



Te Kaunihera Rata  
o Aotearoa

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**Medical Council  
of New Zealand**

# The New Zealand Medical Workforce in 2017

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## Executive summary

This report presents the results of the Medical Council of New Zealand workforce survey for 2017. It contains information about changes in the medical workforce including retention rates for doctors.

This report was prepared by Andrew Cullen, Council's Senior Information Systems Analyst, with support from other Council staff and Bill Grant of AllGo Analytics.

We would also like to thank all the doctors who responded to the survey and provided the valuable data around the type and amount of work they are doing that allows us to present this report.

## Key findings

**Numbers of doctors:** The total number of doctors based on registration data increased by 4.0 percent in 2017 from 15,212 to 15,819 – this represents doctors on the register with a current practising certificate.

**Māori doctors are still under-represented in the medical workforce, but there are positive changes at graduate level:** The proportion of Māori doctors increased to 3.6 percent in 2017 but is still well below their proportion of the New Zealand population. However, almost 16 percent of Otago's graduates in 2017 were Māori, and in 2016, Māori and Pasifika doctors made up a fifth of Auckland's graduating doctors.

**Proportion of female doctors continues to increase:** 44.8 percent of doctors in the active workforce were female, up from 43.9 percent in the previous year. If the current trend continues, women will outnumber men by 2025.

**The fastest growing specialities were emergency medicine, urgent care and psychiatry:** Based on numbers of practising doctors with vocational scopes of practice, these three specialities all increased by over 8 percent in 2017 (emergency medicine by almost 10 percent).

Facts at a glance	2012	2013	2014	2015	2016	2017
Size of the workforce <sup>1</sup>	14,042	14,283	14,533	14,737	15,212	15,819
Doctors per 100,000 population <sup>2</sup>	313.2	317.7	317.6	318.1	321.3	327.9
Proportion of IMGs <sup>3</sup> (%)	41.4	41.9	42.0	40.4	40.4	40.0
Proportion of females (%)	41.3	41.7	42.4	43.5	43.9	44.8
Average age of workforce	45.4	45.5	45.7	45.2	45.5	45.9
Average weekly workload (hours)	43.9	43.7	43.6	44.4	44.7	44.2
Average proportion of new IMGs retained after 1 year <sup>4</sup>	53.5	54.5	55.4	56.9	57.7	58.4

<sup>1</sup> Figures are based on registration data. See Table 2 for more information.

<sup>2</sup> Figures are based on the size of the workforce as measured by registration data (see Table 2) and Statistics New Zealand's estimated residential population as at 31 March of the particular survey period.

<sup>3</sup> IMG: international medical graduate (see page 49 for definition).

<sup>4</sup> See 'Retention' on page 41 for more information and 'Survey method' on page 46 for information on how this figure was calculated.

## Data sources used in this publication

This report incorporates the results of the Medical Council of New Zealand workforce survey for 2017 with registration data. It also includes other non-register registration data collected from doctors as part of the initial registration process and at the time doctors renew their practising certificates each year.

### Decreased survey response rate in 2017

While data from other sources has been used in previous years, there is a greater use of non-survey data in the 2017 report. This is largely because the response rate to the survey in 2017 was lower – in 2017, the response rate dropped to 80.1 percent of doctors surveyed compared with 96.3 percent in 2016 and 99.7 percent in 2015.<sup>1</sup>

Previously, survey data have often been presented as absolute figures (i.e. headcounts), and this could be justified by the level of response to the survey. However, with the lower, though still representative, response rate this year, survey data will only be presented as proportions (i.e. as a percentage of survey respondents).

### Why is there a lower response rate?

In 2015, Council moved to an online application process for the renewal of practising certificates and collection of workforce survey data. Subsequent changes to make it clearer that completion of the workforce survey was voluntary and easier for doctors to opt out appear to have been the driver for the reduction in the response rate.

The workforce survey data is important and is used by organisations like the Ministry of Health to inform areas such as workforce planning. Further declines in the response rate would reduce the usefulness of the data, and therefore, it is really important that doctors complete the survey each year.

## Register data and other non-register data

### Register data

Register data is that used as part of the medical register. This includes doctors' scopes of practice, practising certificate dates and qualification data.

### Non-register registration data

Non-register registration data is collected from doctors when they renew their practising certificate each year or when doctors notify Council of changes during the year. This includes information on where doctors are employed, the level of their practice, the type of medicine and whether they are in a vocational training programme.

### Survey data

Doctors are surveyed as part of their application to renew their practising certificate. This survey collects more detailed information from doctors about the work they are doing, filling in the gaps not covered by register data and non-register registration data and adding richness to these datasets.

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<sup>1</sup> For a fuller explanation of the method used to calculate survey response, see the survey method section on page 46.

## Representativeness of the survey data

Although the response rate of this year's survey is lower than in previous years, we believe the response is still representative and that valid conclusions can be drawn from the data.

### Survey statistical confidence – population size

A major factor in determining survey statistical confidence is the size of the population.

For our survey, the size of the population is the number of doctors on the register with a current practising certificate – 15,819 as at 31 March 2017.

For a population of this size, a response rate of 80 percent can be said to provide 95 percent certainty.<sup>2</sup> This supports our conclusion that, even though our response rate is lower, any conclusions drawn from the data are still valid.

### Demographic comparison – survey data versus register data

While the population size is important, this is meaningless if the response is not representative – that is, if those who responded do not reflect those being surveyed.

To test whether the survey data is representative, we compared the age and gender of those who responded to the survey with those on the medical register. While there were some very small differences when broken down by age group, the breakdown by gender was nearly identical.

This further supports our conclusion that the survey response for 2017 is representative.

#### Comparison by gender

Figure 1 illustrates that, when broken down by gender, the demographics of the two groups are effectively identical.

**Figure 1: Comparison of survey respondents with doctors on the medical register as at 31 March 2017 by gender**



<sup>2</sup> GreatBrook, *Survey Statistical Confidence: How Many is Enough?*, <https://greatbrook.com/survey-statistical-confidence-how-many-is-enough/>.

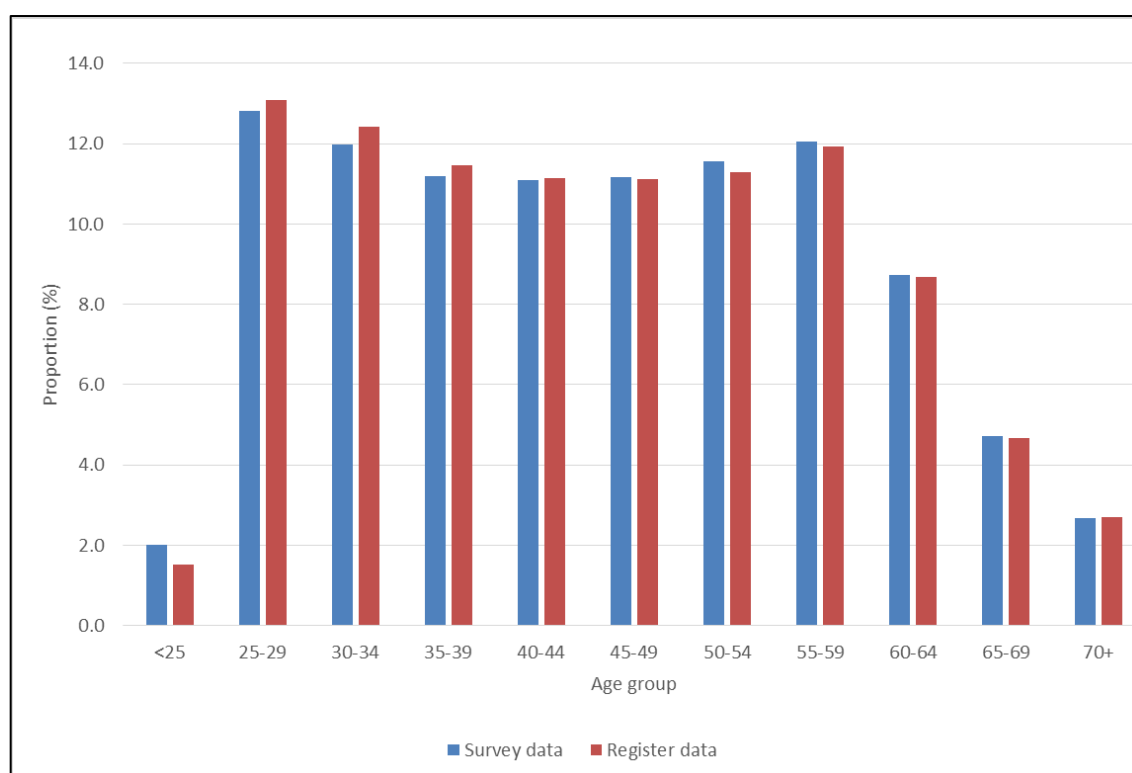
### Comparison by age group

Figure 2 and Table 1 show there are small differences between the two groups when they are broken down by age group.

There are a greater proportion of younger doctors (aged between 25 and 39) amongst doctors on the register compared with those who responded to the survey. There is a corresponding larger proportion of doctors aged 40 and over amongst survey respondents.

This suggests that doctors who come to New Zealand for short periods and are not asked to complete the workforce survey are on average younger.

**Figure 2: Comparison of survey respondents with doctors on the medical register as at 31 March 2017 by age group**



**Table 1: Summary of differences between survey respondents and doctors on the medical register as at 30 June 2017 by age group (selected age groups only)**

Age group	25-29	30-34	35-39	40-49	50-54	55-59	60-64
<b>Survey difference to register</b>	-0.3%	-0.4%	-0.3%	0.0%	+0.3%	+0.1%	+0.1%

### Comparison by country of qualification

The proportion of international medical graduates (IMGs) amongst doctors on the register is higher than the proportion of IMGs amongst doctors who responded to the survey (42.6 percent versus 40.0 percent). This reflects that many IMGs who come to New Zealand for short periods are not asked to complete the survey.

## Changes in the medical workforce

### Size of the workforce

Registration data show that the number of registered doctors increased by 4.0 percent in 2017 from 15,078 to 15,716. This change compares to an increase of 3.2 percent in the previous year (see Table 2).

**Table 2: Estimated yearly workforce growth and changes in composition**

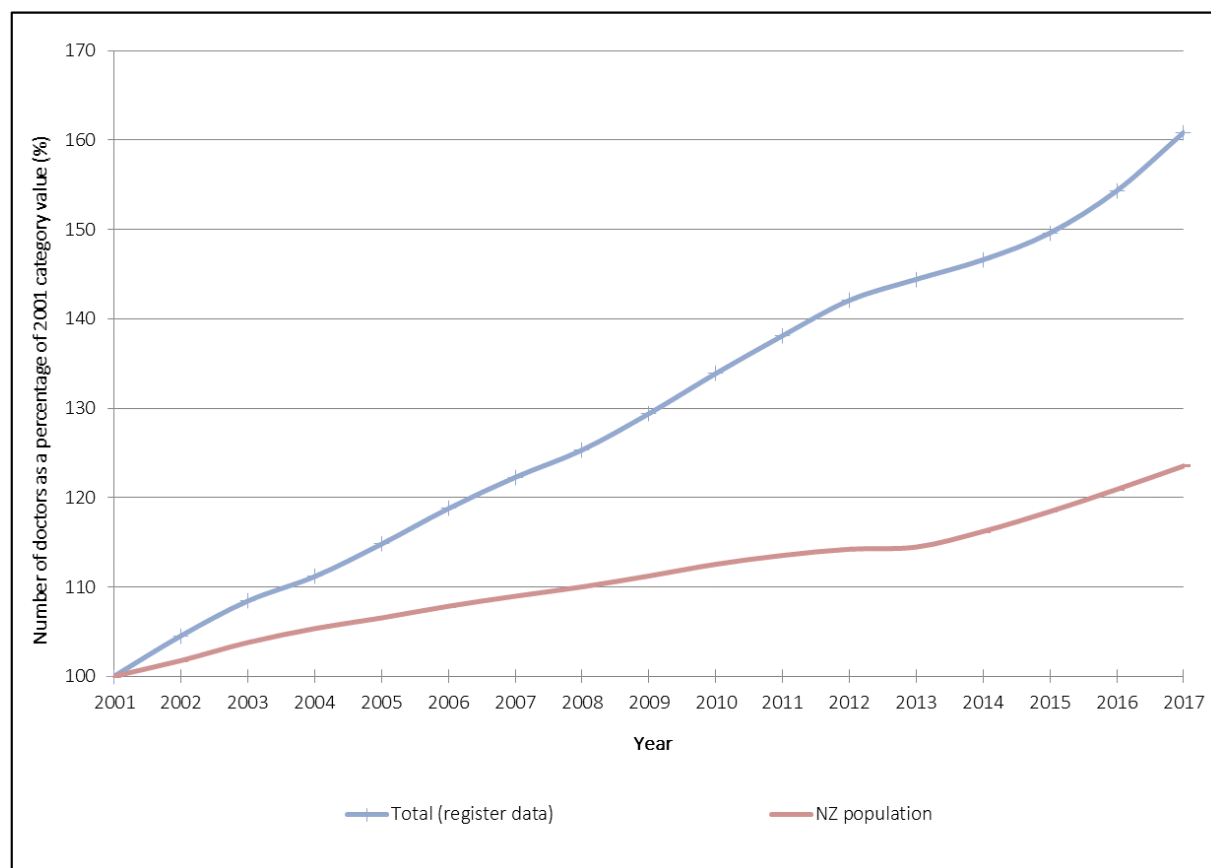
	1985	1990	1995	2000	2005	2010	2016	2017
<b>Total workforce (based on registration data)<sup>1</sup></b>	<b>6,337</b>	<b>6,806</b>	<b>7,998</b>	<b>9,779</b>	<b>11,215</b>	<b>13,266</b>	<b>15,212</b>	<b>15,819</b>
Percentage change in total workforce from previous year measured by registration data (%) <sup>2</sup>	-	-	-	-	3.3	3.5	3.2	4.2

<sup>1</sup> The total workforce according to registration data represents the number of doctors on the medical register with a current practising certificate as at 30 June of that year taken from Council's Annual Report.

<sup>2</sup> Percentage change cannot be shown for years prior to 2005 because the available data are incomplete.

Figure 3 shows just the size of the medical workforce as measured by registration data and of the New Zealand population compared to 2001 levels.

**Figure 3: Change in size of the medical workforce compared to change in size of the New Zealand population (2001–2017)**



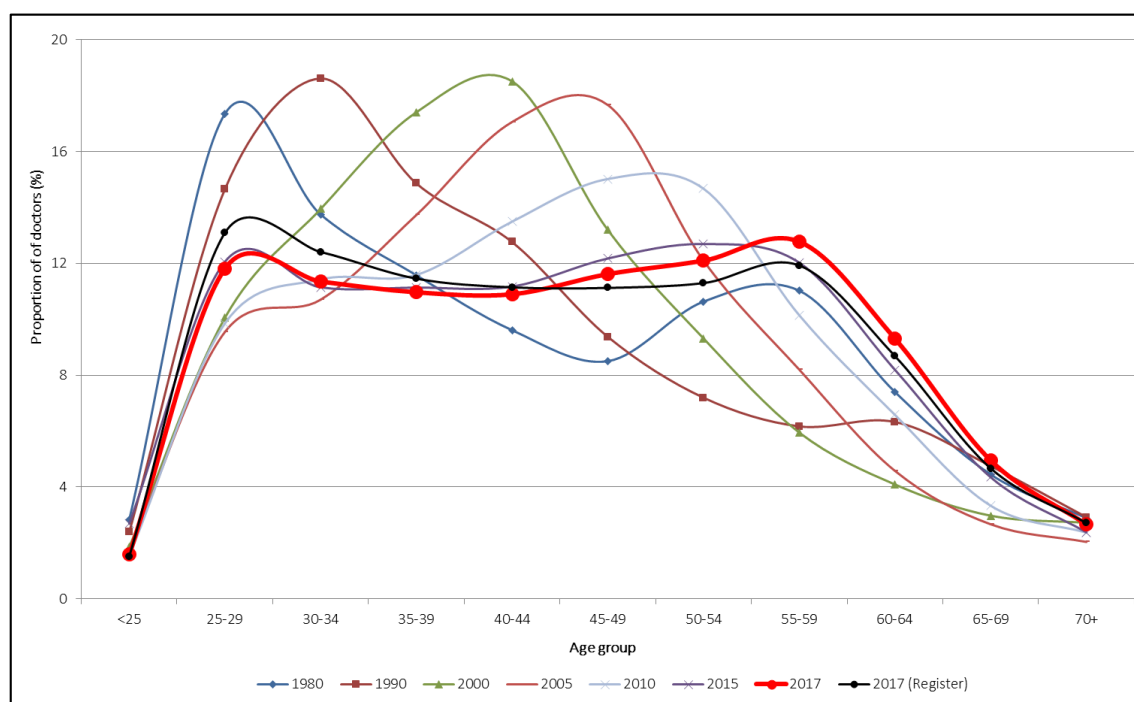
## Age distribution of the workforce

Figure 4 compares the age distribution of the active workforce<sup>3</sup> based on survey data from 1980 to 2017, focusing on selected series (1980, 1990, 2000, 2005, 2010, 2015 and 2017) to aid in comparing the changes over time.

In 2017, the largest group of doctors were those aged 55–59, closely followed by those aged 50–54. In 2010 and 2005, this was doctors aged 45–49, and in 2000, the largest group was doctors aged 40–44. Looking further back, in 1990, the largest group of doctors was those aged 30–34, and in 1980, it was those aged 25–29.

This reflects that the average age of the workforce is higher than it used to be. However, as highlighted in previous reports, the overall distribution in recent years is much more even, and the proportion of doctors aged 25–29 has noticeably increased since 2000. As noted in the 2015 report, this is likely due to the increased numbers of graduates being produced by New Zealand’s medical schools in recent years (see Table 25 on page 57).

**Figure 4: Age distribution of the active workforce (1980–2017)**



<sup>3</sup> Active doctors are those who responded to the workforce survey and reported working 4 or more hours per week.

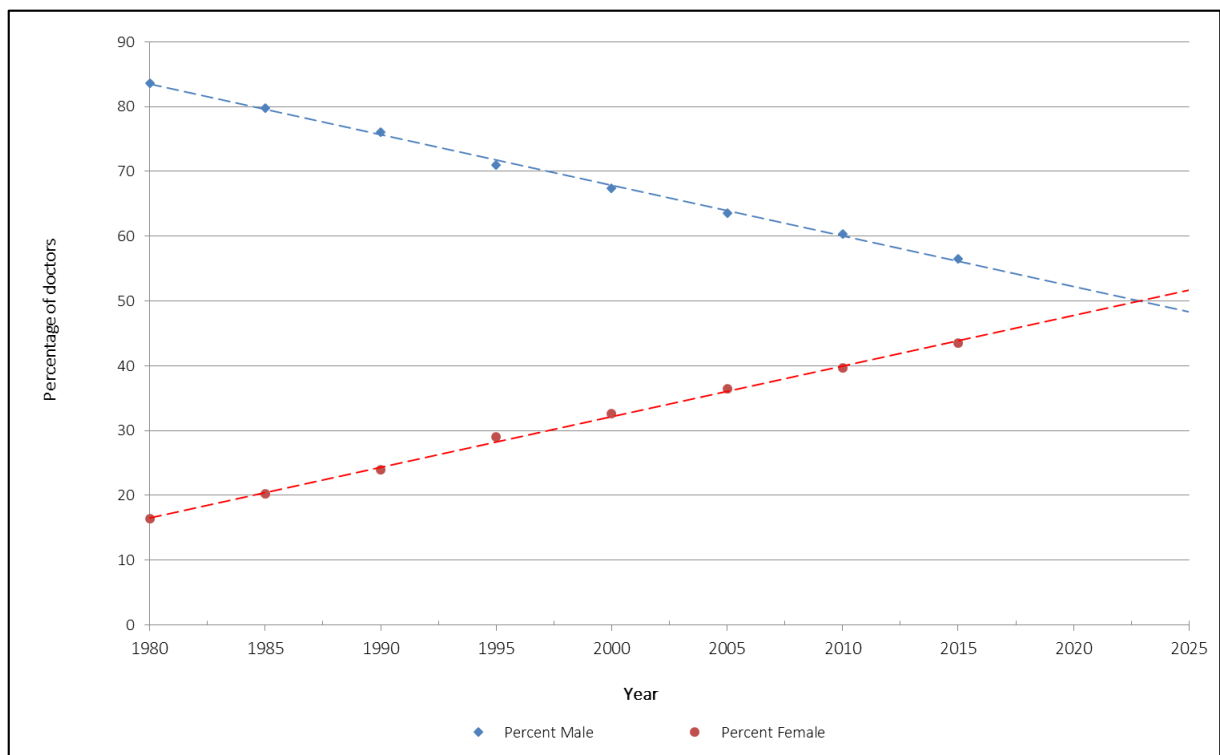


## Gender distribution of the workforce

In 2017, 44.8 percent of the active workforce were female. This compares with 43.9 percent in 2016 and 43.5 percent in 2015.

Figure 5 compares the proportion of females in the active workforce at 5-yearly intervals going back to 1980. This shows that the proportion of females was just 16.4 percent in 1980 but has been increasing steadily since that time. A rough projection of the current trend suggests that women will outnumber men amongst doctors by 2025.

**Figure 5: Proportion of active doctors by gender (1980–2017) showing projected trend forward to 2025.**

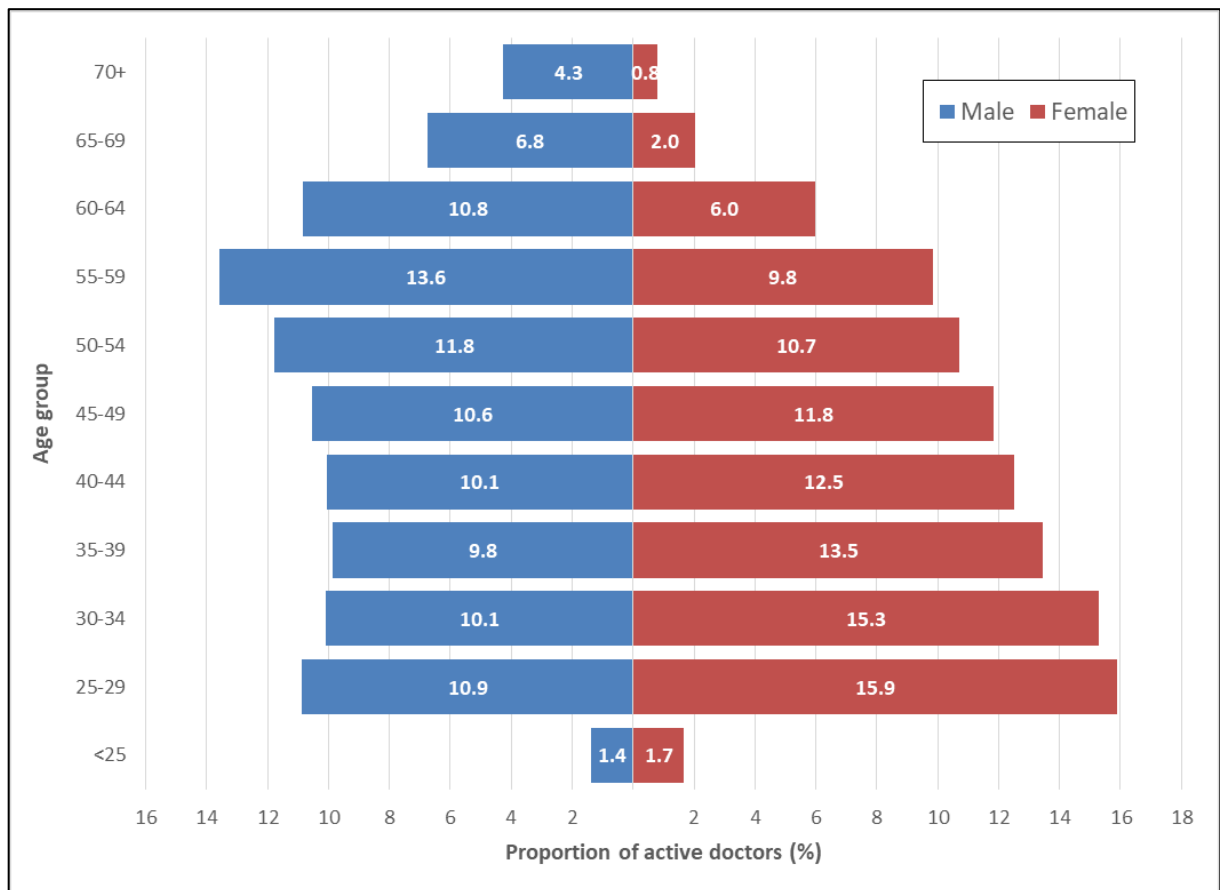


## Distribution by age and gender

Figure 6 shows the distribution of doctors by age and gender using a population pyramid.

This shows that female doctors are more likely to be younger compared with male doctors. The largest groups of female doctors are those aged 25–29 and 30–34. The largest groups of male doctors are those aged 50–54 and 55–59.

**Figure 6: Distribution of active doctors by age and gender**



## Changes by work role

### Clarification regarding terminology used

In some cases, the categories may not reflect current terminology but have been retained to allow for comparison of data over time. The main example of this is house officers who are now more commonly known as interns or PGY1s (postgraduate year 1s).

### General practitioner and specialist

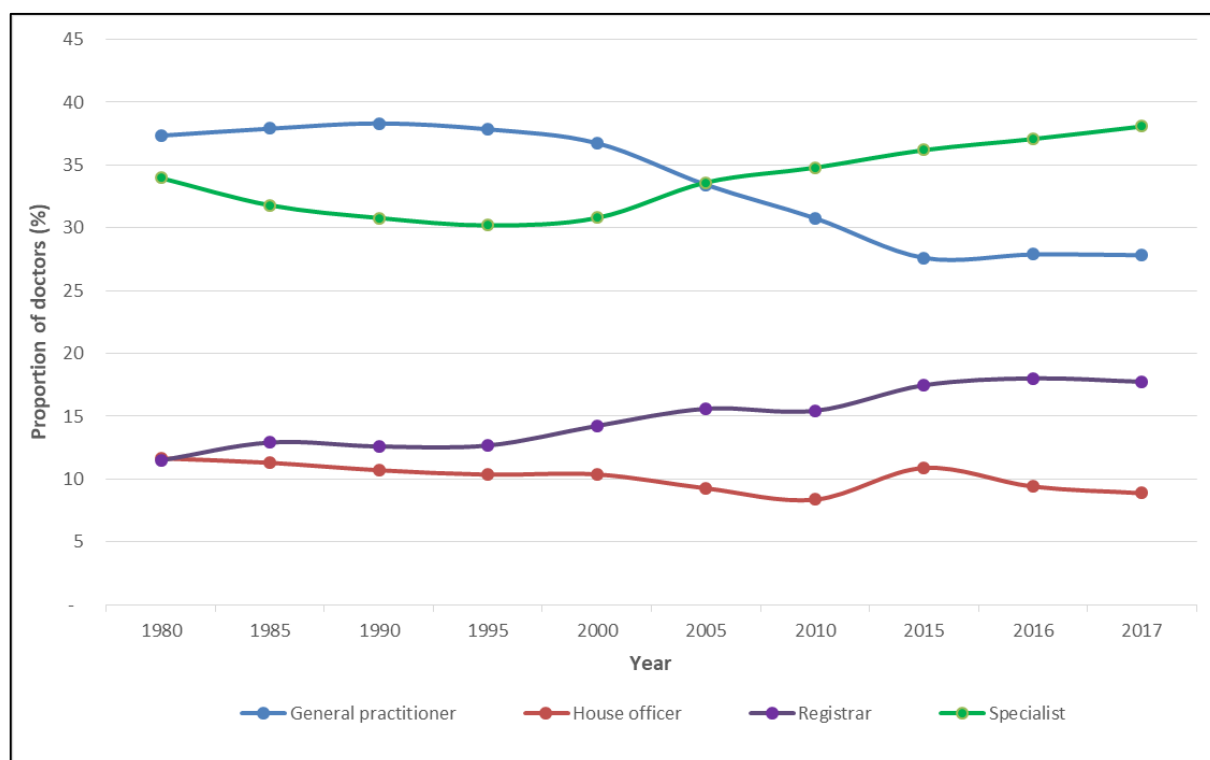
For the purposes of registration, general practice is a specialist scope of practice, and doctors registered in a vocational scope of general practice are considered to be specialists. However, for the purposes of the survey, specialist and general practitioner (GP) are recorded in separate categories to aid analysis and interpretation of the data. Because data are self-reported, not all doctors who report themselves as specialists or GPs will hold a vocational scope of practice.

### Changes by work role over time

Figure 7 shows how the proportion of doctors by work role at their main work site has changed over time, focusing on the four main work roles. In 2017, 28 percent of active doctors were GPs. This proportion has decreased over time – prior to 2000, it was just under 40 percent and has been steadily decreasing.

Conversely, the proportion of specialists has increased over time – from 31 percent in 2000 to 37 percent in 2017. The proportion of registrars also increased over that same period and was 18 percent in 2017 (up from 14 percent in 2000).

**Figure 7: Proportion of active doctors by work role (1980–2017)**



## Work type

The analysis in previous years that compared the numbers of active doctors by work type in the current year with the previous year is not possible given the decreased response rate in 2017.

Table 3 instead uses registration data to show the changes in the number of doctors registered in vocational scopes. Only scopes with more than 100 doctors in 2018 are shown. The full list including all vocational scopes can be found in Table 22 on page 53.

Table 3 shows that the largest increases in the number of doctors practising in a vocational scope in the last year were in emergency medicine (9.5 percent), urgent care (8.4 percent) and psychiatry (8.1 percent).

Looking at the changes in numbers since 2005, emergency medicine was again the largest increase, up 238 percent, with intensive care medicine up 136 percent and urgent care up 100 percent.

General practice, the largest single vocational scope, increased by 2.1 percent between 2017 and 2018 and by 48 percent since 2005.

**Table 3: Number of doctors by vocational scope for selected years (2005–2018)**

Vocational scope	Year <sup>1</sup>					Percent change 2017–2018
	2005	2010	2015	2017	2018	
General practice	2,446	2,701	3,303	3,534	3,609	+2.1
Internal medicine	656	761	958	1,051	1,099	+4.6
Anaesthesia	488	577	737	801	814	+1.6
Psychiatry	425	489	559	575	622	+8.2
Diagnostic and interventional radiology	266	303	448	477	489	+2.5
Paediatrics	219	289	353	379	401	+5.8
Pathology	225	238	278	298	309	+3.7
Obstetrics and gynaecology	223	234	280	293	313	+6.8
General surgery	227	235	262	280	291	+3.9
Orthopaedic surgery	211	237	273	269	291	+8.2
Emergency medicine	88	135	224	272	298	+9.6
Public health medicine	130	157	177	170	169	-0.6
Urgent care	103	119	136	190	206	+8.4
Ophthalmology	107	124	134	141	147	+4.3
Otolaryngology head and neck surgery	85	97	108	114	118	+3.5
Intensive care medicine	44	58	81	98	104	+6.1
Rural hospital medicine	-	26	105	114	117	+2.6
<b>Total</b>	<b>6,389</b>	<b>7,310</b>	<b>9,069</b>	<b>9,755</b>	<b>10,117</b>	<b>+3.6</b>

<sup>1</sup> Figures represent the number of doctors with vocational scope and current practising certificate as at 30 June of the year.

## Work type and age

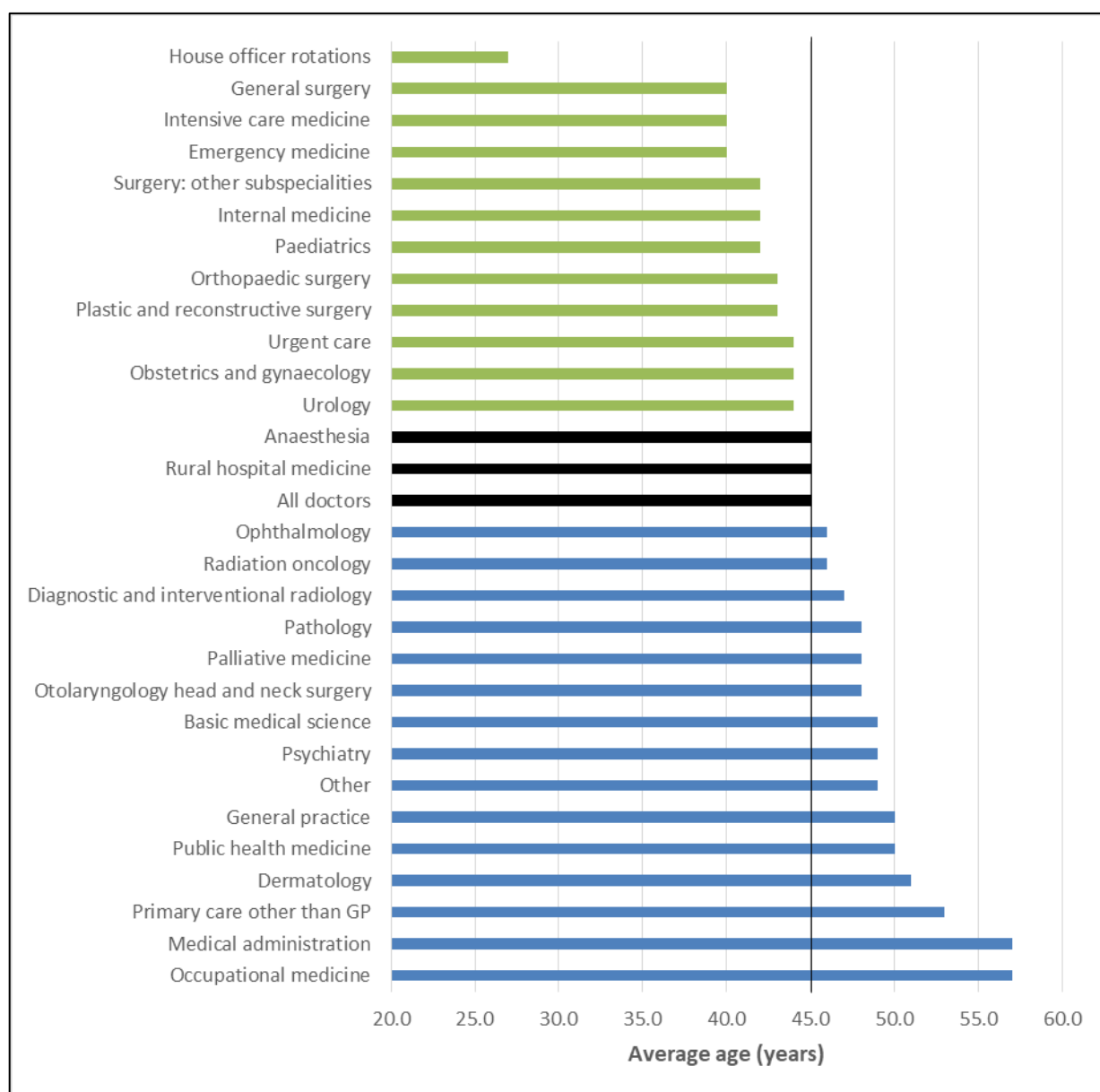
Figure 8 compares the average age of different work types, focusing on those work types with more than 50 respondents.

The average age was highest in medical administration and occupational medicine (57 years), primary care (53 years) and dermatology (51 years).

The average age was lowest for those in house officer rotations (27 years), with the next lowest being emergency medicine, intensive care medicine and general surgery (all 40 years).

Anaesthesia and rural hospital medicine both had the same average age as the overall population at 45 years.

**Figure 8: Average age by work type at main work site (areas with more than 50 doctors)**





### Note regarding internal medicine

Respondents to the survey who reported working in internal medicine had an average age of 42 years. One possible explanation for this is doctors reporting a work role of house officer and a work type of internal medicine.

If the work type of house officer is excluded, the average age for doctors working in internal medicine is 44 years. If we look only at doctors who reported working as a specialist, the average age is 50 years.

### Age and vocational scopes

Table 4 shows that the average age of doctors on the register with a current practising certificate and a vocational scope of practice between 2005 and 2018, focusing on scopes with 100 or more doctors. The same analysis showing all scopes can be found in Table 23 on page 54.

The average age of doctors with a vocational scope and current practising certificate was 52 years in 2018, up from 48 years in 2005.

The average age increased in all vocational scopes, although the increase was smallest in diagnostic and interventional radiology and internal medicine, which both increased by 1 year, and largest in psychiatry and public health medicine where both increased by 5 years.

**Table 4: Average age of doctors on the register with a vocational scope (2005–2018)**

Vocational scope	Year				
	2005	2010	2015	2017	2018
Anaesthesia	46	48	49	49	49
Diagnostic and interventional radiology	48	49	49	49	49
Emergency medicine	41	43	45	45	45
General practice	49	51	53	53	53
General surgery	49	51	51	51	51
Intensive care medicine	46	48	49	50	50
Internal medicine	50	51	50	51	51
Obstetrics and gynaecology	49	51	52	52	52
Ophthalmology	49	50	51	51	51
Orthopaedic surgery	49	50	52	52	52
Otolaryngology head and neck surgery	49	51	53	54	53
Paediatrics	47	48	49	50	50
Pathology	49	50	51	51	51
Psychiatry	48	50	52	53	53
Public health medicine	47	49	51	51	52
Rural hospital medicine		47	49	50	50
Urgent care	45	48	51	51	51
<b>All doctors with vocational scope</b>	<b>48</b>	<b>50</b>	<b>51</b>	<b>51</b>	<b>52</b>

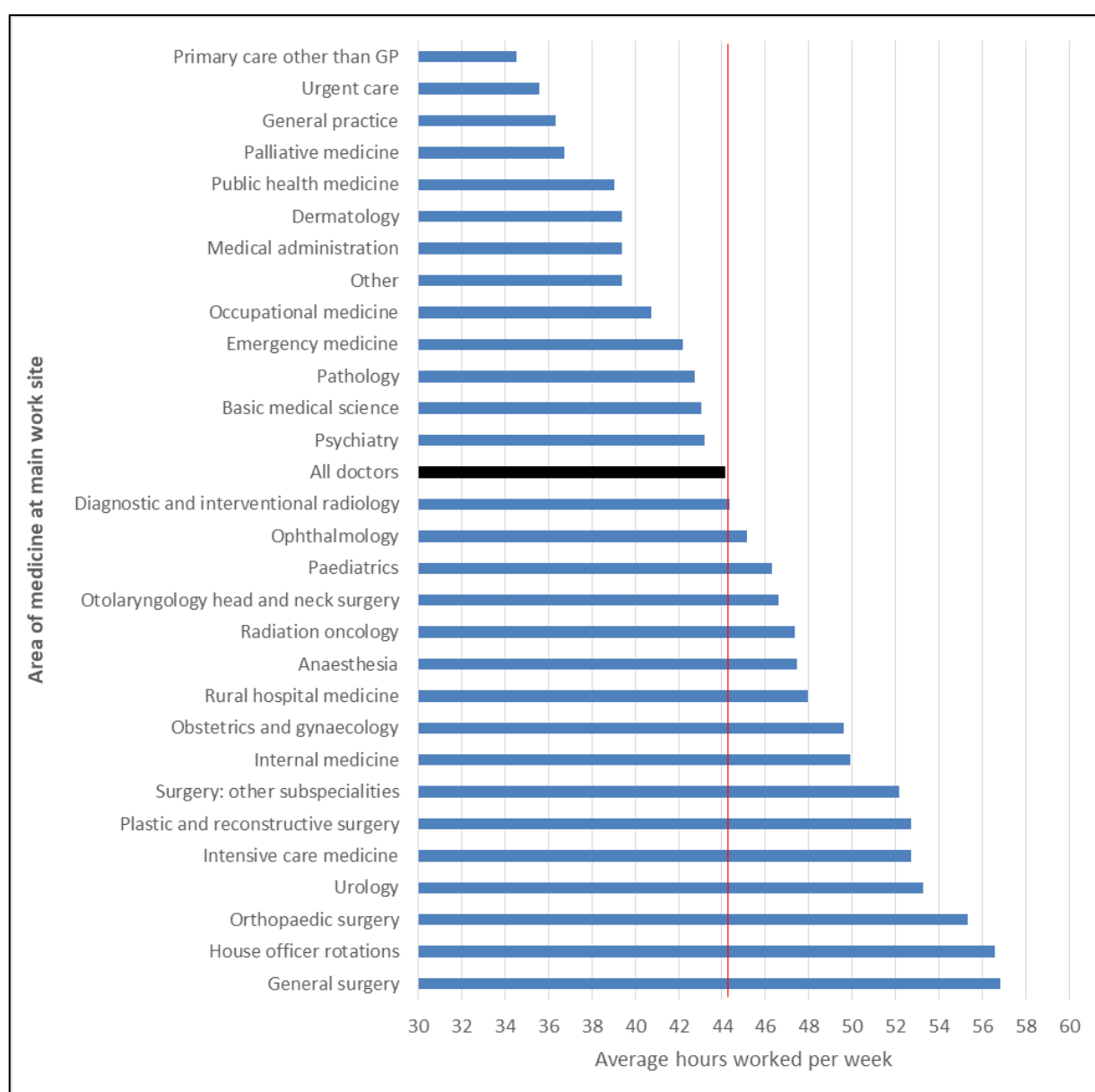
## Workloads

### Hours worked by work type

Figure 9 shows the average hours worked by work type, again looking only at those work types with 50 or more respondents. The average hours worked per week was highest in general surgery (56.8 hours), house officer rotations (56.6 hours) and orthopaedic surgery (55.3 hours).

The average hours worked per week was lowest in primary care (34.5 hours), urgent care (35.6 hours) and general practice (36.3 hours).

**Figure 9: Average hours worked by work type (areas with more than 50 respondents)**





## Hours worked by work role

Table 5 shows the changes over time in the average number of hours worked each week, by work role, at the doctor's main work site.

Overall, the average number of hours doctors have reported working has been decreasing down from 47.1 hours in 2000 to 44.2 hours in 2017.

House officers reported working the most hours each week, followed by registrars. Hours reported by these two groups were decreasing between 2000 and 2010 but have been increasing in recent years, with house officers now reporting more hours than they did in 2000 – the only group to do so.

We have no information on why hours reported by house officers are increasing, and given the improvements in employment conditions for new doctors, it is surprising. One possibility is that some house officers are trying to report multiple rotations rather than their typical or most recent working week. If so, this would cause the number of hours worked by those doctors to be overstated and inflate the average for house officers.

Average hours worked by specialists and GPs have continued to decrease over time, with GPs down to 36.2 hours (from 42.2 in 2000) and specialists down to 44.3 hours (from 48.2 in 2000).

**Table 5: Average hours worked by work role (2000–2017)**

Work role	Year				
	2000	2005	2010	2015	2017
General practitioner	42.2	39.8	37.8	37.1	36.2
House officer	55.7	54.6	52.1	53.7	57.1
Registrar	55.0	53.1	51.6	51.4	52.4
Specialist	48.2	46.6	45.2	45.0	44.3
<b>All doctors</b>	<b>47.1</b>	<b>45.5</b>	<b>43.9</b>	<b>44.4</b>	<b>44.2</b>

## Hours worked by age and gender

For all active doctors, the average number of hours worked was 44.2 per week in 2017. Table 6 shows that doctors aged in their 20s worked the most hours each week on average.

Females work a similar number of hours to males during their 20s (slightly more for doctors aged 24 and younger).

After the age of 30, males work more hours, and the gap is largest between the ages of 40 and 59. For males, the average number of hours continues to remain above 50 hours per week until the 35–39 age group.

**Table 6: Average of total hours worked, by age and gender**

Gender	Age group											All ages, average hours
	≤24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	
Female	57.9	55.1	46.1	37.8	36.9	35.8	36.8	36.9	36.3	35.9	30.6	41.1
Male	57.8	56.8	51.7	47.2	46.7	46.8	46.4	45.4	44.2	39.1	31.9	46.7
<b>All doctors</b>	<b>57.8</b>	<b>55.9</b>	<b>48.6</b>	<b>42.2</b>	<b>41.7</b>	<b>41.5</b>	<b>42.2</b>	<b>42.2</b>	<b>41.9</b>	<b>38.4</b>	<b>31.7</b>	<b>44.2</b>

Table 7 shows that the average number of hours worked per week for females decreased in 2017 to 41.1. The average number of hours worked per week for males also decreased in 2017, albeit by a smaller amount from 47.0 hours to 46.7 hours.

The average number of hours worked per week for females is up from 2005 whereas males are reporting fewer hours than they did in 2005.

**Table 7: Average hours worked, by gender and year (2005–2017)**

Gender	Year				
	2005	2010	2015	2016	2017
Female	40.6	39.8	41.2	41.8	41.1
Male	48.3	46.6	46.8	47.0	46.7
<b>All doctors</b>	<b>45.5</b>	<b>43.9</b>	<b>44.4</b>	<b>44.7</b>	<b>44.2</b>

## Part-time work and gender

Females were more likely than males to work fewer than 40 hours per week. Almost 41 percent of females reported working fewer than 40 hours compared with 17 percent of males.

Doctors who reported working fewer than 40 hours were asked to record the main reason for this. The most common reasons given by females were personal preference (1,083 respondents), family commitments (554 respondents) and part-time work (468 respondents).

The vast majority of male doctors who reported working fewer than 40 hours most commonly gave the reason for this as personal preference (731 respondents). Other commonly given reasons were that they were retired or semi-retired (166 respondents) and part-time work (127 respondents). A much smaller number of male doctors reported working part-time due to family commitments (51 respondents).

## Hours on call by work role

When completing the workforce survey, doctors were asked to record all hours they actually worked in an average week as hours worked, including hours where they were on call and were required to work.

Hours on call measures the additional hours when doctors were on call but were not required to work. If no on-call hours are reported, the doctor was either not on call or chose not to provide details of their on-call hours.

Table 8 shows on-call hours by workforce roles. Almost 70 percent of doctors reported no on-call hours. Specialists were most likely to be on call, with over half of specialists reporting some on-call hours and over 36 percent on call for 10 or more hours per week.

Almost three-quarters of GPs reported working no on-call hours, although this was fewer than house officers and registrars, where this proportion was 96 percent and 85 percent respectively. For house officers and registrars, this reflects the higher average hours worked by these doctors.

**Table 8: Doctors' on-call hours, grouped in each work role (%)**

On-call hours, grouped	General practitioner <sup>2</sup>	House officer	Registrar	Medical officer	Specialist
No on-call hours	74.4	95.5	84.7	71.9	44.9
1–4	8.0	0.8	1.3	2.2	6.8
5–9	4.5	1.3	3.8	4.7	12.0
10–19	5.5	2.0	6.6	10.7	19.0
20–49	5.1	0.4	3.2	8.8	14.4
50 and over	2.5	0.0	0.5	1.7	2.8
<b>Total<sup>1</sup></b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

<sup>1</sup> Individual categories may not add up to total due to rounding.

<sup>2</sup> GP includes those doctors who reported a work role of primary care.

## Hours on call by employer

Table 9 shows the main place of work for doctors on call for 10 or more hours each week and compares specialists with all other work roles – 87 percent of specialists on call for 10 or more hours worked in a public hospital at their main work site.

Of the doctors from other work roles who were on call for 10 or more hours, 43 percent worked in a group private practice at their main work site, and just under 41 percent worked in public hospitals.

**Table 9: Proportion of doctors on call for 10 or more hours each week, by employer (%)**

Main employer	Specialist	Other work roles	Total
Commercial company	1.3	2.8	1.8
Government department/agency	2.7	3.1	2.9
Professional body	0.1	0.5	0.2
Group private practice	4.8	43.2	17.2
Private hospital	2.1	1.4	1.9
Public hospital	86.6	40.3	71.7
Solo private practice	2.3	8.8	4.4
University/polytechnic	0.8	1.1	0.9
Other	2.0	7.6	3.8
<b>Total<sup>1</sup></b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

<sup>1</sup> Individual categories may not add up to total due to rounding.

## Hours on call – changes over time

Table 10 shows the changes in the average on-call hours by work role between 2000 and 2017. All work roles are reporting fewer on-call hours than they did in 2000, and the overall average is also down from 10.2 hours in 2000 to 6.0 hours in 2017.

**Table 10: Average on-call hours by work role (2000–2017)**

Work role	Year				
	2000	2005	2010	2015	2017
GP	9.6	5.6	5.3	4.8	4.9
House officer	2.6	1.3	0.8	0.5	0.4
Medical officer	8.9	5.6	4.6	6.7	5.9
Registrar	5.1	3.2	2.8	2.4	2.2
Specialist	16.7	13.1	11.0	10.2	9.9
<b>All doctors</b>	<b>10.2</b>	<b>7.3</b>	<b>6.3</b>	<b>5.9</b>	<b>6.0</b>

## Geographic distribution

### Important information about geographic data

Although care is taken in producing this data, we recommend that caution is used in interpreting and relying on figures in this section.

To allow data to be presented in geographic regions, we allocate every doctor who responds to the survey to their nearest territorial local authority (TLA) and district health board (DHB). However, there are a number of limitations that mean that these data will not always be completely accurate.

Doctors often work in more than one location, and in allocating each doctor to a single TLA and DHB, we cannot fully represent every location in which the doctor is working. Some geographic regions are closely related, especially those in the wider Auckland and Wellington regions. Taking this example, doctors might work across the entire Wellington region throughout the year but will only be represented in these figures against one TLA and DHB. This means that the results, especially when analysed by DHB, tend to be skewed towards the main DHB in a region – for example, Auckland DHB in the Auckland region and Capital & Coast in the Wellington region.

Auckland combined into a single TLA region – the Auckland ‘Super City’ – in November 2010. In the years that followed, we continued to report the separate regions from before the merger to allow comparison with previous years. Unfortunately, because this has now become unmanageable, from 2015 onwards, the figures for Auckland are presented as a single TLA. The separate DHBs within Auckland will still continue to be reported separately.

### Effect of reduced response rate

In previous years, we have presented geographic data and especially data by DHB in the form of headcounts. We are unable to do this for 2017 because of the reduced response rate to the survey. Instead, figures are presented as proportions of the total.

We apologise that we are unable to provide the data as presented previously and appreciate this will make the data less useful for some stakeholders. We are looking at ways to source and present headcount data in future reports, potentially based on non-register data collected from doctors.

## District health boards

Table 11 shows the proportion of doctors at each DHB, along with the proportion of FTEs, proportion of GPs and average hours worked.

**Table 11: Distribution of doctors and GPs by DHB region**

DHB	Population	Proportion of population (%)	Proportion of doctors (%)	Proportion of total FTEs (%)	Proportion of GPs (%)	Average hours worked
Northland	175,400	3.7	3.2	3.2	3.7	44.4
Waitemata	606,000	12.6	8.7	8.6	10.7	43.4
Auckland	523,500	10.9	20.1	20.8	12.5	45.8
Counties Manukau	546,600	11.4	6.7	6.6	8.5	43.2
Waikato	408,800	8.5	8.3	8.4	8.5	44.8
Bay of Plenty	231,900	4.8	4.7	4.5	5.9	42.3
Lakes	108,500	2.3	1.8	1.9	2.2	45.3
Hauora Tairāwhiti	48,500	1.0	0.8	0.8	0.8	43.6
Hawke's Bay	163,900	3.4	3.2	3.2	3.8	44.9
Taranaki	118,100	2.5	2.0	2.0	2.0	43.2
MidCentral	176,600	3.7	3.4	3.5	2.9	45.9
Whanganui	64,100	1.3	1.0	1.1	1.2	46.9
Wairarapa	44,500	0.9	0.5	0.4	0.8	40.1
Hutt Valley	147,900	3.1	2.0	1.8	2.6	41.3
Capital & Coast	312,700	6.5	9.9	9.9	8.5	44.1
Nelson Marlborough	148,800	3.1	2.8	2.6	3.8	41.2
West Coast	32,500	0.7	0.4	0.4	0.4	43.3
Canterbury	551,400	11.5	12.5	12.3	12.1	43.5
South Canterbury	59,600	1.2	0.8	0.9	1.1	45.2
Southern	324,300	6.8	7.3	7.2	8.0	43.6

### Distribution of doctors

While the figures show that Auckland DHB is the largest DHB, this is likely to be exaggerated by the limitation of having to allocate each doctor to a single DHB. Looking at the three DHBs in the Auckland region as a whole, over a third of all doctors (36.5 percent) work at either Auckland, Waitemata or Counties Manukau DHBs. This is consistent with the proportion of the New Zealand population contained within these areas (35 percent).

Just over 76 percent of doctors are based in the North Island. Again, this is consistent with the distribution of the New Zealand population.

The largest DHB in the South Island is Canterbury with 12.1 percent of all doctors, slightly more than their proportion of the New Zealand population.

### Distribution of GPs

The two largest DHBs in terms of numbers of GPs are Auckland and Canterbury (both 12.5 percent).

The distribution of GPs was largely consistent with the New Zealand population. Areas that were relatively under-represented included Counties Manukau (-2.9 percentage points) and Waitemata (-2.0 percentage points).

Areas that were relatively over-represented were Auckland (1.6 percentage points), Capital & Coast (1.93 percentage points) and Bay of Plenty (1.1 percentage points).

### Hours worked

In terms of hours worked, there wasn't much variation across DHBs. The DHB with the highest average hours worked was Whanganui (46.9 hours), followed by MidCentral (45.9 hours) and Auckland (45.8 hours).

The DHBs with the lowest average hours were Wairarapa (40.1 hours), Nelson Marlborough (41.2 hours) and Hutt Valley (41.3 hours).

### Gender

Table 12 shows the percentage of female doctors, percentage of IMGs and average age for each DHB.

**Table 12: DHBs by percentage female, percentage IMG and average age**

DHB	Population	Percentage female (%)	Percentage IMGs (%)	Average age
Northland	175,400	44.8	51.0	47.0
Waitemata	606,000	46.1	38.5	46.5
Auckland	523,500	45.6	31.3	45.9
Counties Manukau	546,600	47.0	41.3	46.0
Waikato	408,800	38.1	49.7	45.6
Bay of Plenty	231,900	47.5	48.2	44.8
Lakes	108,500	47.0	46.6	45.0
Hauora Tairāwhiti	48,500	42.1	47.7	46.9
Hawke's Bay	163,900	46.9	44.2	45.4
Taranaki	118,100	40.2	50.2	45.2
MidCentral	176,600	39.3	41.8	44.7
Whanganui	64,100	33.6	63.3	47.9
Wairarapa	44,500	37.9	58.6	56.3
Hutt Valley	147,900	44.6	43.4	48.6
Capital & Coast	312,700	48.4	32.1	44.2
Nelson Marlborough	148,800	45.6	41.9	46.4
West Coast	32,500	37.0	69.6	47.1
Canterbury	551,400	46.8	36.1	45.4
South Canterbury	59,600	31.1	50.0	51.0
Southern	324,300	43.3	44.6	47.0

The percentage of female doctors varied quite widely between DHBs. The DHBs with the highest percentages of female doctors were Capital & Coast (48.3 percent), Bay of Plenty (47.5 percent) and Counties Manukau (47.0 percent).

The DHBs with the lowest percentages of female doctors were South Canterbury (31.1 percent), Whanganui (33.6 percent) and Wairarapa (37.9 percent).

### **International medical graduates**

Again, the percentage of IMGs varied quite widely between DHBs. West Coast had the highest percentage of IMGs – almost 70 percent (69.6 percent), followed by Whanganui (63.3 percent) and Wairarapa (58.6 percent).

The DHBs with the lowest percentages of IMGs were Auckland (31.3 percent), Capital & Coast (32.1 percent), Canterbury (36.1 percent) and Waitemata (38.5 percent).

This may reflect that main urban areas are easier to staff and so are less reliant on recruiting doctors from overseas.

### **Age**

There was some variation in age across DHBs but not as pronounced as with gender and IMGs. The DHB with the highest average age was Wairarapa (56.3 years), followed by South Canterbury (50.1 years).

The DHBs with the lowest average ages were Capital & Coast (44.2 percent), MidCentral (44.7 percent) and Bay of Plenty (44.8 percent).



## Urban/rural

### Method

Statistics New Zealand, in its report *New Zealand: An Urban/Rural Profile*,<sup>4</sup> outlines the complexities involved in classifying an area as rural or urban and notes that there is no internationally recognised definition of a 'rural' area.

One way of approximating how rural or urban an area is to look at how densely it is populated. For the purposes of this section, we have allocated TLAs into one of three groups based on population density. The population density for each TLA was calculated by dividing its population by its land area (in km<sup>2</sup>).

As an example, Wellington City, an urban area, is listed as having an area of 290 km<sup>2</sup> and a population of 212,700, giving it an average population density of 733 people per square kilometre. South Wairarapa District, generally considered a rural area, is listed as having an area of 2,387 km<sup>2</sup> and a population of 10,250, giving it an average population density of 4.3 people per square kilometre.

The three groups are defined as:

- main urban — areas with 100 or more people per square kilometre
- secondary urban — areas with 21–99 people per square kilometre
- rural — areas with 20 or fewer people per square kilometre.

**Table 13: Summary of workforce statistics by population density of area (all doctors)**

Workforce measure	Population density		
	Main urban 100+ people per km <sup>2</sup>	Secondary urban 21–99 people per km <sup>2</sup>	Rural 0–20 people per km <sup>2</sup>
Proportion of doctors (%) <sup>1</sup>	75.5	12.9	11.6
Proportion of GPs (%) <sup>2</sup>	65.4	14.2	20.4
Population <sup>3</sup>	2,971,530	660,500	1,160,840
Proportion of population (%)	62.0	13.8	24.2
Average hours worked	44.5	43.7	42.3
Average hours worked by GPs	33.6	33.6	36.2
Average on-call hours	5.4	6.9	8.6
Average age	45.3	46.2	49.0
Proportion of female doctors (%)	45.5	44.1	41.6
Proportion of IMGs (%)	37.0	44.3	54.9

<sup>1</sup> Represents all active doctors who responded to the survey.

<sup>2</sup> Represents active doctors who reported working in general practice at one or more of their work sites.

<sup>3</sup> Population figures are based on Statistics New Zealand's estimated residential population as at 30 June of the particular survey period, in this case, 30 June 2017.

<sup>4</sup> Statistics New Zealand: *New Zealand: An Urban/Rural Profile*  
[http://www.stats.govt.nz/browse\\_for\\_stats/people\\_and\\_communities/Geographic-areas/urban-rural-profile.aspx](http://www.stats.govt.nz/browse_for_stats/people_and_communities/Geographic-areas/urban-rural-profile.aspx)

### Distribution of doctors

Urban areas have a higher concentration of doctors compared with rural areas. Over three-quarters of doctors are in main urban areas compared with 62 percent of the population. One-quarter of people live in rural areas, but these areas only make up 11.6 percent of doctors. Secondary urban areas have about the same proportion of doctors as they do the population.

### Distribution of GPs

While the majority of GPs are found in urban areas, the distribution of GPs is less skewed towards urban areas compared with the overall medical workforce. GPs in main urban areas make up 65.4 percent of doctors, with GPs in rural areas making up 20.4 percent and GPs in secondary urban areas 14.2 percent.

### Hours worked and on call

For all doctors, the average number of hours worked per week is slightly lower in rural areas, but the number of on-call hours is higher. Doctors in rural areas were on call for 8.6 hours per week on average compared with 5.4 for doctors in main urban areas.

Looking only at hours worked by GPs, the average hours worked per week is higher in rural areas than in urban areas – 36.2 hours per week in rural areas compared with 33.6 hours per week in main urban areas.

### Age distribution

Overall, doctors working in rural areas tend to be older than those working in urban areas – the average age is 49.0 years in rural areas compared with 45.3 years in main urban areas.

One reason for this is likely to be that most house officers, who tend to be much younger, will work in training centres in urban areas. Table 14 compares the average age of doctors by work role and population density group, focusing on GPs, registrars and specialists.

**Table 14: Average age by work role and population density group**

Workforce measure	Population density		
	Main urban 100+ people per km <sup>2</sup>	Secondary urban 21–99 people per km <sup>2</sup>	Rural 0–20 people per km <sup>2</sup>
Average age (GPs) <sup>1</sup>	51.6	51.4	51.7
Average age (registrars) <sup>1</sup>	32.8	33.5	33.1
Average age (specialists) <sup>1</sup>	51.0	52.2	53.5

<sup>1</sup> Based on work role at main employer.

Table 14 shows that the average age of GPs is actually very similar across the population density groups – 51.6 years in urban areas compared with 51.7 years in rural areas.

The same is true for registrars, where the average age is 32.8 years in urban areas and only slightly more in rural areas (33.1 years).

However, specialists in urban areas are, on average, younger than those in rural areas – 51 years in urban areas compared with 53.5 years in rural areas.

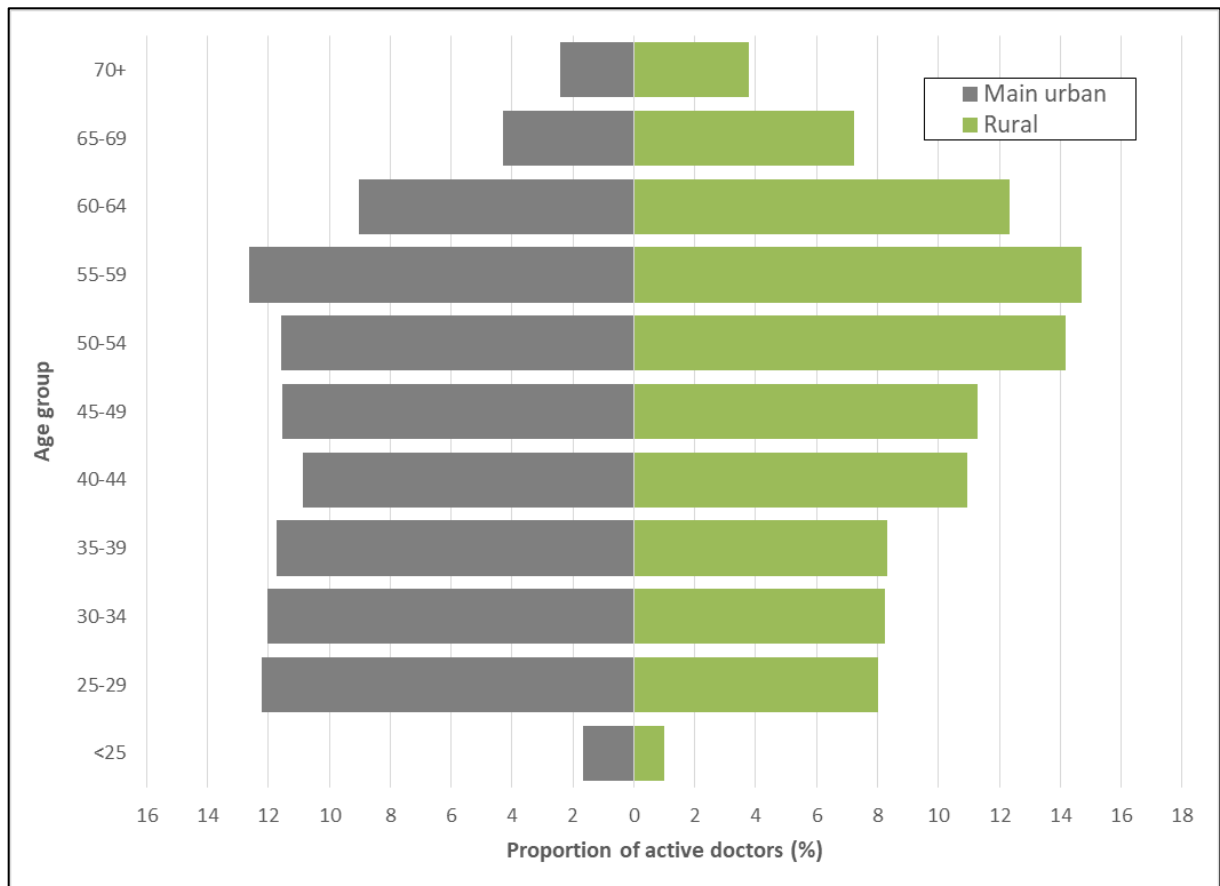
### Distribution by age group

Figure 10 compares the age distribution of doctors in urban and rural areas.

Just under 26 percent of doctors in rural areas were aged 39 or under compared with almost 38 percent of doctors in urban areas and 32.3 percent in secondary urban areas.

As noted earlier in this section, this reflects that younger doctors will be working in training centres in urban areas and not yet available to work in more rural areas.

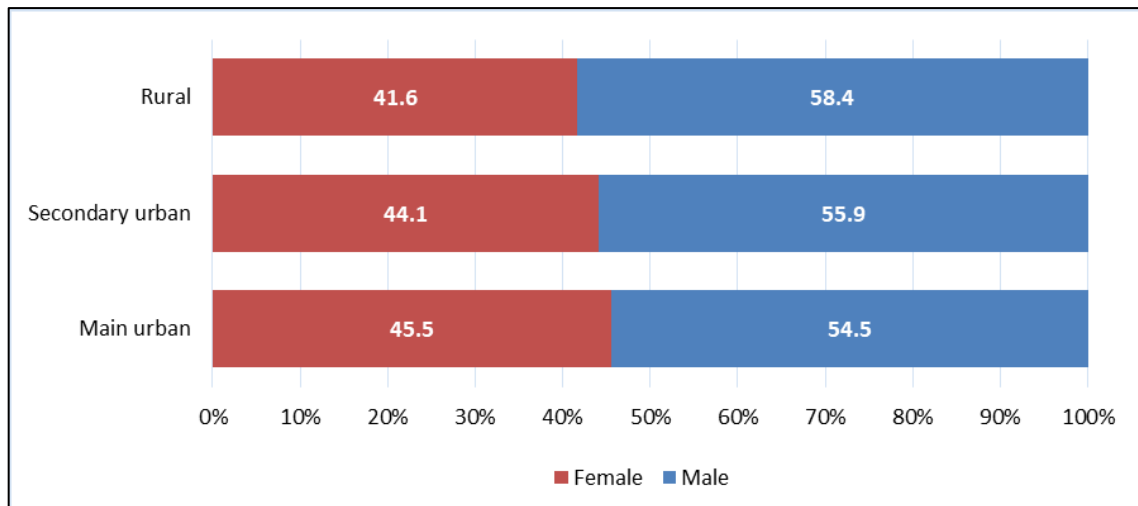
**Figure 10: Distribution of doctors by age and population density (main urban and rural)**



## Gender

Figure 11 shows there is a higher proportion of female doctors in urban areas compared with rural areas – 45.5 percent of doctors in main urban areas are female compared with 41.6 percent of doctors in rural areas.

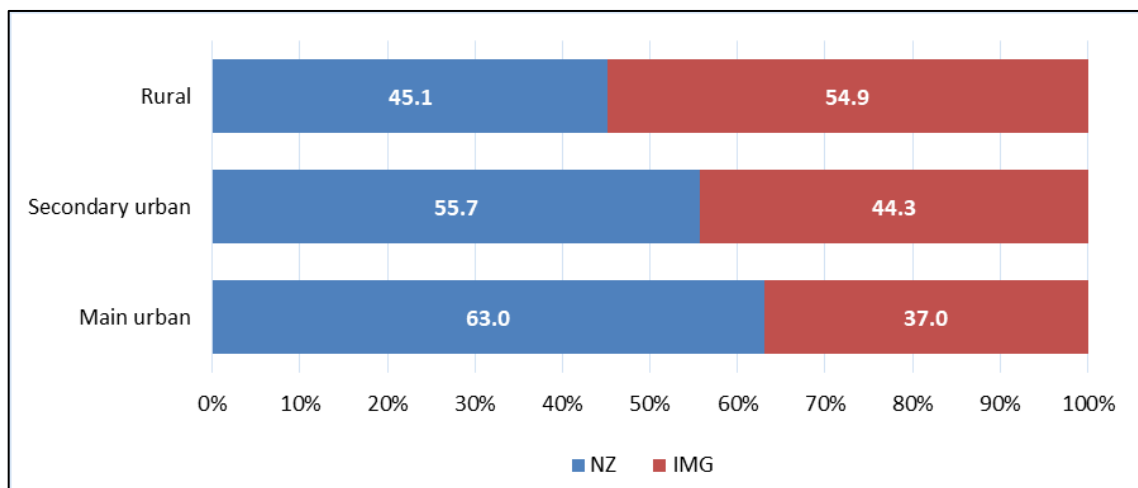
**Figure 11: Proportion of doctors by gender and population density of area**



## International medical graduates

Figure 12 shows there is a higher proportion of international medical graduates (IMGs) in rural areas compared with urban areas – 54.9 percent of doctors in rural areas are IMGs compared to 37 percent in main urban areas. This may reflect that rural areas are sometimes harder to staff and so positions in these areas are more likely to be filled by doctors from outside New Zealand.

**Figure 12: Proportion of IMGs by population density of area**



### Combined Auckland region

With Auckland being presented as a combined region for the first time in 2015, we are continuing to look at this region by itself. As expected, the combined region is categorised as a main urban area with its population of 1,657,200 and land area of 4,938 km<sup>2</sup>, giving it a population density of 335 people per square kilometre.

Presented as a combined region, Auckland represents over a third of New Zealand's population (34.6 percent) and has 35.5 percent of all doctors and 31.9 percent of all GPs.

Doctors in Auckland on average work slightly fewer hours but are on call for more hours compared to the workforce as a whole. The proportion of female doctors in Auckland is higher, while the proportion of IMGs is lower.

**Table 15: Summary of workforce statistics – Auckland City**

Workforce measure	Auckland City	New Zealand
Proportion of doctors (%) <sup>1</sup>	35.5	-
Proportion of GPs (%) <sup>2</sup>	31.9	-
Population <sup>3</sup>	1,657,200	4,792,870
Proportion of population (%)	34.6	-
Average hours worked	44.7	44.2
Average hours worked by GPs	34.5	34.1
Average on call hours	4.8	6.0
Average age	46.1	45.9
Proportion of female doctors (%)	46.0	44.8
Proportion of IMGs (%)	34.9	40.0

<sup>1</sup> Represents all active doctors who responded to the survey.

<sup>2</sup> Represents active doctors who reported working in general practice at one or more of their work sites.

<sup>3</sup> Population figures are based on Statistics New Zealand's estimated residential population as at 30 June of the particular survey period, in this case, 30 June 2017.

## Ethnicity

### Changes in ethnicity of the workforce over time

Table 16 shows the ethnicities of doctors over time. The proportion of doctors who identified themselves as Māori has been increasing and in 2017 is the highest it has been – 3.6 percent.

The proportion of Pasifika doctors is slightly down in 2017 compared with 2015 but is increasing overall – up from 1.1 percent in 2000 to 1.9 percent in 2017.

The proportion of NZ European/Pākehā doctors remains above 50 percent but is slowly declining. The proportion of doctors identifying as other European was also down slightly but remains around 20 percent as it has since 2010.

**Table 16: Proportion of doctors by ethnic group (%)**

Ethnicity	2000	2005	2010	2015	2017
Māori	2.3	2.6	3.0	3.4	3.6
Pacific Island (Pasifika)	1.1	1.5	1.3	2.0	1.9
Chinese	4.5	5.4	5.3	5.9	5.7
Indian	4.5	5.1	5.9	6.0	5.5
Other non-European	7.6	10.8	9.9	11.9	10.9
Other European <sup>1</sup>	-	15.4	19.7	20.5	19.7
NZ European/Pākehā	76.5	57.5	53.3	51.4	50.2
Not answered	3.2	1.5	1.5	2.4	-
Refused <sup>2</sup>	0.2	0.2	0.2	0.0	2.4
<b>Total<sup>3</sup></b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

<sup>1</sup> In 2000, other European and NZ European/ Pākehā were combined in one category.

<sup>2</sup> From 2016, not answered is no longer an available option. The ethnicity question can only be answered or refused.

<sup>3</sup> Individual categories may not add up to total due to rounding.

### Proportion of doctors by ethnicity in the workforce compared with the New Zealand population

Table 17 shows the proportion of doctors by ethnicity, as well as the equivalent proportion of the overall New Zealand population based on the results of the most recent Census<sup>5</sup> focusing on Māori, Pasifika and NZ European/Pākehā.

Although the proportion of Māori and Pasifika is increasing, these groups continue to be noticeably under-represented compared to their proportion of the population, even allowing for differences in method.<sup>6</sup>

<sup>5</sup> Although there was a Census conducted in March 2018, the results were not yet available at the time this report was written. Coincidentally, the 2018 Census results were delayed because of a lower than expected response rate – see <https://www.stats.govt.nz/2018-census/>.

<sup>6</sup> We are using a prioritised count to assign a doctor to one ethnic group (see the survey method section on page 46), whereas Statistics New Zealand counts a person once for every ethnic group they identify with. Because of the way the Census results were published, it was not possible to find an equivalent figure for each group.

**Table 17: Proportion of doctors and New Zealand population by ethnic group**

<b>Ethnicity<sup>1</sup></b>	<b>Proportion of doctors (2017)</b>	<b>Proportion of New Zealand population (2013 Census)<sup>2</sup></b>
Māori	3.6	14.7
Pacific Island (Pasifika)	1.9	6.6
NZ European/Pākehā	50.2	60.5
<b>Total<sup>3</sup></b>	<b>100.0</b>	<b>100.0</b>

<sup>1</sup> Proportions calculated including the other ethnicity categories not shown in the table. The table includes only these three categories for ease of reading.

<sup>2</sup> Figures based on the results of the 2013 Census published by Statistics New Zealand – see <http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/ethnic-profiles.aspx>.

<sup>3</sup> Individual categories may not add up to total due to rounding.

## Developments in the ethnicity of medical graduates

While there is still a large gap in the representation of Māori and Pasifika doctors amongst the medical workforce, there are signs this gap is slowly being closed. The proportion of Māori doctors is higher amongst newer doctors, especially house officers (see Table 19 on page 32). This reflects that significant progress is being made at graduate level.

In December 2016, a record number of Māori and Pasifika doctors graduated from both New Zealand medical schools.<sup>7</sup> Notably, Auckland University reported that “Māori and Pacific medical graduates made up about a fifth of the 215 doctors to graduate”<sup>8</sup> and have stated their aim is that 25 percent of new entrants are Māori and Pasifika.<sup>9</sup>

At Otago University, 45 Māori doctors graduated in 2016, a proportion representative of Māori in the New Zealand population – a first for the University. In addition, Otago University reported a 179 percent increase in the numbers of Māori and Pasifika students in their medicine programme.<sup>10</sup>

We followed up with the medical schools to see if the 2017 and 2018 graduate classes had similar representation of Māori and Pasifika doctors.

Otago University advised that, in 2017, they had 27 Māori graduates out of a total of 249 graduates (10.8 percent), and in 2018, they had 42 Māori graduates out of a total of 267 (15.7 percent).

<sup>7</sup> *The New Zealand Medical Workforce in 2015*, p28, Medical Council of New Zealand, 11 April 2018.

<sup>8</sup> University of Auckland, 23 November 2016, <https://www.auckland.ac.nz/en/about/news-events-and-notice/news/news-2016/11/record-number-of-new-mori-and-pacific-doctors-this-year.html>.

<sup>9</sup> Newsroom, 19 March 2018, <https://www.newsroom.co.nz/2018/03/18/97643/the-need-for-maori-and-pacific-doctors>.

<sup>10</sup> University of Otago, 8 June 2018, <https://www.otago.ac.nz/news/news/otago688339.html>.

## Ethnicity by age

Table 18 shows the average age of doctors by ethnic group and gender. Māori, Pasifika, Chinese and Indian doctors all have average ages lower than the overall figure, with Chinese doctors having the lowest average ages for both females and males – 36.3 years and 40.8 years respectively.

Both females and males identifying as NZ European/Pākehā had an average age higher than the overall figure, with male doctors the only group to have an average age greater than 50 (51.4 years).

**Table 18: Average age of doctors by ethnicity and gender**

Ethnicity	Average age		
	Female	Male	Overall
Māori	37.6	41.8	39.6
Pacific Island (Pasifika)	38.7	42.9	41.0
Chinese	36.3	40.8	39.0
Indian	43.2	46.4	45.2
Other non-European	40.7	44.4	42.8
Other European	42.9	47.4	45.2
NZ European/Pākehā	44.5	51.4	48.4
<b>All doctors</b>	42.8	48.3	45.9

## Ethnicity by age group

Table 19 compares the proportion of each ethnicity by age group with its proportion of the overall workforce. The intention is to try and measure how much the gap in representation is being closed by increased graduate numbers of Māori and Pasifika doctors.

Taking an example to show how this works, Maori made up 11.9 percent of doctors aged less than 25 but only 3.6 percent of doctors overall. This means their relative representation in this group was 8.3 percentage points more than in the workforce as a whole.

**Table 19: Distribution of doctors by ethnicity and age relative to overall distribution**

Ethnicity	Age group							
	<25	25–29	30–34	35–39	40–44	45–49	50–54	55–59
Māori	+8.3	+2.9	+1.2	+0.4	0.0	-0.1	-1.2	-0.7
Pacific Island (Pasifika)	+1.1	+1.5	+1.2	+0.5	-0.4	-0.8	-0.7	-0.5
Chinese	+9.7	+4.5	+3.1	+2.9	+0.4	-1.7	-1.5	-2.6
Indian	-0.6	-1.6	+0.3	+1.1	+2.5	-0.5	+0.4	-0.3
Other non-European	+2.5	+3.7	+6.1	+2.3	-1.2	-2.2	-2.0	-2.5
Other European	-17.7	-4.1	+4.4	+3.7	+4.5	+2.7	+0.2	-3.4
NZ European/Pākehā	-3.5	-6.9	-17.3	-11.0	-5.8	+2.5	+4.9	+9.9

Māori doctors are most greatly represented amongst doctors younger than 30, peaking in the group aged under 25 (+8.4 percentage points). This is also true for Pasifika doctors (although to a lesser degree) and Chinese doctors (to an even greater degree).



Doctors identifying as NZ European/Pākehā mirror Māori in that they are less relatively represented up to the age of 44 and then are more relatively represented peaking in the 55–59 age group (+9.9 percentage points).

Doctors identifying as other European are the second largest group numerically and are more relatively represented amongst doctors aged between 30 and 49 (and less relatively represented amongst doctors younger than 30).

This is likely to reflect IMGs coming to New Zealand who have already been working as doctors for a number of years.

### Ethnicity by work role

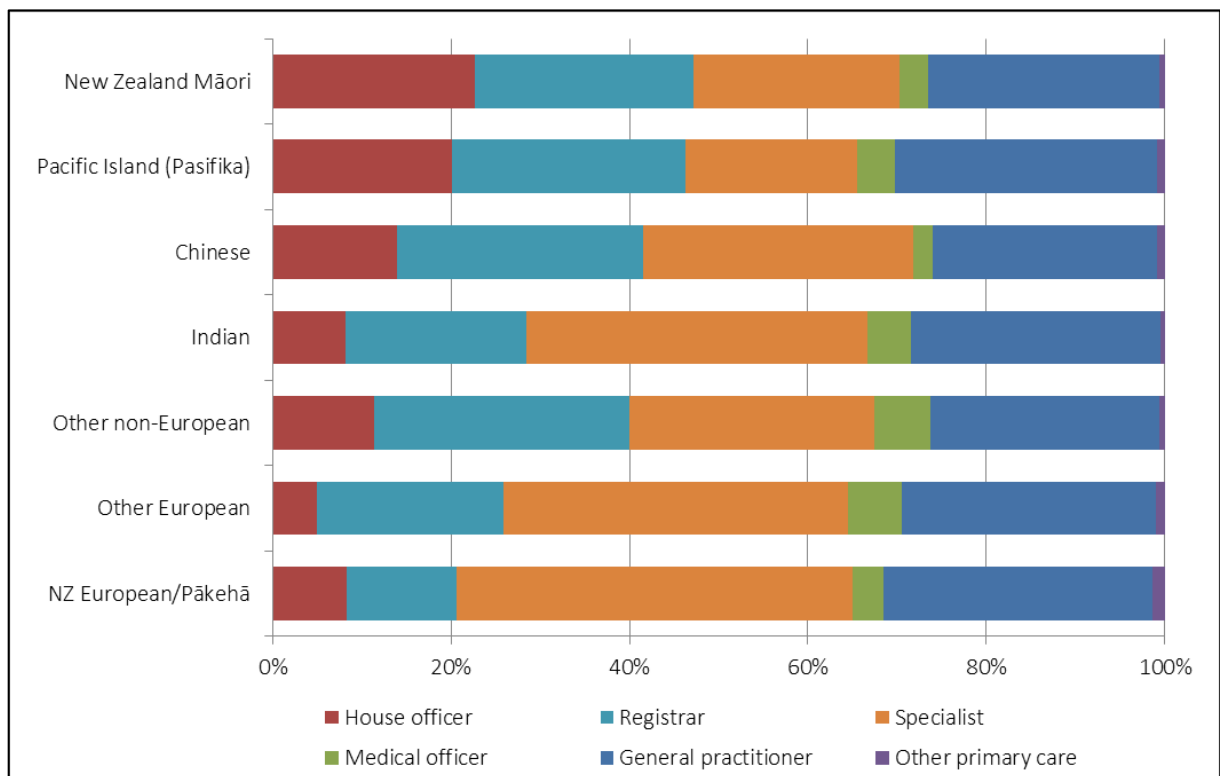
Figure 13 shows the distribution of ethnic groups by work role.

The proportion of Māori and Pasifika doctors reporting their work role as house officers and registrars is higher than that for NZ European/Pākehā (45.7 percent for Māori, 45.8 percent for Pasifika and 20.2 percent for NZ European/Pākehā). This reflects their greater representation amongst younger doctors.

### Specialists

Conversely, the proportion of doctors reporting as specialists was highest amongst NZ European/Pākehā doctors (43.3 percent), compared to only 22.4 percent for Māori and 19.2 percent for Pasifika. The proportion of doctors reporting as general practitioners was a lot more consistent across ethnicities with all groups falling between 25 and 30 percent.

**Figure 13: Proportion of ethnic groups by work role at main work site**



### General practitioners

While the proportion of Māori doctors working in general practice is about the same as their representation within the overall workforce (3.6 percent), the Royal New Zealand College of General Practitioners (RNZCGP) is working to improve this figure.

The goals the RNZCGP are aspiring to achieve by 2021 are to increase:

- Māori GPEP1 registrars to 22 percent of the annual intake
- the number of Māori GPs in Taranaki, Whanganui and Hauora Tairāwhiti to add 50 percent more GPs
- the number of Māori GP teachers, medical educators and examiners.<sup>11</sup>

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<sup>11</sup> NZDoctor, *TIME TO KŌRERO. Te reo! Give it a go*, 12 September 2018, <https://www.nzdoctor.co.nz/article/print-archive/time-korero-te-reo-give-it-go>.

## Ethnicity by work type

Table 20 shows the relative representation of each ethnicity for work types with more than 100 doctors.

To give an example of how this works, doctors identifying as Māori made up 3.6 percent of the workforce, but 9.3 percent of doctors reported their work type as house officer rotations so their relative representation is +5.7 percentage points. Other than in house officer rotations, Māori had greater representation in public health medicine (+3.1 percentage points).

Pasifika doctors had greater representation in general surgery (+4.0 percentage points) and urgent care (+2.5 percentage points).

Doctors identifying as NZ European/Pākehā had significantly greater representation in public health medicine (+19.0 percentage points), orthopaedic surgery (+7.0 percentage points) and anaesthesia (3.6 percentage points).

Psychiatry, intensive care medicine, emergency medicine and urgent care were all areas where doctors identifying as other European were highly represented. This may reflect that these areas have a high proportion of IMGs.

**Table 20: Relative representation by ethnicity for work types with more than 100 respondents compared with distribution of workforce as a whole**

	Māori	Pacific Island (Pasifika)	Chinese	Indian	Other	Other European	NZ European/Pākehā
House officer rotations	+5.7	+1.6	+4.3	+0.8	+2.1	-12.5	-1.8
Anaesthesia	-1.5	-1.0	+0.7	-2.1	-3.4	+2.2	+3.6
Diagnostic and interventional radiology	-2.6	-0.9	+1.4	+0.3	-2.0	-2.8	+7.0
Emergency medicine	-1.0	-0.4	-2.1	-1.3	-1.4	+19.6	-12.2
General practice	0.0	+0.2	-0.4	+0.1	-0.5	-0.5	+1.9
Intensive care medicine	-1.3	-1.1	-0.3	-4.0	-4.1	+7.8	+2.4
Internal medicine	+0.1	-0.7	+2.7	+0.6	+4.2	-1.6	-6.4
Obstetrics and gynaecology	+0.9	+0.6	-1.2	+1.4	+3.1	-0.8	-3.0
Ophthalmology	+0.0	-0.1	+4.4	+0.4	-0.8	-7.2	+2.7
Paediatrics	+0.1	+0.1	-0.2	-0.1	-2.2	-1.9	+4.4
Pathology	-2.7	-1.0	-0.2	-1.0	+0.4	+1.6	+1.1
Psychiatry	-0.4	-0.5	-3.0	+3.3	+2.3	+7.9	-9.6
Public health medicine	+3.1	+1.5	-4.6	-1.1	-7.6	-11.9	+19.0
Surgery: general	+0.7	+4.0	+0.8	+0.1	+1.7	-5.6	-1.8
Surgery: orthopaedic	+1.0	+0.8	-1.3	-1.2	-1.5	-6.4	+7.0
Surgery: otolaryngology head and neck	-0.6	-1.9	-0.6	+1.0	-0.7	-1.5	+3.0
Surgery: plastic and reconstructive surgery	-0.9	-1.9	+4.1	-1.1	+1.6	-6.3	+2.4
Urgent care	-2.1	+2.5	-1.3	+0.3	+1.6	+8.2	-7.6

## Gender

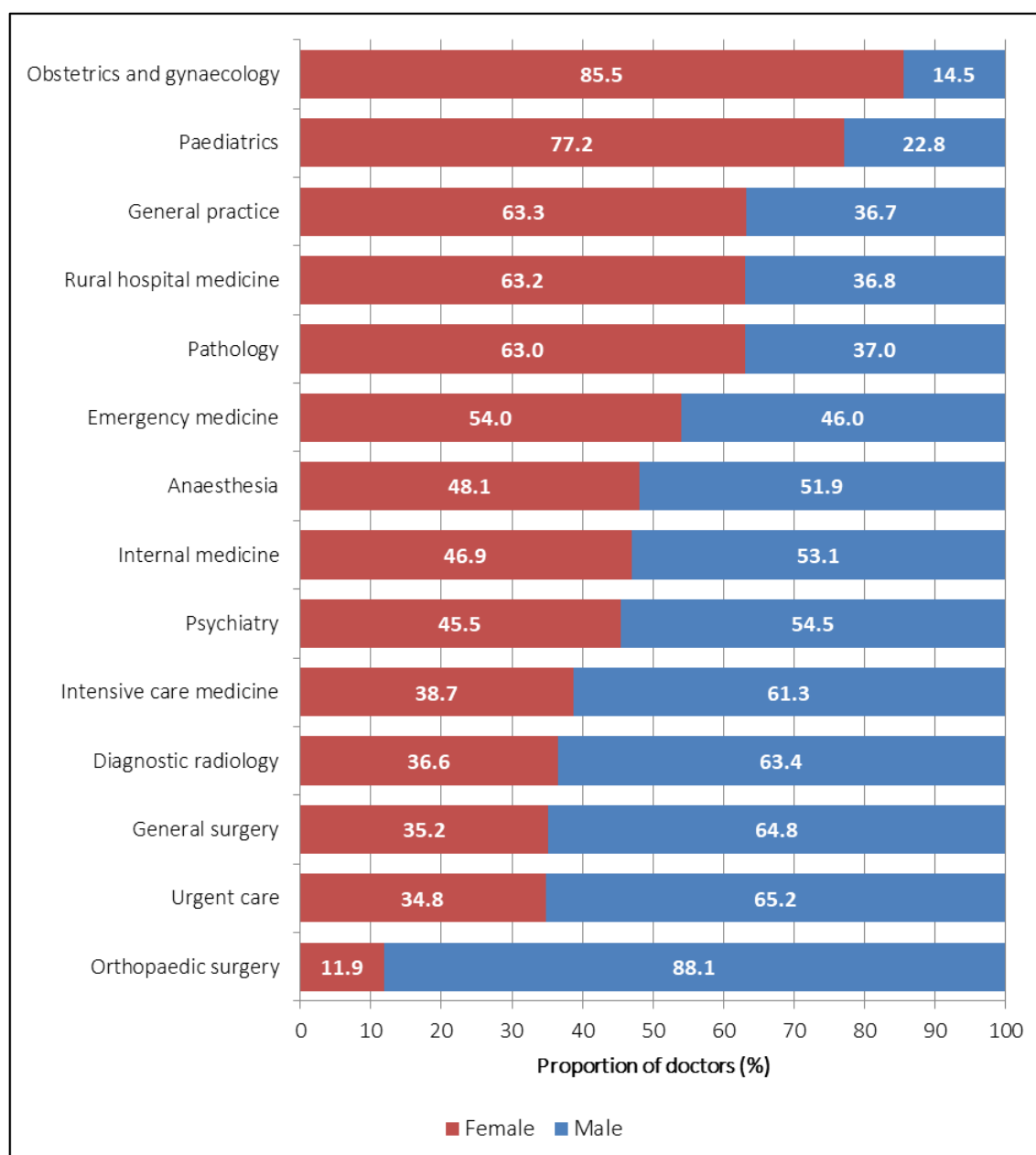
### Vocational trainees

Figure 14 shows the proportion of trainees in each vocational training area by gender, focusing on those areas with more than 20 trainees.

Female doctors made up the majority of doctors in vocational training (54 percent) and were most highly represented in obstetrics and gynaecology, and paediatrics.

Male doctors were most highly represented in orthopaedic surgery, urgent care and general surgery.

**Figure 14: Vocational training area by gender (areas with more than 20 trainees)**



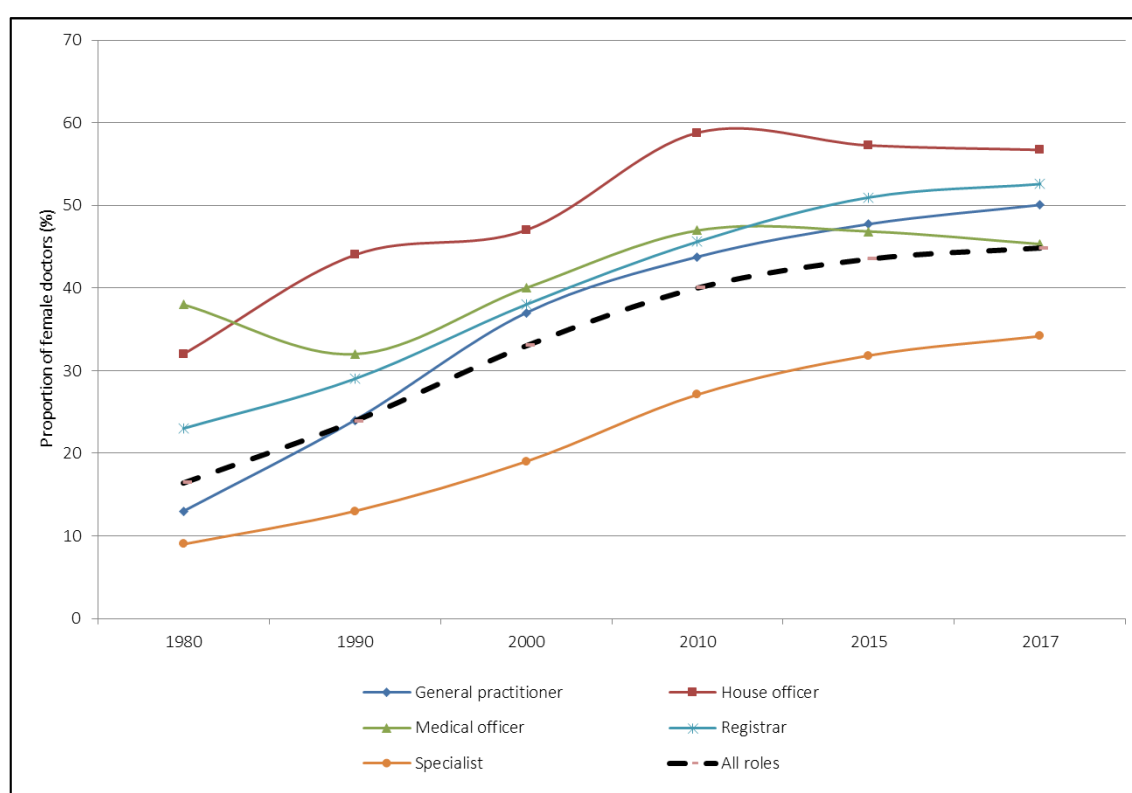
## Work role

Figure 15 shows the change in the proportion of females in the workforce by work role at their main work site between 1980 and 2017.

The overall proportion of females in the workforce (based on survey responses) increased by 1 percentage point to 44.8 percent in 2017. Women continue to outnumber men amongst house officers (56.7 percent), registrars (52.6 percent) and, for the first time, GPs albeit only slightly (50.1 percent).

Women are least represented amongst specialists, making up 34.2 percent, although this gap should continue to decrease as the doctors who are currently house officers and registrars complete training.

**Figure 15: Proportion of females by work role at main work site**



## Work types

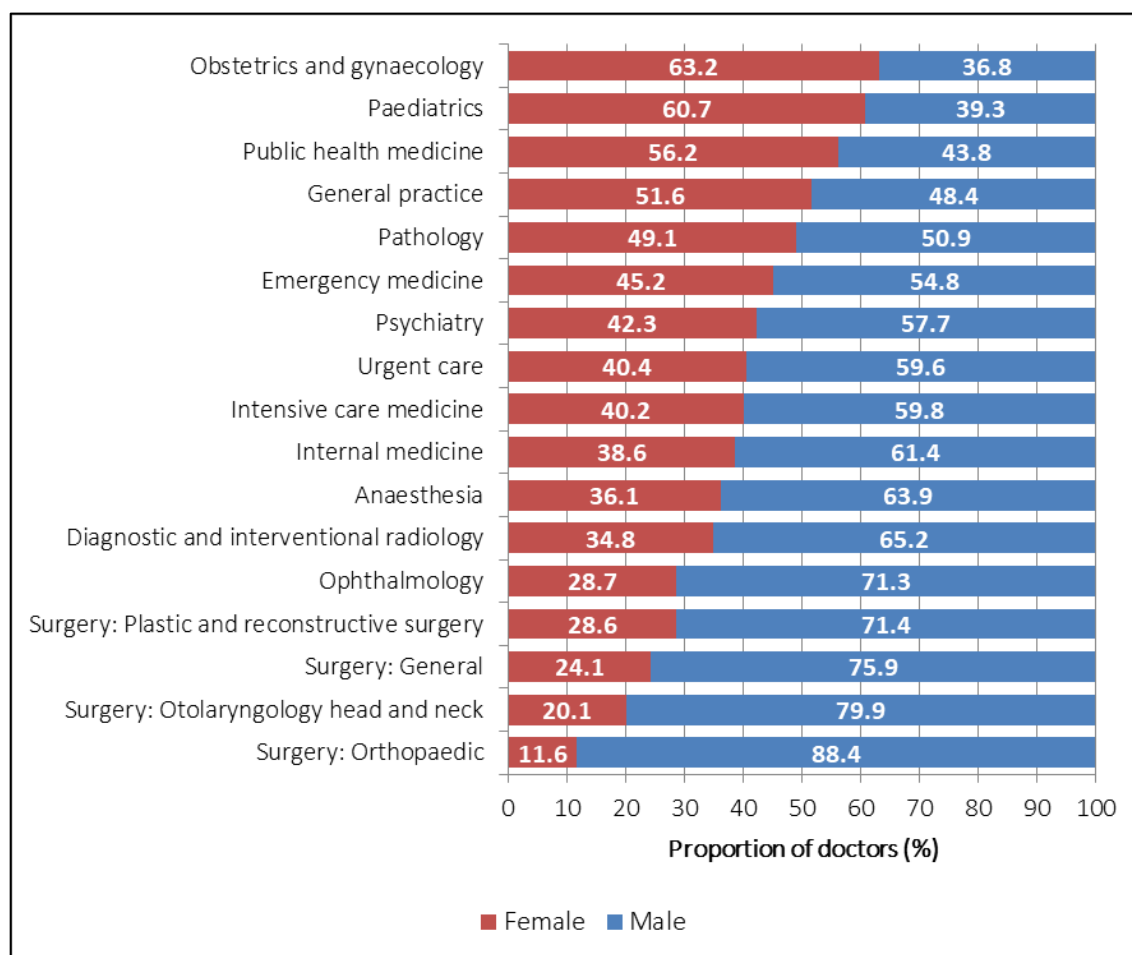
Figure 16 shows the distribution by gender for work types with a total of 100 or more doctors.

The work types with the highest proportion of female doctors were obstetrics and gynaecology, paediatrics, public health medicine and general practice.

The work types with the lowest proportion of female doctors were orthopaedic surgery, otolaryngology head and neck surgery, general surgery and plastic and reconstructive surgery. Looking at all the surgical work types together, women make up 10.8 percent of doctors.

Female doctors have long been under-represented amongst surgical work types, but this is slowly improving. In 2005, women made up 4.4 percent of doctors working in surgical work types. This increased slightly to 5.8 percent in 2010 and 10.7 percent in 2015.

**Figure 16: Proportion of doctors by work type and gender**



## International medical graduates

### What are international medical graduates?

International medical graduates (IMGs) in this survey are doctors who obtained their primary medical qualification in a country other than New Zealand. Other countries define the term IMG differently, so care is needed when comparing the proportion of IMGs employed in New Zealand to the proportion employed in any other country.

### Proportion of workforce

From survey data, the proportion of IMGs amongst respondents is 40.0 percent, down from 40.4 percent in 2016. This is reasonably consistent with registration data, which indicate that the proportion of IMGs in the workforce as at 30 June 2017 was around 42.6 percent, slightly up from 2016 where it was 42.3 percent.

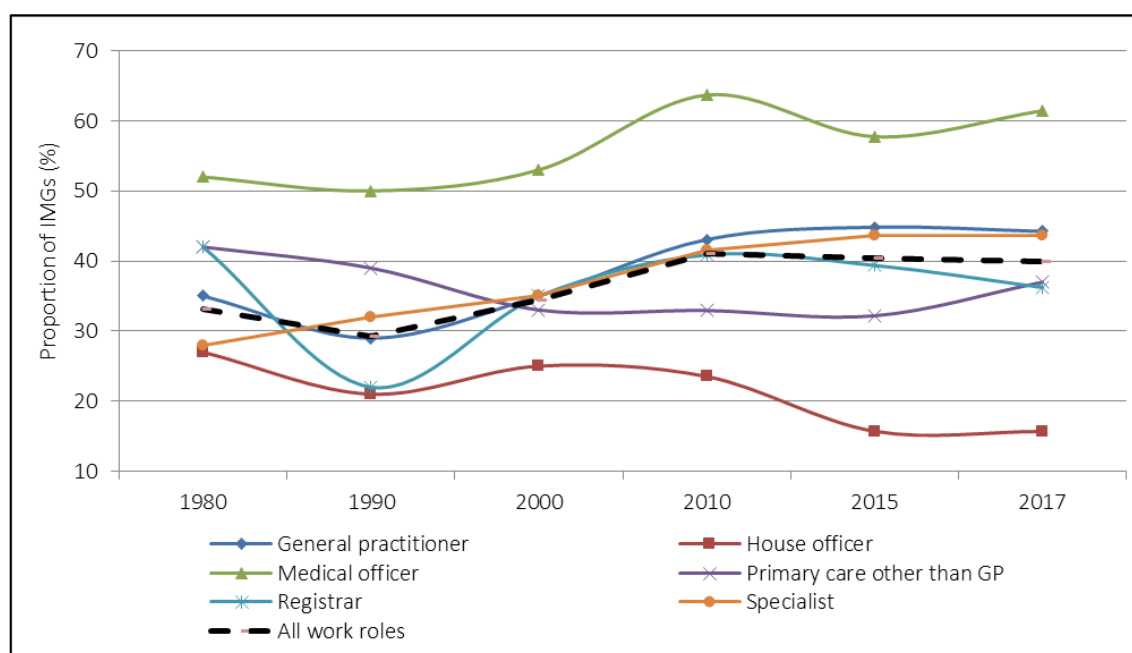
Although some IMGs only come to New Zealand for short periods, many are relocating permanently. Whether here temporarily or permanently, IMGs play an important role in the medical workforce, and movement of doctors between countries is normal and expected. As IMGs come to New Zealand to work, many New Zealand-trained doctors work in other countries – see the retention section on page 48 for more on this.

### Work role

Figure 17 shows that the medical officer work role again had the highest proportion of IMGs, at 61.5 percent (up from 57.7 percent in 2015). The proportion of IMGs in most other work roles was either similar or slightly decreased.

The most notable decrease was amongst registrars where the proportion of IMGs decreased from 39.4 percent to 36.2 percent.

**Figure 17: Proportion of IMGs by work role at main work site (1980–2017)**



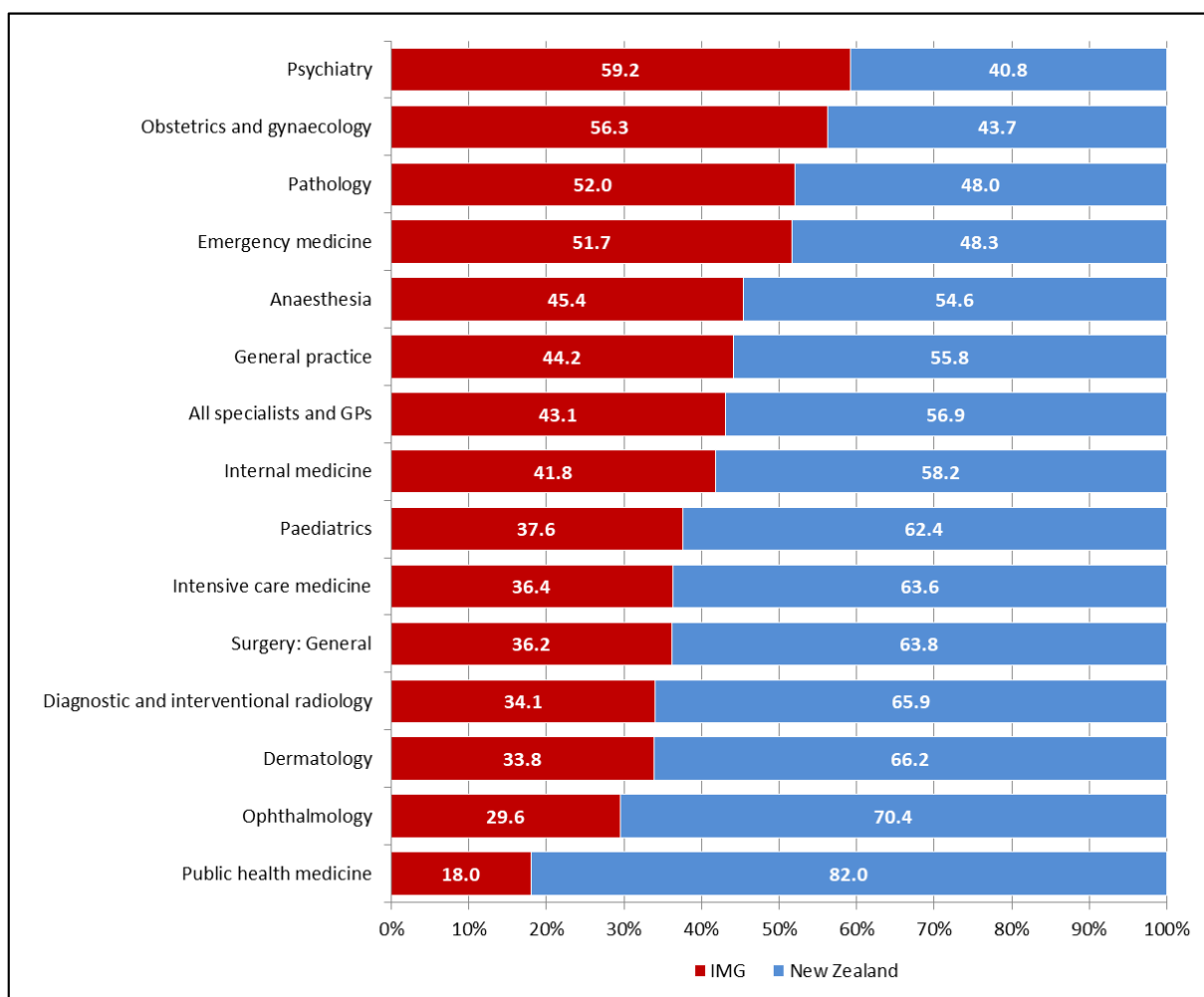
## Work type

Figure 18 shows the proportion of IMGs working as specialists or general practitioners in vocational scopes for those areas with more than 50 doctors. Overall, 43.1 percent of doctors working as specialists or GPs were IMGs.

The proportion of IMGs was more than 50 percent in psychiatry, obstetrics and gynaecology, pathology and emergency medicine.

The proportion of IMGs was lowest in public health medicine, ophthalmology, dermatology and diagnostic and interventional radiology.

**Figure 18: Proportion of IMGs by vocational scope (areas with more than 50 doctors)**





## Retention

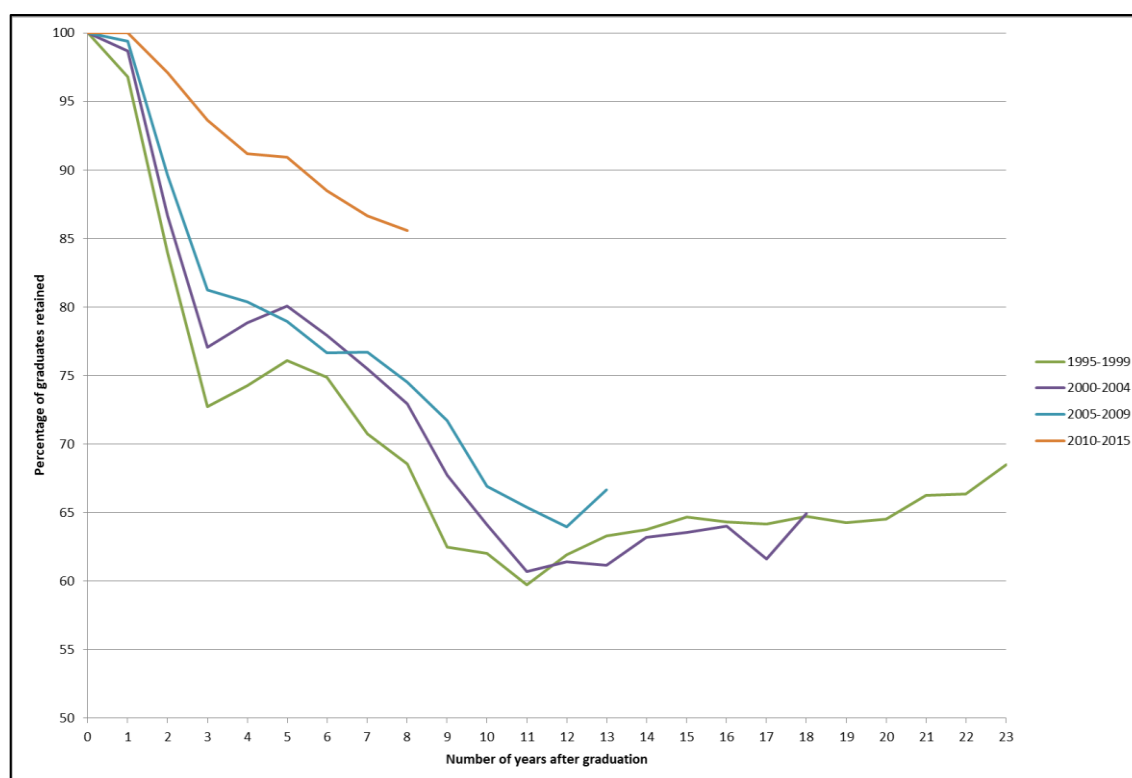
### New Zealand graduates

Figure 19 compares the retention rates at each year after graduation for successive classes of graduates from 1995 to 2015, combining these into 5-year cohorts for ease of viewing. See Table 25 on page 57 for more detailed retention data for New Zealand graduates.

A greater proportion of graduates amongst recent cohorts are being retained showing that retention is improving. At least 90 percent of graduates from the 2010, 2011, 2012 and 2013 cohorts are retained 5 years after initial registration. Retention for graduates in earlier cohorts at the same point is on average just under 80 percent.

This may reflect initiatives like the Ministry of Health's Voluntary Bonding Scheme<sup>12</sup> giving graduates greater incentives to remain in New Zealand in the years immediately after graduation.

**Figure 19: Graduate retention of class years 1995–2015 (5-year cohorts)**



<sup>12</sup> <https://www.health.govt.nz/our-work/health-workforce/voluntary-bonding-scheme>.

## Where do graduates go?

Now that the OECD have begun collecting workforce migration from countries around the world, we can begin to see where New Zealand-trained doctors who work overseas are going.

The OECD figures indicate that 2,621 New Zealand-trained doctors were practising in other countries in 2016.<sup>13</sup> The vast majority of these doctors were practising in Australia (2,029). Other countries where significant numbers of New Zealand-trained doctors were practising include the United States (232), the United Kingdom (203) and Canada (111).

In terms of the rate of flow of doctors to these countries, unfortunately the OECD's annual inflow figures for New Zealand-trained doctors are incomplete. The figures for 2016 show 34 doctors going to the United Kingdom and seven to Ireland, but no data is available for Australia, the United States or Canada.

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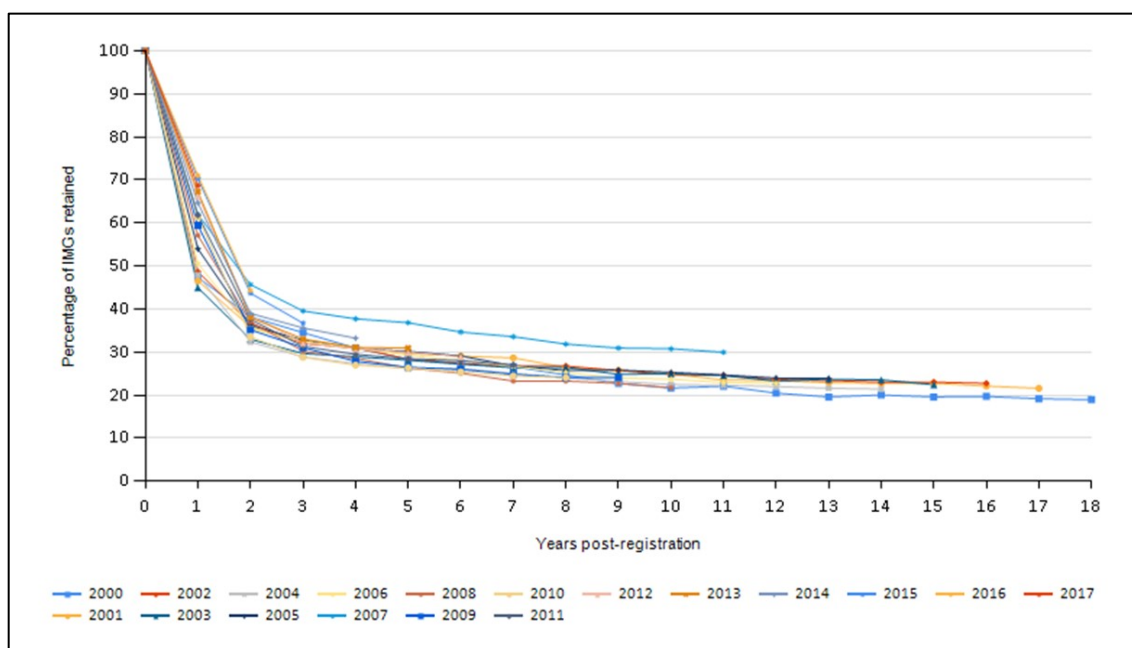
<sup>13</sup> OECD, Health Workforce Migration – *Foreign-trained doctors*.

## International medical graduates

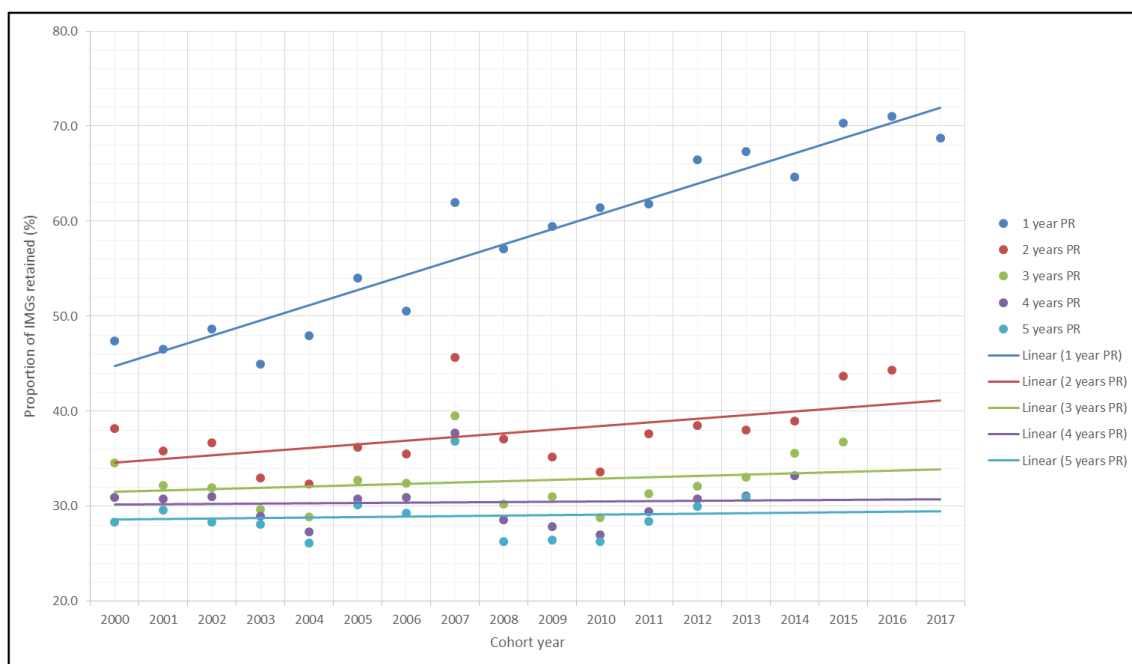
Figure 20 shows the overall retention rate for IMGs between 2000 and 2017, illustrating that the rate of retention has been relatively stable over time. After an initial drop in the first 2 years post-registration to just under 40 percent, retention of IMGs levels out in subsequent years at around 20 percent.

Figure 21 confirms that, while IMG retention at 1 year post-registration is improving, in subsequent years, the rate is largely unchanged over time, with less change for every year post-registration.

**Figure 20: Retention rate for IMGs (2000–2017)**



**Figure 21: Changes in IMG retention over time (1–5 years post-registration (PR))**



## Retention by country of qualification

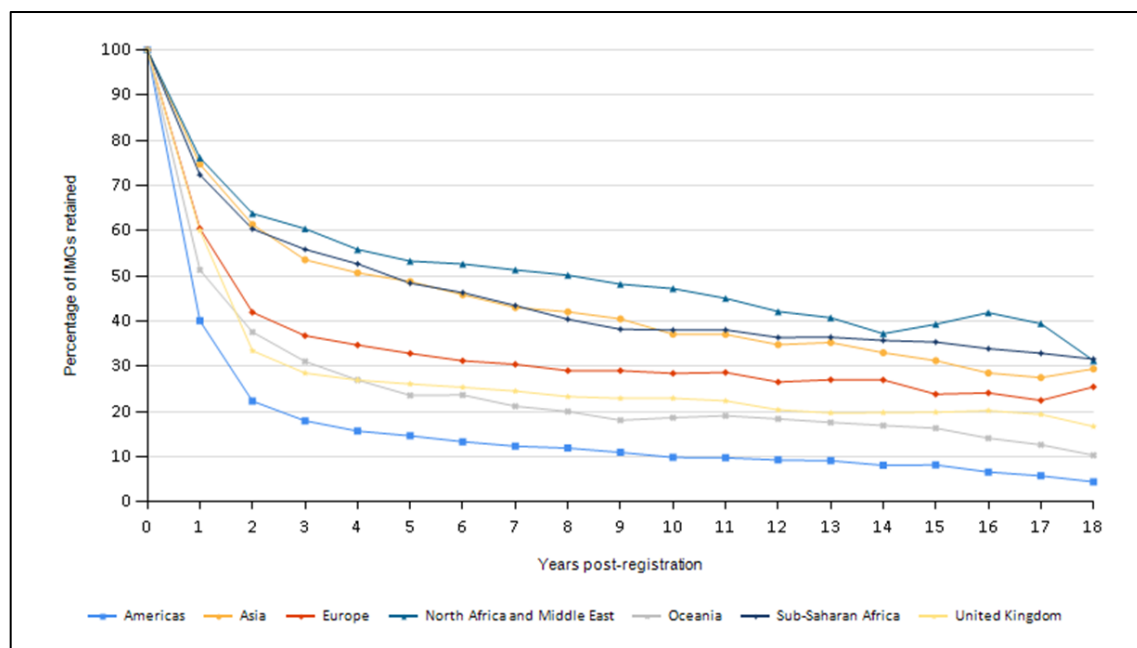
Figure 22 shows the retention of IMGs by country of qualification.

Doctors from North America have the lowest retention rate, with Oceania (mainly doctors from Australia and the Pacific), the United Kingdom (UK) and Europe the next lowest. Only 40 percent of doctors from North America are retained 1 year after initial registration, dropping further to 22.3 percent in the second year. Over 60 percent of doctors from the UK are retained after 1 year, but this then drops to 33 percent in the second year.

Doctors from Africa, the Middle East and Asia have the highest retention rates. Around three-quarters of doctors from these countries are retained 1 year after initial registration, with retention remaining around 50 percent for 4 subsequent years. Retention for Africa and the Middle East remains at or above 50 percent for 8 years after initial registration.

This suggests that doctors from the United Kingdom and North America are more likely to only come to work in New Zealand temporarily for short periods (i.e. a working holiday) whereas doctors from Africa, the Middle East and Asia are more likely to relocate to New Zealand permanently.

**Figure 22: Retention of IMGs by country of qualification**

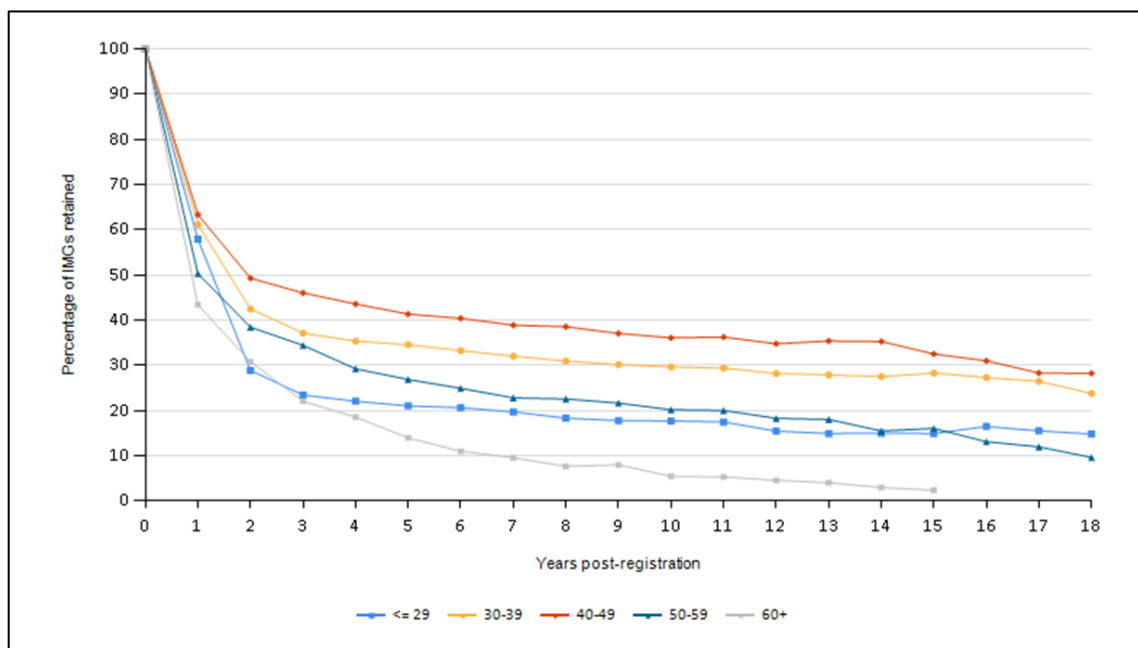


## Retention by age group and time since qualification

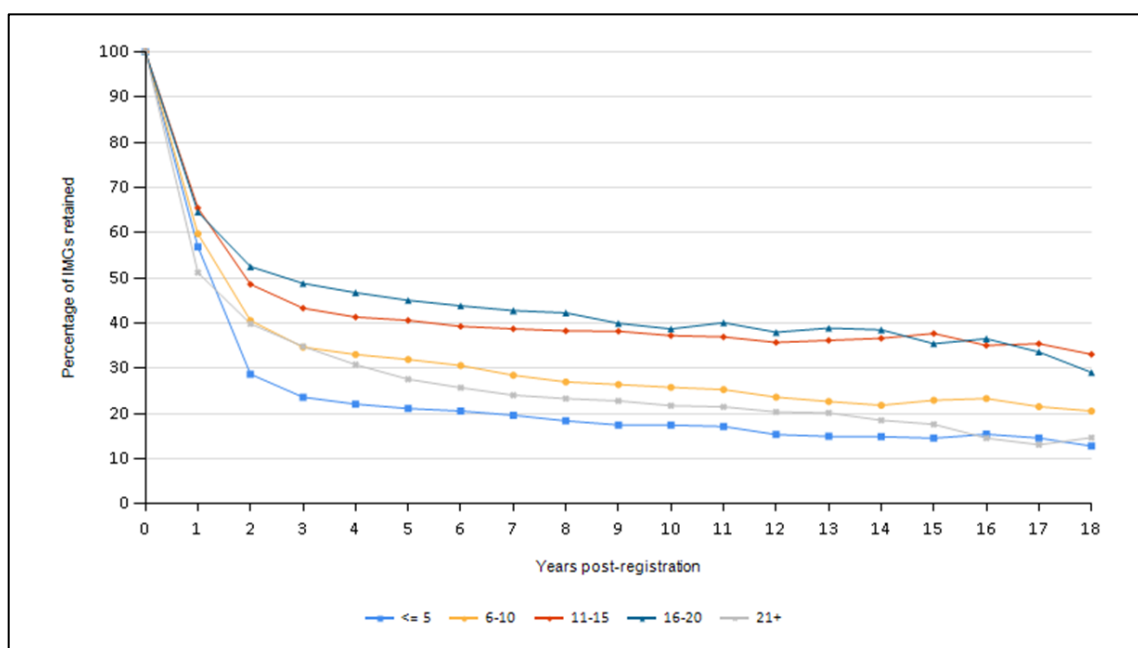
Figure 23 compares the retention rates of IMGs by age group. The highest retention rate was amongst those doctors aged 40–49 followed by those aged 30–39. The lowest retention rate was amongst those aged over 60, followed by those aged less than 30.

A similar pattern can be seen when comparing retention of IMGs to the time since the doctor qualified – newer doctors in their first 10 years of practice are less likely to be retained compared with those in the middle of their careers. This suggests that newer doctors aged under 30 are more likely to come to New Zealand for a short period of time compared with doctors in their 30s and 40s.

**Figure 23: Retention rates for IMGs by age group (2000–2017)**



**Figure 24: Retention rate for IMGs by time since qualification (2000–2017)**



## Survey method

### Change in delivery method

Council is now delivering the survey questionnaire entirely electronically. This change is as a result of Council moving its practising certificate renewal process online, with doctors now renewing through myMCNZ (<https://mymcnz.org.nz/>). This particular survey is the second done entirely electronically, with the 2015 survey being a hybrid (the first quarter being delivered through the existing paper-based system and the other three-quarters being delivered electronically).

### Timing of the questionnaire

Workforce data are collected as part of the renewal of practising certificates. In 2000, the certificate renewal process was changed from one universal date to four renewal periods, based on the doctor's birth date.

The four periods of data in this report are November 2016, February 2017, May 2017 and August 2017.

The questionnaire was posted out a month or more before the end of each period. All data were collected within 3 months of a renewal period ending.

### Sampling frame

The sampling frame for the workforce survey questionnaire consisted of doctors who:

- held a current general, provisional general, vocational or provisional vocational scope of practice
- held a current practising certificate or held one at some point in the previous year
- had a New Zealand address at the date the questionnaire was posted.

The sampling frame does not include doctors registered for specific short-term purposes (special-purpose scope of practice).

### Responses to the survey

As noted at the beginning of this report, the response rate in 2017 was lower compared with 2016 and previous years. For the 2017 workforce survey, 15,824 doctors were asked to complete the survey online with 12,789 responding (an overall response rate of 80.8 percent).

As noted in the executive summary, the main drivers of this reduced response rate are the move to collecting survey data online combined with subsequent changes making it clearer that the survey is optional and giving the doctors the ability to opt out.

### Active doctors

The results in this report include only the responses from the 12,749 active doctors – that is, those who reported working 4 or more hours a week.

## Categories of data

Data for this report were collected in employer, role and work type categories at a main work site and at second and third work sites where appropriate.

Role options were:

- GP
- primary care
- house officer
- registrar
- medical officer
- specialist/consultant
- other.

## Use of registration data

This report also includes data drawn from Council's registration information to avoid duplicating questions in the practising certificate application including data around a doctor's age, sex, registration date, and year and country of graduation.

Where Council's registration database is cited as a source for additional analysis, issue of a practising certificate is used as the measure of workforce participation.

## Geographical analysis

Geographical analysis used territorial local authority (TLA) and district health board (DHB) regions based on the employment information for the main work site.

DHB and TLA populations were sourced from the corresponding tables of Statistics New Zealand's Estimated Resident Population dataset as at 30 June 2017.<sup>14</sup>

Because the TLAs in the Auckland region have been combined into one, population figures for the separated areas are no longer available, and so from 2015 onwards, Auckland TLA will be presented as one category.

## Full-time equivalent (FTE)

Full-time equivalents (FTEs) are calculated proportionately – 40 hours per week is one FTE.

## Ethnicity

For the purposes of this report, multiple responses of ethnicity are reported as a single category, according to a simplified version of Statistics New Zealand's prioritisation standard. A single ethnic category was selected from multiple responses in the following order of priority:

1. Māori
2. Pacific Island (Pasifika)
3. Chinese
4. Indian
5. Other non-European
6. Other European
7. NZ European/Pākehā.

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<sup>14</sup> Statistics New Zealand: Estimated Resident Population as at 30 June 2016  
[http://archive.stats.govt.nz/browse\\_for\\_stats/population/estimates\\_and\\_projections/NationalPopulationEstimates\\_HOTPA30Jun16.aspx](http://archive.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalPopulationEstimates_HOTPA30Jun16.aspx).

## Calculating retention rates

### Retention of New Zealand graduates

Retention of New Zealand graduates is calculated by comparing the list of graduates provided by the universities for a particular year with the lists of doctors who were granted practising certificates in subsequent years.

### Retention of international medical graduates

IMGs are included in a group if they practised in New Zealand in that year but not in the previous year. For example, for an IMG to be included in the 2000 cohort, they must have practised in New Zealand in 2000 but not in 1999.

The retention rate is calculated by comparing the number of IMGs active at some point during a year to the number originally in that group. The retention rate is expressed as a percentage.

Inclusion in a group is not related to the date of graduation in the IMG's home country.



## Explanation of terms used

### Active doctors

Active doctors are doctors who, by their own estimate, worked a total of at least 4 hours in medical (including non-clinical) work during a typical working week.

### Full-time equivalent (FTE)

Proportional calculation of FTEs is based on a 40-hour week, for example, 60 hours = 1.5 FTE. On-call time is included in hours worked only if it is actually worked.

### General practitioner (GP)

Unless otherwise stated, a GP is any respondent who has indicated they are working in that work role at one of their work sites. It does not specifically refer to doctors holding the FRNZCGP qualification or doctors holding a vocational scope of general practice.

### House officer

This work role category takes in doctors in their first few years out of medical school. (Doctors in their first year out of medical school are also sometimes known as interns or PGY1s.)

### Hours on call

Additional hours when doctors are on call but not actually working.

### Hours worked

Unless otherwise stated, hours worked are as reported by the survey respondent.

The combined total of hours worked across all work sites is based on a typical working week during the previous year (or the most recent week if the respondent cannot identify a typical week).

### International medical graduate (IMG)

An international medical graduate is a doctor who obtained their primary medical qualification in a country other than New Zealand. IMGs were previously called overseas-trained doctors.

### Main work site

A doctor's main work site is the place where they spend most of their working hours.

### Medical officer

The Multi Employer Collective Agreement (MECA) between the Association of Salaried Medical Specialists (ASMS) and DHBs<sup>15</sup> defines medical officer as "any medical practitioner who is registered under the Health Practitioners Competence Assurance Act 2003 ... who is not a medical specialist". Medical officers were previously called medical officers of special scale (MOSS).

### Registrar

A registrar is a doctor who has at least 2 years of experience since graduation from medical school and generally will be completing vocational training in their chosen speciality.

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<sup>15</sup> <https://www.asms.org.nz/wp-content/uploads/2017/10/2017-2020-DHB-MECA-Signed.pdf>

### **Registered within a vocational scope of practice**

Doctors registered in a vocational scope of practice have completed an approved or equivalent postgraduate training programme leading to the award of an approved or equivalent postgraduate qualification.

Registration within a vocational scope of practice was previously known as vocational registration.

### **Specialist**

This work role category is generally understood to require membership of the relevant specialist college, but survey respondents may apply the term more broadly to themselves.

To help with results analysis, GPs and doctors working in accident and medical practice or other primary care disciplines are recorded under separate work role categories.

### **Work role**

Work role category options in the survey were:

- GP
- primary care other than GP
- house officer
- registrar
- medical officer
- specialist/consultant
- other.

### **Work type**

This is the type of work (area of medicine) the doctor is working in. For example, Table 24 on page 55 shows the distribution of doctors by ethnicity and work type.

## Further information

If you would like to contact Council's Information Systems Analyst about this report, please email [workforce@mcnz.org.nz](mailto:workforce@mcnz.org.nz).

Further information about the medical workforce can also be accessed via the Ministry of Health at the following link:

<https://www.health.govt.nz/nz-health-statistics/access-and-use/how-access-data>

Alternatively, you can contact the Ministry at the following address:

Analytical Services  
National Collections & Reporting  
National Health Board  
PO Box 1043  
Wellington

Email: [data-enquiries@moh.govt.nz](mailto:data-enquiries@moh.govt.nz)

Website: [www.moh.govt.nz](http://www.moh.govt.nz)

Phone: (04) 816 2850

## Appendix 1 – Changes in the medical workforce by work role

Table 21 shows the changes in the distribution of the workforce by work role over time.

**Table 21: Changes in the medical workforce**

Workforce role <sup>2</sup>	Proportion of active doctors (%) <sup>1</sup>								
	1980	1985	1990	1995	2000	2005	2010	2015	2017
General practitioner (GP)	37	38	38	38	37	33	31	28	28
House officer	12	11	11	10	10	9	8	11	9
Medical officer	3	3	3	3	3	4	5	4	4
Primary care other than GP	1	2	3	4	2	2	1	1	1
Registrar	11	13	13	13	14	16	15	17	18
Specialist	34	32	31	30	31	34	35	36	37
Other	1	2	2	2	2	2	3	3	2
No answer	-	-	-	-	0	0	2	0	-
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

<sup>1</sup> Proportion of doctors who responded to the survey and reported working 4 or more hours per week.

<sup>2</sup> Work role at the doctor's main work site.

## Appendix 2 – Work type

**Table 22: Number of doctors by vocational scope for selected years (2005–2018)**

Vocational scope	Year <sup>1</sup>				
	2005	2010	2015	2017	2018
Anaesthesia	488	577	737	801	814
Breast medicine	4	-	-	-	-
Cardiothoracic surgery	19	23	28	31	30
Clinical genetics	6	7	12	15	18
Dermatology	50	56	63	67	72
Diagnostic and interventional radiology	266	303	448	477	489
Emergency medicine	88	135	224	272	298
Family planning and reproductive health	24	26	24	25	25
General practice	2,446	2,701	3,303	3,534	3,609
General surgery	227	235	262	269	291
Intensive care medicine	44	58	81	98	104
Internal medicine	656	761	958	1,051	1,099
Medical administration	12	15	25	28	30
Musculoskeletal medicine	20	22	20	23	23
Neurosurgery	18	20	23	23	23
Obstetrics and gynaecology	223	234	280	298	313
Occupational medicine	40	49	53	59	59
Ophthalmology	107	124	134	141	147
Oral and maxillofacial surgery	17	17	20	23	24
Orthopaedic surgery	211	237	273	280	291
Otolaryngology head and neck surgery	85	97	108	114	118
Paediatric surgery	15	14	19	19	22
Paediatrics	219	289	353	379	401
Pain medicine	-	-	23	27	29
Palliative medicine	32	42	54	56	61
Pathology	225	238	278	293	309
Plastic and reconstructive surgery	43	55	64	69	72
Psychiatry	425	489	559	575	622
Public health medicine	130	157	177	170	169
Radiation oncology	34	49	60	64	59
Rehabilitation medicine	11	16	24	25	26
Rural hospital medicine	-	26	105	114	117
Sexual health medicine	18	20	18	21	19
Sport and exercise medicine	12	19	26	27	27
Urgent care	103	119	136	190	206
Urology	51	54	64	66	68
Vascular surgery	20	26	33	31	33
<b>Total</b>	<b>6,389</b>	<b>7,310</b>	<b>9,069</b>	<b>9,755</b>	<b>10,117</b>

<sup>1</sup> Figures represent the number of doctors with vocational scope and current practising certificate as at 30 June of the year.

## Appendix 3 – Age

Table 23 shows the changes in the average age of doctors holding a vocational scope between 2005 and 2018.

**Table 23: Average age of doctors on the register with a vocational scope (2005–2018)**

Vocational scope	2005	2010	2015	2017	2018
Anaesthesia	46	48	49	49	49
Cardiothoracic surgery	48	52	53	53	53
Clinical genetics	42	46	46	48	47
Dermatology	51	51	52	52	52
Diagnostic and interventional radiology	48	49	49	49	49
Emergency medicine	41	43	45	45	45
Family planning and reproductive health	53	53	53	52	53
General practice	49	51	53	53	53
General surgery	49	51	51	51	51
Intensive care medicine	46	48	49	50	50
Internal medicine	50	51	50	51	51
Medical administration	53	56	58	58	57
Musculoskeletal medicine	52	55	58	59	60
Neurosurgery	54	55	52	52	53
Obstetrics and gynaecology	49	51	52	52	52
Occupational medicine	50	53	55	56	57
Ophthalmology	49	50	51	51	51
Oral and maxillofacial surgery	45	48	52	49	49
Orthopaedic surgery	49	50	52	52	52
Otolaryngology head and neck surgery	49	51	53	54	53
Paediatric surgery	49	53	55	53	51
Paediatrics	47	48	49	50	50
Pain medicine	-	-	54	54	53
Palliative medicine	50	54	56	55	54
Pathology	49	50	51	51	51
Plastic and reconstructive surgery	49	48	50	51	51
Psychiatry	48	50	52	53	53
Public health medicine	47	49	51	51	52
Radiation oncology	46	47	49	50	50
Rehabilitation medicine	51	51	51	52	53
Rural hospital medicine	-	47	49	50	50
Sexual Health Medicine	50	52	55	55	54
Sport and exercise medicine	46	46	48	48	49
Urgent care	45	48	51	51	51
Urology	50	52	51	50	50
Vascular surgery	48	50	50	52	52
<b>All doctors with vocational scope</b>	<b>48</b>	<b>50</b>	<b>51</b>	<b>51</b>	<b>52</b>

## Appendix 4 – Ethnicity by work type

Table 24 shows the distribution of ethnicity for each work type at doctors' main work site.

**Table 24: Distribution of ethnicity by work type at main work site (%)**

Work type	Māori	Pacific Island (Pasifika)	Chinese	Indian	Other	Other European	NZ European/Pākehā	Refused	Total
Anaesthesia	2.1	0.9	6.4	3.4	7.5	21.9	53.8	4.0	100.0
Basic medical science	1.9	0.0	9.3	5.6	9.3	20.4	46.3	7.4	100.0
Clinical genetics	0.0	0.0	8.3	0.0	8.3	0.0	83.3	0.0	100.0
Dermatology	1.4	0.0	6.8	4.1	2.7	14.9	64.9	5.4	100.0
Diagnostic and interventional radiology	0.9	0.9	7.0	5.9	8.9	16.9	57.3	2.1	100.0
Emergency medicine	2.6	1.5	3.6	4.2	9.6	39.3	38.0	1.1	100.0
Family planning and reproductive health	5.9	0.0	2.9	0.0	8.8	20.6	61.8	0.0	100.0
General practice	3.6	2.1	5.3	5.6	10.5	19.2	52.2	1.5	100.0
House officer rotations	9.3	3.4	10.0	6.4	13.1	7.3	48.5	2.2	100.0
Intensive care medicine	2.3	0.8	5.3	1.5	6.9	27.5	52.7	3.1	100.0
Internal medicine	3.7	1.2	8.4	6.2	15.2	18.2	43.8	3.4	100.0
Medical administration	4.4	0.0	0.0	1.5	2.9	17.6	70.6	2.9	100.0
Musculoskeletal medicine	0.0	0.0	5.3	5.3	5.3	10.5	73.7	0.0	100.0
Obstetrics and gynaecology	4.5	2.4	4.5	6.9	14.0	18.9	47.2	1.6	100.0
Occupational medicine	3.1	1.5	0.0	4.6	7.7	15.4	66.2	1.5	100.0
Ophthalmology	3.6	1.8	10.1	6.0	10.1	12.5	53.0	3.0	100.0
Paediatrics	3.6	2.0	5.4	5.4	8.7	17.8	54.6	2.4	100.0
Palliative medicine	1.2	0.0	4.7	4.7	3.5	32.9	50.6	2.4	100.0
Pathology	0.9	0.9	5.5	4.5	11.4	21.4	51.4	4.1	100.0
Primary care other than GP	2.4	1.2	1.2	3.7	4.9	18.3	65.9	2.4	100.0
Psychiatry	3.1	1.4	2.7	8.9	13.3	27.6	40.6	2.3	100.0
Public health medicine	6.7	3.4	1.1	4.5	3.4	7.8	69.3	3.9	100.0
Radiation oncology	1.6	3.2	9.5	9.5	14.3	19.0	39.7	3.2	100.0
Rehabilitation medicine	10.0	0.0	6.7	10.0	23.3	26.7	23.3	0.0	100.0
Rural hospital medicine	2.6	0.0	0.0	5.1	15.4	29.5	44.9	2.6	100.0
Sexual health medicine	0.0	3.3	3.3	6.7	3.3	30.0	53.3	0.0	100.0
Sports medicine	11.4	0.0	0.0	0.0	5.7	8.6	71.4	2.9	100.0
Surgery: cardiothoracic	0.0	4.3	0.0	14.9	12.8	12.8	51.1	4.3	100.0
Surgery: general	4.2	5.9	6.5	5.6	12.7	14.1	48.5	2.5	100.0
Surgery: neurosurgery	5.7	2.9	8.6	5.7	14.3	25.7	37.1	0.0	100.0
Surgery: oral and maxillofacial	0.0	0.0	8.3	0.0	4.2	25.0	62.5	0.0	100.0
Surgery: orthopaedic	4.6	2.7	4.4	4.4	9.5	13.3	57.3	3.9	100.0

<b>Work type</b>	<b>Māori</b>	<b>Pacific Island (Pasifika)</b>	<b>Chinese</b>	<b>Indian</b>	<b>Other</b>	<b>Other European</b>	<b>NZ European/Pākehā</b>	<b>Refused</b>	<b>Total</b>
Surgery: other subspecialities	7.2	0.0	4.8	6.0	16.9	14.5	49.4	1.2	100.0
Surgery: otolaryngology head and neck	2.9	0.0	5.1	6.6	10.2	18.2	53.3	3.6	100.0
Surgery: paediatric	0.0	11.5	0.0	11.5	15.4	26.9	34.6	0.0	100.0
Surgery: plastic and reconstructive surgery	2.7	0.0	9.8	4.5	12.5	13.4	52.7	4.5	100.0
Surgery: urology	1.4	4.2	8.3	1.4	12.5	12.5	58.3	1.4	100.0
Surgery: vascular	2.1	2.1	6.4	6.4	21.3	23.4	31.9	6.4	100.0
Urgent care	1.5	4.4	4.4	5.9	12.5	27.9	42.6	0.7	100.0
Other	4.2	3.0	3.0	1.8	7.3	20.0	58.2	2.4	100.0
<b>All doctors</b>	<b>3.6</b>	<b>1.9</b>	<b>5.7</b>	<b>5.5</b>	<b>10.9</b>	<b>19.7</b>	<b>50.2</b>	<b>2.4</b>	<b>100.0</b>



## Appendix 5 – Retention of New Zealand graduates

Table 25: Proportion of New Zealand graduates retained by cohort and year post-registration (%)

Graduate cohort	Year post-registration																							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1995	100	96	85	74	74	79	76	72	68	65	64	65	67	70	68	68	67	68	69	67	66	68	68	68
1996	100	97	88	77	77	79	79	77	74	70	64	64	59	63	64	67	67	67	67	67	67	66	65	
1997	100	97	85	71	68	69	69	73	69	69	63	65	62	62	63	63	63	63	64	65	65	65		
1998	100	96	79	67	75	76	76	76	69	67	63	60	55	59	60	60	64	63	62	60	61			
1999	100	97	83	75	77	76	76	73	70	68	58	58	56	58	59	60	61	60	62	63				
2000	100	98	84	74	76	79	79	80	77	75	69	61	58	58	59	62	64	64	65					
2001	100	99	85	77	79	80	80	78	75	71	64	65	57	61	58	58	59	59						
2002	100	99	87	75	79	80	80	77	77	74	70	68	65	62	61	65	66							
2003	100	99	86	79	80	78	78	75	73	72	68	63	63	62	63	66								
2004	100	99	92	80	81	83	83	79	76	73	67	64	61	65	65									
2005	100	100	87	75	76	76	76	73	73	70	67	66	61	64										
2006	100	100	91	83	79	79	79	75	77	72	67	64	67											
2007	100	99	86	78	79	74	74	72	74	73	69	66												
2008	100	99	92	86	86	82	82	81	81	79	77													
2009	100	100	92	85	82	84	84	83	80	79														
2010	100	99	97	92	90	90	90	89	87															
2011	100	100	96	92	90	90	90	87																
2012	100	100	95	92	90	90	90																	
2013	100	99	97	93	94	93																		
2014	100	100	98	95	92																			
2015	100	100	100	99																				
2016	100	100	100																					
2017	100	100																						
2018	100																							
<b>Average</b>	-	99	90	82	81	81	80	78	75	72	66	64	61	62	62	63	64	63	65	64	65	66	66	68
<b>Standard deviation</b>	-	1.5	6.1	8.9	6.9	6.2	5.7	5.1	4.9	4.0	4.5	2.7	4.1	3.5	3.3	3.5	2.9	3.1	2.8	2.8	2.8	1.3	1.9	

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