



Te Kaunihera Rata  
o Aotearoa

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**Medical Council  
of New Zealand**

# The New Zealand Medical Workforce in 2021

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## Foreword

Tenā koutou,

Council is pleased to present the 2021 Workforce Survey.

This report is drawn together from the feedback gathered in the workforce survey that each doctor completes when applying for an annual practising certificate (APC).

The data collected during this process informs the survey report providing an overview of the current medical workforce, insights into the changing demographics of the profession, and the trends around where and how doctors are working.

I would like to thank the doctors who completed the survey and thus contribute to this important insight into the medical profession in Aotearoa. I also thank all members of the medical profession for the work they do in service of New Zealanders, particularly with the COVID-19 pandemic still affecting our country, and the pressures across our health system

We trust the workforce survey will be of interest and use to you. Council welcomes your feedback on the report ([workforce@mcnz.org.nz](mailto:workforce@mcnz.org.nz)), including what information you would like to see presented in future editions.

Noho ora mai

Dr Curtis Walker



**Chairperson**

**Kaunihera Rata o Aotearoa | Medical Council of New Zealand**

## Introduction and acknowledgements

This report presents the results of the Medical Council of New Zealand workforce survey for 2021. Ayushi Mehta, IT Data Analyst prepared the report with support from Andrew Cullen, Senior Information Systems Analyst, as well as other Council staff.

We would like to thank all the doctors who responded to the survey and provided the valuable data on the type and amount of work they are doing.

## Key findings

### **Māori doctors are under-represented in the medical workforce but the positive trends in undergraduate and graduate levels continue**

The proportion of Māori doctors is 4.4 percent, well below the proportion of Māori in the New Zealand population. However, in 2021, 21.6 percent of Otago's graduates and 13.6 percent of Auckland's graduates were Māori whereas 6.6 percent of Otago's graduates and 7.0 percent of Auckland's graduates were Pasifika. Further, the New Zealand Medical Schools Outcomes Database (MSOD) reports that 15.3 percent of students beginning medical school between 2015 and 2019 identified as Māori, and 7.2 percent as Pasifika.

### **The proportion of female doctors increased**

46.6 percent of doctors in the active workforce were female, up over half a percentage point from 2021. We continue to predict that women will outnumber men in the workforce by 2025. 46.9 percent of doctors who were registered in 2021 were females, as compared to 46.2 percent in 2020.

**The number of practising doctors increased:** The total number of doctors on the register with practising certificates increased by 3.6 percent in 2021 from 17,671 to 18,308.

**The fastest-growing specialties were emergency medicine, urgent care and internal medicine:** The number of doctors registered in the vocational scope of emergency medicine increased by over 12 percent between 2020 and 2021. Urgent care increased by 6.4 percent and internal medicine increased by 4.3 percent.

Facts at a glance	2015	2016	2017	2018	2019	2020	2021
Size of the workforce <sup>1</sup>	14,737	15,212	15,819	16,292	16,908	17,671	18,308
Doctors per 100,000 population <sup>2</sup>	318.1	321.3	327.9	333.5	344.7	347.6	357.4
Proportion of IMGs <sup>3</sup> (%)	40.4	40.4	40.0	40.1	40.4	40.2	41.2
Proportion of females (%)	43.5	43.9	44.8	45.1	46.3	46.9	46.5
Average age of workforce	45.2	45.5	45.9	46.1	46.0	45.9	45.4
Average weekly workload (hours)	44.4	44.7	44.2	43.8	44.5	44.1	44.4
Average proportion of new IMGs retained after 1 year <sup>4</sup>	56.9	57.7	58.4	59.1	59.7	60.5	-

<sup>1</sup> Figure is based on registration data. See Table 4 for more information.

<sup>2</sup> Figures are based on the size of the workforce as measured by registration data (see Table 4) and Statistics New Zealand's estimated residential population as of 31 March of the particular survey period.

<sup>3</sup> IMG: international medical graduate (see page 45 for definition).

<sup>4</sup> See 'Retention' on page 35 for more information and 'Survey method' on page 40 for information on how this figure was calculated.

## Key terms and definitions

Here are some of the key terms used in this publication, and their definition. Please see page 45 for the full list.

### General practitioner (GP)

A GP is any respondent who indicated working in the GP work role at one of their work sites. It does not specifically refer to a doctor holding the FRNZCGP qualification or a vocational scope of general practice. We sometimes need to use a different definition of GP. We will specify that we have done this in the text.

### Specialist

This work role category is generally understood to require membership of the relevant specialist college (and registration within a vocational scope of practice). However, the data are self-reported and doctors who respond to the survey may apply the term more broadly. General practice is a specialty, and GPs are specialists. However, we ask doctors working in general practice, urgent care and other primary care disciplines to use separate work role categories to help us analyse the data.

### Registrar

A doctor who has at least 2 years of experience since graduation from medical school. Registrars are generally undertaking vocational training in their chosen specialty.

### House officer

House officers are doctors in their first 2-to 3 years out of medical school. Doctors in their first year out of medical school are sometimes known as interns or PGY1s.

### International medical graduate (IMG)

We define IMGs as doctors who obtained their primary medical qualification in a country other than New Zealand.

Please take care when comparing the proportion of IMGs employed in New Zealand to the proportion in other countries – many countries define IMG differently from us.

## Ethnicity

### Changes in ethnicity of the workforce over time

The proportion of doctors who identify as Māori is 4.3 percent. This is up from 3.4 percent in 2015 and 3.0 percent in 2010. The proportion of Pasifika doctors is 2.1 percent – up slightly from 2015 (2.0 percent) and up by 0.8 percentage points from 2010 (1.3 percent).

The proportion of NZ European/Pākehā doctors was decreasing but is now holding steady at between 46 and 54 percent. The proportion of doctors identifying as other European decreased slightly to 19.1 percent in 2021.

**Table 1: Proportion of doctors by ethnic group (%)**

Ethnicity	2000	2005	2010	2015	2021
Māori	2.3	2.6	3.0	3.4	4.3
Pacific Island (Pasifika)	1.1	1.5	1.3	2.0	2.1
Chinese	4.5	5.4	5.3	5.9	6.6
Indian	4.5	5.1	5.9	6.0	6.3
Other non-European	7.6	10.8	9.9	11.9	11.5
Other European <sup>1</sup>	-	15.4	19.7	20.5	19.1
NZ European/Pākehā	76.5	57.5	53.3	51.4	46.4
Not answered	3.2	1.5	1.5	2.4	3.6
Refused <sup>2</sup>	0.2	0.2	0.2	-	-
<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, refused is no longer an available option.

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

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

Māori and Pasifika are noticeably under-represented compared to their proportion of the population, even allowing for differences in method.<sup>1</sup> Māori make up 16.5 percent of the population, but only 4.3 percent of doctors. Over 8.1 percent of New Zealanders identify as Pasifika compared to 2.1 percent of doctors.

What would a representative workforce look like?

If the number of doctors reflected the makeup of the New Zealand population, there would be 2,915 Māori doctors and 1,431 Pasifika doctors. The results of the survey suggest there are currently about 673 Māori doctors and 331 Pasifika doctors<sup>2</sup>. This is a significant gap, but it is closing. We talk more about the developments in this area at graduate and undergraduate level in the next section.

<sup>1</sup> We are using a prioritized 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.

<sup>2</sup> Applying the percentages for each group in Table 2 to the number of registered doctors with a current practising certificate as of 31 March 2021 – 18,308.

**Table 2: Proportion of doctors and New Zealand population by ethnic group**

<b>Ethnicity<sup>1</sup></b>	<b>Proportion of doctors (2021)</b>	<b>Proportion of New Zealand population (2018 Census)<sup>2</sup></b>
Māori	4.3	16.5
Pacific Island (Pasifika)	2.1	8.1
NZ European/Pākehā	46.4	64.1
<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 2018 Census published by Statistics New Zealand – see <https://www.stats.govt.nz/information-releases/2018-census-ethnic-groups-dataset>.

<sup>3</sup> Individual categories may not add up to the 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 in the medical workforce, the proportion of Māori and Pasifika doctors is higher amongst more recently-qualified doctors, especially house officers. This reflects the progress that New Zealand’s medical schools are making at undergraduate and graduate levels to increase the numbers of Māori and Pasifika doctors entering the workforce.

### Ethnicity of undergraduates

15.3 percent of students beginning medical school between 2015 and 2019 identified as Māori. The proportion of students identifying as Māori was highest in 2018 (17.7 percent) and lowest in 2015 (12.1 percent).

The proportion of students identifying as Pasifika increased significantly between 2015 and 2019 – from 3.6 percent in 2015 to 9.7 percent in 2019. Overall, 7.2 percent of students beginning medical school between 2015 and 2019 identified as Pasifika<sup>3</sup>.

### Ethnicity of graduates

Otago University reported that, in 2020, they had 44 Māori graduates out of a total of 290 graduates (15.2 percent). In 2021, they had 62 Māori graduates out of a total of 287 graduates (21.6 percent). The equivalent figure for Pasifika were 7.9 percent in 2020 (23/290 graduates) and 6.6 percent in 2021 (19/287 graduates).

Auckland University reported that in 2020, 12.5 percent of graduates were Māori and 6.0 percent were Pasifika. In 2021, 13.7 percent of medical graduates were Māori, and 7.0 percent were Pasifika.

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<sup>3</sup> New Zealand Medical Schools Outcomes Database (MSOD), *National report on students commencing medical school in New Zealand in 2015-2019*, <https://www.otago.ac.nz/medical-school/undergraduate/medicine/msod/>.

## Ethnicity by age

Māori, Pacific Island (Pasifika), and Chinese all have average ages lower than the overall figure. Chinese doctors have the lowest average age for females – 37.0 years. Māori are the youngest group amongst males – 40.1 years.

Male doctors identifying as NZ European/Pākehā are the oldest, on average – 51.5 years.

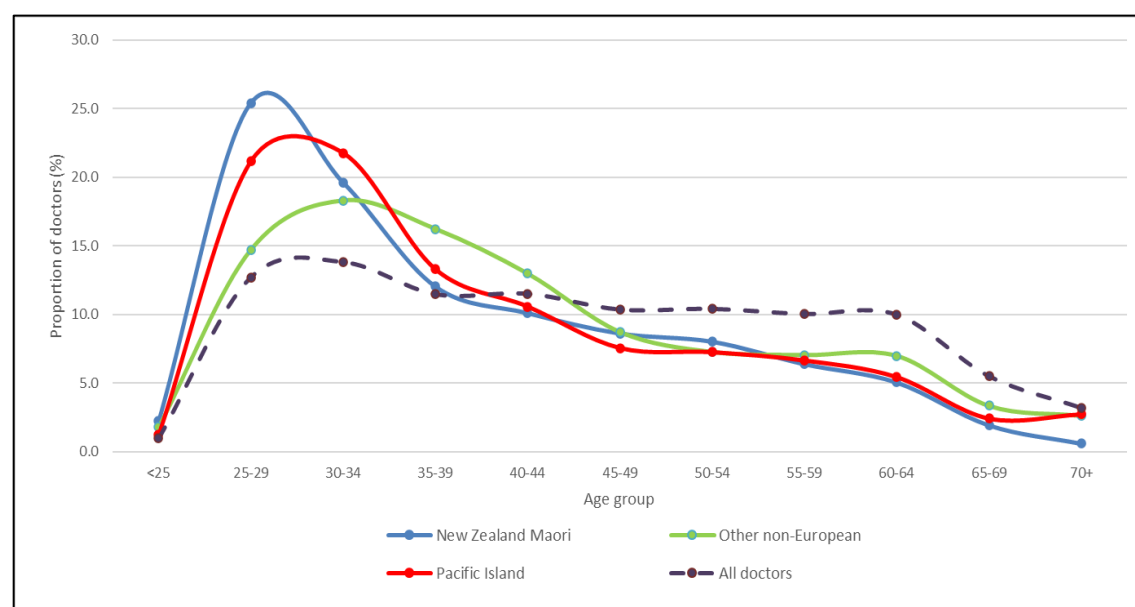
**Table 3: Average age of doctors by ethnicity and gender**

Ethnicity	Average age		
	Female	Male	Overall
Māori	37.8	40.1	39.0
Pacific Island (Pasifika)	38.3	42.3	40.4
Chinese	37.0	40.8	39.1
Indian	43.2	46.9	45.4
Other non-European	41.0	43.4	42.1
Other European	42.9	46.5	44.6
NZ European/Pākehā	45.3	51.5	48.6
All doctors	42.9	47.6	45.4

## Ethnicity by age group

Māori and Pasifika doctors are more likely to be aged under 35 years compared with NZ European/Pākehā doctors and the overall workforce. 47.3 percent of Māori doctors and 44.1 percent of Pasifika doctors are aged 34 and under, compared with 27.5 percent of the overall workforce.

**Figure 1: Ethnicity by age group (selected groups)**





Doctors identifying as New Zealand European/Pākehā and other European are more likely to be 45 or over – 61.0 and 46.5 percent respectively. They are relatively less likely to be aged under 35 – 21.7 and 25.3 percent.

This increased number of older doctors in these group may reflect IMGs<sup>4</sup> who come to New Zealand after already working as doctors for several years.

### Ethnicity by work role

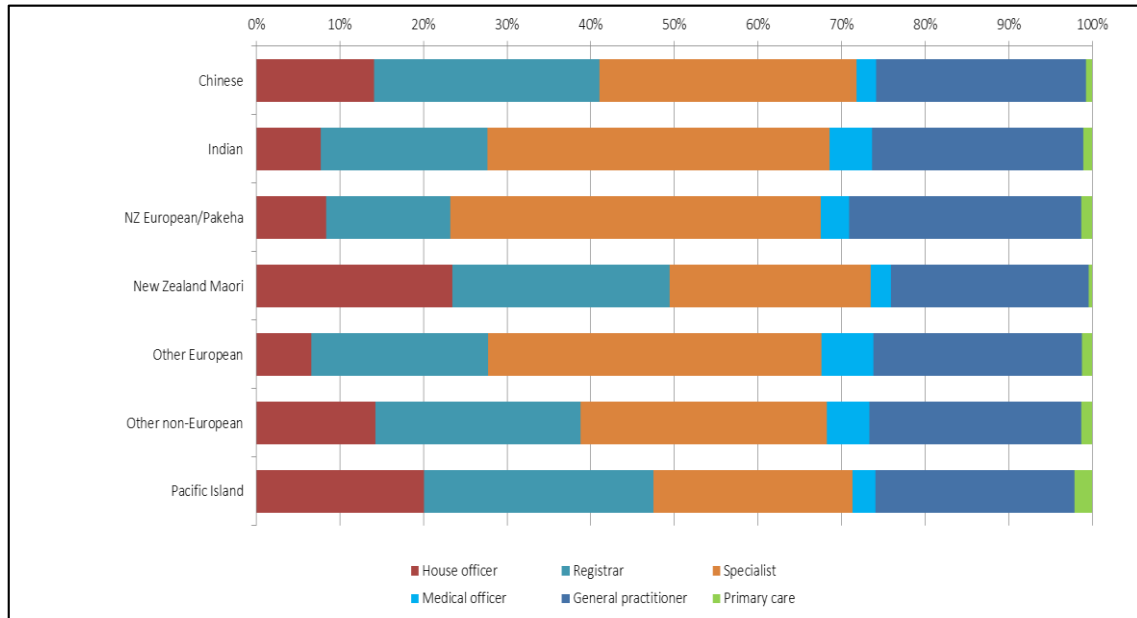
The proportion of Māori and Pasifika doctors reporting their work role as house officers and registrars is higher than that for NZ European/Pākehā (48.0 percent for Māori, 46.5 percent for Pasifika, and 22.6 percent for NZ European/Pākehā). This reflects their greater representation amongst more recently qualified doctors.

### Specialists

Conversely, the proportion of doctors reporting as specialists and medical officers (MOSS) is highest amongst NZ European/Pākehā doctors (46.4 percent), compared to only 25.7 percent for Māori and 26.0 percent for Pasifika.

The proportion of doctors reporting as general practitioners was a lot more consistent across ethnicities. NZ European/Pākehā doctors were most likely to be a GP with 27.0 percent reporting this, followed by Indian doctors and Chinese (24.8 percent and 24.6 percent). Māori doctors were least likely to work as a GP with only 22.9 percent reporting this work role.

**Figure 2: Proportion of ethnic groups by work role at main work site**



<sup>4</sup> IMG: international medical graduate (see page 34 for definition).

### **Māori working in general practice**

Māori doctors made up just 4 percent of doctors working as GPs (based on work role). Even allowing that some GPs may still be in training and reporting their work role as registrar, the level of representation of Māori doctors amongst GPs is considerably less than in the workforce.

The Royal New Zealand College of General Practitioners' most recent workforce survey confirmed these findings. They also found that GPs reporting an ethnicity of Māori or Pacific Island were at a much lower rate than is found in the general population<sup>5</sup>.

The College also found that “Māori are less likely to be in partnership or to be an owner of a practice than respondents reporting a European ethnicity (22 percent versus 36 percent) and more likely to be an employee or contractor (71 percent and 59 percent respectively)”.

### **Proportional representation at the graduate level may not be enough**

A major ongoing obstacle to general practice and other specialties increasing the representation of Māori doctors amongst their numbers is that the pool of available Māori doctors graduating from medical schools is limited. The representation of Māori doctors amongst medical graduates is still slightly behind compared with the percentage of Māori in the New Zealand population. In addition, Māori and Pasifika populations experience greater health needs, creating a needs-based argument for greater than demographic representation of Māori and Pasifika doctors in the medical workforce.

There were about 210 fully-funded general practice training (GPEP1) places in 2021. To achieve its goal of 22 percent Māori representation, the RNZCGP would need to increase the number of Māori registrars to about 46.

New Zealand registered 514 new graduates in 2020. Assuming about 15 percent of these were Māori, this is approximately 77 doctors. Therefore, the RNZCGP would need 60 percent of new Māori graduates to achieve their goal. This would leave the other specialties competing for the remaining graduates, all of which will have similar goals to increase their Māori representation.

New Zealand needs more Māori and Pasifika doctors at graduate level for all specialties to achieve demographic proportionality at specialist level. To achieve this in any meaningful timeframe will require Māori representation amongst medical students that is greater than Māori representation in the New Zealand population.

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<sup>5</sup> 2020 General Practice Workforce Survey – Equity report – Royal New Zealand College of General Practitioners – December 2020 - [https://rnzcgp.org.nz/RNZCGP/Publications/The\\_GP\\_workforce/RNZCGP/Publications/GP%20workforce.aspx?hkey=a7341975-3f92-4d84-98ec-8c72f7c8e151](https://rnzcgp.org.nz/RNZCGP/Publications/The_GP_workforce/RNZCGP/Publications/GP%20workforce.aspx?hkey=a7341975-3f92-4d84-98ec-8c72f7c8e151)

## Gender

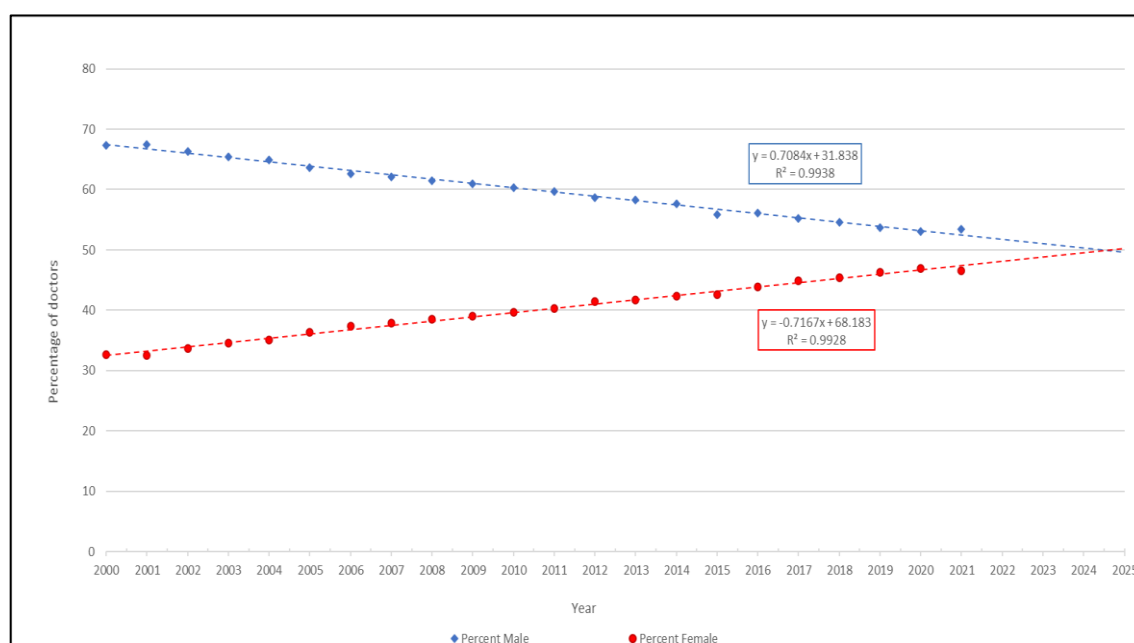
### Gender distribution of the workforce

The proportion of women in the workforce according to survey data decreased slightly. In 2021, 46.6 percent of the active workforce were female. This compares with 46.9 percent in 2020, 46.3 percent in 2019, 45.8 percent in 2018, and 44.8 percent in 2017.

This drop in 2021 is unlikely to represent a change in the overall trend of the proportion of women in the workforce increasing. Registration data shows the proportion of women continuing to increase. In 2021, 46.9 percent of doctors on the register were female. This compares with 46.2 percent in 2020, 45.7 percent in 2019, 45.1 percent in 2018 and 44.5 percent in 2017.

Figure 3 compares the proportion of females in the active workforce at yearly intervals going back to 2000. This shows that the proportion of females was just 32.6 percent in 2000 but has been increasing steadily since that time till 2020. A projection of the current trend suggests that women will outnumber men by 2025.

**Figure 3: Proportion of active doctors by gender (2000–2021) showing projected trend-forward to 2025.**



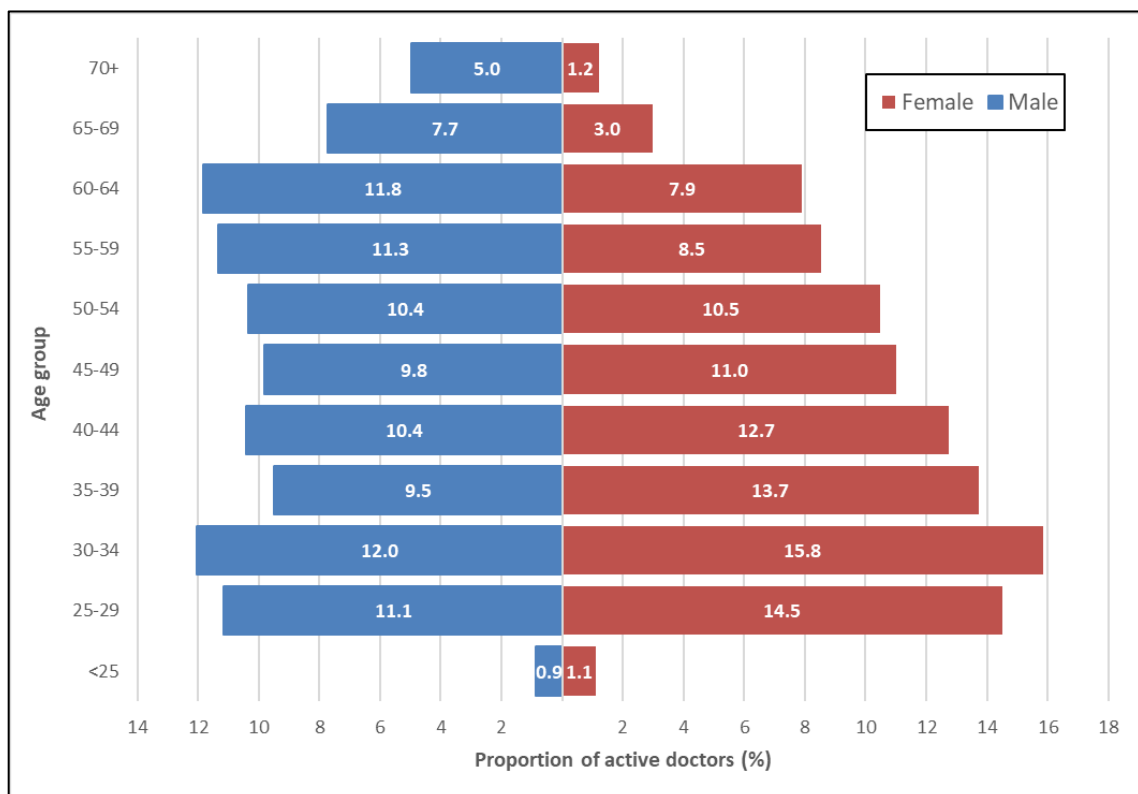
## Distribution by age and gender

There are more young female doctors than young male doctors. The largest groups of female doctors are those aged between 25 and 34. Male doctors are more evenly distributed. The largest groups of male doctors are those aged 55 and 69.

The distribution of female doctors reflects that they have outnumbered men amongst medical school graduates for some time, and we are now beginning to see the effect of this on the workforce. See Figure 6 on page 14.

Figure 4 shows the distribution of doctors by age and gender using a population pyramid.

**Figure 4: Distribution of active doctors by age and gender**



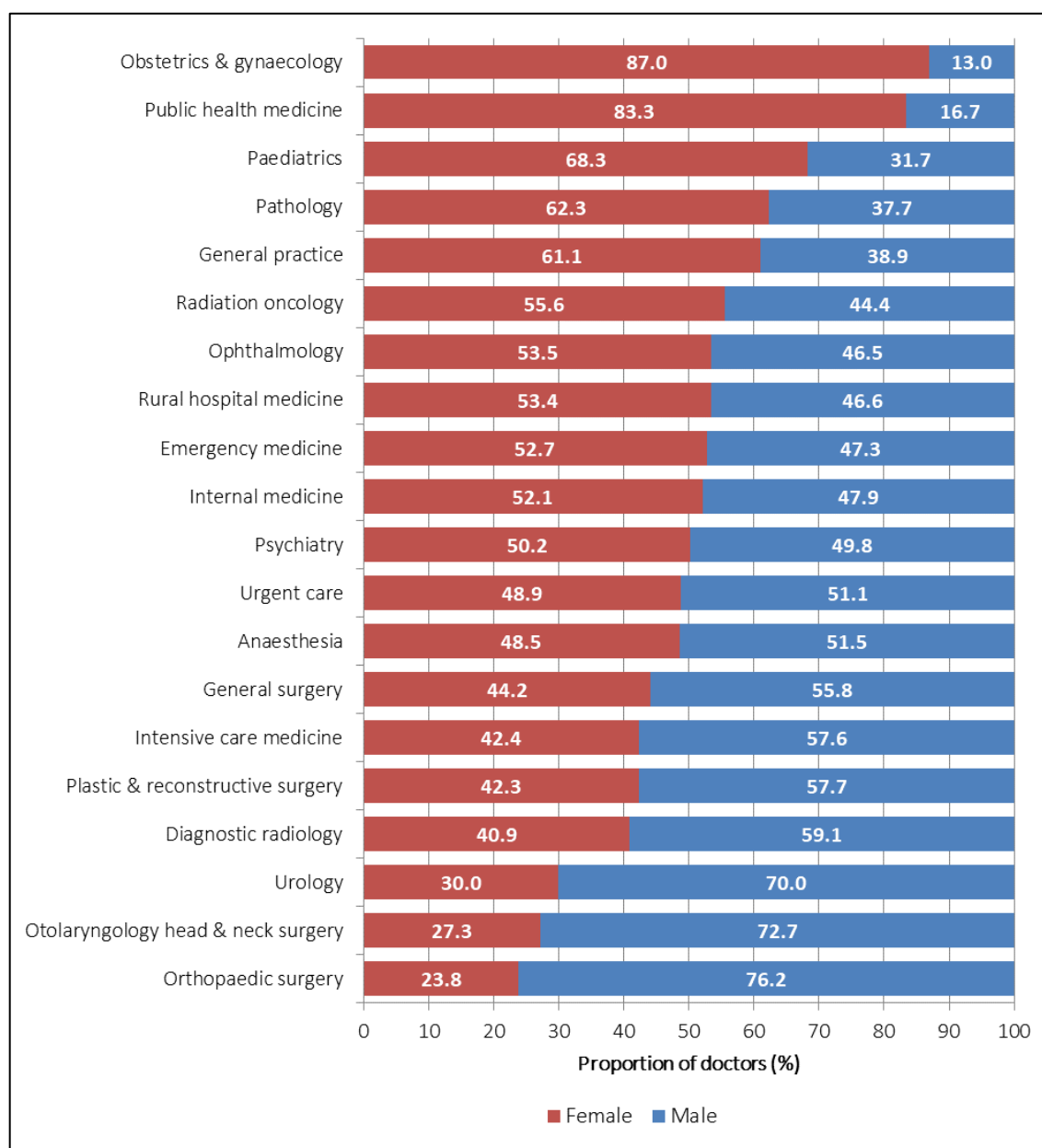
## Vocational trainees

Female doctors outnumber male doctors in vocational training – 55.2 percent of trainees are female. Female doctors are most highly represented in obstetrics & gynaecology (87.0 percent), public health medicine (83.3 percent), paediatrics (68.3 percent) and pathology (62.3 percent). They are also highly represented in general practice and rural hospital medicine (61.1 percent and 53.4 percent).

Male doctors are most highly represented in orthopaedic surgery (76.2 percent), otolaryngology head and neck surgery (72.7 percent), intensive care medicine (57.9 percent), diagnostic and interventional radiology (59.1 percent) and general surgery (55.8 percent)

Figure 5 shows the proportion of trainees in each vocational training area by gender as of 31 March 2021, focusing on those areas with more than 20 trainees.

**Figure 5: Vocational training area by gender (areas with more than 20 trainees)**



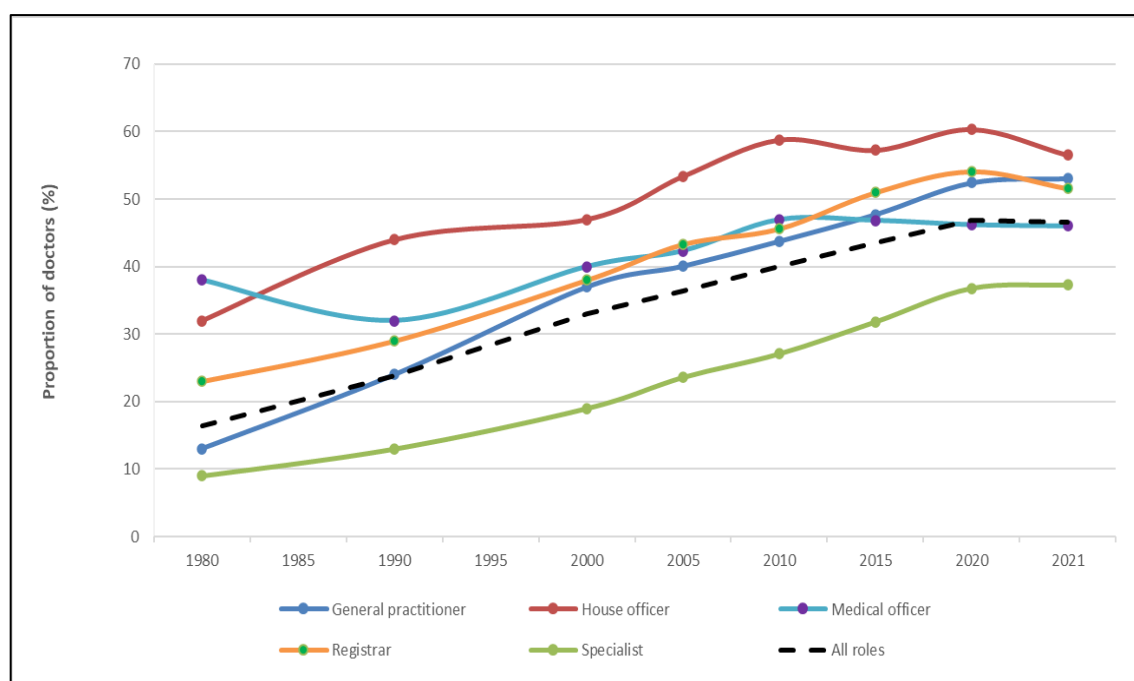
## Work role

Women outnumber men amongst house officers (56.5 percent), registrars (51.6 percent) and GPs (53.1 percent).

Women are least represented amongst specialists, making up 37.3 percent. However, this is up from 31.8 percent in 2015 and 27.1 percent in 2010. This gap should continue to decrease as the doctors who are currently house officers and registrars complete their vocational training.

Figure 6 shows the change in the proportion of females in the workforce by work role at their main work site between 2000 and 2021. Note the break in the time scale – the figures are five-yearly from 1980 through to 2020 and then one-yearly.

**Figure 6: Proportion of females by work role at main work site (2000-2021)**



## Work types

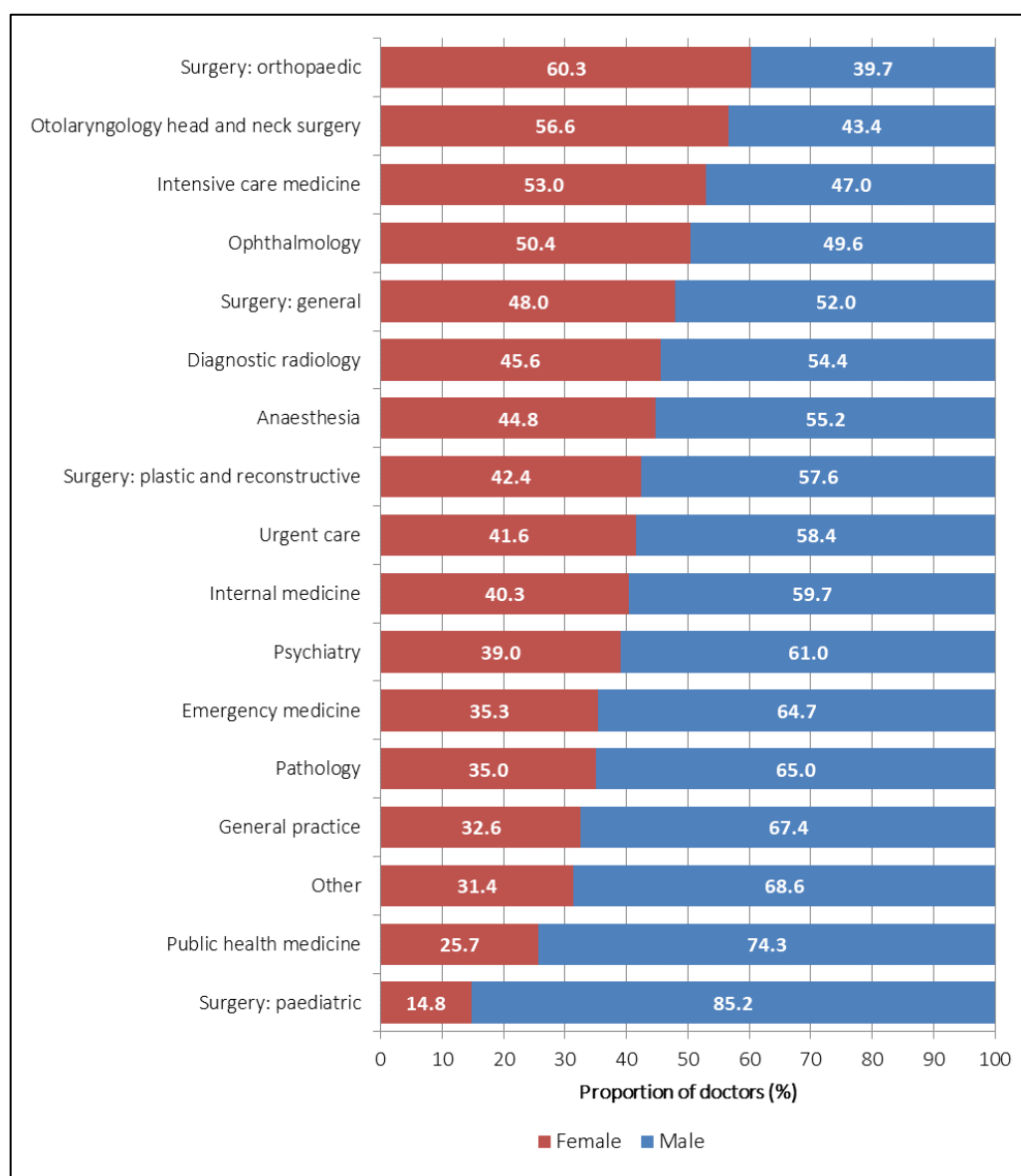
Women are most highly represented in the areas of paediatrics (60.3 percent), public health medicine (60.3 percent) and general practice (53.0 percent).

Women are least represented in orthopaedic surgery (25.7 percent), otolaryngology head and neck surgery (31.4 percent), general surgery (35.3 percent) and Intensive care medicine (32.6 percent).

Taking all surgical work types together, women make up 36.3 percent of doctors. Female doctors have long been under-represented amongst surgical work types, but this is slowly improving. In 2005, women made up 9.2 percent of doctors working in surgery. This increased slightly to 11.8 percent in 2010 and 18.0 percent in 2015.

Figure 7 shows the distribution by gender for work types with a total of 100 or more doctors.

**Figure 7: Proportion of doctors by work type and gender**



## Changes in the medical workforce

### Size of the workforce

The number of practising doctors increased by 12.4 percent between 2018 and 2021 — from 16,291 to 18,308. This compares to an increase of 11.0 percent in the previous three-year period (see Table 4).

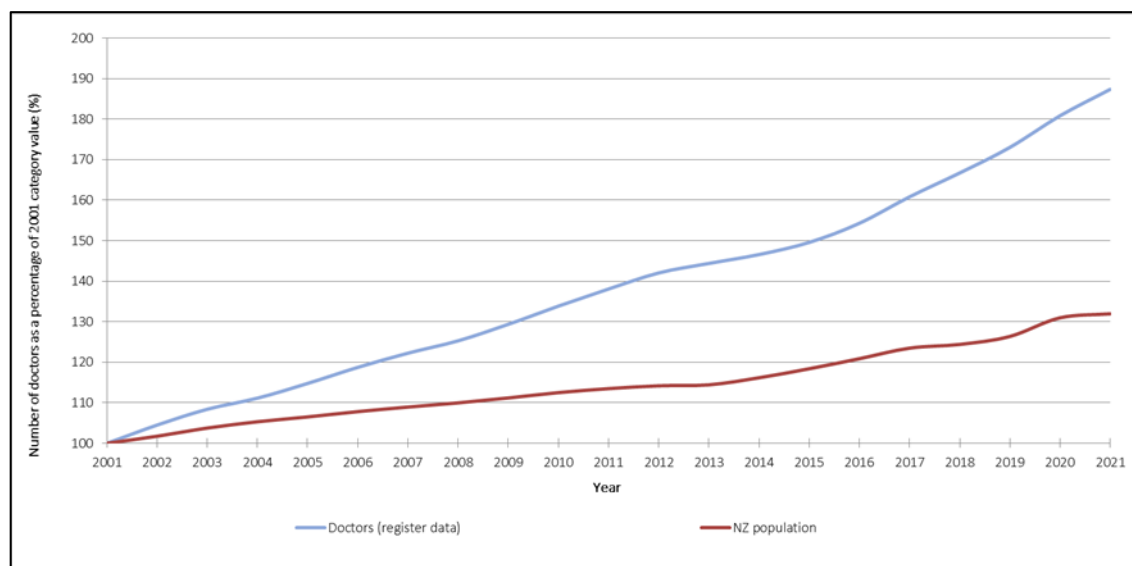
**Table 4: Estimated yearly workforce growth and changes in composition**

	2000	2003	2006	2009	2012	2015	2018	2021
<b>Total workforce (based on registration data)<sup>1</sup></b>	<b>9,779</b>	<b>10,594</b>	<b>11,604</b>	<b>12,641</b>	<b>13,879</b>	<b>14,677</b>	<b>16,291</b>	<b>18,308</b>
Percentage change in total workforce over the previous five years based on registration data (%)	-	8.3	9.5	8.9	9.8	5.7	11.0	12.4

<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 of 30 June of that year taken from Council's Annual Report.

Figure 8 shows the size of the medical workforce as measured by registration data and of the New Zealand population compared to 2001 levels.

**Figure 8: Change in size of the active medical workforce compared to change in the size of the New Zealand population (2001–2021)**





## Age distribution of the workforce

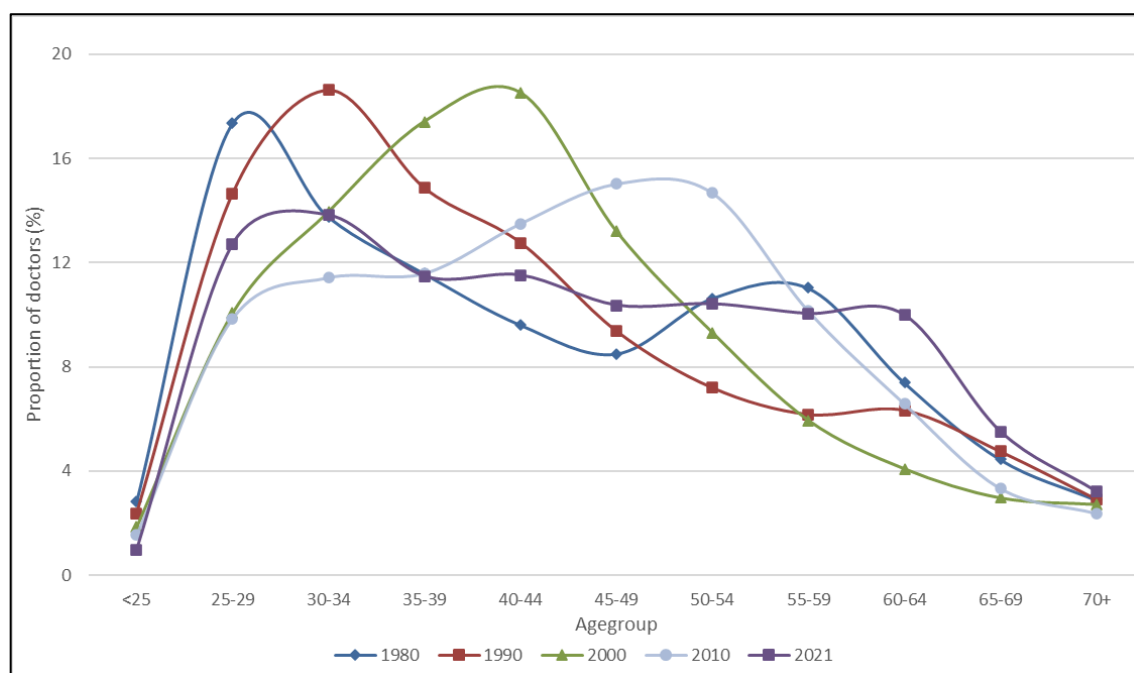
The average age of the workforce dropped very slightly to 45.4 years in 2021. The distribution of doctors continues to be more evenly spread across the age groups compared to previous years. The peaks previously seen in the 45-49 and 50-54 age groups in 2010 and 2015 have now flattened out in 2021.

Figure 9 compares the age distribution of the active workforce<sup>6</sup> based on survey data from 2000 to 2021. We have focused on selected series (2000, 2005, 2010, 2015 and 2021) to make it easier to see the changes over time.

In 2021, the largest group of doctors were those aged 30-34 (13.8 percent), followed closely by those aged 25-29 (12.7 percent). This reflects the increased numbers of graduates being produced by New Zealand's medical schools in recent years (see Table 21 on page 53).

All groups for doctors aged between 25 and 64 made up between 10 and 12 percent of the workforce. This reflects the more even spread of doctors by age group seen in more recent years.

**Figure 9: Age distribution of the active workforce (2000–2021)**



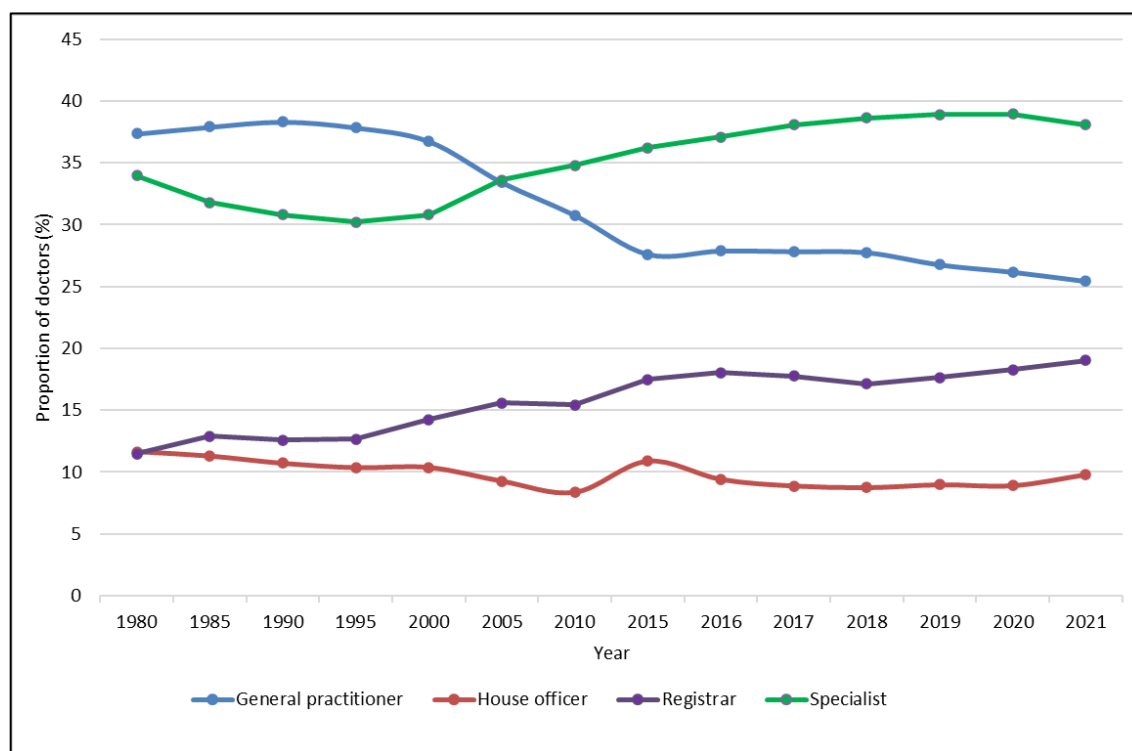
<sup>6</sup> Active doctors are those who responded to the workforce survey and reported working 4 or more hours per week.

## Changes by work role

Specialists make up an increasing proportion of the workforce. Specialists make up 38 percent of the workforce in 2021 compared with 31 percent in 2000. Conversely, the proportion of GPs continues to decrease – down to 25 percent in 2021 from 28 percent in 2018 and 37 percent in 2000.

Figure 10 shows how the proportion of doctors by work role at their main work site has changed over time. It focuses on the four main work roles of specialist, GP, registrar, and house officer. Please note the break in the time scale - five-year intervals from 2000 through to 2020 and then one-year intervals from 2020 to 2021.

**Figure 10: Proportion of active doctors by work role (2000–2021)**



### Clarification of terminology used

The categories may not reflect current terminology in some cases but have been retained to allow for the 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

General practice is a specialist scope of practice for the purposes of registration. Doctors registered in a vocational scope of general practice are specialists. However, for the purposes of the survey, specialists and general practitioners (GP) are separate categories to help us to analyse and interpret the data. Because data are self-reported, not all doctors who report themselves as specialists or GPs will hold a vocational scope of practice.

## Work type

The vocational scopes of urgent care and emergency medicine increased the most between 30 June 2020 and 30 June 2021. Emergency medicine increased by 12.0 percent, with urgent care increasing by 6.4 percent.

General practice, the largest vocational scope with 3,787 doctors in 2021, increased by 1.0 percent. Internal medicine, the second largest with 1,274 doctors, increased by 4.3 percent.

Several scopes decreased in 2021. Dermatology, oral and maxillofacial surgery, vascular surgery, occupational medicine, and clinical genetics all had fewer doctors in 2021 compared with the previous year.

Cardiothoracic surgery, family planning and reproductive health, neurosurgery, rehabilitation medicine, plastic and reconstructive surgery, and radiation oncology did not change between 2020 and 2021.

Table 5 shows the changes in the number of doctors registered in vocational scopes of practice. Only scopes with more than 100 doctors in 2021 are shown. The full list including all vocational scopes can be found in Table 18 on page 49.

**Table 5: Number of doctors by the vocational scope for selected years (2005–2021)**

Vocational scope	Year <sup>1</sup>					Percent change 2020–2021
	2005	2010	2015	2020	2021	
General practice	2,446	2,701	3,303	3,748	3,787	+1.0
Internal medicine	656	761	958	1,222	1,274	+4.3
Anesthesia	488	577	737	879	913	+3.9
Psychiatry	425	489	559	671	638	-4.9
Diagnostic radiology	266	303	448	570	536	-6.0
Paediatrics	219	289	353	422	423	+0.2
Emergency medicine	88	135	224	350	392	+12.0
Obstetrics and gynaecology	223	234	280	337	339	+0.6
Pathology	225	238	278	324	322	-0.6
Orthopedic surgery	211	237	273	311	310	-0.3
General surgery	227	235	262	298	307	+3.0
Urgent care	103	119	136	249	265	+6.4
Public health medicine	130	157	177	180	180	+0.0
Ophthalmology	107	124	134	166	161	-3.0
Rural hospital medicine	-	26	105	128	132	+3.1
Otolaryngology head and neck surgery	85	97	108	119	123	+3.4
Intensive care medicine	44	58	81	111	111	+0.0
<b>Total</b>	<b>6,389</b>	<b>7,310</b>	<b>9,069</b>	<b>10,863</b>	<b>10,996</b>	<b>+1.2</b>

Figures represent the number of doctors with vocational scope registration and current practising certificates as of 30 June of the year.

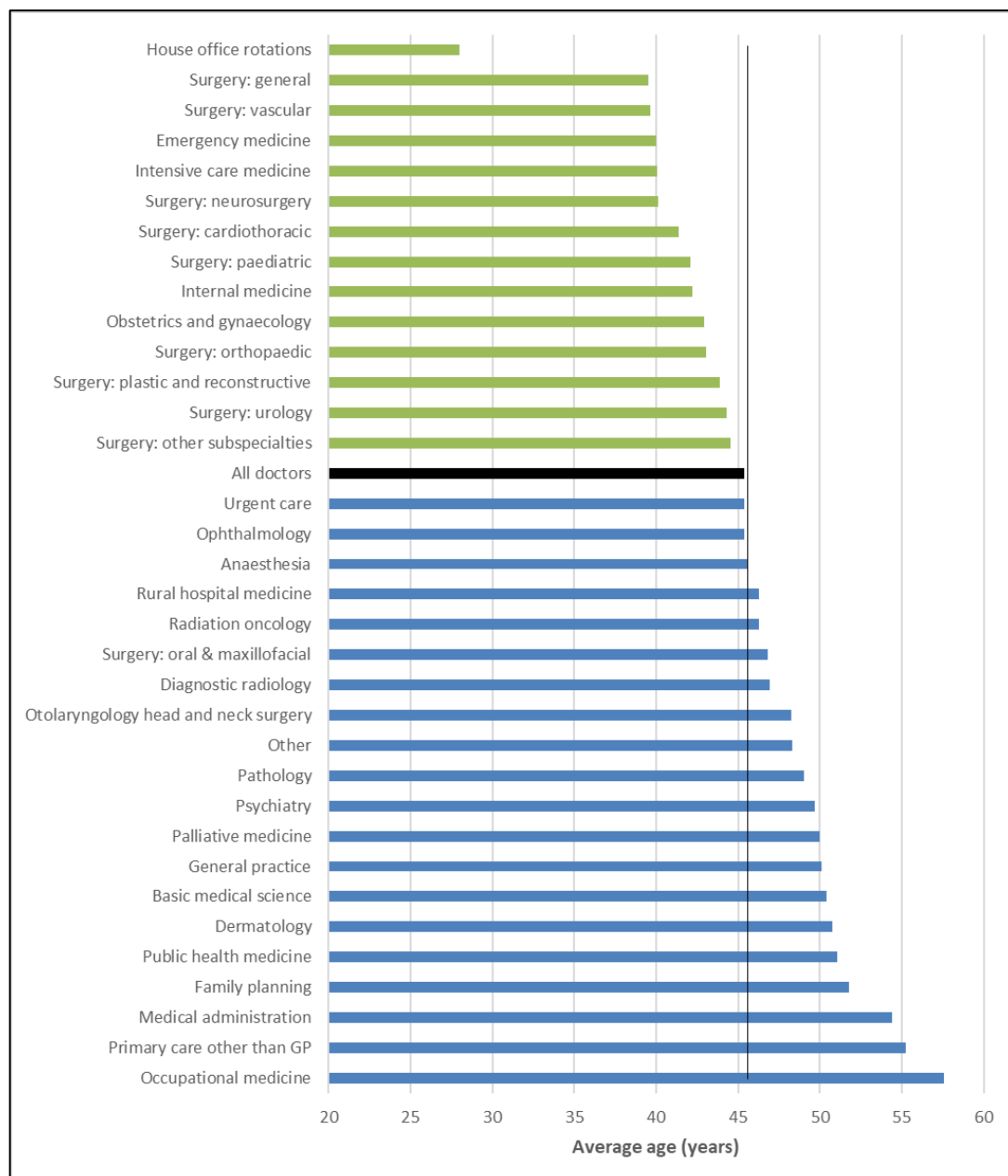
## Work type and age

The average age is highest in occupational medicine (58 years) is followed by medical administration (54 years) and primary care other than GP (55 years).

Putting aside house office rotations, the average age is lowest in emergency medicine, intensive care medicine, vascular surgery, and general surgery (all 40 years). Doctors working in house officer rotations are almost exclusively new graduates. As a result, they have the youngest average age (28 years).

Figure 11 compares the average age of different work types, focusing on those work types with more than 50 respondents.

**Figure 11: Average age by work type at main work site (areas with more than 50 doctors)**



### Age and vocational scopes

The average ages in Figure 11 include doctors at all levels and so do not give an accurate indication of the age of the specialist workforce in an area of medicine. We have therefore analysed the average age of doctors on the register by vocational scope of practice to provide more accurate figures.

Looking at vocational scopes with 100 or more doctors, psychiatry has the highest average age – 55 years. Otolaryngology head and neck surgery was next highest with an average age of 54 years.

The youngest vocational scope is emergency medicine with an average age of 46 years. The next youngest are anaesthesia, intensive care medicine and diagnostic and interventional medicine, both with an average age of 49 years.

The average age of all doctors with a vocational scope is 52 years in 2021, up from 48 years in 2005.

Table 6 shows that the average age of doctors on the register practising in a vocational scope of practice between 2005 and 2021, focusing on scopes with 100 or more doctors. Table 19 on page 50 shows the same analysis but for all scopes.

**Table 6: Average age of doctors on the register with a vocational scope (2005–2021)**

Vocational scope	Year				
	2005	2010	2015	2020	2021
Anaesthesia	46	48	49	49	49
Diagnostic radiology	48	49	49	49	49
Emergency medicine	41	43	45	46	46
General practice	49	51	53	53	53
General surgery	49	51	51	52	51
Intensive care medicine	46	48	49	49	49
Internal medicine	50	51	50	51	50
Obstetrics and gynaecology	49	51	52	52	52
Ophthalmology	49	50	51	51	52
Orthopaedic surgery	49	50	52	52	52
Otolaryngology head and neck surgery	49	51	53	54	54
Paediatrics	47	48	49	50	50
Pathology	49	50	51	51	51
Psychiatry	48	50	52	54	55
Public health medicine	47	49	51	52	53
Rural hospital medicine	-	47	49	51	51
Urgent care	45	48	51	52	52
<b>All doctors with vocational scope</b>	<b>48</b>	<b>50</b>	<b>51</b>	<b>52</b>	<b>52</b>

## Workloads

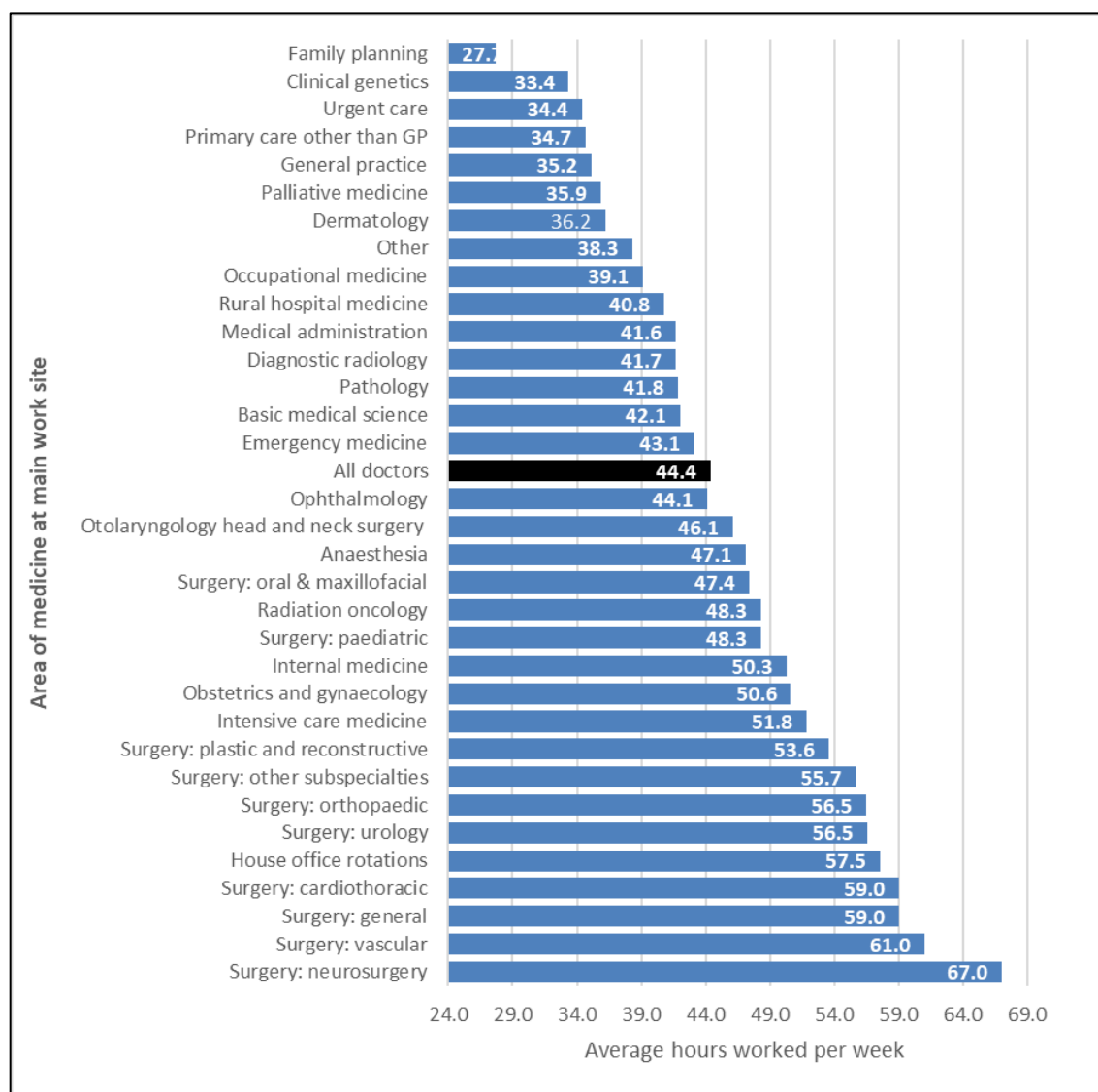
### Hours worked by work type

Doctors in neurosurgery work the most hours (67 hours per week) followed by vascular surgery (61.0 hours), cardiothoracic surgery (59.0 hours) and general surgery (59.0 hours).

Doctors in family planning and reproductive health (27.7 hours) and clinical genetics (33.4 hours) worked the least hours. This reflects the number of doctors working part-time in these specialties. 53.4 percent of doctors in general practice reported working less than 40 hours per week, compared with 6.2 percent for internal medicine.

Figure 12 shows the average hours worked by work type, looking only at those work types with 50 or more respondents.

**Figure 12: Average hours worked by work type (areas with more than 50 respondents)**



## Hours worked by work role

The average number of hours doctors report working is decreasing – from 47.1 hours in 2000 to 44.4 hours in 2021. House officers and registrars report working the most hours, with GPs and specialists reporting the least hours.

Hours reported by house officers and registrars decreased between 2000 and 2010 but has increased in recent years. House officers are the only group reporting more hours worked than in 2000.

We have no information on why hours reported by house officers are increasing. This figure is surprising, given the changes in the general terms of employment for new doctors<sup>7</sup>. One possibility is that some house officers are trying to report multiple rotations rather than their typical or most recent working week. However, even looking at just the main work site, house officers reported working 56.9 hours per week – more than the workforce average.

Average hours worked by specialists and GPs continues to decrease, with GPs down to 35.1 hours (from 42.2 in 2000) and specialists down to 43.0 hours (from 48.2 in 2000). This is another example of the increased tendency of GPs and specialists to work part-time compared with house officers and registrars. 58.6 percent of GPs and 24.7 percent of specialists work less than 40 hours per week compared to only 1.3 percent of house officers and 11.0 percent of registrars.

Table 7 shows the changes over time in the average number of hours worked each week, by work role, at the doctor's main work site.

**Table 7: Average hours worked by work role (2000–2021)**

Work role	Year				
	2000	2005	2010	2015	2021
General practitioner	42.2	39.8	37.8	37.1	35.1
House officer	55.7	54.6	52.1	53.7	63.6
Registrar	55.0	53.1	51.6	51.4	52.3
Specialist	48.2	46.6	45.2	45.0	43.0
<b>All doctors</b>	<b>47.1</b>	<b>45.5</b>	<b>43.9</b>	<b>44.4</b>	<b>44.4</b>

<sup>7</sup> As defined in the Multi-Employer Collective Agreement (MECA) between the Resident Doctors Association (RDA) and the 20 District Health Boards (<https://nZRda.org.nz/rmos/meca-fags/>)

## Hours worked by age and gender

Doctors aged in their 20s work the most hours per week, with women reporting slightly more hours than men (60.4 hours for women versus 57.8 hours for men). After the age of 30, men work more hours per week than women. This difference peaks in the 50–54-year age group where men work 45.5 hours compared with 36.4 for women.

Overall, women reported working 42.6 hours per week compared with 46.0 hours for men.

**Table 8: 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	66.1	60.0	48.0	40.3	37.0	37.4	36.4	37.1	35.7	33.7	31.1	42.6
Male	63.2	57.4	51.5	46.2	44.9	45.5	45.5	44.5	42.5	37.6	31.0	45.9
<b>All doctors</b>	64.7	58.8	49.6	42.9	40.8	41.5	41.2	41.6	40.0	36.6	31.0	44.4

The average number of hours worked is decreasing for men but increasing for women. Women worked 42.6 hours per week in 2021 compared with 41.2 hours in 2015, and 40.6 hours in 2005. Men worked slightly more hours in 2021 compared with the previous year (46.5 hours in 2021 versus 46.0 hours in 2020). However, the overall trend is toward men working less hours – men reported working 46.8 hours in 2010 and 48.3 hours in 2005.

**Table 9: Average hours worked, by gender and year (2005–2021)**

Gender	Year					
	2005	2010	2015	2019	2020	2021
Female	40.6	39.8	41.2	42.3	42.0	42.6
Male	48.3	46.6	46.8	46.5	46.0	46.5
<b>All doctors</b>	<b>45.5</b>	<b>43.9</b>	<b>44.4</b>	<b>44.5</b>	<b>44.0</b>	<b>44.3</b>

## Gender and part-time work

Women are much more likely to work part-time than men. Almost 39.5 percent of women reported working fewer than 40 hours compared with 21.0 percent of men.

The most common reasons given by women for working part-time were personal preference.

(1,380 respondents), part-time work (668 respondents) and family commitments (473 respondents).

The most common reasons given by men for working part-time were personal preference (1052 respondents), that they were retired or semi-retired (234 respondents), and part-time work (214 respondents). Only 45 male doctors reported family commitments as a reason for part-time work.



### Paperwork and other non-clinical work

Paperwork and other non-clinical work on top of clinical work was another common reason given for working less than 40 hours per week. Some examples of these comments are:

- “28 hours face to face patient hours equates to 40+ hours if you include the paperwork associated with this 28 hour - i.e., referrals/ inbox/ phone calls/ reports etc.”
- “Significant number of unpaid paperwork hours with the job. In reality working around/ over 40.”
- “I am contracted to work less than 40 hours per week. I do out of hours work every week.”
- “In addition to my paid 20 hrs/week I spend an additional 5 hrs/week of unpaid time to complete my administrative duties.”
- “My admin time adds another 6+ hours per week and is unaccounted for above.”
- “This 25 hour reflects 20 hrs of face time in private practice and significant hours of nonclinical time are added to this i.e. hours spent on clinical and nonclinical medical work approach 40 hours per week or more. “

### Hours on call by work role

Most doctors did not report working “on-call” – over 72 percent of doctors reported no on-call hours. Specialists reported the most on-call hours. Just over 48.6 percent of specialists were on-call, with 31.2 percent reporting 10 or more hours. House officers reported the least on-call hours – 96.8 percent indicating no on-call hours. Similarly, only 14 percent of registrars reported on-call hours.

For house officers and registrars, the lower number of on-call hours reflects the higher number of hours they work on average. Where doctors are on-call and are required to work, we ask them to record these hours in their hours worked rather than their on-call hours.

Table 10 shows on-call hours by workforce role, grouped by on-call hours. “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 10: Doctors’ on-call hours, grouped in each work role (%)**

On-call hours, grouped	General practitioner	House officer	Registrar	Medical officer	Specialist
No on-call hours	79.1	96.9	86.7	76.8	51.4
1–4	6.1	0.6	1.2	3.0	5.9
5–9	4.5	1.3	3.4	5.3	11.5
10–19	4.0	0.9	5.1	8.0	18.0
20–49	4.1	0.2	3.0	5.3	10.6
50 and over	2.2	0.1	0.5	1.6	2.6
<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 category may not add up to the total due to rounding.

## Hours on call by employer

Over 84 percent of specialists who reported being on-call for 10 or more hours per week work in public hospitals.

Amongst other work roles, most doctors on-call for 10 or more hours per week worked in public hospitals (40.3 percent) and group private practices (38.9 percent). Over 70 percent of all doctors on-call for 10 or more hours per week worked in public hospitals.

Table 11 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.

**Table 11: Proportion of doctors on call for 10 or more hours each week, by employer (%)**

Main employer	Specialist	Other work roles	Total
Commercial company	1.1	2.8	1.6
Government department/agency	3.6	1.8	3.0
Group private practice	3.4	38.9	14.5
Private hospital	2.1	0.6	1.6
Professional body	0.2	-	0.1
Public hospital	84.4	40.3	70.7
Solo private practice	2.5	6.7	3.8
University/polytechnic	0.54	1.1	0.7
Other	2.2	7.9	4.0
<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

Hours on-call reported by doctors is decreasing. All work roles show fewer on-call hours in 2021 compared to 2000. Specialists reported the most on-call hours (8.4 hours) with house officers and registrars reporting the least (0.3 and 2.2 hours respectively). GPs reported an average of 4.3 on-call hours.

Table 12 shows the changes in the average on-call hours by work role between 2000 and 2021.

**Table 12: Average on-call hours by work role (2000–2021)**

Work role	Year				
	2000	2005	2010	2015	2021
General practitioner	9.6	5.6	5.3	4.8	4.3
House officer	2.6	1.3	0.8	0.5	0.3
Medical officer	8.9	5.6	4.6	6.7	4.5
Registrar	5.1	3.2	2.8	2.4	2.2
Specialist	16.7	13.1	11.0	10.2	8.4
<b>All doctors</b>	<b>10.2</b>	<b>7.3</b>	<b>6.3</b>	<b>5.9</b>	<b>4.5</b>

## Geographic distribution

### Important information about geographic data

We recommend caution in interpreting and relying on figures in this section. Several limitations restrict how accurately we can report on where doctors work. This includes challenges around representing the location of doctors who routinely work across multiple regions.

Doctors often work in more than one location. However, we need to allocate each doctor to a single DHB for reporting purposes. This means some locations where a doctor works will not be reflected in the results.

Because of this, the results tend to favour larger DHBs where neighbouring geographic regions are closely related — for example, in the wider Auckland and Wellington regions. Doctors might work across the entire region throughout the year but will only be represented in these figures against one DHB. This tends to be the largest DHB in the region — Auckland DHB in the Auckland region and Capital & Coast in the Wellington region.

### Effect of reduced response rate

We are unable to present geographic data as headcounts as we have done in previous reports because of the reduced response rates since 2017. 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

The largest DHB as measured by number of practising doctors is Auckland, followed by Canterbury and Waitematā.

The figure for Auckland will be exaggerated as we allocate each doctor to a single DHB for reporting purposes. It is likely the doctors in Auckland, Waitematā and Counties Manukau are more evenly spread than these figures would suggest. Viewed together, the DHBs in the Auckland region contain 36.2 percent of doctors. This is consistent with their proportion of the population (33.9 percent).

Over three-quarters of doctors are based in the North Island (76.4 percent). Canterbury DHB is by far the largest DHB in the South Island with 12.4 percent of all doctors. This is slightly more than its proportion of the New Zealand population (11.4 percent).

Table 13 shows the proportion of doctors at each DHB, along with the proportion of FTEs, proportion of GPs, and average hours worked.

**Table 13: 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	197,900	3.9	3.3	3.2	3.8	43.5
Waitematā	639,400	12.5	9.2	9.4	9.9	45.4
Auckland	499,100	9.7	22.1	22.9	15.0	46.1
Counties Manukau	601,300	11.7	4.9	4.9	6.7	45.2
Waikato	445,200	8.7	8.6	8.8	8.3	45.6
Lakes	118,400	2.3	1.8	1.8	1.7	43.8
Bay of plenty	269,800	5.3	4.7	4.4	5.9	42.1
Hauora Tairāwhiti	51,500	1	1.1	1.0	1.8	40.6
Taranaki	126,600	2.5	2.1	2.1	2.4	43.5
Hawke's Bay	181,400	3.5	3.2	3.0	4.1	42.0
Whanganui	69,100	1.3	0.9	1.0	0.9	47.7
MidCentral	189,100	3.7	2.7	2.8	2.1	46.0
Hutt Valley	160,300	3.1	3.2	3.0	4.9	41.5
Capital & Coast	326,800	6.4	8.2	8.3	5.9	45.1
Nelson Marlborough	164,100	3.2	3.0	2.8	4.4	40.3
Wairarapa	49,900	1	0.4	0.4	0.8	39.2
West Coast	32,700	0.6	0.2	0.2	0.2	41.4
Canterbury	586,400	11.4	12.4	12.1	12.5	43.1
South Canterbury	62,200	1.2	0.8	0.8	1.1	43.2
Southern	351,400	6.9	7.12	7.1	7.6	44.1
<b>All DHBs</b>	<b>5,122,600</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>44.4</b>

### **Distribution of GPs**

The two largest DHBs in terms of numbers of GPs are Auckland and Canterbury (15.0 and 12.5 percent respectively).

Auckland is relatively over-represented compared to the proportion of the population (15 percent of GPs compared to 9.7 percent of the New Zealand population). However, the wider Auckland region (including Waitematā and Counties Manukau) is relatively underrepresented, with 33.9 percent of the population but only 31.6 percent of GPs. Waitematā is underrepresented by 2.6 percentage points and Counties Manukau by 5.0 percentage points.

Hutt Valley (+1.8 percentage points) and Nelson Marlborough (+1.2 percentage points) also have a proportion of GPs greater than their proportion of the population.

Most other areas have GP numbers that are consistent with their proportion of the population (+/- 1 percentage point).

### **Hours worked**

Doctors reported working the most hours in Whanganui (47.7 hours) followed by Auckland (46.1 hours) and MidCentral (46.0 hours).

Doctors reported working the least hours in Wairarapa (39.2 hours), Nelson-Marlborough (40.3 hours), and Hauora Tairāwhiti (40.6 hours).

### **Hours worked by GPs**

GPs outside of the major centres tended to report working more hours. GPs in Whanganui reported working an average of 40.1 hours per week, followed by West Coast (39.6 hours) and South Canterbury (38.4 hours).

GPs in the Bay of Plenty reported working the fewest hours (32.6 hours). Lakes was next lowest with 33.0 hours followed by Capital and Coast (33.2 hours).

## Gender

Women are more highly represented in larger centres. West Coast has the highest proportion of female doctors and is the only DHB with more female doctors than male doctors (55.3 percent). The other large DHBs are not far behind. Most of the larger DHBs have between 48 and 49 percent female doctors, led by Nelson Marlborough and Auckland (both with 48.8 percent).

MidCentral has the lowest proportion of female doctors – 38.8 percent compared to 46.6 for the overall workforce. Whanganui (39.7 percent) was next followed by Waikato (40.1 percent).

## International medical graduates

IMGs are more highly represented outside of the larger centres. Whanganui has the highest percentage of IMGs (63.1 percent), followed by Wairarapa (62.7 percent), West Coast (60.5 percent), and South Canterbury (58.3 percent).

The DHBs with the lowest percentages of IMGs are Auckland (32.9 percent), Capital & Coast (33.9 percent) and Canterbury (36.0 percent). This may reflect those main urban areas are easier to staff and so rely less on recruiting doctors from overseas.

In addition, New Zealand graduates in their first two years of practice must work in training centres and cannot work in rural areas. This will also contribute to the lower proportions of IMGs in the main urban areas.

## Age

Doctors tend to be older on average outside of the main centres. However, this trend is not as significant as it is with gender and country of qualification.

Doctors are the oldest in Wairarapa (52 years), Hauora Tairāwhiti (49 years), and South Canterbury (48 years), compared to the overall average age of 45 years.

Doctors are the youngest in Waikato and Capital & Coast both are (44 years) and Waitematā, Auckland, and Counties Manakau (all 45 years). Most other areas are about the same as the overall average (+/- one year).

Table 14 shows the percentage of female doctors, percentage of IMGs and average age for each DHB.

**Table 14: DHBs by percentage female, percentage IMG and average age**

DHB	Population	Percentage female (%)	Percentage IMGs (%)	Average age
Northland	197,900	49.0	52.4	47
Waitematā	639,400	46.4	37.6	45
Auckland	499,100	48.5	32.9	45
Counties-Manukau	601,300	45.3	41.8	45
Waikato	445,200	40.1	53.0	44
Lakes	118,400	47.5	50.0	45
Bay of plenty	269,800	46.2	46.5	46
Hauora Tairāwhiti	51,500	41.6	53.0	49
Taranaki	126,600	46.4	48.8	45
Hawke's Bay	181,400	45.1	50.2	46
Whanganui	69,100	39.7	63.1	46
MidCentral	189,100	38.8	48.0	45
Hutt Valley	160,300	46.8	41.0	47
Capital & Coast	326,800	50.1	33.9	44
Nelson Marlborough	164,100	49.0	42.3	47
Wairarapa	49,900	44.8	62.7	52
West Coast	32,700	55.3	60.5	45
Canterbury	586,400	48.4	36.0	45
South Canterbury	62,200	40.9	58.3	48
Southern	351,400	45.9	42.9	46
<b>All DHBs</b>	<b>5,122,600</b>	<b>46.6</b>	<b>41.0</b>	<b>45</b>

## Combined Auckland region

The three Auckland-based DHBs represent over a third of New Zealand's population (34.0 percent) and has 31.1 percent of all doctors and 25.0 percent of all GPs.

Doctors in Auckland work slightly more hours but are on call for less hours on average compared to the overall workforce. GPs in Auckland also work slightly more hours than the national average.

The proportion of female doctors in Auckland is slightly higher, while the proportion of IMGs is significantly lower.

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

Workforce measure	Auckland	New Zealand
Proportion of doctors (%) <sup>1</sup>	31.1	-
Proportion of GPs (%) <sup>2</sup>	25.0	-
Population <sup>3</sup>	1,739,800	5,122,600
Proportion of population (%)	34.0	-
Average hours worked	45.9	44.4
Average hours worked by GPs	32.7	33.0
Average on call hours	4.2	5.0
Average age	45.3	45.4
Proportion of female doctors (%)	47.9	46.6
Proportion of IMGs (%)	34.3	41.2

<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 of 30 June of the particular survey period, in this case, 30 June 2021

## Urban/rural

We're reviewing the methodology we use to estimate whether doctors are working in a rural area. There has been a lot of change in this area. As a result, the method we were using, which compared the land areas of TLA regions to their population, is now out of step with the current Geographic Classification for Health (GCH)<sup>8</sup>, which classifies locations according to their proximity to larger urban areas.

Implementing the GCH classification will be a significant task. We've therefore chosen to leave this analysis out of the 2021 report rather than present potentially inaccurate figures using the old method or delaying the publishing of this report until we can implement the new method. We plan to publish a standalone analysis aligned with the GCH methodology in the coming financial year (2022-2023).

<sup>8</sup> University of Otago, 18 March 2022, <https://blogs.otago.ac.nz/rural-urbannz/welcome/gch-map/>



## International medical graduates

International medical graduates (IMGs) make up 41.2 percent of doctors who responded to the survey and 42.1 percent of doctors on the register. Historically the proportion of IMGs has tended to increase each year. Over the last five years, however, this growth has stopped, and the proportion is now either about the same or slightly less as the previous year.

### Importance of IMGs to the workforce

IMGs play an important role in the medical workforce. IMGs fill gaps that we cannot fill with locally-trained doctors. Some IMGs come here to gain experience and expertise they cannot get in their home country. Other IMGs are moving to New Zealand permanently, giving us the benefit of the experience and expertise they gained overseas.

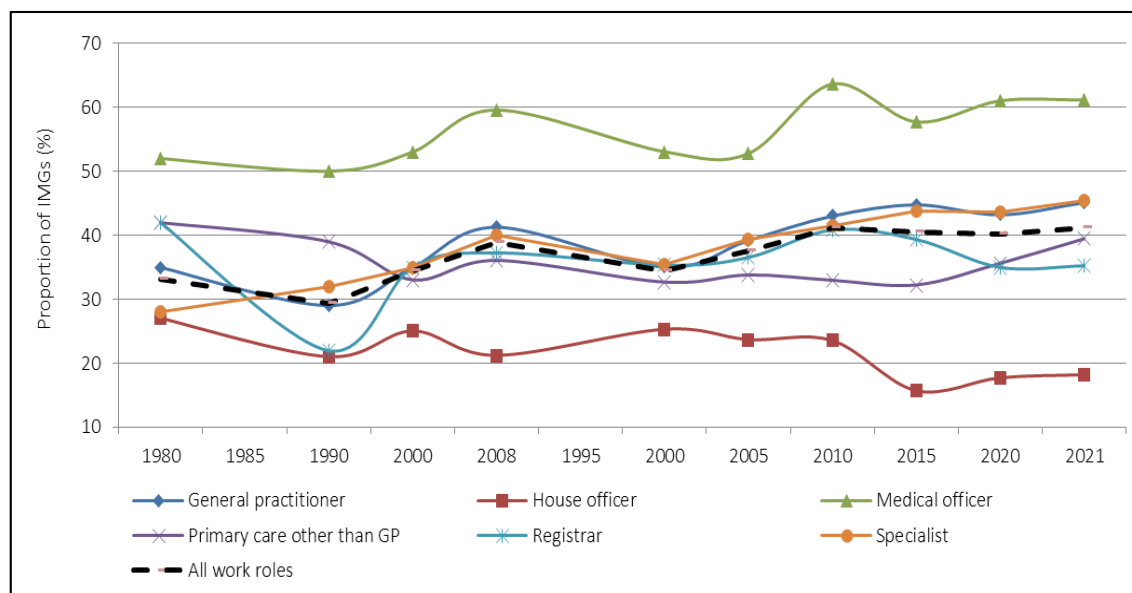
Movement of doctors between countries is normal and expected. Just as IMGs come to New Zealand to work, many New Zealand-trained doctors work in other countries – see the retention section on page 44 for more on this.

### Work role

IMGs are most represented amongst medical officers – 61.2 percent. They are least represented amongst house officers (18.2 percent) and registrars (35.3 percent). This reflects that we are training more doctors locally and so there are fewer training posts available for IMGs.

Figure 13 shows changes in the proportion of IMGs by work role at their main work site between 1980 and 2021. Note the break in time series – the graph is five-yearly from 1980 to 2020 and then one-yearly.

**Figure 13: Proportion of IMGs by work role at the main worksite (1980–2021)**



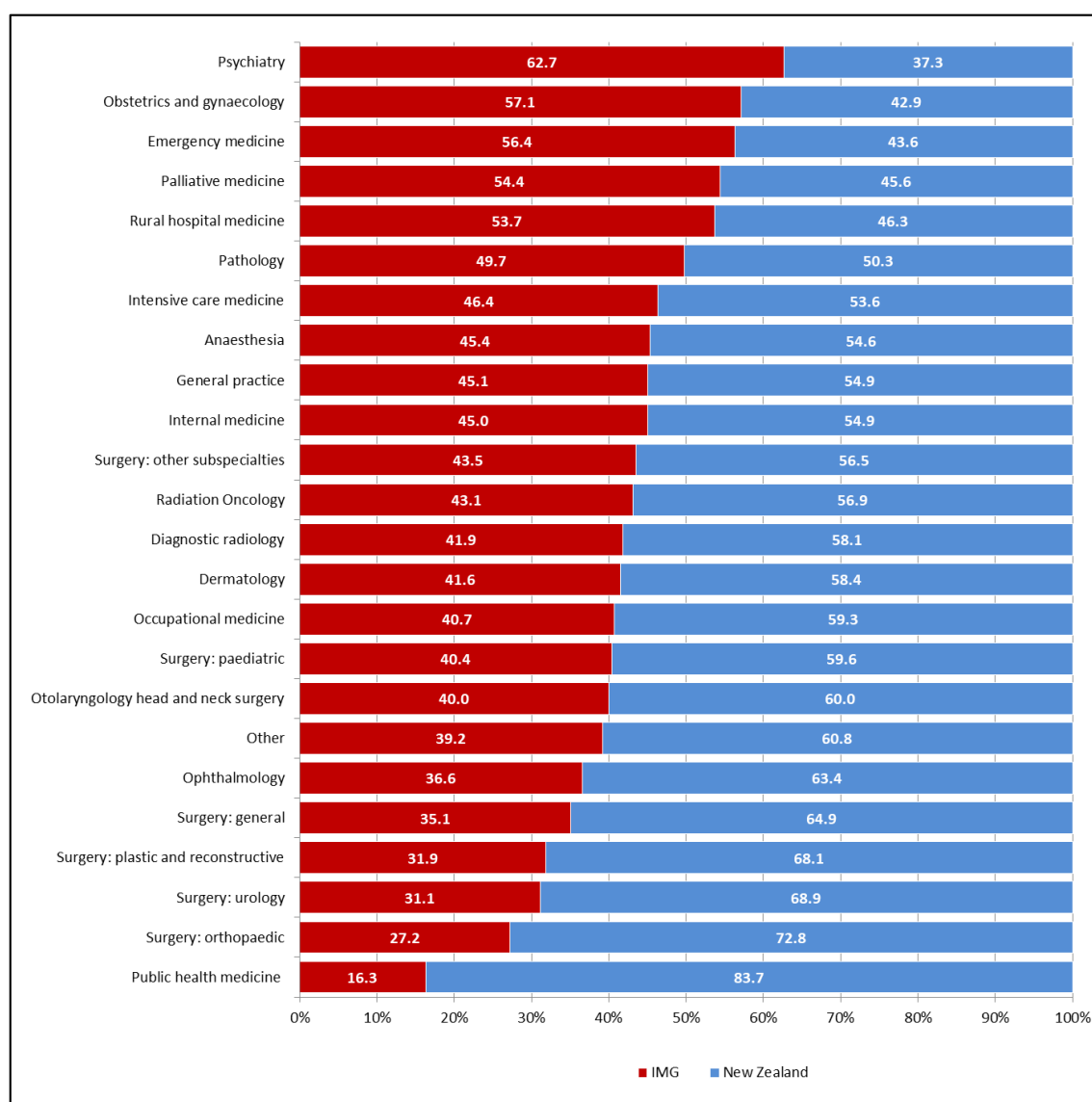
## Work type

IMGs are most represented in Psychiatry (62.7 percent), obstetrics and gynaecology (57.1 percent) and emergency medicine (56.4 percent).

IMGs are least represented in public health medicine (16.3 percent), orthopaedic surgery (27.2 percent) and urology (31.1 percent).

Figure 14 shows the proportion of IMGs working as specialists or general practitioners in vocational scopes for those areas with more than 50 doctors.

**Figure 14: Proportion of IMGs by work type (areas with more than 50 doctors)**



## Retention — how long do our doctors stay

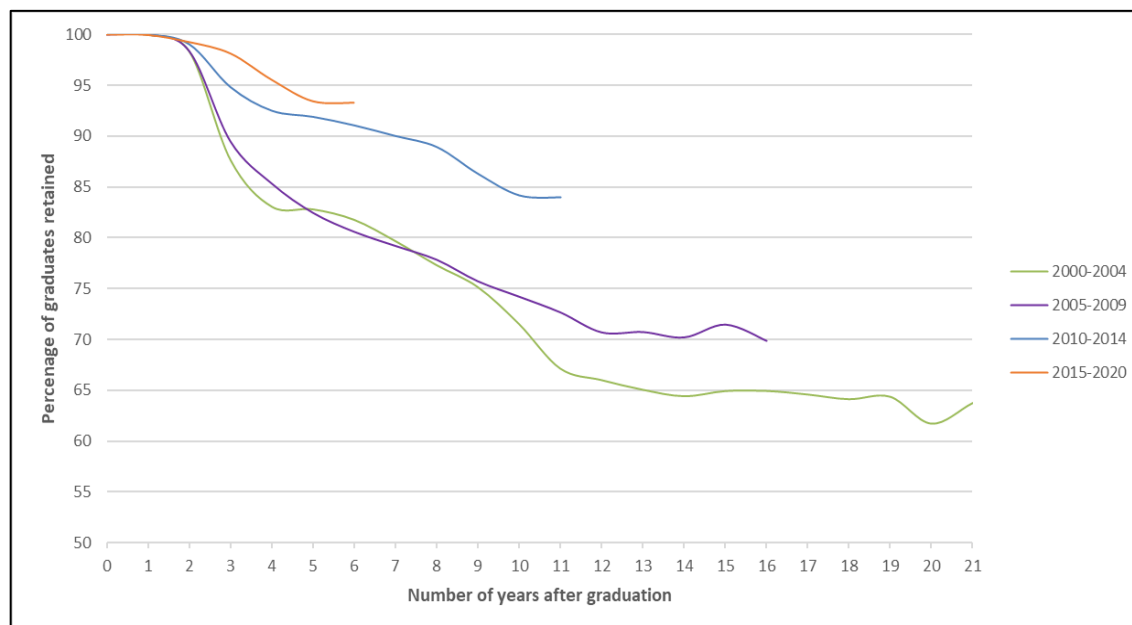
### Retention of New Zealand graduates

New Zealand is retaining more of our own graduates than we used to. We retained no less than 90 percent of graduates from the 2010, 2011, 2012 and 2013 cohorts for 5 years after initial registration. Retention for earlier cohorts at the same point averaged just under 80 percent.

This may reflect initiatives like the Ministry of Health’s Voluntary Bonding Scheme<sup>9</sup> giving graduates greater incentives to remain in New Zealand in the years immediately after graduation.

Figure 15 compares the retention rates at each year after graduation for successive classes of graduates from 2000 to 2020, combining these into 5-year cohorts to make it easier to see trends. See Table 21 on page 53 for more detailed retention data for New Zealand graduates.

**Figure 15: Graduate retention of class years 2000–2020 (5-year cohorts)**



<sup>9</sup> <https://www.health.govt.nz/our-work/health-workforce/voluntary-bonding-scheme>.

## Most graduates who leave go to Australia

Most New Zealand-trained doctors practising outside of New Zealand are in Australia (2,187 in 2019). This is not surprising given that Australia is our nearest (and largest) neighbour.

Other countries where New Zealand-trained doctors are practising include the United Kingdom (187 in 2020), Ireland (22 in 2020), Canada (104 in 2019), and Israel (4 in 2020)<sup>10</sup>.

The OECD data on how many doctors move each year is relatively incomplete. The available data shows that 19 doctors moved to Canada in 2019, 39 to the United Kingdom in 2020, and 2 moved to Ireland in 2020<sup>11</sup>.

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<sup>10</sup> OECD, Health Workforce Migration – Foreign-trained doctors by country of origin – stock (<https://stats.oecd.org/>).

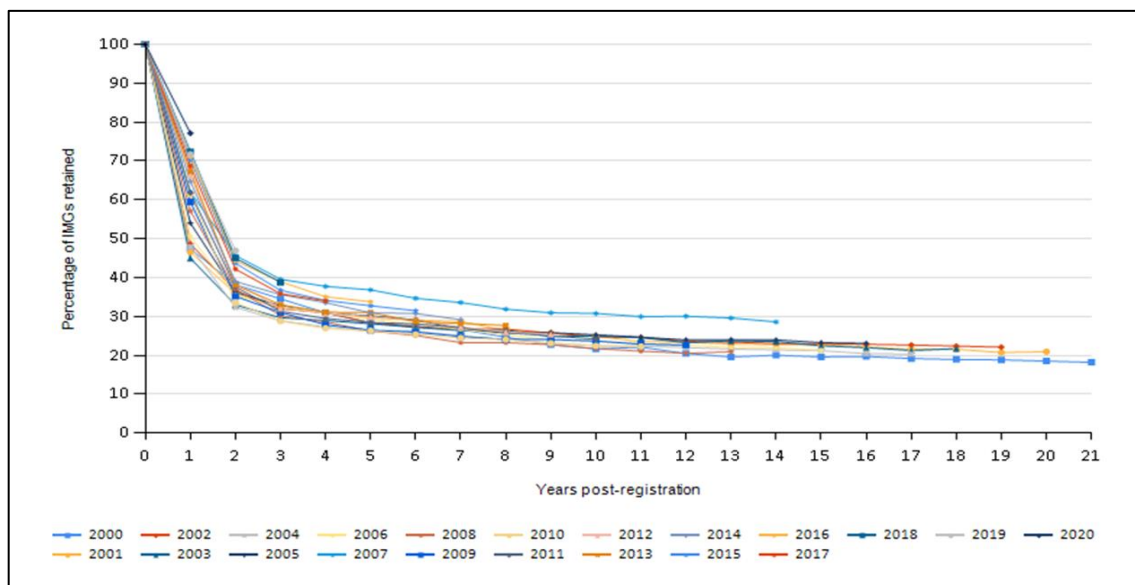
<sup>11</sup> OECD, Health Workforce Migration – Foreign-trained doctors by country of origin – Annual inflow (<https://stats.oecd.org/>).

## Retention of International medical graduates

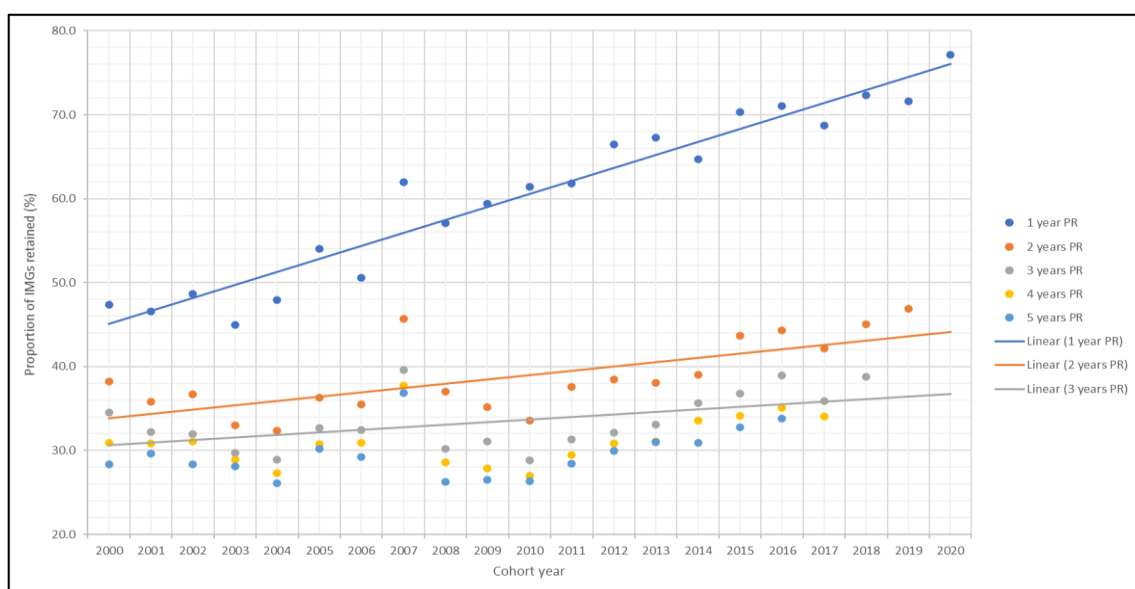
Most IMGs who register in New Zealand don't stay for long periods. Just over 60 percent leave in the first two years after they register. IMGs continue to leave in subsequent years until there are about 20 percent remaining. Retention at 1-year post-registration is improving significantly (see Figure 22), but the overall trend of IMGs leaving from 2 years post-registration onwards is largely stable.

Figure 16 and 22 show the overall retention rate for IMGs who registered in New Zealand between 2000 and 2020. See the method section on page 44 for information on how we grouped IMGs together into cohorts.

**Figure 16: Retention rate for IMGs (2000–2020)**



**Figure 17: Changes in IMG retention over time (1–5 years post-registration (PR))**



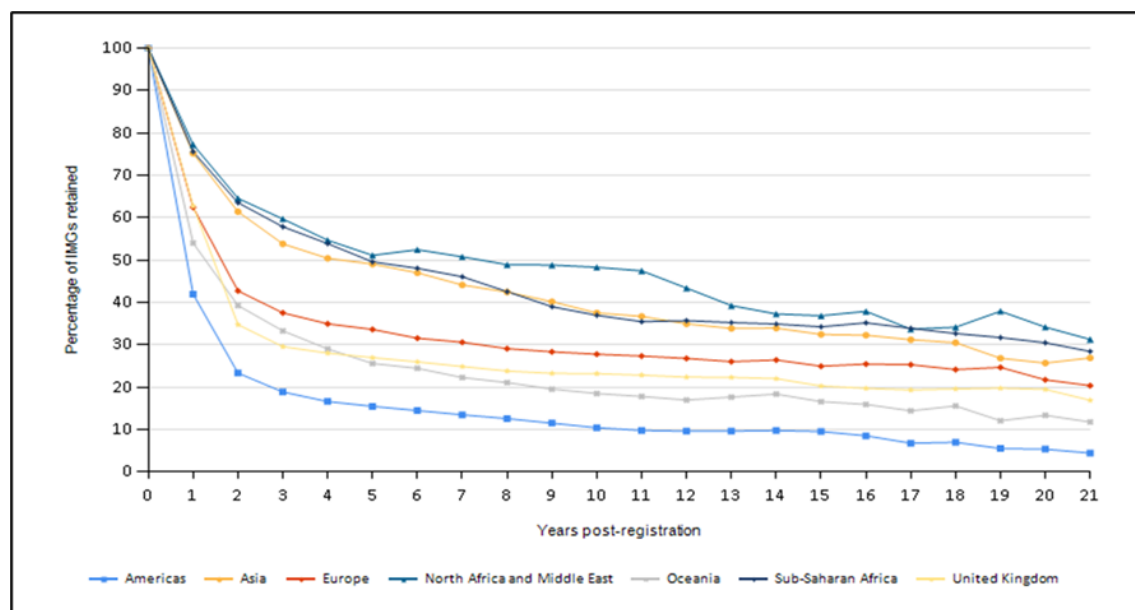
## Retention by region of qualification

Doctors from Africa, the Middle East and Asia are most likely to stay. We retain over three-quarters of doctors from these regions for one year and about 50 percent for a further four years. Over half of doctors from Africa and the Middle East are still in New Zealand up to seven years after they initially register.

Doctors from North America are least likely to stay in New Zealand followed by Oceania (mainly doctors from Australia and the Pacific), the United Kingdom (UK), and Europe. Only 42.0 percent of doctors from North America are retained one year after initial registration, dropping further to 23.3 percent in the second year. While around 62.7 percent of doctors from the UK are retained after one year, this then drops to just under 34.8 percent in the second year.

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

**Figure 18: Retention of IMGs by region of qualification (2000-2021)**

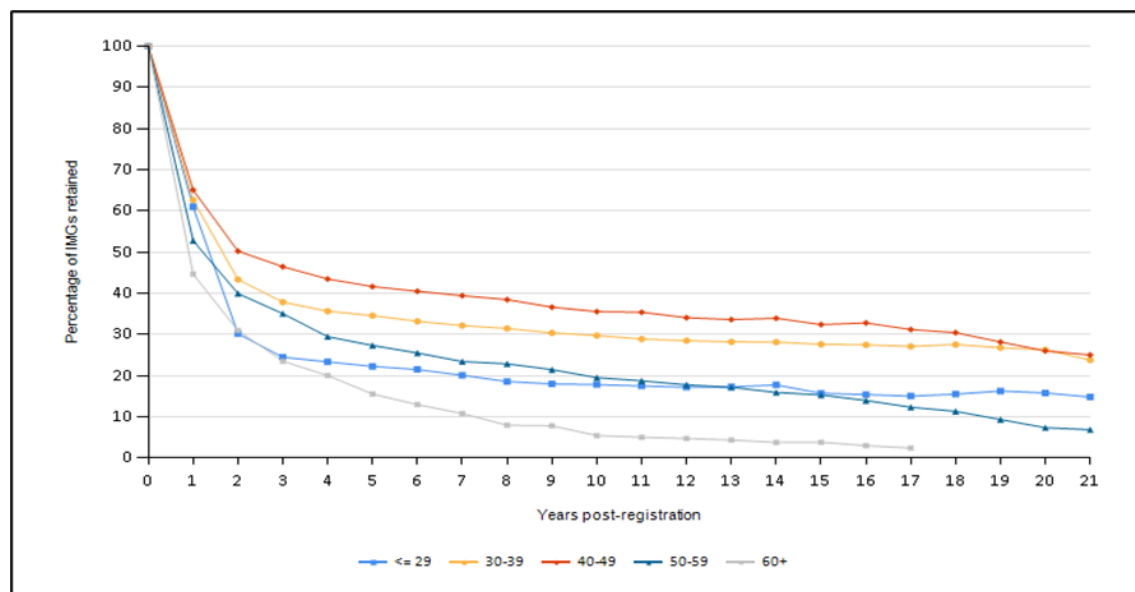


## Retention by age group and time since initial qualification

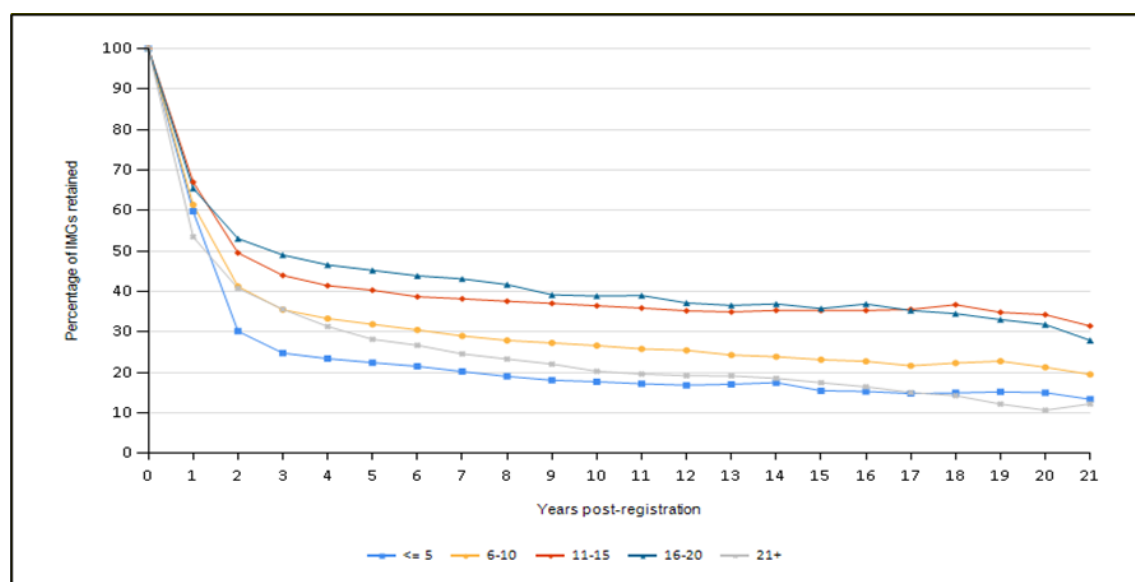
Doctors aged between 30 and 50 are more likely to stay compared to doctors in their 20s and those aged 60 and over. Similarly, doctors moving to New Zealand in the middle of their careers are more likely to stay compared with newer doctors in their first 10 years of practice.

This suggests that 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, who are more likely to be relocating permanently.

**Figure 19: Retention rates for IMGs by age group (2000–2021)**



**Figure 20: Retention rate for IMGs by time since initial qualification (2000–2021)**



## Data sources used in this publication

This report combines the results of the Medical Council of New Zealand workforce survey for 2021 with existing registration data. It also includes other non-register registration data collected from doctors as part of the initial registration process and when they renew their practising certificates each year.

### Register data and other non-register data

#### Register data

Register data are 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 are 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/workforce data

We ask doctors for workforce data as part of their application to renew their practising certificate. This section of the application collects detailed information from doctors about the work they are doing. This fills in the gaps not covered by register data and non-register registration data enriching these datasets.

## Representativeness of the survey data

The response rate for the 2021 survey was up from the previous year - 90.8 percent of doctors surveyed responded compared with 81.7 percent in 2020.

We believe the response is representative and that valid conclusions can be drawn from the data, even though not all doctors provide the additional workforce data. We make this assertion based on the population size and demographic comparison of the survey data with register 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 current practising certificates – 18,308 as of 31 March 2021.

For a population of this size, a response rate of 90.8 percent should provide 95 percent certainty. This supports our conclusion that, even though our response rate is relatively low, any conclusions drawn from the data are still valid.



## Demographic comparison – survey data versus register data

While the population size is important, the sample must accurately reflect the survey population. If it is, we can say that the survey data are representative.

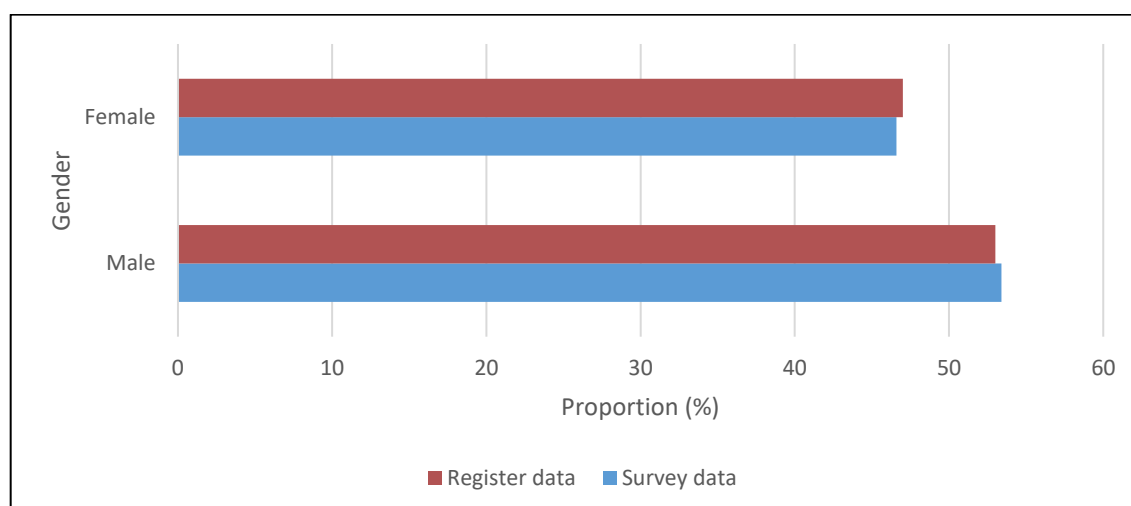
We compared the age and gender of those who responded to the survey with those on the medical register to test whether the survey data are representative. While there were some small differences when broken down by age group, the breakdown by gender was nearly identical.

This further supports our conclusion that the survey response for 2021 is representative.

### Comparison by gender

Figure 21 illustrates that, when broken down by gender, the demographics of the two groups are effectively identical. In both cases, about 46 percent were female and 53 percent were male.

**Figure 21: Comparison of survey respondents with doctors on the medical register as of 31 March 2021 by gender**



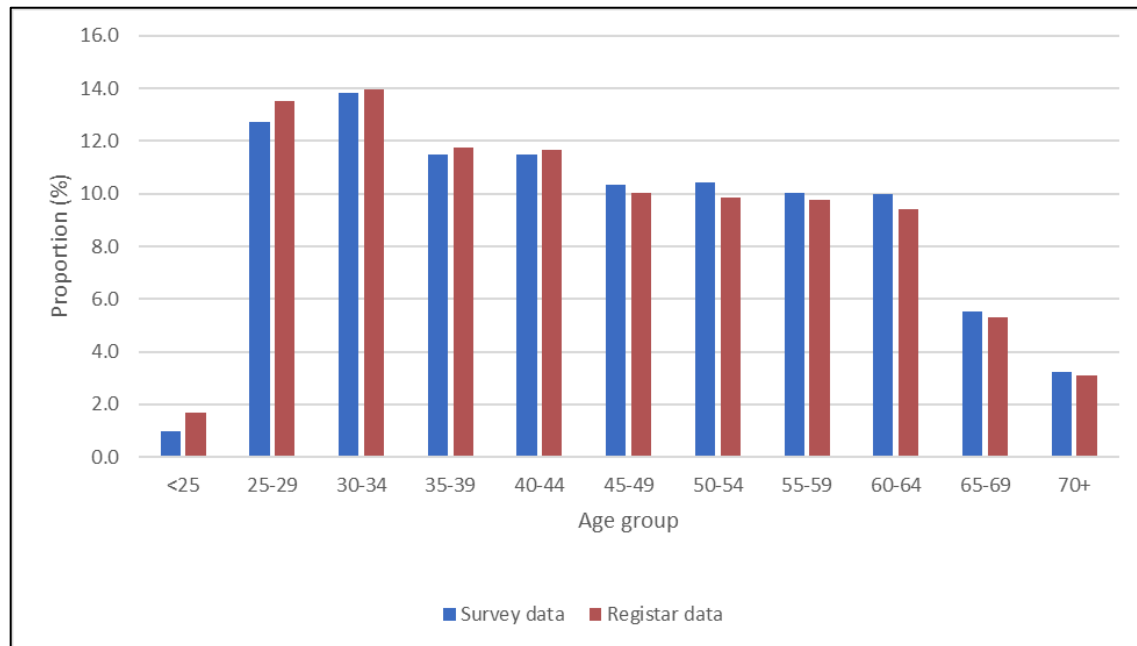
### Comparison by age group

Figure 22 and Table 16 show small differences between the two groups when they are broken down by age group.

There is 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 between 45 and 64 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 22: Comparison of survey respondents with doctors on the medical register as of 31 March 2021 by age group**



**Table 16: Summary of differences between survey respondents and doctors on the medical register as of 31 March 2021 by age group (selected age groups only)**

Age group	25–29	30–34	35–39	40–49	50–54	55–59	60–64
<i>Survey difference to register</i>	-0.8	-0.2	-0.3	0.2	0.6	0.3	0.6

### 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 (42.1 percent versus 41.2 percent). This reflects that we do not ask IMGs who come to New Zealand for short periods to complete the survey.

## Survey method

### Delivery method

Since 2015 we have collected our survey data electronically. We made this change when we moved our practising certificate renewal process online. Doctors renew their practising certificates online through myMCNZ (<https://mymcnz.org.nz/>). This is the sixth survey we have administered electronically.

### Timing of the questionnaire

We ask doctors to renew their practising certificate (and complete the workforce survey) at one of four dates during the year, determined by the doctor's birthdate.

The 2021 survey covers doctors who renewed their practising certificate from December 2020, March 2021, June 2021, and September 2021.

Doctors can complete the survey up to 6 weeks before these dates. We collected all data within 3 months of a renewal period ending.

### Sampling frame

We ask doctors to complete the survey if they:

- hold a current general, provisional general, vocational, or provisional vocational scope of practice, and
- hold a current practising certificate or held one at some point in the previous year, and
- have a New Zealand address.

We do not ask doctors who are registered for specific short-term purposes (special-purpose scope of practice) to complete the survey.

### Responses to the survey

The response rate to the 2021 survey is 90.8 percent. We asked 17,729 doctors to complete the survey; 16,090 doctors responded. 15,587 doctors reported working in the previous year. The remaining 503 doctors reported that they did not work.

This response rate is higher than 2020 (81.7 percent). The increased response to the survey will be because we removed the ability for doctors to opt-out of the workforce questionnaire in response to a change in legislation - the Health Practitioners Competence Assurance Amendment Act 2003 made in 2019.

This amendment requires us to provide the Director-General of Health with key workforce information on doctors<sup>12</sup>. Doctors now need to complete the questionnaire but will be able to decline to answer specific questions – for example, ethnicity.

### Active doctors

The results in this report reflect the responses from active doctors. Active doctors are those who reported working four or more hours per week. There were 15,552 active doctors in 2021.

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<sup>12</sup> Health Practitioners Competence Assurance Amendment Act 2019, s134A – <http://www.legislation.govt.nz/act/public/2003/0048/latest/LMS193179.html>

## Categories of data

We asked doctors completing the survey to report an employer type (e.g., public hospital), role type (e.g., registrar) and work type categories (e.g., cardiology) for up to three work sites.

## Use of registration data

We combined survey data with registration information to avoid asking doctors unnecessary questions and make it easier for them to respond to the survey. This information included the doctor's age, gender, registration date, and year and country of graduation.

We also used registration data in this report where it was more reliable than survey data.

## How we do geographical analysis

We assigned doctors' responses to a district health board (DHB) region, based on the address information we held for them at the time they responded to the survey.

We used Statistics New Zealand's Estimated Resident Population dataset as of 30 June 2021<sup>13</sup> for DHB and TLA populations.

## Ethnicity

Doctors can report up to three ethnicities. However, when we report data, we assign each doctor a single ethnicity using a simplified version of Statistics New Zealand's prioritisation standard. The priority order is:

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

The ethnicity we use in analysis is the one reported by the doctor with the highest priority.

## Calculating retention rates

### Retention of New Zealand graduates

We calculate the retention rates for New Zealand graduates by comparing the list of graduates provided by the universities with the lists of doctors who held practising certificates in subsequent years.

### Retention of international medical graduates

We calculate the retention rates for IMGs by grouping them into year cohorts and then checking whether doctors in the cohort held a practising certificate in subsequent years. We express the retention rate as a percentage. If 100 doctors are in the cohort and 90 doctors hold a practising certificate in the following year, the retention rate is 90 percent.

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<sup>13</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).

We include a doctor in the cohort for a year if they practised in New Zealand during 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.

Inclusion in a group does not relate 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)

We base proportional calculation of FTEs on a 40-hour week. For example, 60 hours = 1.5 FTE. On-call time is only included in FTE when the doctor works.

### General practitioner (GP)

A GP is any respondent who indicated working in the GP work role at one of their work sites. It does not specifically refer to a doctor holding the FRNZCGP qualification or a vocational scope of general practice. We sometimes need to use a different definition of GP. We will specify that we have done this in the text.

### House officer

House officers are doctors in their first 2-3 years out of medical school. Doctors in their first year out of medical school are sometimes known as interns or PGY1s.

### Hours on call

Hours on call are additional hours when doctors were on call but did not work.

### Hours worked

Hours worked at are those doctors report unless we specify otherwise.

We ask doctors to report the hours they work across all work sites during a typical working week. Alternatively, we ask doctors to report their most recent week if they cannot identify a typical week.

### International medical graduate (IMG)

A doctor who obtained their primary medical qualification in a country other than New Zealand. IMGs used to be called overseas-trained doctors.

Please take care when comparing the proportion of IMGs employed in New Zealand to the proportion in other countries – many countries define IMG differently from us.

### Main work site

The work site where the doctor spends most of their working hours.

### Medical officer

The Multi-Employer Collective Agreement (MECA) between the Association of Salaried Medical Specialists (ASMS) and DHBs<sup>14</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).

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<sup>14</sup> <https://www.asms.org.nz/wp-content/uploads/2017/10/2017-2020-DHB-MECA-Signed.pdf>

### **Registrar**

A doctor who has at least 2 years of experience since graduation from medical school. Registrars are generally undertaking vocational training in their chosen specialty.

### **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 (and registration within a vocational scope of practice). However, the data are self-reported and doctors who respond to the survey may apply the term more broadly.

General practice is a specialty, and GPs are specialists. However, we ask doctors working in general practice, urgent care, and other primary care disciplines to use separate work role categories to help us analyse the data.

### **Work role**

Work role category options for the survey are:

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

### **Work type**

Work type is the area of medicine or specialty that the doctor is working in. For example, internal medicine or general surgery.

## More information

### Requesting further information

Please contact Andrew Cullen, Council's Information Systems Analyst for further information about this report. You can send email requests to [workforce@mcnz.org.nz](mailto:workforce@mcnz.org.nz).

You can also get further information about the medical workforce from the Ministry of Health. Please see:

<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  
New Zealand

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

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

Phone: +64 4 816 2850

### Referencing this report

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- Year: 2022
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- Edition: n/a

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

Table 17 shows the changes in the distribution of the workforce by work role over time.

**Table 17: 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	2021
General practitioner	37	38	38	38	37	33	31	28	25
House officer	12	11	11	10	10	9	8	11	10
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	19
Specialist	34	32	31	30	31	34	35	36	38
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 18: Number of doctors by vocational scope for selected years (2005–2021)**

Vocational scope	Year <sup>1</sup>				
	2005	2010	2015	2020	2021
Anaesthesia	488	577	737	879	913
Breast medicine	4	-	-	-	
Cardiothoracic surgery	19	23	28	31	31
Clinical genetics	6	7	12	16	15
Dermatology	50	56	63	77	73
Diagnostic and interventional radiology	266	303	448	570	536
Emergency medicine	88	135	224	350	392
Family planning and reproductive health	24	26	24	30	30
General practice	2,446	2,701	3,303	3,748	3787
General surgery	227	235	262	298	307
Intensive care medicine	44	58	81	111	111
Internal medicine	656	761	958	1,222	1275
Medical administration	12	15	25	30	29
Musculoskeletal medicine	20	22	20	24	23
Neurosurgery	18	20	23	24	24
Obstetrics and gynaecology	223	234	280	337	339
Occupational medicine	40	49	53	64	62
Ophthalmology	107	124	134	166	161
Oral and maxillofacial surgery	17	17	20	30	28
Orthopaedic surgery	211	237	273	311	310
Otolaryngology head and neck surgery	85	97	108	119	123
Paediatric surgery	15	14	19	24	25
Paediatrics	219	289	353	422	423
Pain medicine	-	-	23	34	38
Palliative medicine	32	42	54	71	75
Pathology	225	238	278	324	322
Plastic and reconstructive surgery	43	55	64	75	75
Psychiatry	425	489	559	671	638
Public health medicine	130	157	177	180	180
Radiation oncology	34	49	60	68	68
Rehabilitation medicine	11	16	24	27	27
Rural hospital medicine	-	26	105	128	132
Sexual health medicine	18	20	18	19	19
Sport and exercise medicine	12	19	26	33	36
Urgent care	103	119	136	249	265
Urology	51	54	64	68	73
Vascular surgery	20	26	33	33	32
<b>Total</b>	<b>6,389</b>	<b>7,310</b>	<b>9,069</b>	<b>10,863</b>	<b>10,997</b>

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

## Appendix 3 – Age

Table 19 shows the changes in the average age of doctors holding a vocational scope between 2005 and 2021.

**Table 19: Average age of doctors on the register with a vocational scope (2005–2021)**

Vocational scope	2005	2010	2015	2020	2021
Anaesthesia	46	48	49	49	49
Cardiothoracic surgery	48	52	53	52	51
Clinical genetics	42	46	46	46	47
Dermatology	51	51	52	52	52
Diagnostic and interventional radiology	48	49	49	49	49
Emergency medicine	41	43	45	46	46
Family planning and reproductive health	53	53	53	51	52
General practice	49	51	53	53	53
General surgery	49	51	51	52	51
Intensive care medicine	46	48	49	49	49
Internal medicine	50	51	50	51	50
Medical administration	53	56	58	57	57
Musculoskeletal medicine	52	55	58	60	61
Neurosurgery	54	55	52	53	52
Obstetrics and gynaecology	49	51	52	52	52
Occupational medicine	50	53	55	58	58
Ophthalmology	49	50	51	51	52
Oral and maxillofacial surgery	45	48	52	49	51
Orthopaedic surgery	49	50	52	52	52
Otolaryngology head and neck surgery	49	51	53	54	54
Paediatric surgery	49	53	55	54	54
Paediatrics	47	48	49	50	50
Pain medicine	-	-	54	53	54
Palliative medicine	50	54	56	52	52
Pathology	49	50	51	51	51
Plastic and reconstructive surgery	49	48	50	52	53
Psychiatry	48	50	52	54	55
Public health medicine	47	49	51	52	53
Radiation oncology	46	47	49	51	51
Rehabilitation medicine	51	51	51	53	51
Rural hospital medicine	-	47	49	51	51
Sexual Health Medicine	50	52	55	55	56
Sport and exercise medicine	46	46	48	48	49
Urgent care	45	48	51	52	52
Urology	50	52	51	51	51
Vascular surgery	48	50	50	54	55
<b>All doctors with vocational scope</b>	<b>48</b>	<b>50</b>	<b>51</b>	<b>52</b>	<b>52</b>

## Appendix 4 – Ethnicity by work type

Table 20 shows the distribution of ethnicity for each work type at doctors' main work site.

**Table 20: Distribution of ethnicity by work type at main work site (%)**

Work type	Māori	Pacific Island (Pasifika)	Chinese	Indian	Other Non-European	Other European	NZ European/Pākehā	Refused	Total
Urgent care	3.9	4.3	7.7	6.4	16.3	25.3	33.5	2.6	100.0
Anesthesia	2.7	1.2	7.2	4.2	7.0	22.3	51.3	4.0	100.0
Basic medical science	0.0	1.8	1.8	10.5	8.8	24.6	47.4	5.3	100.0
Clinical forensic medicine	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
Clinical genetics	0.0	0.0	9.1	0.0	9.1	9.1	72.7	0.0	100.0
Dermatology	0.0	0.0	10.3	5.7	3.4	20.7	54.0	5.7	100.0
Diagnostic radiology	1.7	1.0	7.3	5.9	11.8	18.9	48.4	5.0	100.0
Emergency medicine	4.3	1.1	4.4	4.0	9.0	34.3	39.9	2.9	100.0
Family planning	0.0	0.0	10.0	0.0	10.0	25.0	55.0	0.0	100.0
General practice	4.1	2.2	6.6	6.4	11.9	17.3	48.6	2.8	100.0
House office rotations	10.0	4.5	9.1	5.1	16.5	8.8	41.3	4.7	100.0
Intensive care medicine	1.9	1.0	4.3	3.8	7.1	31.9	43.8	6.2	100.0
Internal medicine	3.7	1.8	9.1	7.7	14.0	18.6	40.7	4.3	100.0
Medical administration	9.9	1.4	1.4	4.2	7.0	15.5	59.2	1.4	100.0
Musculoskeletal medicine	5.7	0.0	2.9	5.7	8.6	14.3	62.9	0.0	100.0
Obstetrics and gynaecology	6.6	1.6	7.3	6.8	12.6	20.8	41.6	2.7	100.0
Occupational medicine	0.0	1.4	1.4	7.1	5.7	17.1	65.7	1.4	100.0
Ophthalmology	3.1	0.9	11.2	6.3	17.4	13.8	44.2	3.1	100.0
Other	7.0	1.6	5.1	4.3	5.9	18.0	54.7	3.5	100.0
Palliative medicine	1.9	0.0	3.8	3.8	5.8	25.0	57.7	1.9	100.0
Pathology	0.4	2.0	8.5	4.9	14.2	18.3	48.8	2.8	100.0
Primary care other than GP	5.6	1.9	0.9	3.7	3.7	14.0	67.3	2.8	100.0
Psychiatry	3.5	1.5	2.6	9.9	13.4	26.6	39.2	3.3	100.0
Public health medicine	12.1	3.0	0.5	4.5	5.5	9.0	63.8	1.5	100.0
Radiation oncology	1.3	1.3	9.3	16.0	17.3	13.3	38.7	2.7	100.0
Rehabilitation medicine	6.7	0.0	10.0	6.7	33.3	20.0	23.3	0.0	100.0
Rural hospital medicine	2.9	1.0	1.0	7.8	5.8	22.3	54.4	4.9	100.0
Sexual health medicine	0.0	0.0	3.6	7.1	10.7	28.6	46.4	3.6	100.0
Sports medicine	8.2	2.0	4.1	0.0	10.2	8.2	63.3	4.1	100.0
Surgery: Cardiothoracic	1.8	3.6	5.5	16.4	10.9	27.3	32.7	1.8	100.0
Surgery: General	6.9	4.2	6.7	6.9	15.0	10.2	45.8	4.4	100.0
Surgery: Neurosurgery	3.5	1.8	7.0	12.3	14.0	17.5	35.1	8.8	100.0

Work type	Māori	Pacific Island (Pasifika)	Chinese	Indian	Other Non-European	Other European	NZ European/Pākehā	Refused	Total
Surgery: Oral & maxillofacial	0.0	2.4	14.6	4.9	4.9	22.0	46.3	4.9	100.0
Surgery: Orthopaedic	6.9	3.7	6.5	4.1	8.5	15.0	49.6	5.7	100.0
Surgery: Other subspecialties	3.3	3.3	6.5	4.3	16.3	14.1	48.9	3.3	100.0
Surgery: Otolaryngology head & neck	4.2	1.2	7.2	9.6	10.8	12.0	49.1	6.0	100.0
Surgery: Paediatric	4.0	2.8	5.0	6.7	7.6	20.2	50.2	3.5	100.0
Surgery: Plastic and reconstructive	3.2	4.0	12.1	3.2	9.7	20.2	42.7	4.8	100.0
Surgery: Urology	3.8	2.9	5.7	5.7	5.7	15.2	55.2	5.7	100.0
Surgery: Vascular	0.0	4.7	14.1	6.3	18.8	15.6	34.4	6.3	100.0
<b>Total</b>	<b>4.3</b>	<b>2.1</b>	<b>6.6</b>	<b>6.3</b>	<b>11.5</b>	<b>19.1</b>	<b>46.4</b>	<b>3.6</b>	<b>100.0</b>

## Appendix 5 – Retention of New Zealand graduates

Table 21: 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
2000	100	100	99	87	81	83	83	82	79	76	72	64	64	62	63	64	64	64	65	64	63	64
2001	100	100	98	87	84	82	81	79	76	73	68	68	64	61	59	59	60	59	60	60	60	
2002	100	100	99	88	83	84	83	81	78	76	74	70	68	66	65	68	67	68	68	69		
2003	100	100	96	86	83	82	80	77	77	76	72	69	66	68	68	67	65	64	64			
2004	100	100	99	90	84	83	82	78	76	75	71	66	68	68	68	67	68	68				
2005	100	100	99	87	84	79	77	76	74	71	71	68	66	68	68	69	70					
2006	100	100	99	90	86	82	81	80	77	73	72	72	69	70	72	74						
2007	100	100	97	85	80	80	76	77	74	74	71	71	69	71	71							
2008	100	100	99	92	88	86	83	82	81	80	76	74	72	73								
2009	100	100	98	93	88	86	86	83	83	81	82	79	78									
2010	100	100	99	95	91	90	89	88	87	84	83	84										
2011	100	100	99	92	91	90	90	88	87	87	85											
2012	100	100	98	95	92	92	91	89	89	88												
2013	100	100	99	95	94	94	93	93	93													
2014	100	100	100	97	95	93	92	91														
2015	100	100	98	98	96	93	93															
2016	100	100	100	99	95	93																
2017	100	100	100	98	96																	
2018	100	100	99	98																		
2019	100	100	100																			
2020	100	100																				
2021	100																					
Average	-	-	99	92	88	87	85	83	81	78	75	71	68	68	67	67	66	65	64	64	62	64
Standard deviation	-	0.1	0.9	4.6	5.4	5.2	5.7	5.6	5.9	5.5	5.5	6.0	4.1	4.0	4.3	4.6	3.3	3.6	3.4	4.5	2.4	0.9

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