medical practitioners registered in Australia, and 85.3% of them responded to the workforce survey.
- Between 2007 and 2011, the number of medical practitioners employed in medicine increased by 17.3% from 67,208 to 78,833. In 2011, 93.8% (73,980) were working as clinicians, of whom 33.1% were specialists and 33.9% were general practitioners.
- Of those employed as non-clinicians (6.2% of all employed medical practitioners), more than half were researchers (26.9%) or administrators (27.7%).
- Physician was the largest main speciality of practice among both clinician specialists and total specialists (5,157 and 5,689 respectively). The second-largest main speciality for clinician specialists and specialists (3,951 and 4,125 respectively) was surgery.
- The average weekly hours worked by employed medical practitioners remained stable between 2007 and 2011. In 2011, male medical practitioners worked an average of 45.9 hours per week, while female medical practitioners worked an average of 38.7 hours per week. In 2011, both male and female medical practitioners aged 20–34 worked the highest average weekly hours.
- The overall supply of clinicians across all states and territories increased between 2007 and 2011, from 323.5 full-time equivalents per 100,000 population in 2007 to 360.4 in 2011.
- Between 2007 and 2011, there was also a rise in the supply of employed medical practitioners in all regional areas, including *Major cities*, *Inner regional* areas, *Outer regional* areas and *Remote/ Very remote* areas.
- The average age of medical practitioners decreased slightly from 2007 to 2011 (45.9 to 45.5 years).
- Women are increasingly represented in the medical practitioner workforce, growing to 37.6% of employed practitioners in 2011 (up from 34.0% in 2007). Among clinicians, in 2011, women accounted for 48.0% of hospital non-specialists compared to 25.6% of specialists.
- In 2011, 264 employed medical practitioners identified as Aboriginal or Torres Strait Islander, representing 0.3% of all employed medical practitioners in Australia.

1 Introduction

This report provides data on the Australian medical workforce in 2011, and is the second report on this profession using information from the new National Health Workforce Data Set (NHWDS).

The information presented in this report was collected from medical practitioners when they renewed their registration via the mandatory registration process administered by the Australian Health Practitioner Regulation Agency (AHPRA). An optional survey collected a range of additional demographic and workforce information at the same time. The NHWDS combines data from the National Registration and Accreditation Scheme (NRAS) with health workforce survey data.

Where the data allow, this report compares the 2011 results with estimates derived from surveys conducted in earlier years. Registration data from AHPRA are also presented for comparison.

Box 1.1: What is a medical practitioner?

Medical practitioners work in various settings using their knowledge and skills as qualified health practitioners. Under the National Law, a medical practitioner is a person who holds registration with the Medical Board of Australia. The Australian and New Zealand Standard Classification of Occupations revision 1 (ANZSCO) (ABS 2009) provides the following definition:

A medical practitioner (commonly referred to as a doctor) is a person whose primary employment role is to diagnose physical and mental illnesses, disorders and injuries and prescribe medications and treatment to promote or restore good health.

Tasks may include:

- examining patients to establish the nature of their complaints, and performing and ordering tests, X-rays and other diagnostic procedures
- determining diagnoses based on examination and results of tests
- selecting and administering appropriate treatments and therapies, and advising patients of further treatment options and preventive and therapeutic measures
- prescribing, administering, preparing and dispensing medication and prosthetic and corrective devices
- monitoring patients' progress and response to treatment
- recording patients' illnesses, treatment given and patients' responses and progress
- advising on diet, exercise and other measures to prevent and aid treatment of diseases and disorders.

Medical practitioners can be further classified as either a clinician or non-clinician.

A clinician is a medical practitioner who reported spending the majority of their total weekly working hours involved in the area of clinical practice. The clinical group comprises several subfields: general practitioner, hospital non-specialist, specialist, specialist-in-training and other clinicians.

A non-clinician is a medical practitioner who reported spending the majority of their total weekly working hours not involved in the area of a clinical practice. This can include working as an administrator, teacher/educator, researcher or other non-clinician.

Sources: ABS 2006, 2009.

1.1 Medical practitioners in Australia

In Australia, under the National Law, a medical practitioner is a person who holds registration with the Medical Board of Australia. The ABS defines the role of a medical practitioner is to 'diagnose physical and mental illnesses, disorders and injuries, provide medical care to patients, and prescribe and perform medical and surgical treatments to promote and restore good health' (ABS 2006, 2009). Medical practitioners may be clinicians, including general practitioners, hospital non-specialists, specialists, specialists-in-training and other clinicians. They may also be non-clinicians, and work as administrators, teachers or educators, or researchers (see Box 1.1 and 'Glossary').

When medical practitioners have completed their studies at university they receive provisional registration and enter the medical workforce as a doctor-in-training. This training is called an internship, and lasts for 12 months. It is usually undertaken in a public hospital, although it is expected interns will increasingly spend part of their training in general practice and community-based settings in the future (AMA 2009).

When practitioners have successfully completed their internship they receive full medical registration. However, doctors-in-training can spend more time after their internship working in the public hospital system to gain more broad clinical experience. This period of on-the-job training is known as residency.

Vocational training is the required training for a medical practitioner to specialise in a chosen medical field. Medical graduates undergoing this training are known as registrars, and training usually lasts between three and eight years. A large number of specialist disciplines are recognised in Australia, including medical administration or becoming a medical academic/researcher. Upon completing this training, specialists must meet the registration standards detailed by the Medical Board of Australia (MBA) to be registered to practise in that specialty under the National Registration and Accreditation Scheme (MBA 2012).

1.2 National registration of medical practitioners

All medical practitioners must be registered with AHPRA to practise in Australia. This applies to both those who trained in Australia and those who trained overseas. AHPRA manages the NRAS, which replaced jurisdiction-based registration with a single national registration and accreditation system for health professionals in July 2010, or 18 October 2010 in Western Australia. As part of this scheme, AHPRA supports National Health Practitioner Boards that are responsible for regulating registered health professions under nationally consistent legislation. Registration for each profession is granted by the relevant Boards, subject to applicants meeting the standards and policies set by each Board (see Box 1.2). The outcome of an application is either 'registration', 'registration with conditions' or 'rejection'.

Box 1.2: The Medical Board of Australia

The Medical Board of Australia is the national medical regulator in Australia. It is established under the Health Practitioner Regulation National Law, as in force in each state and territory (the National Law).

The functions of the MBA include:

- register medical practitioners and medical students
- develop standards, codes and guidelines for the medical profession
- investigate notifications and complaints
- where necessary, conduct panel hearings and refer serious matters to tribunal hearings
- assess international medical graduates who wish to practise in Australia
- approve accreditation standards and accredited courses of study.

The MBA has established state and territory boards to support its work in the national scheme. The MBA sets policy and professional standards, and the state and territory boards continue to make individual notification and registration decisions affecting individual medical practitioners, based on the national policies and standards.

Source: MBA 2012.

At 1 July 2012, the NRAS covered registration for 14 health professions (see Box 1.3). The type of registration held by medical practitioners determines (or limits) the work they are licensed to perform. Registration is granted to medical practitioners who have fulfilled the full requirements of the MBA to practise (see Box 1.2). It permits medical practitioners to work unsupervised in their field. If a medical practitioner does not meet the requirements to become registered, they may obtain a registration with conditions – such as completion of further education or training within a specified period, or a specified period of supervised practice.

Although AHPRA registration data are used, the information provided in this report focuses on medical practitioners who make up the workforce, thus most of the data exclude those not actively working in medicine. For this reason, figures in this report are not directly comparable with figures on the number of registered medical practitioners released by the AHPRA.

Box 1.3: Which professions are included in the National Registration and Accreditation Scheme?

Since 1 July 2010, the following 10 professions have been regulated under the national scheme:

- chiropractors
- dental practitioners (including dentists, dental hygienists, dental prosthetists, dental therapists and oral health therapists)
- medical practitioners
- nurses and midwives
- optometrists
- osteopaths
- pharmacists
- physiotherapists
- podiatrists
- psychologists.

On 1 July 2012, the following four health professions were included in the national scheme:

- Aboriginal and Torres Strait Islander health practitioners
- Chinese medicine practitioners
- medical radiation practitioners
- occupational therapists.

Source: AHPRA 2012.

1.3 Medical Workforce Survey

Access to reliable, comprehensive, timely and nationally consistent trend data is required to understand the current health workforce and for workforce planning. The size, distribution and expertise of the health workforce are of keen interest to governments, educators, health-care providers and the community. There is particular interest in changes to the size and composition of the various health professions, and the potential impacts of these changes on health-care delivery.

Recognising this, the Australian Health Ministers Advisory Council (AHMAC) commissioned the Australian Institute of Health and Welfare (AIHW) in 1990 to develop national health labour force statistics on the major registrable health professions. Medical practitioners were identified as one of the key health professions for which ongoing information should be collected for monitoring and planning purposes. These practitioners have been the focus of a regular survey and AIHW reports annually since 1993.

Before 2010, the AIHW Medical Labour Force Survey was managed by each state and territory health authority, with a questionnaire administered by the medical board (or council) in each jurisdiction as part of the registration renewal process. Under agreement with the Health Workforce Principal Committee of the AHMAC, the AIHW cleaned, collated and weighted the state and territory survey results to obtain national estimates of the total medical workforce, and reported the findings.

In 2010, the NRAS was introduced and the AIHW Medical Labour Force Survey was replaced with the Medical Workforce Survey. The new national survey is administered by AHPRA and included as part of the registration renewal process. This survey is voluntary.

The Medical Workforce Survey is used to provide nationally consistent estimates of the medical workforce. It provides data not readily available from other sources, such as on the type of work done by, and job setting of, medical practitioners; the number of hours worked in a clinical or non-clinical role, and in total; and the numbers of years worked in, and intended to remain in, the medical workforce. The survey also provides information on those registered medical practitioners who are not undertaking clinical work or who are not employed.

The overall response rate in 2011 was 85.3%, which was the highest survey response rate ever recorded (Table A2). New South Wales, South Australia and Victoria had the highest response rates at 87.7%, 86.7% and 85.9%, respectively. The Northern Territory had the lowest response rate at 82.4%.

Responses to the survey have been weighted to benchmark figures to account for non-response. The benchmarks used are the number of medical practitioners registered by state and territory (using principal address) by main specialty of practice by sex and age group.

Past and present surveys have different collection and estimation methodologies and questionnaire designs. As a result, care should be taken in comparing historical data from the AIHW Medical Labour Force Surveys with data from the Medical Workforce Survey 2011.

A detailed description of the Medical Workforce Survey 2011, including a summary of changes from the 2009 AIHW Medical Labour Force Survey and data collected, is provided in Appendix A.

1.4 Additional information

Before the introduction of the NRAS in 2010, medical practitioner registration numbers were published in annual reports of state and territory medical boards (or councils). These figures are now published by the AHPRA, and are available from the AHPRA website at <http://www.ahpra.gov.au/> (see Appendix B).

An electronic version of this report is available from the AIHW website at <http://www.aihw.gov.au/workforce-publications/>. Additional data tables from the NHWDS: medical practitioners 2011 are also available from the website.

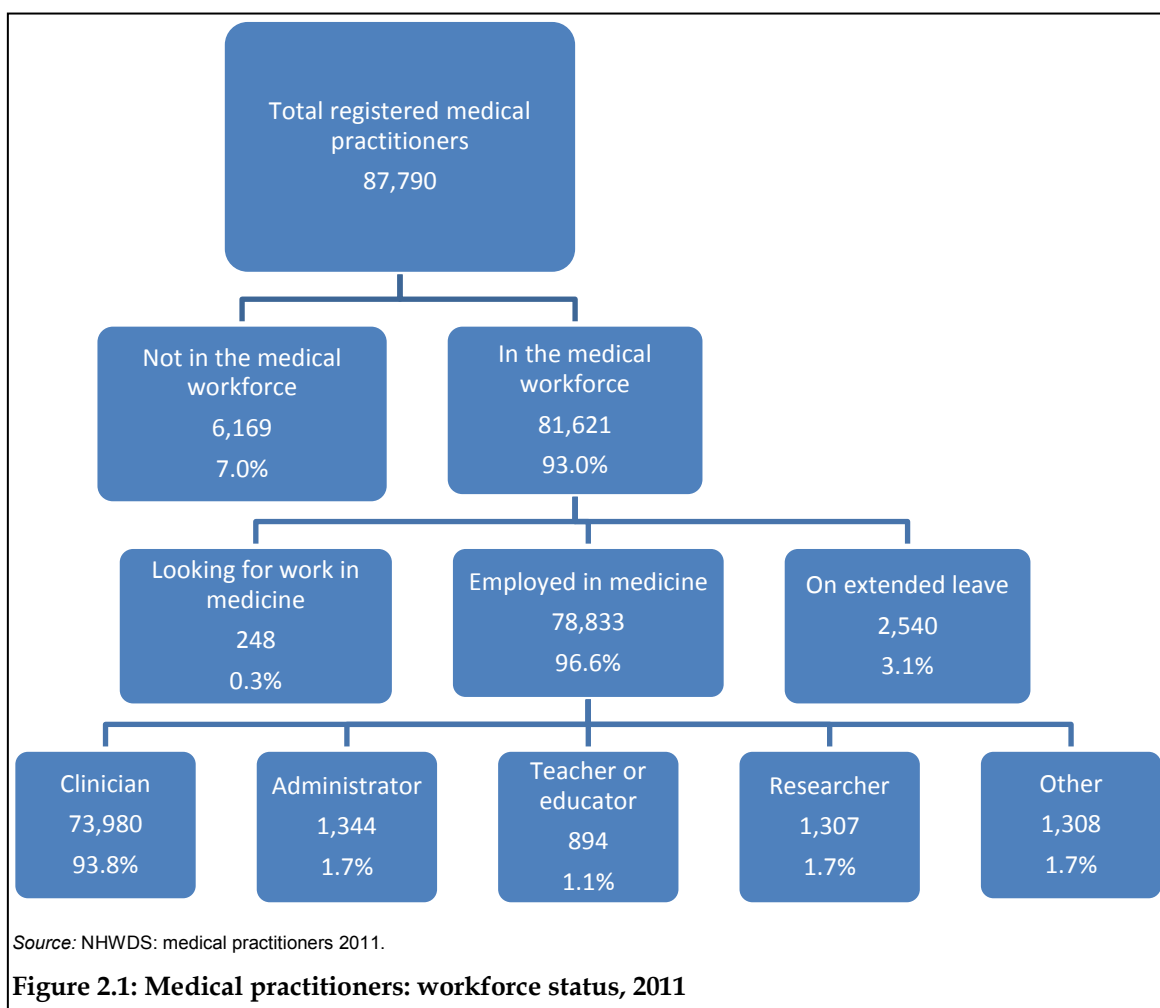
2 Registered medical practitioners

2.1 At a glance

	In 2011, there were 87,790 medical practitioners registered in Australia.
	There were 78,833 medical practitioners employed in medicine in 2011.
	Almost 2 out of 5 employed medical practitioners were women.
	1 in 4 of all employed medical practitioners was aged 55 or older.
	Medical practitioners work on average 43.2 hours per week.
	93.8% of all employed medical practitioners were working in a clinical role.
	In 2011, 3,770 students completed medical undergraduate training in Australia.

Sources: NHWDS: medical practitioners 2011; DoHA 2012b.

The number of registered medical practitioners in 2011 was 87,790 (Figure 2.1). This figure is the number of practitioner registrations provided by AHPRA from the NRAS, which closed on 30 September 2011.



Between 2007 and 2011, the number of medical practitioners employed in medicine increased by 17.3% from 67,208 to 78,833 (Table 2.1).

2.2 Workforce status

Of the 87,790 registered medical practitioners in 2011, 78,833 (89.8%) were employed in medicine in Australia (Table 2.1). This ranged from 89.8% in Tasmania to 93.1% in South Australia (Table 2.3). Comparisons across jurisdictions should be undertaken with caution due to variations in scope and response rates (see Appendix A).

Table 2.1: Registered medical practitioners: workforce status, 2007 to 2009^(a), and 2011

Workforce status	2007	2008	2009	2010 ^(b)	2011	Change between 2007 and 2011 (per cent)
In the medical workforce	68,812	70,193	74,260	55,187	81,621	18.6
Employed in medicine	67,208	68,455	72,739	53,425	78,833	17.3
On extended leave	1,124	1,166	1,154	1,619	2,540	126.0
<i>Looking for work in medicine</i>	<i>480</i>	<i>572</i>	<i>366</i>	<i>142</i>	<i>248</i>	<i>-48.4</i>
Employed elsewhere	102	71	62	14	15	-85.0
Not employed	378	501	304	129	233	-38.5
Not in the medical workforce	8,381	8,476	8,636	5,282	6,169	-26.4
Overseas	3,030	3,214	3,030	2,569	2,731	-9.9
<i>Not looking for work in medicine</i>	<i>2,720</i>	<i>2,955</i>	<i>3,494</i>	<i>853</i>	<i>1,105</i>	<i>-59.4</i>
Employed elsewhere	662	739	840	347	336	-49.2
Not employed	2,058	2,216	2,654	506	769	-62.6
Retired ^(c)	2,631	2,307	2,111	1,860	2,333	-11.3
Total registered medical practitioners	77,193	78,669	82,895	60,469	87,790	13.7
Percentage of registered medical practitioners employed in medicine	87.1	87.0	87.7	88.4	89.8	..

(a) For 2007, 2008 and 2009, medical practitioners may have been registered in more than one state or territory; the figures account for this potential source of double counting. See Appendix A for further information.

(b) Data for 2010 exclude Queensland and Western Australia due to their registration period closing after the national registration deadline of 30 September 2010. The count of registered practitioners in 2010 was under-enumerated by something in the order of 6% of medical practitioners (see Appendix E).

(c) In 2011, 'Retired' include only those who were retired from regular work. See Appendix A for further information.

Sources: AIHW Medical Labour Force Survey, 2007, 2008 and 2009; NHWDS: medical practitioners 2011.

Differences between the questionnaires administered by jurisdictions before 2010, as well as changes to the nationally standardised survey tool introduced in 2010, have resulted in a slight change in the pattern of responses to the employment-related questions. As such, comparing data over time should be done with caution (see Appendix A for further information on significant changes to the three employment-related questions).

While there have been changes to the survey a number of changes in the results cannot be explained by methodology changes. These include:

- Between 2007 and 2011, medical practitioners reporting being on leave from work for 3 months or more rose from 1,124 to 2,540 (Table 2.1).
- There was a large fall in medical practitioners who were not in the medical workforce, down from 8,381 in 2007 to 6,169 in 2011.
- There was a 9.9% fall in the number of medical practitioners working overseas from 2007 to 2011.
- There is a large change in the number of medical practitioners not looking for work in medicine (down 59.4% from 2,720 to 1,105).

Box 2.1: Comparing 2010 and 2011 medical practitioners figures

AIHW published *Medical workforce 2010* on 28 March 2012, which was the first release of data derived from the new NRAS.

At this time, it was known and reported that there were issues with the 2010 survey data, especially the lack of data from Queensland and Western Australia. Queensland and Western Australia were subsequently removed from the workforce tables in the 2010 publication, thus comparisons with the 2011 data should be undertaken with caution.

Once the 2011 data were supplied, it became apparent that there were large differences between the 2010 and 2011 numbers of registered medical practitioners. When further investigated, this was found to be caused by differences in the way these data were stored and extracted from the AHPRA databases. As a result, the data were re-extracted and supplied in October 2012 for both 2010 and 2011 using the same methods.

This revealed an undercount in the originally published 2010 registration data, which was difficult to detect because the 2010 data appeared coherent with previously reported figures, particularly 2009 figures, from the AIHW Labour Force Surveys.

Due to the above issues, this publication makes few comparisons between the 2010 and 2011 data.

The AIHW data for 2010 have been updated in this publication based on a resupply of data from AHPRA (Table 2.2). The number of registrations has increased by 3.8%, from 58,192 originally reported to 60,469 based on the resupplied data. This has resulted in an increase in the number of medical practitioners employed in medicine in 2010 of 928 (1.7%), up from 52,497 to 53,425. The area most affected by the resupplied data was those not in the medical work force, which increased by 23.5%, with the largest increase in this category being for those who reported being retired, up 36.8%. There was a 1.8 percentage point change in the percentage of registered medical practitioners who were employed in medicine, down from 90.2% to 88.4%.

Table 2.2: Registered medical practitioners: workforce status, 2010 and 2011

Workforce status	2010 as published 28 March 2012	2010 updated	2011 excluding Qld and WA	2011 including Qld and WA
In the medical workforce	54,150	55,187	57,559	81,621
Employed in medicine	52,497	53,425	55,537	78,833
On extended leave	1,526	1,619	1,854	2,540
<i>Looking for work in medicine</i>	<i>126</i>	<i>142</i>	<i>168</i>	<i>248</i>
Employed elsewhere	12	14	11	15
Not employed	114	129	157	233
Not in the medical workforce	4,042	5,282	4,916	6,169
Overseas	2,128	2,569	2,424	2,731
<i>Not looking for work in medicine</i>	<i>738</i>	<i>853</i>	<i>850</i>	<i>1,105</i>
Employed elsewhere	287	347	290	336
Not employed	451	506	560	769
Retired from regular work	1,176	1,860	1,642	2,333
Total registered medical practitioners	58,192	60,469	62,475	87,790
Percentage of registered medical practitioners employed in medicine	90.2	88.4	88.9	89.8

Table 2.3: Registered medical practitioners: workforce status and principal role of main job, by state and territory^(a), 2011

Workforce status/Principal role of main job	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia ^(b)
In the medical workforce	26,221	20,092	16,154	7,908	6,513	1,884	1,604	1,024	81,621
<i>Employed in medicine</i>	25,413	19,413	15,628	7,667	6,328	1,813	1,557	972	78,833
Clinician	23,819	18,106	14,839	7,237	5,963	1,709	1,374	895	73,980
Administrator	420	295	276	138	84	34	67	31	1,344
Teacher/educator	295	209	160	85	78	32	25	11	894
Researcher	452	485	126	89	95	15	27	16	1,307
Other	428	318	227	119	108	24	64	19	1,308
On extended leave	736	623	476	210	171	63	46	48	2,540
<i>Looking for work in medicine</i>	72	56	50	30	15	9	n.p.	n.p.	248
Employed elsewhere	5	4	3	n.p.	n.p.	—	n.p.	n.p.	15
Not employed	68	52	47	n.p.	n.p.	9	n.p.	n.p.	233
Not in the medical workforce	1,545	997	706	548	281	136	105	21	6,169
Overseas	316	273	187	120	74	35	n.p.	n.p.	2,731
<i>Not looking for work in medicine</i>	350	281	138	118	60	33	32	6	1,105
Employed elsewhere	120	108	22	25	13	5	12	—	336
Not employed	231	173	116	93	46	28	20	6	769
Retired from regular work	879	443	380	311	147	69	n.p.	n.p.	2,333
Total registered medical practitioners	27,766	21,089	16,860	8,455	6,794	2,020	1,709	1,045	87,790
Percentage of registered medical practitioners employed in medicine	91.5	92.1	92.7	90.7	93.1	89.7	91.1	93.0	89.8

(a) Derived from state and territory of main job where available; otherwise, state and territory of principal practice is used as a proxy. If principal practice details are unavailable, state and territory of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(b) Data include employed medical practitioners who did not state or adequately describe their state or territory, and medical practitioners who reside overseas. Therefore, state and territory totals may not sum to the national total. In particular, the total for working overseas is noticeably higher than the sum of the state and territory figures.

Source: NHWDS: medical practitioners 2011.

As mentioned previously, medical practitioner registration data in Australia moved from individual state- and territory-based systems to a national registration scheme, the NRAS, in 2010. This has had consequences for the way in which data have been reported by state and territory. For example, before the NRAS, data were reported by the state in which the medical practitioner was registered. Data obtained since the NRAS are based on the address of the medical practitioner's main location of practice at the time of the survey, unless stated otherwise.

To reflect the most recent contact address of the medical practitioner, the state and territory used in this report are derived from the location of the main job at the time of the survey. If these data were unavailable, the location of the principal practice or the residence address was used (see Appendix A). For example, if a medical practitioner had a principal practice address in Sydney but during the time of the survey worked in the Northern Territory, they would be included in Northern Territory data in this report.

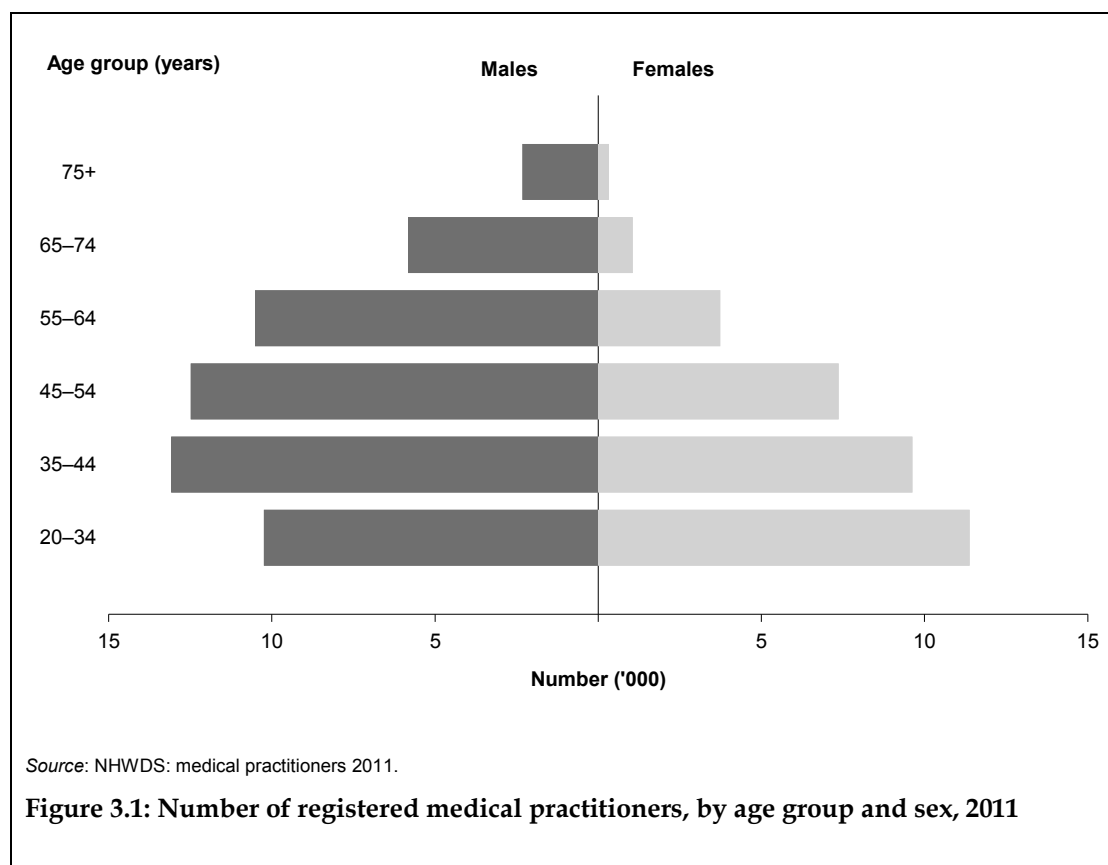
3 Medical practitioners employed in medicine in Australia

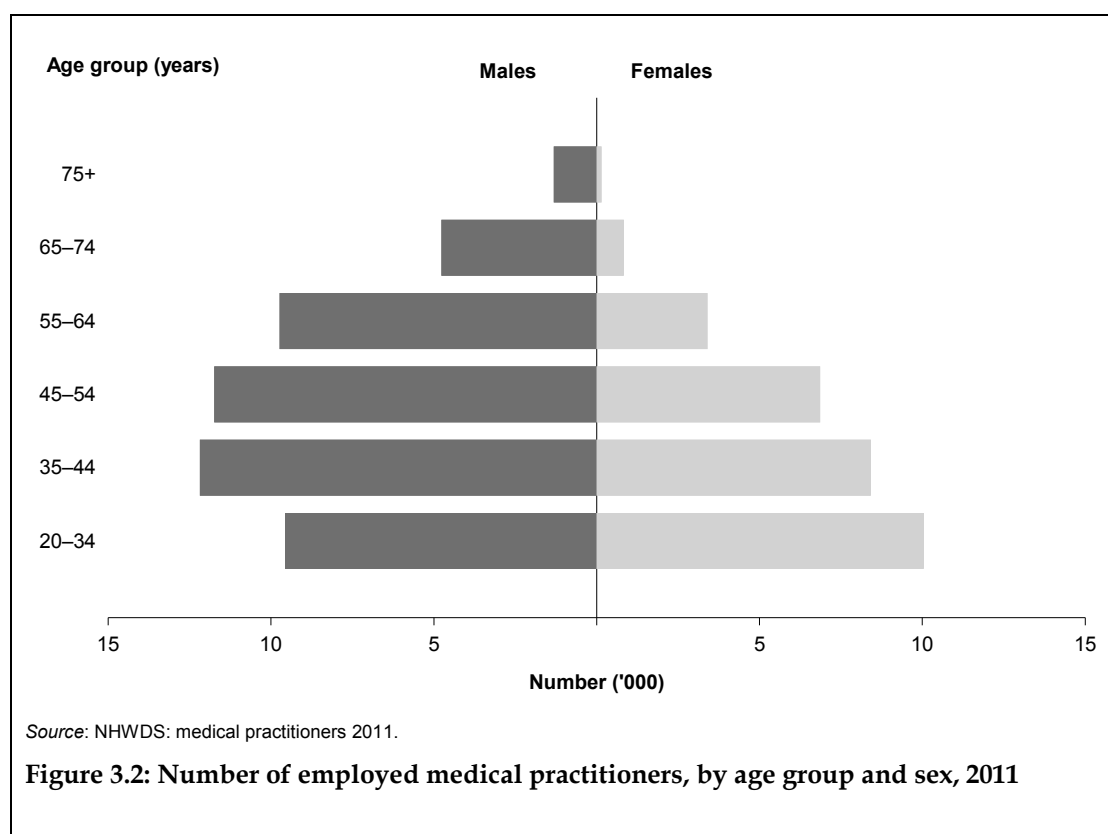
A medical practitioner who reported working in medicine in the week before the survey is considered to have been employed in medicine, or to be an employed medical practitioner, at the time of the survey (see 'Glossary'). In 2011, there were 78,833 medical practitioners employed in medicine in Australia (Figure 2.1).

The characteristics and supply of medical practitioners employed in Australia are the focus of the remainder of this report.

3.1 Age and sex

In 2011, the average age of employed medical practitioners was 45.5 years, slightly younger than the average of 45.9 years in 2007 (Table 3.2). The female proportion of the medical workforce rose from previous years, with women forming 34.0% of the medical workforce in 2007 and 37.6% in 2011. However, as can be seen in figures 3.1 and 3.2, the age pattern of women and men is different, with substantially more men in the older age groups and near equal numbers in the youngest group (20–34 years).





3.2 Aboriginal and Torres Strait Islander medical practitioners

In 2011, there were 249 medical practitioners employed in Australia who identified as Aboriginal or Torres Strait Islander. This represents 0.3% of all employed medical practitioners who chose to provide their Indigenous status (Table 3.1).

Table 3.1: Employed medical practitioners: Indigenous status, by state and territory^(a), 2011

Indigenous status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia ^(b)
Indigenous	93	22	59	32	17	4	7	16	249
Non-Indigenous	25,232	19,308	15,509	7,609	6,292	1,795	1,545	950	78,282
Not stated	89	83	61	27	19	14	4	5	302
Total	25,413	19,413	15,628	7,667	6,328	1,813	1,557	972	78,833
Percentage of medical practitioners employed in medicine who are Indigenous^(c)	0.4	0.1	0.4	0.4	0.3	0.2	0.5	1.7	0.3

(a) Derived from state and territory of main job where available; otherwise, state and territory of principal practice is used as a proxy. If principal practice details are unavailable, state and territory of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(b) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice and employed medical practitioners who reside overseas.

(c) Percentages exclude the 'Not stated' category.

Source: NHWDS: medical practitioners 2011.

About 3 in 5 (61.0%) Indigenous medical practitioners were employed in New South Wales and Queensland, the first and third most populous states in Australia (Table 3.1).

The Northern Territory has the highest proportion of medical practitioners who identified as Aboriginal or Torres Strait Islander, at 1.7%.

3.3 Field of medicine

Field of medicine describes the types of medical work undertaken by employed practitioners. The 2011 survey categorised the roles as clinician, administrator, teacher/educator, researcher and other.

Clinicians, the largest group, are mainly involved in the diagnosis, care and treatment of individuals, including recommending preventive action. Within the clinical group, further subfields are identified – general practitioner, hospital non-specialist, specialist, specialist-in-training and other clinicians. Medical practitioners working in the remaining fields are termed ‘non-clinicians’ (see Box 1.1 and ‘Glossary’).

Most employed medical practitioners in Australia in 2011 were working as clinicians (93.8%). Of these, the largest proportion were general practitioners (33.9%), followed by specialists (33.1%), specialists-in-training (16.9%) and hospital non-specialists (12.9%). Of the non-clinical workforce, administrators (27.7%) and researchers (26.9%) made up more than half of this group, followed by other non-clinicians (27.0%) and teachers/educators (18.4%) (Table 3.2).

Table 3.2: Employed medical practitioners: selected features, by main field of medicine, 2007 and 2011^(a)

Main field of medicine	Number	Average age	Aged 55 and over (per cent)	Women (per cent)	Average hours	FTE rate ^(b)	Change in number between 2007 and 2011 (per cent)
2007							
<i>Clinician</i>	62,652	45.6	24.7	34.1	43.4	322.6	..
Primary care practitioner	24,121	49.8	32.7	37.6	39.0	111.6	..
Hospital non-specialist	7,412	33.7	4.8	47.2	47.5	41.8	..
Specialist	21,702	49.8	32.5	23.0	44.5	114.6	..
Specialist-in-training	8,853	33.3	—	40.0	49.6	52.1	..
Other clinician	564	46.0	28.0	43.6	34.8	2.3	..

(continued)

Table 3.2 (continued): Employed medical practitioners: selected features, by main field of medicine, 2007 and 2011^(a)

Main field of medicine	Number	Average age	Aged 55 and over (per cent)	Women (per cent)	Average hours	FTE rate ^(b)	Change in number between 2007 and 2011 (per cent)
2007							
<i>Non-clinician</i>	4,556	51.2	37.7	32.4	39.0	21.1	..
Administrator	1,338	51.5	35.6	28.0	43.8	7.0	..
Teacher/Educator	730	52.3	38.2	43.9	34.2	3.0	..
Researcher	1,146	45.0	22.0	33.9	43.0	5.8	..
Public health physician	416	49.2	30.0	44.3	39.4	1.9	..
Occupational health physician	302	50.8	38.9	23.2	36.1	1.3	..
Other	623	62.3	74.8	21.9	27.7	2.0	..
Total	67,208	45.9	25.6	34.0	43.1	343.7	..
2011							
<i>Clinician</i>	73,980	45.1	24.6	37.4	43.5	360.4	18.1
General practitioner ^(c)	25,056	50.5	36.6	40.5	39.1	109.7	3.9
Hospital non-specialist	9,576	34.1	5.0	48.0	46.2	49.5	29.2
Specialist	24,475	50.1	32.6	25.6	44.7	122.5	12.8
Specialist-in-training	12,491	33.4	0.6	44.6	48.8	68.3	41.1
Other clinician ^(c)	2,382	42.7	21.2	45.6	39.4	10.5	322.3
<i>Non-clinician</i>	4,853	51.2	39.3	40.0	38.0	20.7	6.5
Administrator	1,344	53.1	44.7	32.2	42.2	6.4	0.4
Teacher/educator	894	53.5	44.4	47.3	32.1	3.2	22.5
Researcher	1,307	45.9	25.8	38.2	42.1	6.2	14.0
Other ^(d)	1,308	52.9	43.8	44.7	33.5	4.9	-2.5
Total	78,833	45.5	25.5	37.6	43.2	381.4	17.3

(a) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice and employed medical practitioners who reside overseas.

(b) Full-time equivalent (FTE) number per 100,000 population. FTE is based on total weekly hours worked (see Box 4.1 and 'Glossary').

(c) In 2011, primary care practitioners who did not self-identify as general practitioners may be included in 'Other clinician' rather than 'General practitioner'. Therefore, general practitioner data in 2011 are not directly comparable with primary care practitioner data in 2007.

(d) In 2011, 'Other' may include public health physician and occupational health physician, which were previously reported as separate categories.

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

Clinicians

The number of clinicians in Australia grew by 18.1% from 62,652 in 2007 to 73,980 in 2011 (Table 3.2). This growth was seen across all areas of main field of medicine, with the largest increases observed in 'Other clinicians' (322.3%), though this is likely to be highly influenced by the change in survey followed by 'Specialists-in-training' (41.1%). Growth in the number of general practitioners from 2007 to 2011 was relatively small (3.9%) compared with that for other fields of clinical practice, but may have been affected by a change in the category title.

Table 3.3: Employed medical practitioners: clinicians per 100,000 population, by main area of clinical practice, 2007 and 2011^(a)

Year	Main area of clinical practice					All clinicians
	General practitioner ^(b)	Hospital non-specialist	Specialist	Specialist-in-training	Other clinician ^(b)	
2007	114.8	35.3	103.3	42.1	2.7	298.2
2011	112.2	42.9	109.6	56.0	10.7	331.4

(a) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice and employed medical practitioners who reside overseas.

(b) In 2011, primary care practitioners who did not self-identify as general practitioners may be included in 'Other clinician' rather than 'General practitioner'. Therefore, general practitioner data in 2011 are not directly comparable with primary care practitioner data in 2007.

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

General practitioners

The 3.9% growth in general practitioner numbers between 2007 and 2011 (from 24,121 to 25,056), when coupled with an increase in the Australian population of 7.3% over this period, resulted in a decrease in the general practitioner rates from 114.8 to 112.2 per 100,000 population (tables 3.3 and D1). However, a change in the question response options from 'GP/primary care practitioner' in earlier surveys to 'General practitioner' may have impacts on the comparability of these responses over time, and time series data should be used with caution. This may have led to some of the observed increase in responses in the 'Other clinician' category.

The average age of general practitioners increased slightly between 2007 and 2011 (49.8 and 50.5, respectively). General practitioners, in 2011, had the highest proportion aged 55 and over (36.6%) of all clinician subfields (Table 3.2). The proportion of general practitioners who were female also increased over the 5-year period, from 37.6% in 2007 to 40.5% in 2011.

Hospital non-specialists

The number of hospital non-specialists grew between 2007 and 2011 by 29.2% from 7,412 in 2007 to 9,576 in 2011 (Table 3.2). This was matched by an increase from 41.8 full-time equivalent (FTE) (see Glossary and Box 4.1) hospital non-specialists per 100,000 population in 2007 to 49.5 in 2011 (Table 3.2).

The average age for this clinician subfield in 2011 was 34.1, greater than in 2007 (33.7) (Table 3.2). The proportion of women increased from 47.2% in 2007 to 48.0% in 2011. Hospital non-specialists were the second youngest subfield among clinicians in 2011.

Specialists

Comparison of specialists who are clinicians and their specialty of practice in 2011 with data from 2009 and earlier years should be interpreted with caution. This is due to significant changes in the classification of specialties, and in the methodology of collection (see Appendix A).

The number of employed specialist clinicians increased between 2007 and 2011 (from 21,702 to 24,475) (Table 3.2). From 2007 to 2011, there was a 12.8% increase in specialist numbers, contributing to an increase from a rate of 103.3 to 109.6 specialist clinicians per 100,000 population (tables 3.3, 3.4 and D1).

The average age for specialist clinicians was 50.1 in 2011, compared with 49.8 in 2007, which was the same as general practitioners in 2011. In 2011, a quarter (25.6%) of specialist clinicians were female, the lowest proportion of all clinician subfields (Table 3.2).

Table 3.4: Employed specialists: clinicians per 100,000 population, by broad specialty group, 2007 and 2011^(a)

Year	Broad specialty group ^(b)				Total
	Physician	Pathology	Surgery	Other specialties	
2007	27.8	4.9	21.6	49.0	103.3
2011	23.1	4.1	17.7	62.4	109.6

(a) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice and employed medical practitioners who reside overseas.

(b) There have been significant changes in the classification of specialties and in the methodology of collection between the AIHW Medical Labour Force Survey 2007 and the NHWDS: medical practitioners 2011. In 2007, the specialty of practice was self-identified; while in 2011 specialty was extracted from registration data (see Appendix A for further information).

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

Specialists-in-training

The number of specialists-in-training increased by 41.1% between 2007 and 2011, from 8,853 to 12,491 (Table 3.2). This equates to a rise over the period from 42.1 trainee specialists per 100,000 population, to 56.0 per 100,000 in 2011 (tables 3.3 and D1).

In 2011, 44.6% of specialists-in-training were female; more than one and a half times the proportion of specialists (25.6%), and up from 40.0% in 2007.

The average age of specialists-in-training (33.4 in 2011) was relatively young compared with specialists and general practitioners.

Non-clinicians

Non-clinician practitioners are medical practitioners who reported in the Medical Workforce Survey 2011 that they worked as one of the following:

- an administrator: employed in medical administration
- a teacher/educator: teaching or training people in medicine
- a researcher: engaged in medical research
- in a non-clinical medical field that is not one of the above.

It should be noted that using this definition, a clinician may undertake some non-clinician functions and vice versa.

In 2011, there were 4,853 employed non-clinician medical practitioners, compared with 73,980 employed clinicians (Table 3.2). This equated to 6.2% of medical practitioners employed in medicine in Australia, of which over a quarter were administrators (27.7%), researchers (26.9%) and other clinicians (27.0%).

The number of employed non-clinician medical practitioners increased by 6.5% from 2007 to 2011. Among the non-clinical fields, teachers/educators had the highest increase in numbers (up 22.5%), and administrators reported the lowest increase (0.4%).

Non-clinicians were, on average, slightly older than clinicians (51.2 and 45.1, respectively, in 2011). In 2011, 2 in 5 (40.0%) were female, which is slightly higher than the proportion for clinicians (37.4%).

Specialty of practice

Table 3.5 contains an analysis of a range of specialist practice areas, by number, average age, proportion aged 55 and over, proportion of females and average weekly hours worked. The main specialty of practice categories captured in the NHWDS: medical practitioners 2011 were not identical to those collected in the previous AIHW Medical Labour Force Survey, thus comparisons with results from 2009 and earlier years cannot be made and are therefore not presented in this report.

Table 3.5: Specialists: selected features, by main specialty of practice, 2011^(a)

Specialty of practice	Specialist Clinician					All Specialists				
	Number	Average age	Aged 55 and over (per cent)	Women (per cent)	Average weekly hours	Number	Average age	Aged 55 and over (per cent)	Women (per cent)	Average weekly hours
Addiction medicine	34	57.2	61.4	23.8	43.9	48	56.6	58.3	27.1	44.0
Anaesthesia	3,384	48.3	27.2	24.6	43.3	3,458	48.5	27.6	24.6	43.2
Dermatology	396	50.2	34.3	40.2	40.2	403	50.2	34.5	40.5	40.2
Emergency medicine	956	44.1	7.1	28.4	42.2	1,055	44.5	8.0	27.9	42.5
General practice	365	51.9	39.5	29.6	44.1	439	52.0	39.4	31.4	44.1
Intensive care medicine	291	44.9	13.5	21.3	53.5	313	45.4	14.4	20.4	52.7
Medical administration	18	57.4	54.9	43.9	40.1	125	53.2	47.2	38.5	44.3
Obstetrics and gynaecology	1,380	52.1	38.6	35.7	48.3	1,446	52.3	39.6	35.5	47.7
Occupational and environmental medicine	148	55.3	61.8	19.6	40.0	187	56.2	63.6	18.2	40.3
Ophthalmology	790	52.3	38.2	17.2	43.3	803	52.5	38.4	17.3	43.2
Paediatrics and child health	1,276	49.6	30.7	40.6	44.4	1,419	49.7	31.1	41.6	44.1
Pain medicine	26	51.1	37.7	11.8	47.4	27	52.2	40.8	11.3	47.1
Palliative care	84	50.9	41.6	56.1	40.3	92	51.3	43.4	56.6	39.5
Pathology	918	51.3	37.3	35.9	42.0	1,098	52.0	39.4	36.9	41.7
Physician	5,157	49.8	31.5	24.9	46.1	5,689	49.8	31.9	25.7	45.9
Psychiatry	2,534	52.2	40.9	35.6	38.6	2,813	52.4	41.2	34.9	38.9
Public health medicine	35	51.9	38.3	48.9	36.7	125	53.0	38.9	42.1	40.3
Radiation oncology	252	46.9	20.4	34.4	45.1	265	47.3	22.3	34.3	45.1
Radiology	1,558	50.1	32.6	23.0	42.1	1,598	50.2	32.9	23.1	41.9
Rehabilitation medicine	285	49.0	27.7	39.4	41.2	305	49.7	30.1	39.2	40.7
Sexual health medicine	44	50.6	31.3	63.4	37.1	52	50.1	30.5	65.3	36.2
Sport and exercise medicine	80	49.0	25.7	21.2	45.3	85	49.2	27.1	21.2	45.1
Surgery	3,951	51.7	37.3	8.2	50.1	4,125	52.3	39.1	8.0	49.3
Not stated/Inadequately described	512	45.7	22.0	28.0	42.1	596	47.1	25.6	27.9	40.7
Total	24,475	50.1	32.6	25.6	44.7	26,567	50.4	33.5	26.1	44.4

(a) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

Source: NHWDS: medical practitioners 2011.

‘Physician’ was the largest main speciality of practice among both specialists who are clinicians and all specialists (5,157 and 5,689, respectively). These physicians represented 21.1% of clinician specialists and 21.4% of all specialists. The second largest main speciality of practice for clinician specialists and all specialists was surgery (3,951 and 4,125,

respectively), and these surgeons represented 16.1% of clinicians and 15.5% all specialists (Table 3.5).

The main specialty of practice with the oldest average aged workers was medical administration for clinicians (57.4 years) and addiction medicine for all specialists (56.6 years), although numbers are relatively small. The specialty with the youngest average age was emergency medicine for both clinicians and all specialists (44.1 and 44.5 years, respectively).

For all specialists, the proportion of women was lowest for surgery at 8.0%, and highest for palliative care and sexual health medicine (56.6% and 65.3%, respectively). The proportion of all specialists aged 55 and over was lowest for emergency medicine (8.0%), and highest for occupational and environmental medicine and addiction medicine (63.6% and 58.3%, respectively), although numbers in these groups are quite low (Table 3.5).

3.4 Country of first medical qualification

Information about the country of first medical qualification was collected in previous AIHW Medical Labour Force surveys; however, it was not included as a survey question in 2011, as it is now collected as part of the NRAS registration data. Although it is understood that country of first medical qualification is being entered for new registrants, data migrated from some of the previous jurisdiction-based systems did not contain this information in a consistent manner, thus it could not be included in this report due to variability in scope and coverage. It is expected that this information will improve over time and will be able to be reported in future years.

3.5 Work setting

Medical practitioners were asked to indicate the setting of their main job in medicine in the week before completing the Medical Workforce Survey 2011.

Of all employed clinicians, over two-fifths (44.8%) worked in private practice at the time of the survey. Of those working in private practice, about 7 in 10 were in group practices (70.9%) and 3 in 10 (27.2%) were in solo practices (Table 3.6).

Hospital was reported as the work setting of main job for 45.0% of clinicians. Of these clinicians working in hospitals, only 2.3% indicated outpatient services as their main work setting.

Clinicians working in community health-care services made up only 2.1% of all practitioners employed. Within this small group, 57.8% were working in community mental health service settings, 34.8% in other community health-care service settings and 7.5% in community drug and alcohol service settings (Table 3.6).

Educational facility was the main work setting for 2.0% of all practitioners, but only 0.7% of clinicians reported this as their main work setting. Among all practitioners working in educational facilities, 91.7% were working in tertiary educational facilities.

Table 3.6: Employed medical practitioners: number of and average weekly hours worked, by work setting, 2007 and 2011^(a)

Work setting	Clinicians		Total practitioners	
	Number	Average weekly hours	Number	Average weekly hours
2007				
Total employed	62,652	43.4	67,208	43.1
2011				
<i>Private practice</i>	33,140	41.1	33,596	40.9
Solo private practice	9,028	45.3	9,230	44.9
Group private practice	23,494	39.6	23,739	39.5
Locum private practice	618	35.2	627	35.2
Aboriginal health service	483	37.6	532	37.8
<i>Community health-care services</i>	1,525	37.1	1,625	37.1
Community mental health service	881	38.5	931	38.6
Community drug and alcohol service	114	36.8	124	37.5
Other community health care service	530	34.9	570	34.6
<i>Hospital</i>	33,256	46.6	34,899	46.4
Outpatient services	768	36.6	808	36.8
Other hospital service	32,488	46.8	34,091	46.6
<i>Residential health-care services</i>	180	41.2	194	41.2
Residential aged care	93	37.9	101	37.9
Residential mental health care service	86	44.8	93	44.9
Commercial/business services	177	34.3	333	35.8
<i>Educational facility</i>	516	46.9	1,582	41.4
Tertiary educational facility	506	47.0	1,450	42.0
School and other educational facility	10	42.1	132	34.8
Correctional services	72	37.2	83	37.6
Defence forces	252	41.1	317	41.7
Other government department or agency	235	38.7	673	38.0
Other	4,144	41.7	4,999	40.1
Total employed	73,980	43.5	78,833	43.2

(a) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

Less than 1% of all practitioners were working in each of the following settings: other government department or agency (0.9%); Aboriginal health service (0.7%); commercial/business services (0.4%); defence forces (0.4%); residential health-care services settings (0.2%); and correctional services (0.1%) (Table 3.6).

3.6 Working hours

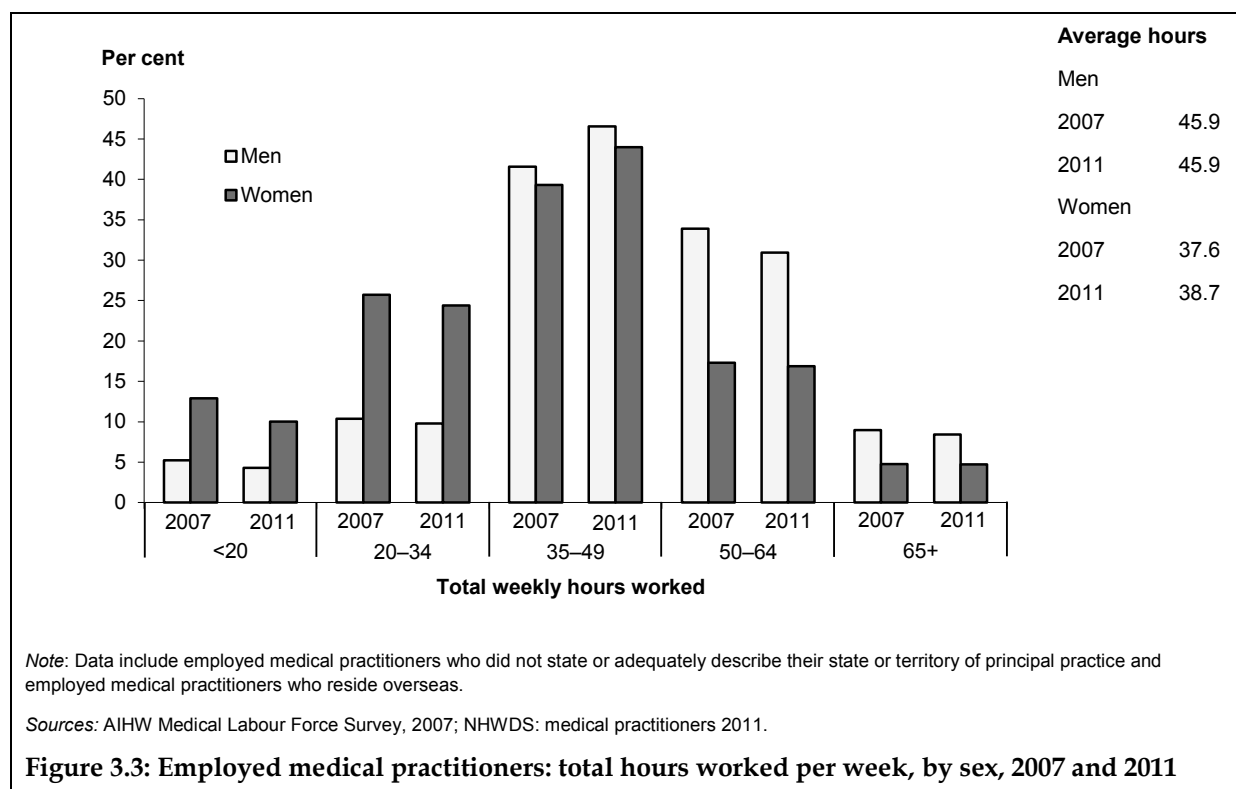
The total number of hours worked per week is reported by medical practitioners in the Medical Workforce Survey, and relates to the number of hours worked in all medical fields in the week before the survey. Working hours are presented by field of medicine because many medical practitioners allocate their time across more than one medical field. Clinical hours are the reported hours worked per week as a clinician.

The highest average weekly hours worked, for both clinicians and all specialists, was by intensive care medicine specialists, at 53.5 and 52.7 hours, respectively. The second highest average weekly hours worked was by surgery specialists, at 50.1 hours for clinicians and 49.3 for all specialists (Table 3.5).

For clinicians, the main specialty area with the lowest average weekly hours worked was public health medicine (36.7 hours), but this represented only 35 practitioners. For all specialists, sexual health medicine had the lowest average weekly hours worked (36.2 hours), and represented only 44 practitioners.

Sex

Earlier medical workforce surveys have shown that male medical practitioners worked more hours per week than female practitioners. This is primarily due to a larger proportion of female medical practitioners working part-time hours of less than 35 hours per week (34.4%), compared with males (14.1%) (Figure 3.3).



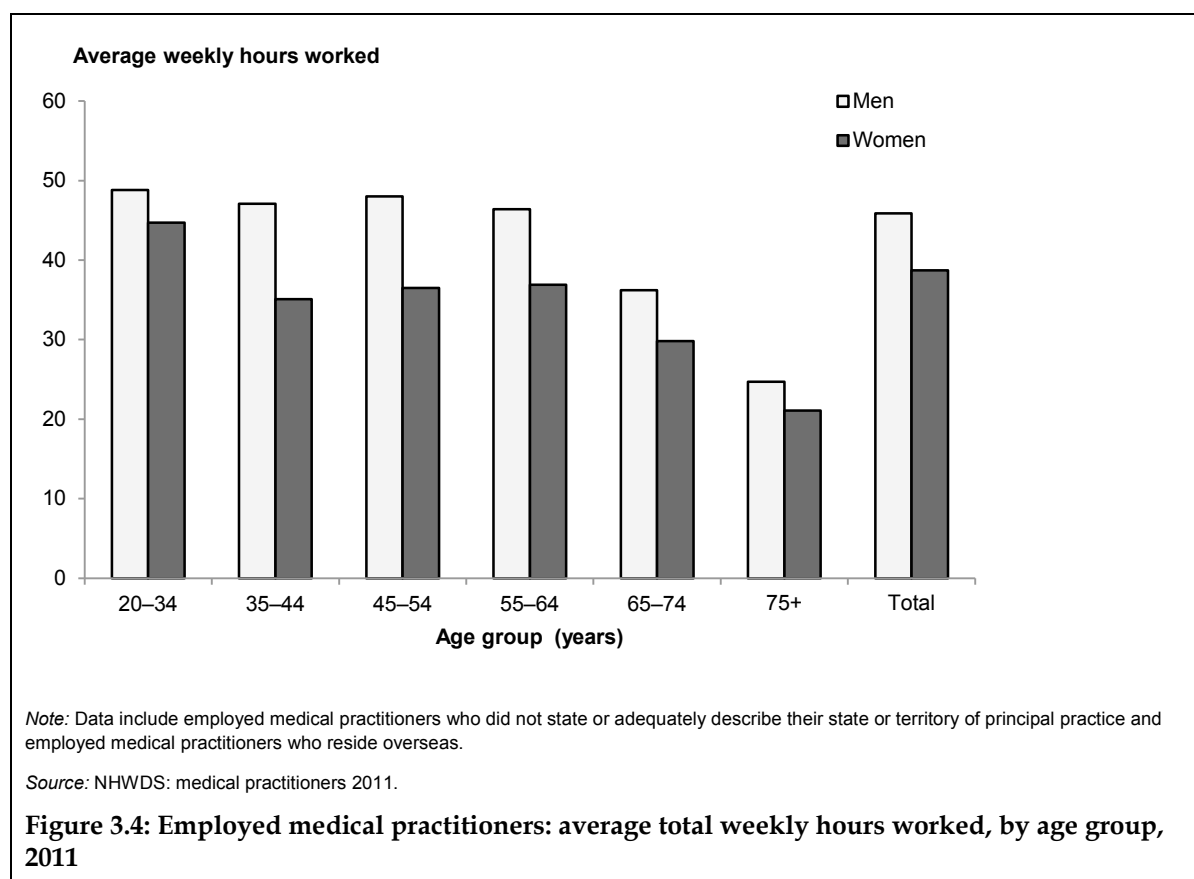
In 2011, male medical practitioners worked an average of 45.9 hours per week, while female medical practitioners worked an average of 38.7 hours per week (Figure 3.3). In 2011 men worked an average of 7.2 hours per week more than women, and men were more likely to work more than 35 hours per week.

Despite the shift towards working fewer hours, the distribution of hours worked by male medical practitioners remained skewed towards long working weeks. About 39.4% of male medical practitioners worked 50 or more hours per week in 2011, although the proportion had fallen from 42.8% in 2007. The proportion of women working 50 or more hours per week remained stable over the same period (22.1% in 2007 and 21.6% in 2011). In 2011, 83.3 per cent of male medical practitioners, compared with 61.3 per cent of female medical practitioners, reported working on average greater than 35 hours per week (Figure 3.3).

Total average hours worked by women have remained relatively stable from 2007 to 2011, while the proportion working 35–49 hours has increased over this period. The proportion of women working 50–64 hours decreased from 17.3% in 2007 to 16.9% in 2011. The proportion of men working 20–34 hours and 65 or more hours per week remained relatively stable from 2007 to 2011.

Age

Medical practitioners aged 20–34, men and women, worked the highest average weekly hours in 2011. Men and women in the 65–74 and 75 and over age groups worked the lowest average weekly hours (Figure 3.4). In other age groups, different patterns were observed for men and women, although men worked higher average weekly hours than women in every age group.



Men in all age groups had higher average weekly hours than their female counterparts, with the largest difference being for those in the 35–44 and 45–54 age groups (12.0 and 11.5 average weekly hours, respectively).

Average weekly hours worked by men stayed above 45 hours per week for all age groups up to 65. However, average weekly hours for women in the 20–34 age group averaged 44.7 hours (the highest of all age groups), then decreased to 35.1 hours for the 35–44 age group, before slightly increasing in the 45–54 and 55–64 age groups (36.5 and 36.9 hours, respectively). For both men and women, average weekly hours declined in the 65–74 age group, (36.2 hours for men and 29.8 hours for women), with a further decrease in the 75 and over age group. However, all medical practitioners in this oldest age group worked an average of 24.3 hours per week, being more than half of a full-work week of 40 hours (Figure 3.4).

Work setting

The average weekly hours worked for all employed medical practitioners, clinicians and total practitioners, remained stable between 2007 and 2011 (Table 3.6).

In 2011, clinicians worked on average 43.5 hours per week, which was similar to total practitioners at 43.2 hours (tables 3.2 and 3.6). Clinicians working in educational facilities and hospitals reported the highest average hours per week (46.9 and 46.6 hours, respectively), with those working in commercial/business services the lowest (34.3 hours).

For those working in private practice, clinicians working in a solo practice worked the highest number of hours (45.3 hours), compared with clinicians working in group and locum private practice (39.6 and 35.2 hours, respectively) (Table 3.6).

Among all practitioners working in hospitals, those working in other hospital services worked on average 9.8 hours more per week than those working in outpatient services (46.6 compared with 36.8 hours, respectively).

For practitioners working in residential health-care services, those in mental health-care services worked on average 7 hours per week more than those working in aged care facilities (44.9 compared with 37.9 hours, respectively) (Table 3.6).

States and territories

Across the jurisdictions, there was some variation in average weekly hours worked by medical practitioners. In 2011, medical practitioners in the Australian Capital Territory worked the highest weekly hours on average (44.4 hours), followed by those working in the Northern Territory (44.1 hours). Medical practitioners in South Australia worked the lowest weekly hours on average at 42.4 hours.

Between 2007 and 2011, there was an increase in the hours worked by all medical practitioners in all jurisdictions, except in Victoria and Queensland. Both male and female practitioners worked higher weekly hours on average in 2011 compared with 2007 across all jurisdictions, except male medical practitioners in Victoria, Queensland and the Northern Territory, who worked lower weekly hours on average in 2011 than in 2007 (Table 3.7).

Table 3.7: Employed medical practitioners: average total weekly hours^(a) worked, by sex and state and territory, 2007^(b) and 2011^{(c)(d)}

Sex	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
2007									
<i>Persons</i>	43.5	43.4	43.2	42.0	42.0	40.6	42.9	43.2	43.1
Men	46.0	46.3	46.3	45.0	44.9	43.9	45.7	46.8	45.9
Women	38.5	37.9	37.2	36.4	36.0	34.6	38.5	38.7	37.6
2011									
<i>Persons</i>	43.8	42.7	43.2	42.8	42.4	42.5	44.4	44.1	43.2
Men	46.3	45.6	46.0	45.6	45.1	44.7	46.6	46.6	45.9
Women	39.5	38.0	38.3	38.1	37.5	38.9	41.2	41.2	38.7

(a) Care should be taken in interpreting change in the estimates on hours worked due to changes in the question on hours worked from 2007 to 2011.

(b) State and territory estimates for 2007 are based on state or territory of registration and should be treated with caution due to low response rates in some jurisdictions, particularly the Northern Territory (27.1%). See Appendix A for further information.

(c) Derived from state and territory of main job where available; otherwise, state and territory of principal practice is used as a proxy. If principal practice details are unavailable, state and territory of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(d) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

Sources: AIHW Medical Labour Force Survey, 2007; NHWDS: medical practitioners 2011.

Remoteness areas

The Remoteness Areas (RA) from the Australian Standard Geographical Classification (ASGC) (ABS 2008) have been used in this report to show data by geographic region (see 'Glossary' for further information).

Table 3.8: Employed medical practitioners: average total weekly hours^(a) worked, by sex and remoteness area^(b) of main job, 2007 and 2011^(c)

Sex	Major cities	Inner regional	Outer regional	Remote/Very remote ^(d)	Australia
2007					
<i>Persons</i>	42.9	43.3	44.0	45.2	43.1
Men	45.8	46.1	47.2	46.9	45.9
Women	37.6	37.1	37.1	42.1	37.6
2011					
<i>Persons</i>	43.0	43.3	44.6	45.8	43.2
Men	45.8	45.7	47.2	47.8	45.9
Women	38.5	38.6	40.1	42.5	38.7

(a) Care should be taken in interpreting change in the estimates on hours worked due to changes in the question on hours worked from 2007 to 2011.

(b) Derived from remoteness area of main job where available; otherwise, remoteness area of principal practice is used as a proxy. If remoteness area details are unavailable, remoteness area of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(c) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

(d) Includes *Migratory* areas.

Note: In 2011, a total of 106 employed medical practitioners did not report the RA they worked in. In 2007, 4,754 did not report the RA they worked in. Hence the number of employed medical practitioners stated by RA is an underestimate.

Sources: AIHW Medical Labour Force Survey, 2007; NHWDS: medical practitioners 2011.

In 2011, medical practitioners in *Remote/Very remote* areas worked longer hours than the national average: an average of 45.8 hours per week compared with of 43.2 hours (Table 3.8).

Medical practitioners in *Remote/Very remote* areas experienced an increase in average hours of 0.6 hours between 2007 and 2011, compared with a national increase of 0.1 hours. Male practitioners in these regions experienced an increase in weekly hours worked on average over the same period of 0.9 hours, from 46.9 hours in 2007 to 47.8 hours in 2011, while female practitioners worked 0.3 weekly hours on average more over the same period.

Employment sector

In 2011, general practitioners worked mostly in the private sector; a FTE number of 22,205 worked in this sector compared with a FTE number of 2,858 in the public sector (Table 3.9). Hospital non-specialists and specialists-in-training worked mostly in the public sector. The FTE number of hospital non-specialists was 10,458 in the public sector compared with 827 in the private sector. The FTE number of specialists-in-training was also higher in the public sector; 14,817 compared with 825 in the private sector. Specialists were more evenly spread through both sectors (FTE number of 15,610 in the public sector and 13,841 in the private sector).

Table 3.9: Employed medical practitioners: employment sector of hours worked^(a), by principal area of practice^(b), by selected characteristics, 2011

Characteristic	Clinical						Total
	General practitioner	Hospital non-specialist	Specialist	Specialist-in-training	Other clinician	Non-clinical	
Public sector							
Number	5,577	9,194	20,676	12,451	1,591	708	50,196
Average age	48.5	33.8	49.0	33.4	39.8	52.5	42.0
Aged 55 and over (per cent)	30.9	4.9	28.6	0.7	17.7	43.1	17.4
Women (per cent)	37.4	48.4	27.3	45.0	45.9	41.8	37.5
Average weekly public hours	20.5	45.5	30.2	47.6	39.5	33.8	36.6
FTE number ^(c)	2,858	10,458	15,610	14,817	1,571	598	45,929
Private sector							
Number	24,202	1,239	18,333	1,474	1,454	535	47,236
Average age	50.8	41.5	51.4	34.7	48.4	53.1	50.3
Aged 55 and over (per cent)	37.4	14.6	37.2	1.2	31.0	46.5	35.5
Women (per cent)	40.6	42.1	21.3	36.3	43.6	39.0	33.1
Average weekly private hours	36.7	26.7	30.2	22.4	29.0	26.3	33.1
FTE number ^(c)	22,205	827	13,841	825	1,054	352	39,088

(a) Data for each sector include medical practitioners who reported working hours in that sector. Medical practitioners working in more than one sector are counted in each sector.

- (b) Because medical practitioners may work in more than one sector and in more than one capacity they may only work a small number of hours in one or other of these categories. For example, general practitioners may work the majority of their hours in private practice and a small number of hours as a hospital non-specialist in the public sector. In this table those public hours would appear under the general practitioner column.
- (c) FTE number is based on total weekly hours worked (see Box 4.1 and 'Glossary').

Source: NHWDS: medical practitioners 2011.

The average age of medical practitioners in the private sector was higher than in the public sector in all categories. Women are more likely to work in the public sector though this may be in part due to the correlation with age as female medical practitioners were, on average, younger than male medical practitioners. Younger medical practitioners were mostly located in the public sector-dominant 'hospital non-specialists' and 'specialists-in-training' areas (Table 3.9).

4 Supply of medical practitioners

4.1 Overall supply

Data on the size and characteristics of the medical workforce present a valuable profile of medical practitioners, but do not give a complete picture of the overall level of service provided. Some medical practitioners have long working weeks and others work part time, therefore their relative contributions to the level of service need to be taken into account to measure the overall supply effectively.

To do this, information on the number of employed medical practitioners, in combination with their average hours worked, has been used to calculate a 'full-time equivalent' (FTE) number of practitioners, based on a 'standard full-time working week' (see Box 4.1).

To take account of population differences across Australia, and across time, Australian Bureau of Statistics estimated resident population figures have been used to convert the FTE number to a FTE rate (FTE per 100,000 population) (see Appendix D).

Box 4.1: Full-time equivalent

The number of full-time equivalent medical practitioners is calculated by multiplying the number of medical practitioners by the average weekly hours worked, and dividing the result by the number of hours in a standard full-time working week.

FTE gives a useful measure of supply because it takes into account both those working full time and those working part time.

The concept of FTE depends on what may reasonably be regarded as a full-time job, and this varies across occupations. The Australian Bureau of Statistics (ABS) defines full-time work as being at least 35 hours per week, and many FTE calculations are based on this (ABS 1996). However, people in managerial or professional jobs tend to work more than 35 hours per week (ABS 2012a) and medical practitioners have worked, on average, 43.2 hours per week (Table 3.6). In this report, a standard week of 40 hours has been used to calculate realistic FTE measures of service delivery by practitioners. That is, FTE measures the number of 40-hour week workloads provided by the medical practitioner workforce.

4.2 Supply of employed clinicians

A clinician is a medical practitioner mainly involved in the diagnosis, care and treatment of individuals, including recommending preventive action. In this report, medical practitioners who reported spending the majority of their total weekly working hours involved in clinical practice are classed as clinicians.

Across all states and territories, the overall supply of clinicians increased between 2007 and 2011, from 323.5 FTE per 100,000 population in 2007 to 360.4 in 2011 (Table 4.1). However, this pattern was not consistent across all clinician subfields.

Over this period, the supply of specialists-in-training, specialists, hospital non-specialists and other clinicians all increased (52.2 to 68.3, 114.9 to 122.5, 41.9 to 49.5 and 2.3 to 10.5 FTE per 100,000 population, respectively).

The supply of general practitioners decreased between 2007 and 2011, from 111.9 to 109.7 FTE per 100,000 population (Table 4.1).

The supply of specialist clinicians across the broad specialty groups is provided in Table 4.1. For each broad specialty group, there was a decline in supply between 2007 and 2011. The supply of physicians decreased the most during this time period, by 18.1% from 32.5 to 26.6 FTE per 100,000 population. The exception was other specialties which increased from 51.7 to 67.0 FTE per 100,000 population. Changes among the subcategories of specialist are also likely to be affected by changes in the classification and in the collection of the data, and should be treated with caution.

Table 4.1: Employed medical practitioners: FTE per 100,000 population^(a), by main field of medicine, 2007 and 2011^(b)

Main field of medicine	2007	2011	Change in FTE rate between 2007 and 2011 (per cent)
<i>Clinician</i>	323.5	360.4	11.4
General practitioner ^(c)	111.9	109.7	-2.0
Hospital non-specialist	41.9	49.5	18.3
<i>Specialist^(c)</i>	114.9	122.5	6.6
Physician	32.5	26.6	-18.1
Pathology	5.1	4.3	-15.0
Surgery	25.7	22.2	-13.8
Other specialties	51.7	67.0	29.6
Specialist-in-training	52.2	68.3	30.7
Other clinician ^(d)	2.3	10.5	350.4
Non-clinician	21.1	20.7	-2.3
Total	344.6	381.4	10.7

(a) Full-time equivalent (FTE) number per 100,000 population. FTE is based on total weekly hours worked (see Box 4.1 and 'Glossary').

(b) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

(c) In 2011, primary care practitioners who did not self-identify as general practitioners may be included in 'Other clinician' rather than 'General practitioner'. Therefore, general practitioner data in 2011 are not directly comparable with primary care practitioner data in 2007.

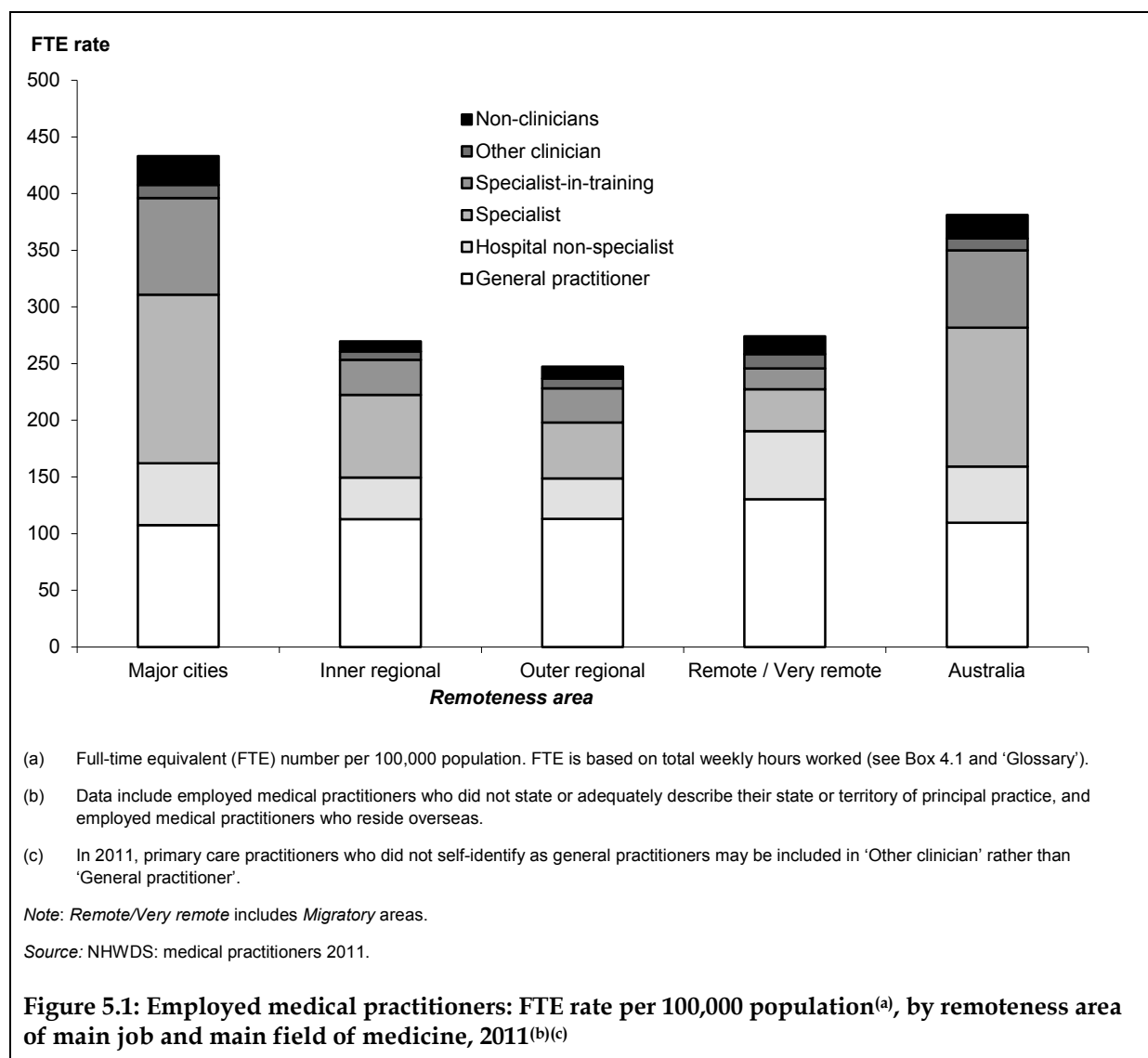
(d) Specialist sub-categories were collected using a survey instrument in 2007 and were derived from the formally recognised specialties recorded on the AHPRA registration database in 2011. Total for 2011 includes no records with specialty data recorded on AHPRA database.

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

5 Geographic profile of employed medical practitioners

5.1 Remoteness areas of Australia

The distribution of medical practitioners in Australia is of considerable interest to both government and communities. Information on the work location of medical practitioners is collected in the Medical Workforce Survey, providing a means, in combination with other data on hours and population, of examining variability in the supply of medical practitioners across Australia.



Using the postcode of practitioners' main work location, each practitioner is allocated to one of the following in the Australian Standard Geographical Classification Remoteness Area (ASGC RA): *Major cities*, *Inner regional*, *Outer regional*, *Remote*, *Very remote* and *Migratory* (see 'Glossary'). In this report, the *Remote*, *Very remote* and *Migratory* categories have been combined due to small numbers (Figure 5.1).

Major cities

Of the medical practitioners employed in *Major cities* in 2011, 93.4% were clinicians. Of employed clinicians, 35.6% were specialists, 30.1% were general practitioners, 18.6% specialists-in-training and 12.5% hospital non-specialists (Table 5.1).

Table 5.1: Employed medical practitioners in *Major cities*: selected features, by main field of medicine of main job, 2007 and 2011^{(a)(b)}

Main field of medicine	Number	Average age	Aged 55 and over (per cent)	Women (per cent)	Average hours	FTE rate ^(c)
2007						
<i>Clinician</i>	46,589	45.3	24.4	35.0	43.2	349.0
Primary care practitioner	16,291	50.5	34.7	39.1	38.0	107.4
Hospital non-specialist	5,504	33.0	4.2	49.0	47.4	45.2
Specialist	17,024	49.6	31.5	24.0	44.3	130.8
Specialist-in-training	7,383	33.1	—	40.1	49.5	63.4
Other clinician	388	45.2	25.8	47.7	35.4	2.4
<i>Non-clinician</i>	3,643	50.9	37.0	32.5	39.3	24.8
Total	50,232	45.7	25.3	34.8	42.9	373.7
2011						
<i>Clinician</i>	58,166	45.0	24.5	38.0	43.3	407.6
General practitioner ^(d)	17,489	51.4	39.3	41.8	38.0	107.5
Hospital non-specialist	7,292	33.3	4.0	49.4	46.3	54.6
Specialist	20,697	49.9	31.9	26.6	44.4	148.7
Specialist-in-training	10,836	33.4	0.6	44.7	48.6	85.2
Other clinician ^(d)	1,852	43.3	22.4	46.7	38.6	11.6
<i>Non-clinician</i>	4,123	50.9	38.2	40.5	38.2	25.5
Total	62,289	45.4	25.4	38.2	43.0	433.4

(a) Derived from remoteness area of main job where available; otherwise, remoteness area of principal practice is used as a proxy. If remoteness area details are unavailable, remoteness area of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(b) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

(c) Full-time equivalent (FTE) number per 100,000 population. FTE is based on total weekly hours worked (see Box 4.1 and 'Glossary').

(d) In 2011, primary care practitioners who did not self-identify as general practitioners may be included in 'Other clinician' rather than 'General practitioner'. Therefore, general practitioner data in 2011 are not directly comparable with primary care practitioner data in 2007.

Note: In 2011, a total of 24 employed medical practitioners did not report the RA they worked in. In 2007, 4,754 did not report the RA they worked in. Hence the number of employed medical practitioners stated by RA is an underestimate.

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

The proportions of specialists and specialists-in-training were higher in *Major cities* than any other remoteness area. The proportions of general practitioners and hospital non-specialists were the lowest of the four RAs, at 28.1% and 11.7%, respectively. This indicates that the medical practitioner population is more evenly distributed across clinician types in *Major cities* than in the other RAs, which may be attributed to specialists and specialists-in-training working mainly in *Major cities*.

In 2011, more than one-third (38.2%) of medical practitioners in *Major cities* were female, which is slightly more than in *Remote/Very remote* areas (38.0%). The average age of medical practitioners in *Major cities* was 45.4, which was about the national average (45.5) in 2011 (tables 3.2, 5.1 and 5.4).

Between 2007 and 2011, the number of employed medical practitioners in *Major cities* increased by 23.8%. For all states and territories, the population in *Major cities* increased 7.2% over the same period (Table D1). For clinicians overall, the increase was 24.8%. Among clinicians, the largest increase over the same period occurred for the category of other clinicians (377.3%), which may be explained by a change in the definition of primary care practitioner (see footnote (d) in Table 5.1). This was followed by specialists-in-training and hospital non-specialists (46.8% and 32.5%, respectively) (Table 5.1).

There was also a rise in the supply of medical practitioners in *Major cities* of 59.7 FTE per 100,000 population, and in the supply of clinicians of 58.6 FTE per 100,000 population, from 2007 to 2011. However, over the same period, the supply of general practitioners remained stable at 107.4 FTE per 100,000 population in 2007 and 107.5 in 2011.

Inner regional areas

Of the medical practitioners employed in *Inner regional* areas in 2011, 96.1% were clinicians (Table 5.2). As with *Major cities*, a relatively high proportion of these clinicians were specialists (35.6% in *Major cities* and 26.5% in *Inner regional*). However, *Inner regional* areas had a much higher proportion who were general practitioners (46.8% compared with 30.1%), and a lower proportion who were specialists-in-training (10.3%) than *Major cities* (18.6%).

In 2011, medical practitioners employed in *Inner regional* areas worked, on average, similar hours to the national average (43.3 compared with 43.2 hours). However, they were slightly older, with an average age of 46.1 compared with 45.5 nationally. They were also less likely to be female (34.1% compared with 37.6% nationally) (tables 3.2 and 5.2).

Between 2007 and 2011, the number of employed medical practitioners in *Inner regional* areas grew by 34.4%. This was the second highest growth rate for all RAs, and higher than the national growth in employed medical practitioners (17.3%). The population in *Inner regional* areas increased 4.7% over this period, for all states and territories. (Table D1). The number of general practitioners in *Inner regional* areas grew by 22.2%. Over the same period, the supply of medical practitioners increased from 210.3 FTE per 100,000 population in 2007 to 269.9 in 2011, while average hours worked per week remained the same (43.3 in both 2007 and 2011).

Table 5.2: Employed medical practitioners in *Inner regional* areas: selected features, by main field of medicine of main job, 2007 and 2011^{(a)(b)}

Main field of medicine	Number	Average age	Aged 55 and over (per cent)	Women (per cent)	Average hours	FTE rate ^(c)
2007						
<i>Clinician</i>	7,671	46.4	25.1	31.4	43.5	201.9
Primary care practitioner	3,968	48.1	26.7	36.4	40.3	96.8
Hospital non-specialist	800	35.8	7.8	42.9	48.0	23.2
Specialist	2,212	50.7	35.4	16.0	45.9	61.4
Specialist-in-training	609	33.6	—	39.0	50.7	18.7
Other clinician	82	46.0	29.6	31.6	36.1	1.8
<i>Non-clinician</i>	356	53.3	42.7	29.2	37.8	8.1
Total	8,027	46.7	25.9	31.3	43.3	210.3
2011						
<i>Clinician</i>	10,362	45.8	25.8	34.1	43.6	261.0
General practitioner ^(d)	4,849	48.7	31.2	37.2	40.2	112.6
Hospital non-specialist	1,389	36.4	8.4	43.9	45.9	36.8
Specialist	2,741	51.0	36.0	19.3	46.1	73.0
Specialist-in-training	1,070	33.4	0.8	43.0	50.0	30.9
Other clinician ^(d)	313	40.4	14.3	40.7	41.2	7.5
<i>Non-clinician</i>	425	54.0	48.4	33.7	35.4	8.7
Total	10,787	46.1	26.6	34.1	43.3	269.9

(a) Derived from remoteness area of main job where available; otherwise, remoteness area of principal practice is used as a proxy. If remoteness area details are unavailable, remoteness area of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(b) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

(c) Full-time equivalent (FTE) number per 100,000 population. FTE is based on total weekly hours worked (see Box 4.1 and 'Glossary').

(d) In 2011, primary care practitioners who did not self-identify as general practitioners may be included in 'Other clinician' rather than 'General practitioner'. Therefore, general practitioner data in 2011 are not directly comparable with primary care practitioner data in 2007.

Note: In 2011, a total of 24 employed medical practitioners did not report the RA they worked in. In 2007, 4,754 did not report the RA they worked in. Hence the number of employed medical practitioners stated by RA is an underestimate.

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

Outer regional areas

In 2011, 95.0% of employed medical practitioners in *Outer regional* areas were categorised as clinicians. Of these, 49.6% were general practitioners (the second-highest proportion of the four RAs), 20.3% were specialists, 14.8% hospital non-specialists and 11.5% specialists-in-training (Table 5.3).

Of all employed medical practitioners, 36.9% were female, which was slightly lower than the national proportion of 37.6%. The average age of employed medical practitioners in *Outer regional* areas was lower than the national average (45.1 compared with 45.5) (tables 3.2 and 5.3).

Medical practitioners in *Outer regional* areas in 2011 worked, on average, 1.4 hours per week more than the national average (44.6 compared with 43.2). General practitioners in *Outer*

regional areas, in particular, worked longer weekly hours than the national average (43.3 compared with 39.1 hours) (tables 3.2 and 5.3).

Between 2007 and 2011, the number of employed medical practitioners in *Outer regional* areas grew by 40.1% (the highest of all RAs), while the population in *Outer regional* areas grew by 2.5% for all states and territories (Table D1). This was above the national growth in employed medical practitioners (17.3%). There was growth in the overall numbers, as well as overall supply, which increased from 178.4 FTE per 100,000 population in 2007 to 247.2 in 2011. This growth was seen in all clinician types over the same period.

Table 5.3: Employed medical practitioners in *Outer regional* areas: selected features, by main field of medicine of main job, 2007 and 2011^{(a)(b)}

Main field of medicine	Number	Average age	Aged 55 and over (per cent)	Women (per cent)	Average hours	FTE rate ^(c)
2007						
<i>Clinician</i>	3,035	46.3	24.2	31.6	44.3	169.9
Primary care practitioner	1,766	47.9	24.8	33.2	42.9	95.7
Hospital non-specialist	277	34.3	5.4	45.4	47.0	16.5
Specialist	744	50.0	37.1	20.7	46.1	43.3
Specialist-in-training	226	35.9	—	38.0	47.7	13.6
Other clinician	23	43.1	16.7	33.4	28.1	0.8
<i>Non-clinician</i>	173	50.5	32.2	33.9	38.5	8.4
Total	3,209	46.5	24.6	31.7	44.0	178.4
2011						
<i>Clinician</i>	4,272	44.7	23.2	36.7	45.0	236.9
General practitioner ^(d)	2,117	47.9	28.9	37.4	43.3	113.0
Hospital non-specialist	634	35.4	5.4	44.3	45.7	35.7
Specialist	868	50.8	35.4	23.2	46.2	49.4
Specialist-in-training	492	33.5	1.0	44.7	49.6	30.1
Other clinician ^(d)	161	40.7	20.2	46.9	43.0	8.5
<i>Non-clinician</i>	225	52.5	41.0	39.7	37.9	10.5
Total	4,496	45.1	24.1	36.9	44.6	247.2

(a) Derived from remoteness area of main job where available; otherwise, remoteness area of principal practice is used as a proxy. If remoteness area details are unavailable, remoteness area of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(b) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

(c) Full-time equivalent (FTE) number per 100,000 population. FTE is based on total weekly hours worked (see Box 4.1 and 'Glossary').

(d) In 2011, primary care practitioners who did not self-identify as general practitioners may be included in 'Other clinician' rather than 'General practitioner'. Therefore, general practitioner data in 2011 are not directly comparable with primary care practitioner data in 2007.

Note: In 2011, a total of 24 employed medical practitioners did not report the RA they worked in. In 2007, 4,754 did not report the RA they worked in. Hence the number of employed medical practitioners stated by RA is an underestimate.

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

Remote and Very remote areas

In 2011, 93.6% of employed medical practitioners in *Remote/Very remote* areas were categorised as clinicians. Of these, 51.7% worked in general practice (the highest proportion of the four RAs), 22.4% were hospital non-specialists (the highest of the RAs), 13.9% were specialists (the lowest of the RAs), and 7.3% were specialists-in-training (the lowest of the RAs) (Table 5.4).

The average age of all employed medical practitioners in *Remote/Very remote* areas in 2011 was 45.5 which was the same as the national average (tables 3.2 and 5.4).

Table 5.4: Employed medical practitioners in *Remote/Very remote* areas^(a): selected features, by main field of medicine of main job, 2007 and 2011^{(b)(c)}

Main field of medicine	Number	Average age	Aged 55 and over (per cent)	Women (per cent)	Average hours	FTE rate ^(d)
2007						
<i>Clinician</i>	923	44.1	21.0	34.2	45.5	215.5
Primary care practitioner	523	46.9	26.0	36.1	44.2	118.6
Hospital non-specialist	201	35.9	3.5	36.6	49.1	50.6
Specialist	143	47.3	35.9	23.1	43.9	32.2
Specialist-in-training	52	40.8	—	30.9	49.1	13.1
Other clinician	5	32.0	—	100.0	40.0	1.0
<i>Non-clinician</i>	63	45.4	24.6	42.8	41.6	13.4
Total	986	44.2	21.3	34.8	45.2	228.7
2011						
<i>Clinician</i>	1,157	45.1	25.3	37.6	46.1	258.2
General practitioner ^(e)	598	47.5	30.2	38.2	45.0	130.3
Hospital non-specialist	259	38.6	11.2	39.9	48.0	60.2
Specialist	161	53.0	43.5	25.9	47.3	36.9
Specialist-in-training	84	34.5	—	51.5	45.5	18.5
Other clinician ^(e)	55	43.4	22.6	33.6	47.5	12.6
<i>Non-clinician</i>	79	49.9	40.7	44.0	40.6	15.5
Total	1,236	45.5	26.3	38.0	45.8	274.1

(a) Includes *Migratory* areas.

(b) Derived from remoteness area of main job where available; otherwise, remoteness area of principal practice is used as a proxy. If remoteness area details are unavailable, remoteness area of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(c) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

(d) Full-time equivalent (FTE) number per 100,000 population. FTE is based on total weekly hours worked (see Box 4.1 and 'Glossary').

(e) In 2011, primary care practitioners who did not self-identify as general practitioners may be included in 'Other clinician' rather than 'General practitioner'. Therefore, general practitioner data in 2011 are not directly comparable with primary care practitioner data in 2007.

Note: In 2011, a total of 24 employed medical practitioners did not report the RA they worked in. In 2007, 4,754 did not report the RA they worked in. Hence the number of employed medical practitioners stated by RA is an underestimate. Due to the update cycle of the Australian Bureau of Statistics, RA population estimates do not balance with the most recent update of state and territory national population estimates.

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

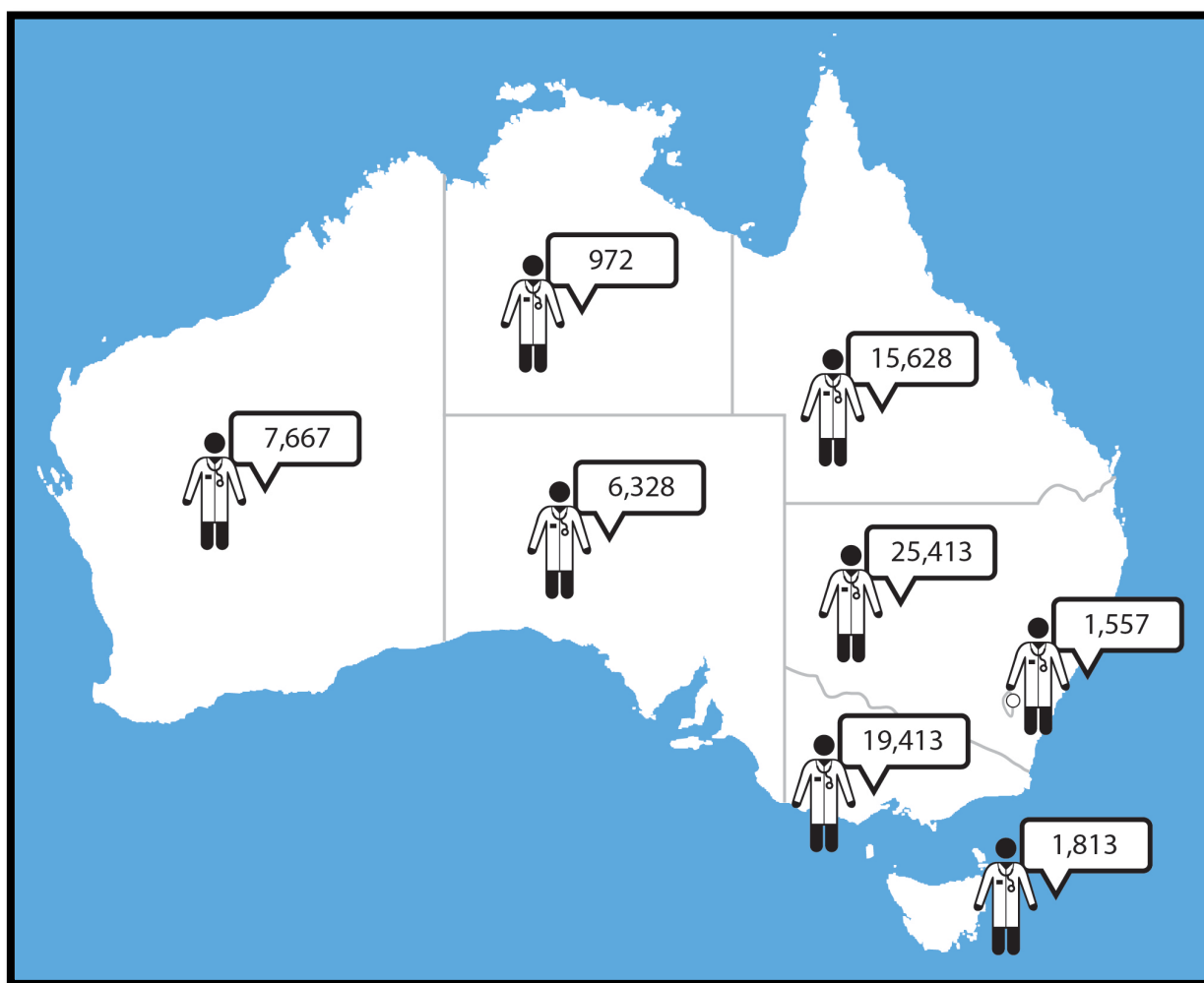
Medical practitioners working in *Remote/Very remote* areas worked, on average, 2.6 hours per week more than the national average (45.8 compared with 43.2 hours). General practitioners, in particular, worked longer average hours in *Remote/Very remote* areas than in other RAs. In 2011, this subfield of clinicians in *Remote/Very remote* areas worked, on average, 5.9 hours per week more than the national average (45.0 compared with 39.1 hours).

Between 2007 and 2011, the number of employed medical practitioners in *Remote/Very remote* areas increased by 25.4%. The supply rose from 228.7 to 274.1 FTE per 100,000 population, an increase of 45.4 FTE over this period. In contrast, for all states and territories, the population in *Remote/Very remote* areas grew by 6.0% over the same period (Table D1).

The supply of general practitioners in *Remote/Very remote* areas was the largest of all RAs in 2011, at 130.3 FTE per 100,000 population, 20.6 FTE more than the national rate of 109.7. Care should be taken in interpreting the Medical Workforce Survey data for *Remote/Very remote* areas due to the relatively small number of employed medical practitioners who stated that their main job was located in this RA (see 'Data issues' section in Appendix A).

5.2 States and territories of Australia

Between 2007 and 2011, the number of employed medical practitioners increased in all jurisdictions, except Western Australia (Table 5.5). Queensland, New South Wales, and South Australia had increases greater than the national increase of 17.3% (28.1%, 20.9% and 17.8%, respectively). The large increases may, in part, be due to changes in the scope of the benchmark figures (see 'Weighting: estimation for population non-response' and 'Data issues' sections in Appendix A). The FTE rate increased in all jurisdictions, except in Western Australia where it declined from 383.1 to 348.8 FTE medical practitioners per 100,000 population, with the increase in both the number of medical practitioners and the hours they worked not keeping pace with the increase in population.



Notes

1. Data are derived from state and territory of main job where available; otherwise, state and territory of principal practice is used as a proxy. If principal practice details are unavailable, state and territory of residence is used. Records with no information on all three locations are coded to 'Not stated'.
2. Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas.

Source: NHWDS: medical practitioners 2011.

Figure 5.2: Employed medical practitioners, by state and territory, 2011

Table 5.5: Employed medical practitioners: selected features, by state and territory, 2007^(a) and 2011^{(b)(c)}

Characteristic	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
2007									
Number	21,024	17,016	12,204	7,713	5,371	1,540	1,442	898	67,208
Average age	46.7	45.7	45.9	44.7	45.7	48.8	44.8	43.0	45.9
Men	48.9	48.2	47.6	47.0	47.6	51.1	46.8	45.2	48.1
Women	42.3	41.0	42.4	40.2	41.9	44.6	41.5	40.4	41.7
Aged 55 and over (per cent)	27.7	25.6	24.1	22.9	25.0	31.8	19.8	18.5	25.6
Women (per cent)	33.6	34.1	33.2	34.1	32.7	35.3	38.8	45.1	34.0
Average hours	43.5	43.4	43.2	42.0	42.0	40.6	42.9	43.2	43.1
FTE rate ^(d)	332.1	354.7	315.5	383.1	356.4	316.7	452.8	451.0	344.6
2011									
Number	25,413	19,413	15,628	7,667	6,328	1,813	1,557	972	78,833
Average age	46.6	45.2	44.5	44.5	45.4	46.1	45.8	42.9	45.5
Men	49.1	47.8	46.5	46.9	47.6	48.4	47.8	45.5	47.8
Women	42.5	41.0	41.1	40.6	41.5	42.3	42.8	39.8	41.5
Aged 55 and over (per cent)	28.7	25.2	22.2	22.8	25.8	26.6	26.2	20.2	25.5
Women (per cent)	37.5	38.2	36.4	38.0	36.3	37.5	41.3	45.5	37.6
Average hours	43.8	42.7	43.2	42.8	42.4	42.5	44.4	44.1	43.2
FTE rate ^(d)	385.9	374.4	377.2	348.8	409.4	376.8	470.0	463.2	381.4

(a) State and territory estimates for 2007 are based on state or territory of registration and should be treated with caution due to low response rates in some jurisdictions, particularly the Northern Territory (27.1%). See Appendix A for further information.

(b) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas. Therefore, state and territory totals may not sum to the national total.

(c) Derived from state and territory of main job where available; otherwise, state and territory of principal practice is used as a proxy. If principal practice details are unavailable, state and territory of residence is used. Records with no information on all three locations are coded to 'Not stated'.

(d) Full-time equivalent (FTE) number per 100,000 population. FTE is based on total weekly hours worked (see Box 4.1 and 'Glossary').

Sources: AIHW Medical Labour Force Survey 2007; NHWDS: medical practitioners 2011.

6 Sources of new entrants and re-entrants to the medical workforce

There are three sources of potential entrants to any workforce: new entrants, re-entrants and migrants. The main source of medical practitioners is new entrants via the training of new medical graduates. The time required for students to complete training and enter the workforce is long, and any acute change in the demand for medical practitioners cannot be met by this group. The second source of entrants includes those medical practitioners who have maintained their registration or enrolment but who are not currently employed in medicine. The third source of recruits to the medical workforce is through the migration of overseas-trained people. This chapter discusses data relevant to the first two of these sources.

While immigration is being used as a source of new medical practitioners, the data on this group of medical practitioners are currently not robust for reporting, but will improve as the NRAS matures and new entrants can be tracked more thoroughly.

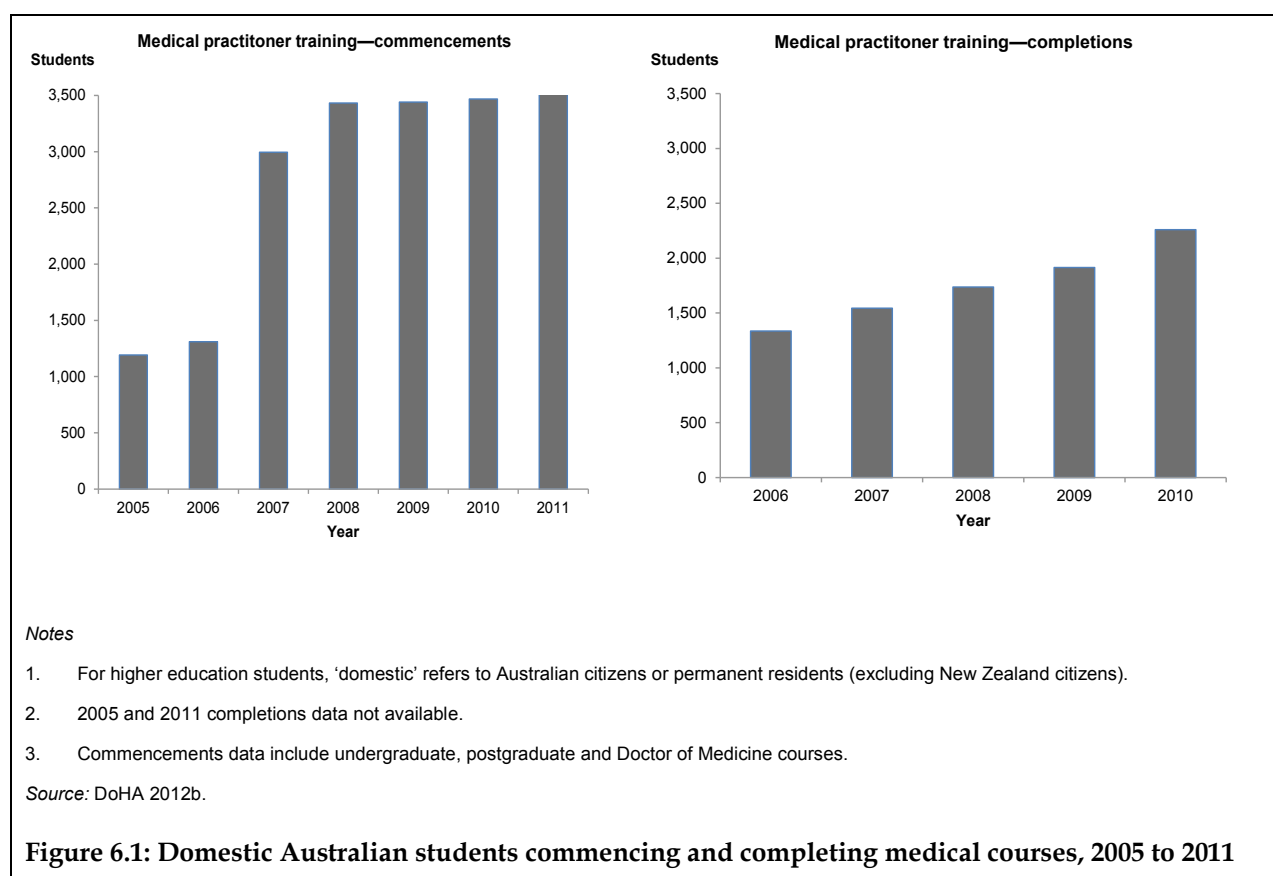
6.1 Medical practitioner training

To become a medical practitioner, a student must study medicine at a university. When offered as an undergraduate course, medical education is five to six years of full-time study. Following completion of the undergraduate course, graduates must undertake one year of full-time employment (internship) at a recognised teaching hospital to be able to gain full registration as a medical practitioner with the Medical Board of Australia (MBA 2012).

Postgraduate medical courses are four years of full-time study. Postgraduate entry requires a completed bachelor degree in any discipline, then application into a graduate-entry medical degree.

Entry to the various specialisations requires medical qualifications followed by postgraduate study, experience in approved hospitals and the passing of examinations leading to membership of the appropriate professional college.

The number of commencements in medicine increased slightly between 2005 and 2006 then rose by 128.5% between 2006 and 2007. From 2007 onwards, commencements showed a gradual increase through to 2011 (2,996 commencements in 2007 and 3,770 in 2011). Completions have also grown over a similar period (1,335 domestic completions in 2006 to 2,259 in 2010) (Figure 6.1).



6.2 Medical practitioners not employed in medicine

The Medical Workforce Survey collects some basic information on those medical practitioners who are registered, but who are not actively employed in medicine in Australia: that is, medical practitioners on extended leave, working overseas, employed elsewhere or not employed. This does not include medical practitioners who are not registered at the time of the survey.

In 2011, there were 8,957 medical practitioners not actively employed in medicine in Australia (Table 6.1). Of these, almost a third were overseas (30.5%), 28.4% were on extended leave and 26.0% were retired from regular work. A further 12.3% were not looking for work in medicine, with about 7 in 10 of these (69.6%) not employed. The remaining 2.8% stated that they were looking for work in medicine.

Medical practitioners on extended leave or not employed and not looking for work in medicine were more likely to be women (38.3% and 39.5% respectively). Medical practitioners on extended leave were, on average, younger than other medical practitioners (41.0 years versus 45.5 years for those employed in medicine), while those who were retired were, not surprisingly, the oldest group (73.2 years) (Table 6.1).

Table 6.1: Medical practitioners not actively employed in medicine in Australia: selected characteristics, 2011

Workforce status	Number	Women (per cent)	Average age (years)	Aged 55 and over (per cent)	Metropolitan residence (per cent)^{(a)(b)}
Medical practitioners not actively employed in medicine in Australia					
On extended leave of 3 months or more	2,540	61.7	41.0	17.7	93.8
<i>Looking for work in medicine</i>	248	62.7	41.3	18.4	93.5
Employed elsewhere	15	40.4	43.1	7.6	100.0
Not employed	233	64.2	41.2	19.1	93.1
Overseas	2,731	33.3	44.4	20.6	95.6
<i>Not looking for work in medicine</i>	1,105	60.5	45.6	24.1	95.2
Employed elsewhere	336	39.2	46.7	24.1	96.5
Not employed	769	69.8	45.1	24.0	94.7
Retired from regular work	2,333	21.8	73.1	96.6	95.7
Total	8,957	42.5	51.0	39.9	94.9
Total employed medical practitioners^(c)					
	78,833	37.6	45.5	25.5	94.0

(a) Based on postcode of residence concorded to ASGC regions (see 'Glossary').

(b) Percentage calculations exclude 'Not stated' values for ASGC region of residence. 'Metropolitan' includes *Major cities* and *Inner regional* areas.

(c) Data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice, and employed medical practitioners who reside overseas. Therefore, state and territory totals may not sum to the national total.

Source: NHWDS: medical practitioners 2011.

Appendix A: Explanatory notes on Medical Workforce 2011 data sources

A.1 National Health Workforce Data Set: medical practitioners

Background

Medical practitioners are required by law to be registered with the Medical Board of Australia to practise in Australia.

The National Health Workforce Data Set (NHWDS): medical practitioners is a combination of data collected through the registration renewal process for medical practitioners. The majority of medical practitioners are due to renew their registrations on 30 September each year. Limited and provisional registration renewals occur on an anniversary basis. This is an individual practitioner anniversary of when the practitioner last registered/renewed. Medical practitioners can renew their registration either online via the AHPRA website or by using a paper form provided by the AHPRA.

When they are first registered, the process is more exhaustive. Graduates of approved (accredited) programs of study can apply for registration online, and later provide supplementary supporting documentation. Other applicants must initially apply in hard copy. Limited and provisional registration renewals are also done using hard copy forms. Registration data collected include demographic information such as age, sex, country of birth, and details of health qualification(s) and registration status (see <http://www.medicalboard.gov.au/Registration/Forms.aspx> >). The Health Practitioner Registration National Law (National Law) requires AHPRA to publish 'the qualification relied upon for registration'. However, this may not include all of the qualifications held by the practitioner.

When medical practitioners renew their registration online, they are also asked to complete an online version of the Medical Workforce Survey questionnaire. The questionnaire collects information on the employment characteristics, work locations and work activity of medical practitioners (see <http://www.aihw.gov.au/workforce-publications/> >). This questionnaire is voluntary.

AHPRA stores both the online registration data and the survey information in separate databases, and then sends these two data sets to the AIHW, where they are merged into a de-identified national data set.

When medical practitioners renew their registration on a paper form, they are also asked to complete a paper version of the voluntary Medical Workforce Survey questionnaire. The paper registration and survey forms are sent back to AHPRA, where the paper registration forms are scanned and the data added to the registration data obtained from those who renew online. AHPRA sends the paper survey forms to Health Workforce Australia (HWA) to be scanned into a data set. HWA then sends this data set to the AIHW for merging with the registration data for all registrants and the survey data for those who have completed it online.

Because some medical practitioners with limited and provisional registration can gain general or specialist registration in the course of the year (and thereby come into synchronisation with the regular September renewal process) it is possible for them to have completed more than one survey form at different times of the year. A small number of people filled in both a paper and an online survey. For this reason AIHW removes apparent multiple responses for an individual, relying primarily on completed online surveys and then any paper surveys received.

The AIHW then undertakes cleansing and adjustment for non-response to form a nationally consistent data set. The final data set is then known as the National Health Workforce Data Set: medical practitioners. The AIHW produces and releases reports and data tables based on the NHWDS: medical practitioners. These reports and data tables are available from the AIHW website at <<http://www.aihw.gov.au/workforce-publications/>> (select link to *Medical workforce 2011*).

A.2 National Registration and Accreditation Scheme registration data

The Council of Australian Governments (COAG) at its meeting on 26 March 2008 signed an Intergovernmental Agreement on the Australian health workforce, for the first time creating the National Registration and Accreditation Scheme (NRAS) (see <http://www.coag.gov.au/coag_meeting_outcomes/2008-03-26/docs/iga_health_workforce.rtf>). Ten (10) health professions were included in the initial national system implemented on 1 July 2010 (or 18 October 2010 in Western Australia): chiropractors, dental practitioners, medical practitioners, nurses and midwives, optometrists, osteopaths, pharmacists, physiotherapists, podiatrists, and psychologists. On 1 July 2012, Aboriginal and Torres Strait Islander health practitioners, Chinese medicine practitioners, medical radiation practitioners and occupational therapists were also included in the National Scheme.

For these professions, practitioners need to be registered with their respective professional boards to practise in Australia. As part of the initial registration and registration renewal process, AHPRA collects information on the registration details and demographic characteristics of practitioners. The information is collectively referred to as the 'registration data'.

2011 was the second year in the NRAS reporting cycle for medical practitioners.

Scope and coverage

AHPRA provides the AIHW with an extract of registration data at the end of the annual medical practitioner registration renewal process.

Data for registered medical practitioners were merged with the Medical Workforce Survey 2011 data to create a national data set, the NHWDS: medical practitioners 2011.

Between 2007 and 2011, the number of medical practitioners registered in Australia increased by 10,597 (13.7%) (Table A1).

Table A1: Registered medical practitioners, by state and territory, 2007 to 2011

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
2007 ^(a)	24,810	19,509	13,928	8,247	6,113	1,846	1,720	1,020	77,193
2008 ^(a)	25,105	19,711	15,235	7,872	6,212	1,793	1,778	964	78,669
2009 ^(a)	25,625	20,648	16,526	8,401	6,470	2,204	1,902	1,120	82,895
2010 ^(b)	26,994	20,437	15,973	7,831	6,669	1,989	1,662	848	84,513
2011 ^(c)	27,766	21,089	16,860	8,455	6,794	2,020	1,709	1,045	87,790

(a) Before 2010, the AIHW Medical Labour Force Survey collected state and territory of registration and reported in this table. The survey was administered by individual state and territory health departments or authorities; therefore the estimates above include a factor to remove the effect of medical practitioners who were registered in more than one jurisdiction.

(b) Derived from state and territory of principal practice where available; otherwise, state and territory of main job is used as a proxy. If principal practice details unavailable, state and territory of residence is used. For records with no information on all three locations, they are coded to 'Not stated'.

(c) Derived from state and territory of main job where available; otherwise, state and territory of principal practice is used as a proxy. If principal practice details unavailable, state and territory of residence is used. For records with no information on all three locations, they are coded to 'Not stated'.

Sources: AIHW Medical Labour Force Survey, 2007 to 2009; NHWDS: medical practitioners, 2010 and 2011.

Data issues

There is a range of considerations and context relevant to the interpretation of registration data from the NRAS in the NHWDS: medical practitioners 2011 (see the Data Quality Statement at Appendix E, and *User guide for the NHWDS: medical practitioners 2011* available from the AIHW website at <<http://www.aihw.gov.au/workforce-publications/>> (select link to *Medical workforce 2011*)).

- Incomplete registration data – the registration schemes in place in Australia before July 2010 mandated the collection of different data. Given that 80% of currently registered practitioners were migrated into the National Scheme from previous data sets, there are therefore variations in the completeness, consistency and availability of many data elements. A small number of records did not include some or all of date of birth, sex, and state and territory of principal practice, as these data were either incomplete or not required in previous schemes. This is an issue because these data items are required for weighting and imputation purposes. Also, country of birth and country of initial qualification were not always required by previous schemes and therefore these data were incomplete for many records. Both these latter items were removed by agreement from the data extract in 2012.
- Issues with overseas residents – many medical practitioners who reside overseas could not be identified by the registration process. They have been included with those whose state or territory of principal practice could not be determined. Therefore, the missing values of state and territory of principal practice cannot be imputed, and thus affected the calculation of survey weights.
- Inconsistency between citizenship and residency status responses – data are not consistent in a number of records; that is, some medical practitioners were reported as being both Australian citizens and permanent residents. These data were not consistently required by all registration schemes before July 2010. Because this information is not required for registration purposes, it may not be updated by the practitioner unless they have refreshed the information in the workforce survey.
- Invalid postcode formats – in some cases as a result of the initial data migration process into the National Scheme, the postcode of principal practice and residence contained text

strings, such as invalid postcodes, suburb names and overseas postal codes. Therefore, after cleaning and recoding, many of these were still coded to the 'Not stated' category. As a result, the derivation by AIHW of ASGC RA categories for these records was not possible. Only a small number of records were affected in 2011.

- Non-supply of many registration variables – In a small number of cases, only a subset of registration data fields were initially provided to AIHW. This is due to a range of reasons: lack of migrated data, the fact that AHPRA does not collect or maintain the requested field, the scope of the data requested from AHPRA and AHPRA data management constraints. This resulted in large numbers of missing values or data of questionable quality for some fields. As a result, the following data were incomplete or not supplied: date of death, (not required for collection under the National Law), country of first qualification, country of birth (these data were excluded by agreement in 2012), citizen status (not required under the National Law for registration purposes and excluded from data set by agreement in 2012), endorsement (not originally requested but will be provided in future data transfers), initial qualification, state of first qualification, year of first qualification, (all excluded from data transfer by agreement in 2012), registration end date, registration start date, resident status (not collected for registration purposes) and student identifier (the student register is not a publicly accessible database under the National Law).

A.3 Medical Workforce Survey

The Medical Workforce Survey 2011 collected information on the employment characteristics, primary work location and work activity of medical practitioners in Australia who renewed their registration with the Medical Board of Australia via the NRAS. This survey data was then combined with the NRAS registration data to form the NHWDS: medical practitioners 2011.

The estimates published in this report are not always directly comparable with estimates derived from the earlier AIHW Medical Labour Force Survey data. This is due to a change in the data collection methodology; including the survey design and questionnaire (see 'A.5: Comparison with previous AIHW Medical Labour Force Survey data'). For further information, refer to the Data Quality Statement (Appendix E) and the *User guide for the NHWDS: medical practitioners 2011*, available from the AIHW website at <http://www.aihw.gov.au/workforce-publications/> (select link to *Medical workforce 2011*).

Scope and coverage

The survey is undertaken in association with the NRAS registration renewal process. As such, only medical practitioners who are required to renew their registration, receive a questionnaire for completion. New registrants will not receive a survey form. These medical practitioners will receive a survey form when they first renew their registration.

Estimation procedures

The AIHW uses the NRAS registration data collected in tandem with that from the Medical Workforce Survey 2011 to derive estimates of the total medical workforce. Not all medical practitioners who receive a survey instrument respond, because it is not mandatory. In deriving the estimates, two sources of non-response to the survey are accounted for:

- *item non-response* – which occurs as some respondents return partially completed questionnaires. Some survey records were so incomplete that it was decided to omit them from the reported survey data.
- *population non-response* – which occurs because not all registered medical practitioners who receive a questionnaire respond.

A separate estimation procedure is used for each. Imputation is used to account for item non-response, and weighting for population non-response.

Both of these procedures are described below.

Imputation: estimation for item non-response

The imputation process involves an initial examination of all information provided by a respondent. If possible, a reasonable assumption is made about any missing information based on responses to other survey questions. For example, if a respondent provides information on hours worked and the area in which they work, but leaves the workforce question blank, it is reasonable to assume that they were employed.

Missing values remaining after this process are considered for their suitability for further imputation. Suitability is based on the level of non-response to that item. Imputation is usually applied only in cases where the proportion of missing values is less than 5% of the total.

In imputation, the known probabilities of particular responses occurring are used to assign a response category value to each record using a random number generator. Imputed values are based on the distribution of responses occurring in the responding sample. Therefore, fundamental to imputing missing values for survey respondents who returned partially completed questionnaires is the assumption that respondents who answer various questions are similar to those who do not.

Age and sex values within each state and territory of principal practice are first imputed to account for missing values. Other variables deemed suitable for this process were then imputed. These include principal role of main job, setting of main job and principal area of main job.

This year, for the first time, the hours variables – public, private, clinical, non-clinical and total hours worked in medicine the week before the survey – were imputed using a structured randomised hot deck procedure. Component categories were also forced into balance with the total hours for a small number of records. For further details see the *User guide for the NHWDS: medical practitioners 2011*, available from the AIHW website at <http://www.aihw.gov.au/workforce-publications/> (select link to *Medical workforce 2011*).

Weighting: estimation for population non-response

Each survey record (or respondent) is assigned a weight that is calibrated to align with independent data on the population of interest, referred to as 'benchmarks'. In principle, this weight is based on the population number (the benchmark) divided by the number in the responding sample. The resulting fraction becomes the expansion factor applied to the record, referred to as the 'weight', providing an estimate of the population when aggregate output is generated. Therefore, the weight for each record is based on particular characteristics that are known for the whole population.

The total number of registered medical practitioners in Australia is used to benchmark the survey (see 'Data issues' section below).

The calculation of weights is usually part of the data processing for a sample survey in which the sample is selected before the survey is done. In the Medical Workforce Survey 2011, all renewing registrants were sent a workforce survey questionnaire when registration renewal was due. Therefore, technically, it was a census of medical practitioners. However, because not all renewing registrants in scope responded to the survey, there is a very large 'self-selecting sample' bias in the data. Since the group of respondents in the data set is not random, standard errors are not a suitable means of gauging variability.

The benchmark data used for the weighting are the number of registered medical practitioners in each state and territory (based on the location of principal practice), by the derived primary specialty, age group and sex within the NRAS registration data supplied by AHPRA.

Producing estimates for the population by weighting the data from respondents does adjust for bias in the responding group of practitioners, but only for *known* population characteristics (such as age and sex, where provided, in the case of the Medical Workforce Survey 2011). If information for a variable is not known for the whole population, the variable cannot be used in the calculation of weights and cannot be used in the adjustment process.

For variables not used in the calculation of weights (for the NHWDS: medical practitioners 2011, that is all variables *other* than derived primary specialty, state and territory of principal practice, age and sex), it is assumed, for estimation purposes, that respondents and non-respondents have the same characteristics. If the assumption is incorrect, and non-respondents are different from respondents, then the estimates will have some bias. The extent of this cannot be measured without obtaining more detailed information about non-respondents. Therefore, there will be some unquantifiable level of bias in the estimates.

Response rate

The overall response rate to the Medical Workforce Survey 2011 was 85.3%; that is, the number of responses to the survey represented 85.3% of registered medical practitioners (Table A2). Of these responses, 87.9% of medical practitioners completed the survey online and 12.1% used the paper form.

As previously stated, the jurisdiction-based data collection used to collect information on the workforce characteristics of medical practitioners was replaced with a single data collection as part of the national registration scheme introduced on 1 July 2010. As a result, the response rates are not directly comparable due to differences in survey design and methodology.

Table A2: Survey response rate, by state and territory of principal practice, 2007 to 2011

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT ^(a)	Australia
2007 ^(b)	84.3	68.8	64.3	54.2	63.5	59.4	64.9	27.1	69.9
2008 ^(b)	81.7	68.4	65.2	51.6	60.0	59.6	64.5	44.4	68.9
2009 ^(b)	79.1	40.3	31.9	42.8	62.8	46.1	62.5	37.3	53.1
2010 ^{(c)(d)(e)}	73.3	82.7	..	..	81.8	75.2	80.0	69.1	76.6
2011 ^{(d)(e)}	87.7	85.9	83.1	82.5	86.7	84.2	83.6	82.4	85.3

(a) The response rate for the Northern Territory is affected by the transient nature of the workforce in that jurisdiction.

(b) Before 2010, the AIHW Medical Labour Force Survey collected state and territory of registration as reported in this table. The survey was administered by individual state and territory boards; therefore, some medical practitioners were registered in more than one jurisdiction and are thus double counted in this table.

(c) 2010 data exclude Queensland and Western Australia due to their registration period closing after the national registration deadline of 30 September 2010.

(d) 2010 and 2011 data include employed medical practitioners who did not state or adequately describe their state or territory of principal practice and employed medical practitioners who reside overseas. Therefore, state and territory totals do not sum to the national total.

(e) Derived from state and territory of principal practice where available; otherwise, state and territory of residence is used as a proxy. If residence details are unavailable, state and territory of main job is used. Records with no information on all three locations are coded to 'Not stated'.

Sources: AIHW Medical Labour Force Survey, 2007, 2008 and 2009; NHWDS: medical practitioners, 2010 and 2011.

Data issues

A number of data issues need to be considered when interpreting medical workforce survey data in the NHWDS: medical practitioners 2011. These issues are outlined in this section.

Sample

The NHWDS: medical practitioners will be produced annually during the national registration renewal process, conducted from early August to 30 September (the renewal date) each year. While the reference time is notionally the renewal date, legislation allows for a one month late period beyond the registration expiry date. Thus the official registration closure date is one month after the renewal date. AHPRA allow a further two weeks to allow for mail and data entry delays before the registrations are considered expired. As a result, for maximum completeness, the extraction of data (the extraction date) is at a point in time a month and a half after the renewal date. Ages are calculated as at the official registration closure date.

Practitioners with limited registration are due for renewal on the anniversary of their first registration and can thus renew and complete a survey at any time throughout the year.

Survey design

In 2011, the online survey questionnaire did not include electronic sequencing of questions to automatically guide the respondent to the next appropriate question based on previous responses. However survey answers were restricted by entry type, so for example only numbers between 0 and 125 could be selected for questions relating to hours. This was a significant improvement on the 2010 survey where many fields were free form text.

The order of the response categories to the 'reason not working in medicine in Australia' question appears to be an issue. The question has 'Retired from regular work' after 'Not working in paid employment at all', which may not be logical as medical practitioners may be retired but still work irregularly (for example, as an occasional locum). On this basis,

the category 'Retired from regular work' should appear before 'Not working in paid employment at all'. The issue with the order in the 2011 survey questionnaire is that it may lead to an undercount of those retired from regular work and an over-representation of those not working in paid employment.

Variation between the online and paper surveys has resulted in additional data quality issues for a number of questions. For example, the state and territory of main job question included the category 'Other territories' on the paper form while the same response category in the online form was labelled 'Other'. The data showed a large number in the 'Other' category captured in the online method, which was not similarly found in the paper responses. In addition, both state and territory of principal practice and residence data items do not include the category 'Other territories' or 'Other'. Another issue is that the 'temporary resident status' question is explicitly asked only on the paper survey form (see 'A.5: Comparison with previous AIHW Medical Labour Force Survey data').

Online and paper versions of the survey questionnaire will be further harmonised in future iterations.

Data structure

Due to unstructured data entry formats, a number of questions that required a numeric value contained text string responses. In 2011 these were largely restricted to the paper survey forms. Where possible, these were recoded to the appropriate numeric value, but this was not possible in all instances. For example, for a number of records, the postcodes of main job information contained values other than valid postcodes, such as text strings and overseas postal identifiers. Conversely, suburb of main job information contained invalid suburb names, 4-digit codes resembling postcodes and even complete street addresses. These issues are complicated where people reported inconsistent combinations of working in particular Australian states, postcodes similar to Australian postcodes, and suburbs that were clearly not in Australia – for example, in Auckland, New Zealand. Where state and postcode information did not agree, the suburb was used to look up a postcode and this was used to decide which of the two were more likely to be correct. Apparent overseas locations had their postcode manually set to 9998.

Issues with the online survey such as sequencing and allowing invalid values will continue to be improved in future iterations of the data collection. Similarly the layout of paper forms have been updated to include for example 3 small square boxes to report hours in rather than a long box with enough room for longer entries.

A.4 Data inconsistencies between survey and registration data

There were a number of inconsistencies between the data sourced from the NRAS registration data and the workforce survey data. This may be due in part to different extraction dates for the survey and registration data or other sources of error.

State and territory, and location (postcode and suburb) of principal practice recorded in the registration data, were in some instances very different from the corresponding details of the main job recorded in the survey. Much of this may be due to temporary movement. It is apparent that the principal practice address does not always accurately reflect the current practise location of medical practitioners. However, under the National Law, medical practitioners are required to reconfirm their principal place of practice each year as part of

the registration renewal cycle. Under the National Law, ***Principal place of practice***, for a registered health practitioner, means the address declared by the practitioner to be the address –

- a) at which the practitioner is predominantly practising the profession; or
- b) if the practitioner is not practising the profession or is not practising the profession predominantly at one address, that is the practitioner's principal place of residence.

The registration data also contain residential addresses which have been migrated from the previous state-based registration systems and may be a number of years out of date. As a result, the derivation of ASGC RA categories for place of residence may be based on out-of-date information.

Overall, the comparison of the number of people within states and territories aligns reasonably between main job and principal practice for employed people. The state or territory with the poorest alignment is the Northern Territory, where it appears that 16.9% more medical practitioners have the Northern Territory as their state of main job in the week before the survey than have it as their principal practice location on the AHPRA database. This almost certainly reflects large amounts of temporary movement to and from the Northern Territory.

The decision was therefore taken to use a derived location, based firstly on main job information, then on principal practice location (if the main job location was missing), and subsequently on residential address if the principal practice location was also missing. This derived location is used in all tables except where otherwise stated. As a consequence of this methodology, medical practitioners who were working overseas but maintained an Australian contact address have been allocated in state tables to the state where that contact address was.

For generating weights, the principal state was derived using principal practice location, residential address and main job location, in that order.

Table A3: Medical practitioners: comparison of different location variables, by state and territory, 2011

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Other ^(a)	Australia
Employed in Australia										
Derived (used in tables unless specified otherwise)	25,413	19,413	15,628	7,667	6,328	1,813	1,557	972	43	78,833
Principal practice (derived for weighting)	25,422	19,683	15,563	7,622	6,374	1,781	1,542	806	40	78,833
Principal practice (original)	25,360	19,640	15,483	7,590	6,358	1,767	1,541	796	298	78,833
Main job	24,533	18,595	14,945	7,360	6,057	1,734	1,484	953	3,172	78,833
Residence	25,337	19,654	15,514	7,615	6,356	1,787	1,515	746	310	78,833
Registered										
Derived (used in tables unless specified otherwise)	27,766	21,089	16,860	8,455	6,794	2,020	1,709	1,045	2,052	87,790
Principal practice (derived for weighting)	27,761	21,378	16,803	8,412	6,839	1,991	1,693	864	2,049	87,790
Principal practice (original)	27,645	21,220	16,649	8,300	6,795	1,960	1,690	852	2,677	87,790
Main job	25,081	19,076	15,324	7,513	6,196	1,779	1,521	994	10,307	87,790
Residence	27,608	21,281	16,730	8,371	6,815	1,996	1,663	790	2,537	87,790

(a) Other includes 'Other territories', overseas, not stated, invalid and, for state or territory of main job, people without a main job.

Source: NHWDS: medical practitioners 2011.

A.5 Comparison with previous AIHW Medical Labour Force Survey data

In the past, medical labour force data published by the AIHW was the result of collated jurisdiction-level occupation-specific surveys. The Medical Workforce Survey 2011 collects similar data items, but the survey methodology has changed, as has the method of obtaining benchmark data on which the numbers of total registrations are based. With the establishment of the AHPRA, there is one source of benchmark data instead of eight, and there is less chance of inconsistency between jurisdictions and years in the scope of benchmark data.

In 2011, most medical practitioners renewing their registration could either complete the voluntary Medical Workforce Survey 2011 online (at the end of the formal registration process) or complete the paper form sent to their postal address with their registration form. Limited and provisional registration renewals and surveys were paper based. The use of online and/or paper surveys varied between jurisdictions and between years with the previous AIHW Medical Labour Force Survey.

Some data items previously collected as part of the AIHW Medical Labour Force Survey – such as date of birth, country of first qualification, specialty of practice, and sex – are now collected as part of the registration and renewal process. However, the data for some of these items are either incomplete, or the data migrated from previous jurisdictional registration systems are inaccurate, or were not provided in the latest extracts, by agreement.

The 2011 Medical Workforce Survey questionnaire contains fewer questions related to workforce information than was collected before 2010. The survey questions were agreed for inclusion with Health Workforce Australia.

Due to the differences in data collection methods, it is recommended that comparisons between data from the NHWDS: medical practitioners 2011 and previous AIHW Medical Labour Force Survey data be made with caution.

Differences between the 2011 questionnaire and surveys in previous years

The following data items collected in the 2011 Medical Workforce Survey questionnaire were either not collected previously in the AIHW Medical Labour Force Survey or were collected using different questions or response categories.

Question 2—Temporary resident status and visa category number

This question was not collected on a national basis before 2010 in the AIHW Medical Labour Force Survey. Some jurisdictions collected temporary resident status, but not visa category number.

The Medical Workforce Survey 2011 collected temporary resident status and visa category number from medical practitioners in both the online and paper form. However, the online question does not ask respondents to answer whether or not they are a temporary resident, but only to enter their visa category number if they self-identify as a temporary resident. The paper form, however, asks respondents to check 'Yes' or 'No' to the temporary resident question, and if 'No' to move on to question 3, or if 'Yes' to provide the visa category number. This may have created some variation in the data between the online and paper respondent groups. There was also a significant amount of reporting of permanent visa category numbers in response to this question.

Questions 3 to 5—Employment

The three employment-related questions in the Medical Workforce Survey 2011 questionnaire are nationally consistent. This is an improvement on the previous AIHW Medical Labour Force Survey where the questionnaire varied across jurisdictions, including the questions and definitions of data items collected.

The 2011 questions have been grouped and sequenced logically: the first question relates to the working status of the medical practitioner, followed by the reason they are not working in medicine in Australia, and then whether or not they are looking for work in medicine.

The new questions in the Medical Workforce Survey 2011 were designed based on a combination of the questions previously used by jurisdictions in the AIHW Medical Labour Force Survey. The redesigned question on working status no longer includes in its explanation of 'Working in medicine' a description of work activity/hours (that is 'worked for a total of 1 hour or more last week in a job or business (including own business) for pay, commission, payment in kind or profit; or hours usually worked but away from work on leave, or rostered off last week'). Inclusion of the additional explanation may have avoided confusion for medical practitioners who worked in medicine, respectively, during the survey reference week but in a voluntary capacity.

Question 10—Principal area of main job in medicine

The question response options used before 2010 in the AIHW Medical Labour Force Survey were different from those used in the 2011 Medical Workforce Survey.

Question 11—Work setting of main job in medicine

Work setting response categories in the 2011 survey are similar to those collected by the AIHW Medical Labour Force Survey before 2010. The 2011 response categories are more detailed and directed towards service provision; for example, the 2011 survey has three categories of private practice ('Solo private practice', 'Group private practice' and 'Locum private practice') compared with only one in the AIHW Medical Labour Force Survey. Another example of improvement is the option to collect three educational workplaces ('Tertiary educational facility', 'School' and 'Other education facility') in the 2011 survey compared with one in the AIHW Medical Labour Force Survey.

Question 12—Number of years worked in medicine in Australia

Number of years worked in medicine in Australia was not previously collected by the AIHW Medical Labour Force Survey on a national basis. A small number of jurisdictions collected this information previously as part of their survey questionnaire, but it is now included for all respondents.

Question 13—Number of years practitioner intends to remain in the medical workforce

Number of years a medical practitioner intends to remain in the medical workforce was not previously collected by the AIHW Medical Labour Force Survey on a national basis. A small number of jurisdictions collected this information previously as part of their survey questionnaire, but it is now included for all respondents.

Appendix B: 2011 medical practitioner registration numbers from the Australian Health Practitioner Regulation Agency

Numbers of registrations from the Australian Health Practitioner Regulation Agency are contained in Table B1 for comparison purposes.

Table B1: Registered practitioners by profession: principal place of practice and registration type, reported by the Australian Health Practitioner Regulation Agency, 30 June 2011

Registration type	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Not stated	Australia
	Number									
General registrations	7,485	5,864	4,771	2,046	1,758	469	460	280	862	23,995
General and Specialist registrations	15,192	11,811	7,980	3,840	3,890	1,018	837	323	653	45,544
Limited registrations (including public interest—occasional practice)	2,448	1,353	1,582	1,133	564	230	131	126	349	7,916
Non-practising registrations	507	503	289	218	136	33	30	—	739	2,455
Provisional registrations	873	659	712	296	244	84	91	22	25	3,006
Specialist registrations	1,181	1,048	1,427	717	334	160	89	66	355	5,377
Total registrations	27,686	21,238	16,761	8,250	6,926	1,994	1,638	817	2,983	88,293
	Percentage of total registrations									
General registrations	27.0	27.6	28.5	24.8	25.4	23.5	28.1	34.3	28.9	27.2
General and Specialist registrations	54.9	55.6	47.6	46.6	56.2	51.0	51.1	39.5	21.9	51.6
Limited registrations (including public interest—occasional practice)	8.8	6.4	9.4	13.7	8.1	11.6	8.0	15.4	11.7	9.0
Non-practising registrations	1.8	2.4	1.7	2.6	2.0	1.7	1.8	—	24.8	2.8
Provisional registrations	3.2	3.1	4.3	3.6	3.5	4.2	5.6	2.7	0.8	3.4
Specialist registrations	4.3	4.9	8.5	8.7	4.8	8.0	5.4	8.1	11.9	6.1
Total registrations	100	100	100	100	100	100	100	100	100	100

Source: AHPRA 2011.

Appendix C: Additional information available from the AIHW website

Tables

In addition to the tables in this report, more detailed tabulations from the Medical Workforce Survey 2011 are published on the AIHW website <<http://www.aihw.gov.au/workforce-publications/>> (select link to *Medical workforce 2011*).

Workforce Survey questionnaire

The questionnaire used in the Medical Workforce Survey 2011 is available from the AIHW website <<http://www.aihw.gov.au/workforce-publications/>> (select link to *Medical workforce 2011*).

Data Quality Statement: NHWDS: medical practitioners 2011

A full description of the data quality of the data set is contained in 'Appendix E: Data Quality Statement: National Health Workforce Data Set: medical practitioners 2011' or available from the AIHW's Meteor website at <<http://meteor.aihw.gov.au>>.

User guide for the NHWDS: medical practitioners 2011

A user guide for the NHWDS: medical practitioners 2011, which provides further information on the survey components and data specifications, is available from the AIHW website at <<http://www.aihw.gov.au/workforce-publications/>> (select link to *Medical workforce 2011*).

Appendix D: Population estimates

This report presents time series information about medical practitioners, using measures such as number per 100,000 population and full-time equivalent (FTE) rate. To derive these measures, the population estimates (often referred to as 'estimated resident population') are obtained from the ABS. The estimates are as at 30 June for each year and based on the 2011 Census of Population and Housing adjusted for population flows, including births, deaths, net migration, and short-term travellers to Australia and absences from Australia.

These figures are used to derive population and FTE rates in tables 3.2–3.4, 4.1 and 5.1–5.5, and in Figure 5.1.

Table D1: Population estimates at 30 June: remoteness area, by state and territory, 2007 to 2011

Remoteness area	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia ^(a)
2007									
Major cities	5,009,607	3,904,620	2,501,482	1,508,259	1,151,585	..	341,065	..	14,416,618
Inner regional	1,395,750	1,045,527	910,664	268,271	191,383	319,324	502	..	4,131,421
Outer regional	442,405	249,779	629,955	193,313	180,225	164,032	..	118,525	1,978,234
Remote	32,960	4,681	84,921	93,987	45,321	7,638	..	47,396	316,904
Very remote ^(b)	4,482	..	50,067	50,011	14,045	2,574	..	49,100	170,279
Total	6,885,204	5,204,607	4,177,089	2,113,841	1,582,559	493,568	341,567	215,021	21,013,456
2008									
Major cities	5,088,411	3,983,643	2,567,410	1,553,374	1,163,488	..	346,809	..	14,703,135
Inner regional	1,407,822	1,055,226	925,585	280,150	194,398	322,473	499	..	4,186,153
Outer regional	442,587	249,585	640,923	195,818	179,734	165,803	..	122,541	1,996,991
Remote	32,587	4,634	85,711	95,036	45,531	7,730	..	48,625	319,856
Very remote ^(b)	4,482	..	50,462	54,199	14,192	2,559	..	49,769	175,663
Total	6,975,891	5,293,088	4,270,091	2,178,577	1,597,343	498,565	347,308	220,935	21,381,798
2009									
Major cities	5,169,841	4,073,714	2,634,657	1,602,275	1,177,493	..	353,280	..	15,011,260
Inner regional	1,419,339	1,067,238	942,458	291,642	197,228	325,858	526	..	4,244,289
Outer regional	443,548	249,600	651,304	198,060	179,572	167,932	..	126,542	2,016,558
Remote	32,521	4,585	86,181	96,405	45,741	7,786	..	49,794	323,013
Very remote ^(b)	4,458	..	50,826	58,277	14,341	2,518	..	50,505	180,925
Total	7,069,707	5,395,137	4,365,426	2,246,659	1,614,375	504,094	353,806	226,841	21,776,045

(continued)

Table D1 (continued): Population estimates at 30 June: remoteness area, by state and territory, 2007 to 2011

Remoteness area	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia ^(a)
2010									
Major cities	5,236,573	4,137,647	2,677,643	1,636,822	1,189,755	..	360,145	..	15,238,858
Inner regional	1,428,330	1,077,999	951,668	300,769	200,092	328,773	608	..	4,288,239
Outer regional	443,190	248,259	656,996	199,030	179,173	169,138	..	129,131	2,024,917
Remote	32,390	4,525	86,586	97,635	45,844	7,801	..	50,334	325,115
Very remote ^(b)	4,445	..	51,265	61,873	14,570	2,495	..	50,850	185,498
Total	7,144,928	5,468,430	4,424,158	2,296,129	1,629,434	508,207	360,753	230,315	22,062,354
2011									
Major cities	5,295,728	4,195,976	2,715,743	1,676,314	1,198,438	..	367,136	..	15,449,335
Inner regional	1,436,745	1,087,651	958,313	310,794	201,501	331,136	616	..	4,326,756
Outer regional	442,387	246,455	661,321	200,259	177,911	169,934	..	130,050	2,028,317
Remote	32,191	4,444	87,172	99,167	45,757	7,675	..	50,358	326,764
Very remote ^(b)	4,417	..	51,549	65,681	14,625	2,450	..	50,923	189,645
Total	7,211,468	5,534,526	4,474,098	2,352,215	1,638,232	511,195	367,752	231,331	22,323,933

(a) Includes Other territories. In Australian total but not in remoteness area estimates.

(b) Includes *Migratory* areas.

Source: Unpublished ABS estimated resident population data.

Appendix E: Data Quality Statement: National Health Workforce Data Set: medical practitioners 2011

Summary of key issues

The National Health Workforce Data Set (NHWDS): medical practitioners 2011 contains information on the demographics, employment characteristics, primary work location and work activity of all medical practitioners in Australia who renewed their medical registration with the Medical Board of Australia via the National Registration and Accreditation Scheme (NRAS) introduced on 1 July 2010.

This is the second publication on medical practitioners from the new national registration scheme. The data set comprises registration (including demographic) information provided by the Australian Health Practitioner Regulation Agency (AHPRA) and workforce details obtained by the Medical Workforce Survey. The survey instrument varies significantly in some areas from previous years, but is now nationally consistent. The NHWDS: medical practitioner 2011 is also more complete than the NHWDS: medical practitioner 2010.

The major issues with data quality for the NHWDS: medical practitioner 2011 include:

- The data are not directly comparable to those collected in the previous AIHW Medical Labour Force Surveys due to changes in methods and scope, including the change in the method of determining the state of practitioners' main job in medicine.
- The registration data previously published in the *Medical workforce 2010* publication, were found to be under-enumerated, so comparisons should be made with caution. The NHWDS: medical practitioner 2010 data have been revised and included in this publication.
- The NHWDS: medical practitioner 2010 did not include Queensland and Western Australia for tables related to employed practitioners, so comparisons between years should be made with caution. These groups were excluded from the data due to non-alignment of renewal cycle in the transition to the National Scheme, and for Western Australia, the later date of commencement of the National Scheme.

Description

The NHWDS: medical practitioner 2011 is a combination of data collected through the medical practitioner registration renewal process.

Medical practitioners are required to renew their registration with the Medical Board of Australia through the NRAS, either online via the AHPRA website or using a paper form provided by AHPRA. The majority of medical practitioners are due to renew their registrations on 30 September each year. Limited and provisional registration renewals occur on an anniversary basis. This is an individual practitioner anniversary of when the practitioner last registered/renewed. Apart from limited and provisional registrations, medical practitioners can renew their registration either online via the AHPRA website or by using a paper form provided by the AHPRA. For initial registration, medical practitioners must use a paper form and provide supplementary supporting documentation. Limited and provisional registration renewals are done using paper forms. This information is referred to

as 'registration data'. Data collected include demographic information such as age, sex, country of birth; and details of health qualification(s) and registration status (see <<http://www.medicalboard.gov.au/Registration/Types.aspx>>, select link to *Registration type* then *Registration form*).

When medical practitioners renew their registration online they are also asked to complete an online version of the Medical Workforce Survey questionnaire. The questionnaire collects information on the employment characteristics, work locations and work activity of medical practitioners (see <<http://www.aihw.gov.au/workforce-publications/>> (select link to *Medical workforce 2011*)). AHPRA stores both the online registration data and the survey information in separate databases. They then send these two data sets to AIHW, where they are merged into a de-identified national data set.

When medical practitioners renew their registration on a paper form they are also asked to complete a paper version of the Medical Workforce Survey questionnaire. The paper registration and survey forms are sent back to AHPRA, where the paper registration forms are scanned and merged with the data obtained from the online process. AHPRA sends the paper survey forms to Health Workforce Australia (HWA) to be scanned into a data set. HWA then sends this data set to AIHW for merging with the online survey forms and registration data, cleansing and adjustment for non-response to form a nationally consistent data set. The final data set is then known as the National Health Workforce Data Set: medical practitioners, containing information sourced from registration data and workforce survey data.

Institutional environment

The Australian Institute of Health and Welfare (AIHW) is a major national agency set up by the Australian Government under the *Australian Institute of Health and Welfare Act 1987* to provide reliable, regular and relevant information and statistics on Australia's health and welfare. It is an independent statutory authority established in 1987, governed by a management Board, and accountable to the Australian Parliament through the Health and Ageing portfolio.

The AIHW aims to improve the health and wellbeing of Australians through better health and welfare information and statistics. It collects and reports information on a wide range of topics and issues, ranging from health and welfare expenditure, hospitals, disease and injury, and mental health, to ageing, homelessness, disability and child protection.

The Institute also plays a role in developing and maintaining national metadata standards. This work contributes to improving the quality and consistency of national health and welfare statistics. The Institute works closely with governments and non-government organisations to achieve greater adherence to these standards in administrative data collections to promote national consistency and comparability of data and reporting.

One of the main functions of the AIHW is to work with the states and territories to improve the quality of administrative data and, where possible, to compile national datasets based on data from each jurisdiction, to analyse these data sets and disseminate information and statistics.

The *Australian Institute of Health and Welfare Act 1987*, in conjunction with compliance to the *Privacy Act 1988* (Cth), ensures that the data collections managed by the AIHW are kept securely and under the strictest conditions with respect to privacy and confidentiality. For further information see the AIHW website <<http://www.aihw.gov.au>>.

The AIHW receives registration (including demographic) information on medical practitioners via the mandatory national registration process administered by AHPRA and the voluntary Medical Workforce Survey data collected at the time of registration renewal. The registration and workforce survey data are combined, cleansed and adjusted for non-response to form a national data set known as NHWDS: medical practitioners 2011. AIHW is the data custodian of the NHWDS: medical practitioners 2011.

Timeliness

The NHWDS: medical practitioners is produced annually from the national registration renewal process, conducted from early August to 30 September each year.

The Medical Workforce Survey will also be collected between 1 July and 30 September, as it is administered as part of the registration renewal process. The exceptions to this timetable are in relation to limited and provisional registrations, where the registrant is renewed on the anniversary of their commencement. Limited and provisional registrations renewals are given paper forms only. These responses are included with the regular survey respondents.

Due to significant delays with release of data from the new national registration system, complete and final data were provided to AIHW much later than originally scheduled. Initial data provided needed joint reviews by AHPRA, AIHW and HWA to manage the range of considerations and data quality issues described in this publication. This review process improved data quality, data definitions, metadata and data cleansing. The process also led to improvements in AHPRA's extracting scripts to provide consistency in data exchange specifications. This process delayed the supply of data but improved the overall quality. AIHW expected to receive both the registration and workforce survey data simultaneously at the end of December 2011. Due to the factors above, the AIHW received complete useable registration and workforce survey data from AHPRA in October 2012. AHPRA have indicated that future data provision is anticipated to be timely and provided six weeks from the close of registration on 30 September.

Delays in processing and reporting on the earlier NHWDS: medical practitioners 2010 and NHWDS: nurses and midwives 2011 also contributed to AIHW delays in reporting the 2011 data and releasing the *Medical Practitioner Workforce 2011* report.

Accessibility

Results from the NHWDS: medical practitioners 2011 are published in the Medical workforce 2011 report. The report, workforce survey questionnaire, user guide to the data set and additional detailed tables are available on the AIHW website at <http://www.aihw.gov.au/workforce-publications/> (select link to *Medical workforce 2011*).

Users can request data not available online or in reports via the Communications, Media and Marketing Unit on (02) 6244 1032 or via email to info@aihw.gov.au. Requests that take longer than half an hour to compile are charged for on a cost-recovery basis. Access to the master unit record file may be requested through the AIHW Ethics Committee.

Interpretability

Information to aid in the interpretation of the NHWDS: medical practitioners 2011 may be found in Appendix A of the Medical Workforce 2011 report. The report is based on this data set. See 'Accessibility' for details.

Relevance

Scope and coverage

The NHWDS: medical practitioners 2011 contains registration details of all registered medical practitioners in Australia at 30 September 2011.

Medical practitioners are required by law to be registered with the Medical Board of Australia and must complete the formal registration renewal form(s) to practise in Australia. This is the compulsory component of the renewal process.

The Medical Workforce Survey is voluntary and only practitioners who are on the register at the time of the survey and required to renew their registration receive a questionnaire for completion. New registrants registering outside the registration renewal period will not receive a survey form. These practitioners will receive a survey form when they renew their registration the following year, during the registration renewal period.

Accuracy

Response rates and mode

The NHWDS: medical practitioners 2011 contains registration details of all registered medical practitioners in Australia at 30 September 2011.

The data set also contains workforce information for registered medical practitioners who completed the Medical Workforce Survey. The overall response rate to the 2011 survey was 85.3%. That is, the number of responses to the survey represented 85.3% of registered medical practitioners. Of these responses, 84.7% completed the survey online and 15.3% used the paper form.

Response rates for 2011 are not directly comparable with prior years because the previous jurisdiction-based data collection used to collect information on the workforce characteristics of medical practitioners was replaced with a single data collection as part of the national registration scheme introduced on 1 July 2010.

Registration data from the NRAS

Some data items collected as part of the previous AIHW Medical Labour Force Survey, such as date of birth, sex and specialty of practice, are now data items collected as part of the registration and renewal process. However, the data for some of these items are incomplete due to the data being migrated from previous jurisdictional registration systems.

There were a number of data items which had higher rates of incomplete responses. This included date of birth, sex and state and territory of principal practice, which are items used in the survey estimation process. Missing values of date of birth and sex were imputed. Many medical practitioners who reside overseas could not be identified by the registration process. They have been included with practitioners whose state or territory of principal practice could not be determined. Therefore, the missing values cannot be imputed, and thus affected the weighting method. Some data items had unexpected categories, for example registration type of 'General (Teaching and Assessing)'.

The NRAS allows a medical practitioner to record more than one specialty, with up to seven specialties recorded in 2011. However, the National Law does not require or enable practitioners to identify their primary speciality. The non-identification of a specialist's main sub-specialty of practice also means headcounts are not possible. To address this issue,

AIHW, in cooperation with HWA, have allocated a primary specialty based on the recorded set of primary specialties held by each medical practitioner.

Some data items such as citizenship and residency status contain only migrated data and because they are not required for registration purposes may not be updated.

For a large number of practitioners, country of birth and country of initial qualification data had responses that could not be mapped to the Standard Australian Classification of Countries (SACC). These records were coded to not stated or inadequately described.

A small number of invalid values and formats for date of birth and year of initial qualification appeared in the registration data collected by the NRAS. For example, system dates such as 1 January 1900.

Workforce Survey 2011 sample

All registered medical practitioners are provided a form upon renewal of their registration each year. Some initial registrants may not receive a survey if they are not required to renew within the target period.

Workforce Survey 2011 design

In 2011, the online survey questionnaire did not include electronic sequencing of questions to automatically guide the respondent to the next appropriate question based on previous responses. This resulted in a number of inconsistent responses. For instance, respondents not correctly following the sequencing instructions for the employment questions may be assigned to an incorrect workforce status or not assigned a status due to incomplete data.

The order of the response categories for the Reason not working in medicine in Australia question appears to be an issue. The question has 'Retired from regular work' after 'Not working in paid employment at all' which may not be logical as practitioners may be retired but still work irregularly (for example, as an occasional locum). On this basis, the category 'Retired from regular work' should appear before 'Not working in paid employment at all'. The issue with the order in the 2011 survey questionnaire is that it may lead to an undercount of those retired from regular work and an over-representation of those not working in paid employment.

Variation between the online and paper surveys has provided additional data quality issues for a number of questions. For example, the State of main job included the category 'Other territories' on the paper form while the same response category in the online form was labelled 'Other'. The data showed a large number in the 'Other' category captured in the online method, which was not similarly found in the paper responses. In addition, state/territory of principal practice and residence data items do not include the category 'Other territories' or 'Other'.

In 2011, the online Medical Workforce Survey did not ask practitioners to answer whether or not they are a temporary resident, but only to enter their visa category number if they self-identify as a temporary resident. However, the paper form asks practitioners to check 'Yes' or 'No' to the temporary resident question and, depending on the response, either answer or skip the visa category question. The temporary resident status data item is incomplete.

Inconsistencies between workforce survey and registration data

There were a number of inconsistencies between the data sourced from the NRAS and the workforce survey data.

There were many records where the response to the survey question regarding temporary residency visa was inconsistent with migrated registration data from state and territory medical boards/councils for citizenship and residency status (which themselves were occasionally inconsistent).

In the survey, a number of medical practitioners self-reported the principal area in their main job to be specialist but had no accredited specialty in their registration details or were accredited as general practitioners only. Under the National Law, specialist registration is available to medical practitioners who have been assessed by an Australian Medical Council accredited specialist college as being eligible for fellowship. Fellowship is not a pre-requisite for specialist registration. The Ministerial Council has approved a list of specialties, fields of specialty practice and specialist titles.

Location of principal practice recorded in the registration data was different from the corresponding details of their main job self-reported by practitioners in the survey. Given that 16.9% more medical practitioners have the Northern Territory as their state of main job in the week before the survey than have it as their principal practice location on the AHPRA database, this probably reflects temporary movement.

The decision was therefore taken to use a derived location based firstly on main job information, then on principal practice location if the main job location was missing, and subsequently on residential address if the principal practice location was also missing. This derived state is used in all tables except where otherwise stated.

Structure and format of data items

Due to unstructured data entry formats, a number of items in the NHWDS: medical practitioners 2011 which required a numeric value contained text string responses. Where possible, these were recoded to the appropriate numeric value, but this was not possible in all instances. For example, for a number of records, Postcode of principal practice contained values other than valid post codes, such as text strings, overseas postal identifiers. Conversely, suburb of main job information contained invalid suburb names, 4-digit codes resembling postcodes and even complete street addresses. These issues are complicated where people reported inconsistent combinations of working in particular Australian states, postcodes similar to Australian postcodes, and suburbs that were clearly not in Australia – for example, in Auckland, New Zealand. Where state and postcode information did not agree, the suburb was used to look up a postcode and this was used to decide which of the two were more likely to be correct. Overseas locations had their postcode manually set to 9998 for statistical purposes.

Coherence

Workforce Survey 2011 – coherence with previous data

AIHW published *Medical workforce 2010* on 28 March 2012, which was the first release of data derived from the new NRAS.

At this time, it was known and reported that there were issues with the 2010 survey data, especially the lack of data from Queensland and Western Australia. Queensland and Western Australia were subsequently removed from the workforce tables in the 2010 publication, thus comparisons with the 2011 data should be undertaken with caution.

Once the 2011 medical data were supplied, it became apparent that there were large differences between the 2010 and 2011 numbers of registered medical practitioners. When further investigated, this was found to be caused by differences in the way these data were

stored and extracted from the AHPRA databases. As a result, the medical data were re-extracted and supplied in October 2012 for both 2010 and 2011 using the same methods.

This revealed an undercount in the originally published 2010 registration data, which was difficult to detect because the 2010 data appeared coherent with previously reported figures, particularly 2009 figures, from the AIHW Labour Force Surveys.

Due to the above issues, this publication makes only minimal comparisons between the 2010 and 2011 data.

Medical labour force data published by the AIHW before the establishment of the NRAS was the result of collated jurisdiction-level occupation-specific surveys. The current survey, Medical Workforce Survey 2010 and 2011 collect similar data items; however, the survey methodology has changed, as has the method of obtaining benchmark data on which the numbers of total registrations are based. With the establishment of AHPRA there is one source of benchmark data instead of eight and there is less chance of inconsistency between jurisdictions and years in the scope of benchmark data.

The scope and coverage of the Medical Workforce Survey 2011 is also different to that of the previous surveys because in some jurisdictions not all types of registered medical practitioners were sent a survey form.

Date of birth, country of initial qualification, specialty of practice and sex are some data items previously collected by the AIHW Medical Labour Force Survey, but now collected by the NRAS. However, data for some of these items are either incomplete or inaccurate (see 'Accuracy').

Speciality of practice, in 2011, was extracted at the time of registration renewal by the NRAS from their database of legally recognised specialties. Before 2010, main specialty of practice information was self-reported from a set of statistical categories by registered medical practitioners in the AIHW Medical Labour Force Survey.

However, the NRAS does not identify main specialty. There have also been significant changes in the classification of categories of specialty of practice used in the NHWDS: medical practitioners 2011 compared with that used in the previous AIHW Medical Labour Force Survey reports. There are 23 valid legally defined specialties in the NHWDS: medical practitioners 2011 (for example, physician, surgery), while there were over 50 detailed specialties published in the previous AIHW Medical Labour Force Survey reports. Thus, comparison of 2011 specialty data with results from AIHW Medical Labour Force Survey should be treated with caution.

Each medical practitioner may have more than one specialty. The data collected by the NRAS do not identify the primary specialty and therefore a headcount of specialists by specialty of practice is not possible. To overcome this problem, the primary specialty of specialists has been derived using their recorded specialties and information from the AIHW Medical Labour Force Survey 2009.

Temporary resident status was not collected on a national basis before 2010 in the AIHW Medical Labour Force Survey. Some jurisdictions collected temporary resident status. Visa category number was not collected in prior years.

The three employment-related questions in the Medical Workforce Survey 2011 questionnaire are nationally consistent. This is an improvement on the previous AIHW Medical Labour Force Survey where the questionnaire varied across jurisdictions, including the questions and definitions of data items collected. However, the redesigned question on

working status no longer includes in its explanation of 'Working in medicine' a description of work activity/hours; that is 'worked for a total of one hour or more last week in a job or business (including own business) for pay, commission, payment in kind or profit; or hours usually worked but away from work on leave, or rostered off last week'. Inclusion of the additional explanation may have avoided confusion for medical practitioners who worked in medicine during the survey reference week but in a voluntary capacity.

A change in the response options in the question about principal area of main job in medicine from 'GP/primary care practitioner' before 2010 to 'General practitioner' may have impacts on the comparability of these responses over time, and time series data should be used with caution. This may have led to the observed increase in responses in the 'Other clinician' category.

Work setting response categories in 2011 are similar to those before 2010. The 2011 categories are more detailed and directed towards service provision; for example, there are three categories of private practice (solo, group and locum) compared with only one available before 2010.

Number of years worked in medicine in Australia was not collected by the AIHW Medical Labour Force Survey on a national basis before 2010. A small number of jurisdictions collected this information previously as part of their survey questionnaire, but it is now included for all respondents.

Due to the differences in data collection methods, including survey design and questionnaire, it is recommended that comparisons between workforce data in the NHWDS: medical practitioners 2011 and AIHW Labour Force Survey data before 2010 be made with caution.

Workforce Survey 2011 – coherence with other data sources

The ABS Census of Population and Housing, conducted every 5 years, is the other main source of data on medical practitioner numbers in Australia. The Census is self-enumerated by respondents and therefore the numbers of people who report their occupation as medical practitioners is not easily comparable with numbers from the NRAS or estimates from the Medical Workforce Survey. The results of the 2011 Census include data on occupations classified using the Australian and New Zealand Standard Classification of Occupations revision 1 (ANZSCO) (ABS 2009). Occupation data are collected for the main job held during the week before Census night.

The ANZSCO definition of Medical practitioners effectively excludes non-clinicians.

In 2011 there were 70,229 medical practitioners who self-identified in the 2011 Census of Population and Housing (ABS 2012b). There were 73,980 employed clinicians in the NHWDS: medical practitioners 2011. This is consistent with the differences found the between 2006 census and the earlier AIHW survey.

According to Medicare claims systems 27,639 medical practitioners provided General practice services claimed for on Medicare during to 2010–11 financial year, equivalent to 20,226 full time working equivalents (DoHA 2012a). In the NHWDS: medical practitioners 2011 there were 25,056 general practitioners working on average 39.1 hours in the week before the survey (Table 3.2). There are a number of possible reasons for this difference. Not all activities being undertaken by general practitioners are Medicare billable. In addition, some salaried specialists may be responsible for a small number of general practitioner-type claims on Medicare and no specialist items resulting in them being classed as general

practitioners under that system. Thus comparisons between Medicare and NHWDS: medical practitioners data should be made with caution.

Glossary

Aboriginal: A person of Aboriginal descent who identifies as an Aboriginal and is accepted as such by the community in which he or she lives.

Benchmark data: For the Medical Workforce Survey 2011, responses were weighted to the number of registered medical practitioners in each state and territory by main specialty of practice by sex and age group to take account for non-response. These numbers are referred to as 'benchmarks' throughout this report, and may not be equivalent to that reported in the Australian Health Practitioner Regulation Agency 2010–11 annual report, due to scope and reporting time differences.

Clinician: A clinician is a medical practitioner who spends the majority of their time working in the area of clinical practice; that is, the diagnosis, care and treatment including recommended preventive action, of patients or clients. Clinical practice may involve direct client contact or may be practised indirectly through individual case material (as in radiology and laboratory medicine). Clinician includes general practitioner, hospital non-specialist, specialist, specialist-in-training and other clinician.

Employed medical practitioner: A medical practitioner who reported working in medicine in the week before the survey is classified as an employed medical practitioner. In this report, data on employed medical practitioners include those who are:

- practising medicine in Australia (including practitioners on leave for less than three months)
- involved with work that is principally concerned with the discipline of medicine (including medical research, administration, or teaching of medicine).

Field of medicine: Unless otherwise stated in this report, field of medicine refers to the type of medical work undertaken by an employed medical practitioner. Medical fields are divided into two main groups, with categories in each group, as follows:

Clinician: a medical practitioner who spends most of the total weekly working hours engaged in clinical practice (that is, diagnosis and/or treatment including recommending preventive action to patients) is classified as a clinician. It includes:

- general practitioner
- hospital non-specialist
- specialist
- specialist-in-training
- other clinician.

Non-clinician: a medical practitioner who is not a clinician. It includes:

- administrator: employed in medical administration
- teacher/educator: teaching or training persons in medicine
- researcher: engaged in medical research
- other: a job function in medicine which is not one of the above.

Full-time equivalent (FTE) number: FTE number measures the number of standard-hour workloads worked by employed medical practitioners. This provides a useful measure of supply because it takes into account both the number of medical practitioners who are working and the hours that they work.

FTE number is calculated by: the number of employed medical practitioners in a particular category multiplied by the average hours worked by employed medical practitioners in the category divided by the standard working week hours. In this report, 40 hours is assumed to be a standard working week and equivalent to 1 FTE.

Full-time equivalent (FTE) rate: The FTE rate (number of FTE medical practitioners per 100,000 population) is a measure of supply. By defining supply in terms of the FTE rate, meaningful comparisons of supply can be made across geographic areas and over time. FTE rate is calculated as: the number of FTE medical practitioners divided by the relevant population count multiplied by 100,000.

General practitioner: For the purposes of the Medical Workforce Survey 2011, medical practitioners self-identify as general practitioners. Previously, in the AIHW Medical Labour Force Survey, the term 'primary care practitioner' was used and included general practitioners, who identified being employed in this area of clinical practice at the time of the survey (primary or general care). In this report, the 2007 data on primary care practitioners include general practitioners (see Primary care practitioner).

General registration: General registration is granted to medical practitioners who have fulfilled the eligibility and suitability requirements set out in the National Law and who meet the registration standards set by the Medical Board of Australia. It permits the individual to take and use the title medical practitioner and to practise unsupervised in their field, subject to any restrictions that may have been imposed on their registration.

Hospital non-specialist: A medical practitioner mainly employed in a salaried position in a hospital who does not have a recognised specialist qualification, and who is not in training to gain a recognised specialist qualification. It includes interns, resident medical officers, career medical officers and other salaried hospital practitioners. They are self-identified on the Medical Workforce Survey 2011.

Hours worked: The total number of weekly hours worked is self-reported by medical practitioners and relates to the number of hours worked in medicine in the week before the survey. In editing survey responses, maximum hours worked accepted were 125 hours per week. Reported hours of greater than 125 are considered unreliable and therefore not included in the analysis of total hours worked by medical practitioners.

In this report, the ABS definition has been used for the cut-off for full-time and part-time work:

- full-time work: 35 hours or more per week
- part-time work: less than 35 hours per week.

For data before 2010, average weekly hours are calculated only where hours are greater than zero (0). That is, employed respondents with 'Not stated' hours worked are excluded from the calculation.

From 2010 onwards, average weekly hours were imputed where missing or invalid.

Indigenous: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander and is accepted as such by the community in which he or she lives.

Medical boards/councils: Medical boards (or councils in some jurisdictions) were statutory authorities established under specific legislation in each state and territory. The main purpose of the board was to protect the health and safety of the public of the jurisdiction by providing mechanisms designed to ensure that medical practitioners were fit to practise medicine. They achieved this by ensuring that only properly trained medical practitioners were registered, and that registered medical practitioners' maintained proper standards of conduct and competence.

The state and territory medical boards/councils were disbanded on 30 June 2011 as part of the rollout of the National Registration and Accreditation Scheme. Jurisdictional boards/councils were replaced by the Medical Board of Australia on 1 July 2010. The Medical Board of Australia has established committees in each state and territory (the State/Territory Boards of the Medical Board of Australia) for the purposes of making individual registration and notification decisions. In the co-regulatory jurisdiction of New South Wales, the Medical Council of NSW has responsibility to handle notifications about medical practitioners in NSW.

Medical practitioner: Under the National Law, a medical practitioner is a person who holds registration with the Medical Board of Australia.

Multi-state registration: Only those medical practitioners who reported that they worked mainly or only in a particular state or territory were included in the AIHW Medical Labour Force Survey before 2010 when estimating the numbers of practitioners in a state or territory. Medical practitioners who reported they worked mainly or only in another state or territory were assumed to be registered in another state or territory and had completed the survey in more than one state or territory.

Non-clinician: A medical practitioner who reported spending most of his or her total weekly working hours not involved in the area of a clinical practice. This can include working as an administrator, teacher/educator, researcher, or in another non-clinical area.

Primary care practitioner: In this report, data on primary care practitioners are included in the data on general practitioners. In the AIHW Medical Labour Force Survey, primary care practitioners were defined as medical practitioners who reported that they were employed in this area of clinical practice at the time of the survey (primary or general care). In the Medical Workforce Survey 2011, practitioners self-identify as general practitioners (see General practitioner).

Principal place of practice: principal place of practice, for a registered health practitioner, means the address declared by the practitioner to be the address –

- a) at which the practitioner is predominantly practising the profession; or
- b) if the practitioner is not practising the profession or is not practising the profession predominantly at one address, that is the practitioner's principal place of residence.

Remoteness area: The Remoteness Area Structure within the Australian Standard Geographical Classification (ASGC), produced by the Australian Bureau of Statistics, has been used in this report to present regional data for medical practitioners.

The Remoteness Area Structure of the ASGC is based on the Accessibility/Remoteness Index of Australia, where the remoteness index value of a point is based on the physical road

distance to the nearest town or service in each of six population size classes based on the 2011 Census of Population and Housing. These classes are:

- Major cities
- Inner regional
- Outer regional
- Remote
- Very remote
- Migratory.

Due to the small numbers in the *Very remote* and *Migratory* classes, they have been combined and reported as *Remote/Very remote* in this report.

Specialist: Under the National Law, a specialist is a person who holds specialist registration who has met the eligibility, suitability and qualification requirements identified in the National Law and by the Medical Board of Australia. They are self-identified on the Medical Workforce Survey 2011.

Specialist-in-training: A medical practitioner accepted by a specialist medical college into a training position supervised by a member of the college. They are self-identified on the Medical Workforce Survey 2011.

Specialty: The specialty area of medicine in which an accredited specialist practices. Specialties in this report were approved by the Australian Health Workforce Ministerial Council on 31 March 2010 pursuant to the Health Practitioner Regulation National Law 2009. It must be noted that a small number of medical practitioners self-identified as being specialists (see above) while the AHPRA database did not hold details of them holding a recognised specialty.

Specialty field: The sub-specialty of the specialty area of medicine in which a specialist practises. Sub-specialties in this report were approved by the Australian Health Workforce Ministerial Council on 31 March 2010 pursuant to the Health Practitioner Regulation National Law 2009 (see Specialty).

State/territory: In this report, state and territory estimates are derived from state and territory of main job where available; otherwise, state and territory of principal practice is used as a proxy. If principal practice details are unavailable, state and territory of residence is used. For medical practitioners with no information on all three locations, they are coded to 'Not stated'.

Torres Strait Islander: A person of Torres Strait Islander descent who identifies as a Torres Strait Islander and is accepted as such by the community in which he or she lives.

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The supply of employed medical practitioners in Australia increased from 344.6 to 381.4 full-time equivalent practitioners per 100,000 population between 2007 and 2011, which reflected a 17.3% rise in practitioner numbers.

The gender balance continued to shift, with women making up 37.6% of practitioners in 2011 compared with 34.0% in 2007.

Specialists-in-training in the public sector worked the most average hours per week (47.6), while general practitioners in the public sector worked the least (20.5).