MEDICAL COUNCIL of NEW ZEALAND

The New Zealand Medical Workforce in 2000

Summary

This year's report marks the beginning of a new decade by providing more extensive information on changes in the medical workforce. The most pressing issue identified in the 2000 workforce survey was the sudden rise in numbers of New Zealand graduates leaving to work overseas:

- decreasing retention of New Zealand graduates up to 15 years post- graduation compared with 1995;
- in the past year, an increasing loss of New Zealand post-graduate year two and three doctors overseas;
- the number of new overseas-trained doctors registering permanently in New Zealand during the last three years decreased by 50 percent compared with the three-year period prior to 1995. But, the proportion of overseas-trained doctors working in New Zealand has increased in 2000 compared with 1995 as practising doctors stay longer;
- increase in the proportion of short-stay overseas-trained doctors with temporary registration;
- retention of women is higher than men between eight to 14 years post-graduation.

As well as discussion of significant changes in workforce composition, this year's report also includes new analysis of comparative retention across vocational branches which will be a useful input into future workforce planning:

- limited growth in the number of general practitioners over the last three years, decline in the number of house officers and medical officers of special scale in the last year, rapid growth in the number and proportion of registrars 1995-2000;
- growing proportions of women in general practice, and in the specialist branches of radiation oncology, paediatrics, psychiatry, pathology and several areas of surgery;
- relatively low retention rates for new vocational registrants in some branches, including psychological medicine and psychiatry, emergency medicine and pathology;
- increasing divergence in general practice service levels across rural/urban divisions and between Health Funding Authority localities.

The proportion of women in the workforce continues to increase rapidly, and some exploratory analysis is provided on participation differences by gender. Projections are included for future participation by women, Māori and Pacific peoples in the medical workforce. The main conclusions are:

- women in general practice work on average 33 hours per week compared with 48 hours per week on average for men;
- the participation of women in terms of hours worked, or FTE, may increase as more women move into specialties other than general practice;
- an increasing number of recent women graduates are training in vocational specialties other than general practice;
- in the early post-graduate years a higher proportion of women hold more than one job, compared with men;
- women move out of hospital employment into the private sector or non-medical employment earlier than men;
- under current conditions it is projected that the number of women doctors will increase from 2811 to 4232 or 51 percent in the next ten years and they will comprise approximately 40 percent of the total medical workforce;

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- it is estimated that the Māori workforce may increase by 18 percent over the next five years from 198 to 234 practitioners and comprise approximately 2.9 percent of the workforce in 2005;
- it is estimated that the Pacific peoples workforce may increase by 35 percent over the next five years from 95 to 128 practitioners and comprise approximately 1.3 percent of the workforce in 2005 (under-estimate at this point in time);

While this year's summary has focused on information with relevance to workforce planning, we are aware that many areas need more in-depth consideration. The commitment made this year to a Health Workforce Advisory Committee provides an opportunity for more integrated analysis and planning in the future.

Introduction

For three decades the Medical Council of New Zealand has collected medical workforce data annually. Summaries have been published by the Council[i] and also by the Ministry of Health[ii] (2000, including time series data) and the Clinical Training Agency (1995)[iii]. Additional detailed analysis of this survey is provided by the Medical Council to the Ministry of Health and individual information requirements can be discussed with the Analytical Unit of the New Zealand Health Information Service.

Based on survey results the active workforce is 8,615 doctors at March 2000, or 10,136 full time equivalents. "Active" is defined as doctors working more than four hours per week and full time equivalent as 40 hours per week. This provides one doctor per 445 people in March 2000, up by 20 percent from one doctor per 533 people in 1990, and by 44 percent from one doctor per 642 people in 1980.

These estimates are limited by the lower response rate this year (92.6%, down from 95% in 1999) due to an emphasis on speedy return of annual practising certificate applications. No allowance has traditionally been made in figures for response rate, which peaked at 97 percent in 1998. This approach will need to be reviewed given the recent decline.

Registration data is used to estimate the annual growth in the number of active doctors at 2.6 percent for 2000 (Table 1.1). This growth rate will be more reliable than comparisons of survey responses for 1999 and 2000, due to the falling response rate. Allowing for non-response and frame bias, point in time estimates from the survey (eg, total full-time equivalents) are estimated to be approximately six percent less than the actual total.

The average annual growth throughout the 1980s was a 2.6 percent increase, measured by survey responses. In more recent years registration information has become more reliable, so both registration and survey results are shown in Table 1.1. Despite peaks and troughs caused by changes in both data sets, it is clear that growth per annum peaked around five percent in the mid-1990s before declining again to around a two percent annual increase.

1. Short-term changes

The proportion of doctors who received their primary medical training overseas is a simple but useful indicator of changes in the workforce (Table 1.1). Because the overseas supply is larger and more flexible, significant shifts in supply or demand will normally be reflected in changes to this ratio.

The proportion of overseas-trained doctors grew significantly in 2000. Hospitals had identified an increased move overseas by recent New Zealand graduates from late 1999, and the Medical Council provided some analysis to quantify the level of loss.

This has been updated in Table 1.2, which compares the retention rates at each year after graduation for successive classes of graduates. The retention rate at post-graduate year two and year three level has fallen significantly, with for example 58 percent of doctors who completed studies in 1997 still working in New Zealand three years later, much less than the 78 percent still working three years after the class of 1996. All full-fee students are excluded from this analysis as they typically return to work overseas.

Table 1.1. Estimates of annual workforce growth and changes in composition

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Growth per year:													
1) measured by survey responses	(a)-	-	-	3.6	2.3	2.2	4.5	4.9	1.4	7.7	3.2	1.5	0.0
2) measured by registration data	-	-	-	-	2.5	2.7	2.0	6.3	5.5	4.1	1.3	2.4	2.6
Graduated from:													
New Zealand	3266	4095	4480	4621	4733	4790	4886	5024	5004	5449	5628	5693	5645
Overseas	1615	1461	1859	1949	1989	2082	2294	2506	2630	2775	2863	2923	2970
Total workforce	**4881**	**5556**	**6339**	**6570**	**6722**	**6872**	**7180**	**7530**	**7634**	**8224**	**8491**	**8616**	**8615**
% overseas-trained	33.1	26.3	29.3	29.7	29.6	30.3	31.9	33.3	34.5	33.7	33.7	33.9	34.5
Temporary registrants	-	-	165	-	-	-	-	129	-	328	351	370	421
Percent of workforce	-	-	2.5	-	-	-	-	1.7	-	3.8	4.0	4.1	4.7

(a) Some earlier data is not available.
Data is five-yearly up to 1990 then annually until 2000

This fall in retention of year two and three doctors over the last year amounts to over 80 lost doctors. Figure 2.1 in section two shows the long-term trend, where ten percent of recent graduates typically seek experience overseas at about post-graduate year three then return to New Zealand. Hospital staff are now concerned that they may face increased long-term as well as short-term loss of doctors.

This trend is confirmed by the recent surge in the certificates of good standing which are issued to departing doctors (Table 1.4). As an indicator, certificates have the advantage of providing early warning of changes.

Several papers have explored the impact of debt on students[iv], and these trends will increase as each year's graduates face a higher cumulative debt caused by substantial increases in fees from 1999. Graduate surveys have also identified increasing debt and lower salaries in public hospitals as factors pushing more graduates into secondary employment in the private sector (see Table 4.3).

Looking back at Table 1.1 again, a similar loss of New Zealand graduates occurred in the mid-nineties with some returning during the following years. While it is obviously not desirable to suggest any particular target level, the proportion of overseas-trained doctors is high by comparison with both Australia (20.4% in 1997[v]) and our own historical levels.

Local graduates are widely viewed in New Zealand as the most consistent performers as resident medical officers, as well as having cultural sensitivity to meet the needs of health priority groups. Identification of ways to retain New Zealand graduates in the future is therefore an important priority.

Table 1.2. Percent of recent New Zealand graduates retained in local workforce

Final class year	By post-graduate year 1	By post-graduate year 2	By post-graduate year 3	By post-graduate year 4
1996	96	87	78	68
1997	95	83	58	
1998	91	72		
1999	95			

Source: Medical Council registration data. Retention measured by APC in 2000/01.
Final class year is used as Auckland and Otago identify graduate year differently.

Table 1.3. Entry and exit of recent NZ graduates

Final class year	Number leaving 1999/00	Number re-entering 1999/00
1985	3	5
1986	6	6
1987	12	10
1988	9	10
1989	21	4
1990	28	9
1991	28	4
1992	15	8
1993	15	7
1994	19	13
1995	14	23
1996	31	13
1997	71	5
1998	52	10
Total	**324**	**127**

Source: registration database. Returning doctors purchased APCs during 99/00 (no APC 98/99); departing doctors had an APC when the 99/00 year commenced but stopped New Zealand practice during that year and did not renew for 00/01.

Table 1.4. Certificates of good standing issued per year

Financial year	Certificates issued
1995/96	479
1996/97	383
1997/98	378
1998/99	379
1999/00	450

Source: Medical Council registration data. Certificates of good standing are issued on payment of a fee, for doctors planning to work overseas.

Table 1.3 shows the number of working New Zealand graduates who left the local workforce in 2000/01, by final class year. This distribution provides an indication of the critical years for retention. Numbers leaving are highest for graduates who had worked for two to four years, and nine to 11 years. Table 1.4 provides further confirmation of the recent surge in departures. Retention of overseas-trained doctors has seen even more significant change, and is covered in section two.

Though the workforce survey has traditionally focused on the permanent workforce, temporary registrants are another important indicator of change. Again there is a relatively flexible supply of applicants and numbers have increased by 51 over 1999 (Table 1.1). There were 446 temporary registrants at 31 March with 17 percent as trainees and 83 percent in service positions. This comprises 4.7 percent of the total workforce, up from four percent in 1998 and 1999[1]. Levels are similar in Australia with 4.5 percent temporary resident doctors in 1998, although this figure uses immigration declarations rather than registration data[vi].

[1] The number of active temporary doctors may be over-estimated as this information is from the Medical Council registration database, where some record maintenance was deferred while a new information system was introduced.

2. Long term retention and participation patterns

The following comparison of cohort remainder rates calculated in 1990 and 1995 with today gives a longer-term perspective on the retention issues. Separate analysis is provided for New Zealand graduates by gender, and for overseas graduates.

New Zealand graduate doctors

Overall there is a slight decrease in the retention of New Zealand doctors who graduated within the last 15 years since 1995 (Figure 2.1 and Table 2.1).

The cohort remainder rate (CRR)[2] or retention of New Zealand doctors who graduated during the last three years and are active in the workforce in 2000 is 71 percent, a decrease of two percent since 1995 (Fig. 2.1). See Appendix 1 for method.

The number of active doctors in the one to three years post-graduation cohort decreased by five percent compared with 1995. This is partially due to the number of students graduating during the previous three years, decreasing by two percent from 849 in 1995 to 830 in 2000 (Table 2.1).

New Zealand graduate doctors by gender

Women started entering the medical profession in increasing numbers in the 1970s and were being trained in similar proportions to men by 1991.

In the first two years beyond graduation retention in the workforce is similar for men and women. There is a sharp drop in retention for both men and women during the third post-graduate year. Forty percent of the graduates cease to practise in New Zealand by this time but many gradually return.

Retention of women is higher than men over the eight to 14 years post-graduate period (Fig. 2.2, Table 2.2). This retention pattern may reflect the high number of women entering general practice compared with other specialist training programmes. Many doctors in specialist vocational programmes other than general practice travel overseas to gain, or consolidate, experience.

Fig. 2.1. Percentage of New Zealand graduate doctors retained in the New Zealand workforce 1990, 1995 and 2000.

Fig. 2.2. Cohort remainder rate for New Zealand trained doctors 1975 -1999.

The retention during the seven to nine years post-graduate period has also decreased from a high of 71 percent in 1995 to 64 percent in 2000. Doctors in this cohort are likely to be in vocational training. The reason more doctors in this cohort are working overseas may be related to the limited number of vocational training positions funded in New Zealand. Changes to the Medical Practitioners Act which encourage all doctors to undertake vocational training may lead to doctors seeking training opportunities overseas (Table 1.3).

[2] The cohort remainder rate is expressed as a percentage and equals the number of doctors who remain in the New Zealand workforce in the year 2000 from a specific period, eg, the last three years since graduation, compared with the number of doctors who graduated during the stated period.

Overseas-trained doctors

There is a trend over the 45 year period analysed for an increasing number and percentage of overseas-trained doctors to stay in New Zealand (Table 2.3).

The retention of overseas-trained doctors who registered in New Zealand during the previous three years increased from 41 percent in 1995 to 81 percent in 2000 (Fig. 2.3). But, over the same period the number of new overseas-trained doctors registering in New Zealand decreased by 50 percent from 1406 in 1995, to 708 in 2000 (Table 2.3). This decrease may be related to the changes in registration policy, with more doctors who plan shorter stays in New Zealand seeking temporary rather than full registration (see Section 1). Temporary registrants[3] are excluded from this analysis of overseas graduates.

Retention of those who registered in the previous four to six years has also increased from 28 percent in 1995 to 36 percent in 2000. This may reflect the number of overseas-trained doctors in vocational training. Beyond the first six years the retention pattern of overseas doctors is similar to 1995.

[3] Since 1996 some doctors may come into New Zealand for a period of up to two years on temporary registration with the possibility of extension for a third year. Thus some overseas-trained doctors may still be working in New Zealand as junior doctors but are no longer captured in the retention analysis.

Fig. 2.3. Percentage of overseas-trained doctors retained in the New Zealand workforce 1990, 1995 and 2000.

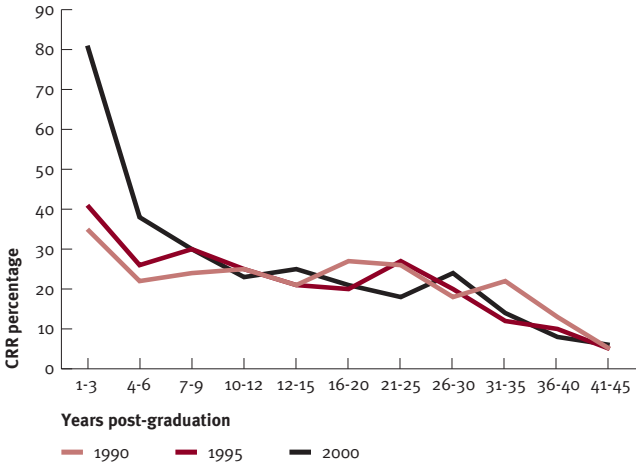


Table 2.1. Cohort remainder rate for New Zealand graduates 1990, 1995 and 2000

Years Post-grad	1990			1995			2000		
	Grads	Active	%	Grads	Active	%	Grads	Active	%
1-3	706	523	74.1	849	619	72.9	830	587	70.7
4-6	768	590	76.8	785	511	65.1	815	543	66.6
7-9	867	563	64.9	693	489	70.6	821	529	64.4
10-12	656	417	63.6	838	550	65.6	749	478	63.8
12-15	558	387	69.4	820	589	71.8	709	485	68.4
16-20	680	474	69.7	981	692	70.5	1407	1011	71.9
21-25	542	370	68.3	680	474	69.7	981	681	69.4
26-30	510	296	58.0	542	355	65.5	680	442	65.0
31-35	438	267	61.0	510	282	55.3	542	320	59.0
36-40	504	249	49.4	438	207	47.3	510	246	48.2
41-45	451	197	43.7	504	145	28.8	438	162	37.0
Total	**6680**	**4333**	**64.9**	**7640**	**4913**	**64.3**	**8482**	**5484**	**64.7**

Notes: Year of graduation is based on final class year, with full fee paying students removed as in most cases they work overseas.
The 1995 data has been recalculated for consistency with 1990 and 2000 data, calculating years post-graduation from final class year rather than graduation year due to inconsistency between Auckland and Otago usage.
A small number of active doctors who graduated over 45 years ago is excluded from this table.

Table 2.2. Cohort remainder rates for New Zealand graduates by gender for the last 25 years

Class Year	Female Grads	Active 2000	Females % active	Male Grads	Active 2000	Males % active	Total Grads	Active 2000	Total % active
1999	130	109	83.8	147	124	84.4	277	233	84.1
1998	123	89	72.4	149	104	69.8	272	193	71.0
1997	136	82	60.3	145	79	54.5	281	161	57.3
1996	136	92	67.6	124	92	74.2	260	184	70.8
1995	119	70	58.8	158	102	64.6	277	172	62.1
1994	125	88	70.4	153	99	64.7	278	187	67.3
1993	150	104	69.3	133	87	65.4	283	191	67.5
1992	123	78	63.4	150	102	68.0	273	180	65.9
1991	136	87	64.0	129	71	55.0	265	158	59.6
1990	124	79	63.7	159	90	56.6	283	169	59.7
1989	103	74	71.8	128	82	64.1	231	156	67.5
1988	107	73	68.2	128	80	62.5	235	153	65.1
1987	91	68	74.7	139	79	56.8	230	147	63.9
1986	80	57	71.3	148	103	69.6	228	160	70.2
1985	92	63	68.5	159	115	72.3	251	178	70.9
1984	83	68	81.9	219	144	65.8	302	212	70.2
1983	106	71	67.0	180	134	74.4	286	205	71.7
1982	114	79	69.3	181	140	77.3	295	219	74.2
1981	105	67	63.8	189	137	72.5	294	204	69.4
1980	78	57	73.1	156	114	73.1	234	171	73.1
1979	85	59	69.4	147	101	68.7	232	160	69.0
1978	61	41	67.2	130	94	72.3	191	135	70.7
1977	50	37	74.0	145	100	69.0	195	137	70.3
1976	43	31	72.1	146	97	66.4	189	128	67.7
1975	35	24	68.6	135	97	71.9	170	121	71.2
Total	**2535**	**1747**	**68.9**	**3777**	**2567**	**68.0**	**6312**	**4314**	**68.3**

Table 2.3. Cohort remainder rate for overseas-trained doctors with New Zealand registration 1990, 1995 and 2000

Years Post-registration	Registered	1990 Active	%	Registered	1995 Active	%	Registered	2000 Active	%
1-3	1239	438	35.4	1406	575	40.9	708	575	81.2
4-6	734	165	22.5	1218	321	26.4	1578	602	38.2
7-9	507	123	24.3	1268	385	30.4	1295	387	29.9
10-12	822	206	25.1	471	119	25.3	1217	279	22.9
12-15	1212	256	21.1	596	124	20.8	1041	259	24.9
16-20	1056	283	26.8	1785	355	19.9	889	186	20.9
21-25	383	100	26.1	1056	290	27.5	1785	314	17.6
26-30	254	46	18.1	383	77	20.1	1056	252	23.9
31-35	215	48	22.3	254	31	12.2	383	54	14.1
36-40	274	35	12.8	215	21	9.8	254	21	8.3
41-45	181	9	5.0	274	13	4.7	215	13	6.0
Total	**6877**	**1709**	**24.9**	**8926**	**2311**	**25.9**	**10421**	**2942**	**28.2**

Notes: Year of registration is based on calendar year. The 1995 data has been recalculated for consistency with 1990 and 2000 data.
A small number of active doctors who registered over 45 years ago is excluded from this table.

3. Post-graduate training and the vocational workforce

Looking at changes in the overall workforce shown in Table 3.1, house officers and medical officers of special scale (MOSS) showed a significant drop over the last year, but strong growth over the combined five years. General practitioners have gradually declined as a proportion of the workforce over the last three years with lower growth relative to the total workforce. Registrars have increased consistently, growing at a much faster rate than the specialist workforce.

Note that allowance must be made when considering this table for the fall of around 2.6 percent in this year's response rate. Temporary registrants are also not included in the survey, and this year's increase in short term registrants may be compensating for the declines in some capacities.

Trends in primary care are not adequately picked up when measured by capacity, as many doctors working in primary care give their capacity as general practitioner. To show these changes, numbers by type of work at main site are also included in Table 3.1 for these two groups.

Table 3.1. Changes in the medical workforce 1995 to 2000

Capacity	Active doctors 1995	Active doctors 2000	% change 1995-96	% change 1996-97	% change 1997-98	% change 1998-99	% change 1999-00	Cum % change 1995-00
No answer	0	2						
Other	171	206	-13	58	22	-24	-5	20
General practice	2850	3166	3	6	1	1	-1	11
House officer	631	894	19	11	9	3	-4	42
M.O.S.S.	225	277	29	-5	-5	11	-4	23
Primary care not GP	275	190	(a)*	*	-2	-5	14	-31
Registrar	955	1227	4	13	3	2	5	28
Specialist	2274	2653	2	6	3	4	0	17
Total	**7381**	**8615**	**3**	**8**	**3**	**1**	**0**	**17**
Work at main site	**Active doctors 1995**	**Active doctors 1996**	**Active doctors 1997**	**Active doctors 1998**	**Active doctors 1999**	**Active doctors 2000**	**Cum % increase 1995-00**	
General practice	2850	2899	2966	3007	2590	2701	-5%	
Primary care not GP	275	275	417	419	(b) 837	695	153%	
Total	**3125**	**3174**	**3383**	**3426**	**3427**	**3396**	**9%**	

(a) Primary Care not included in 1996 survey, affecting percentage change in all categories.
(b) Fluctuations between GP and Primary Care may be attributed to form changes making options more visible.

As well as raising some policy issues, these trends lead into the key issue of estimating the future workforce and required training levels. Forecasting in recent years has been based on a consultation process coordinated by the Clinical Training Agency. We have attempted this year to compile a wider range of relevant information from the workforce survey to support the planning process.

This year also sees the introduction of a Health Workforce Advisory Committee which can provide a focus for building links between national analysis and branch-specific training.

The main quantitative inputs for workforce planning included in this summary are:

- retention of recent graduates (Table 1.1) and the overall workforce (Section 2)
- vocational training and funded trainee numbers (Table 3.2)
- age structure of the existing workforce (Table 3.2)
- changes in workforce composition over time and by gender (Table 3.2, Sections 2 and 4)
- retention of the vocationally registered workforce (Table 3.3).
- geographical distribution of general practitioners (Table 5.1, 5.2, 5.4)

Other important considerations beyond the scope of this summary include:

- health funding levels and policies
- changes in medical practice, service delivery and training requirements
- changes in demand due to social change, consumer preference and demographics
- interventions to address uneven distribution of services across geographic or social boundaries
- consumer feedback and other indicators of supply and demand
- international population-based benchmarks for service levels.

Overall, vocational training numbers appear to be high, with respondents using a broad self-definition of training towards vocational registration. The number in vocational training has started to drop from its peak in 1998, when a large group of established general practitioners moved through the system and achieved vocational registration.

When analysing workforce and training requirements for particular branches, it is important to include all relevant information. Taking one example, radiation oncology has a high proportion of funded trainees given its average growth rate over the last ten years. Turning to Table 3.3 shows the low retention rate for this group of vocationally registered specialists, and the resulting high proportion of overseas-trained doctors in the workforce.

Table 3.2. Vocational groups at main work site (house officers excluded)[a]

Vocational group[b]	No. of doctors in main work site	% change 1990 to 2000	Average median age 2000	No. of hours worked (all sites)	Funded vocational training (survey)[c]	Funded trainees July 2000 (CTA)	Vocational trainees as percent of workforce	Registration current APC NZ address
Anaesthetics	512	117	42	51	142	106	23	363
Basic medical science	38	100	44	50	-	-	-	-
Breast medicine	4	-	39	35	3	-	-	-
Dermatology	47	34	45	45	2	-	-	42
Diagnostic radiology	261	88	42	47	56	54	20	203
Emergency medicine	169	-	34	43	106	50	40	23
General practice	2,701	11	42	42	933	50	2	1,751
Intensive care medicine	18	-	40	53	7	-	-	1
Internal medicine	870	146	41	50	154	157	23	501
Musculo-skeletal medicine	13	-	52	38	15	-	-	-
Obstetrics & gynaecology	233	75	43	54	49	36	20	188
Occupational medicine	56	155	47	43	26	-	-	24
Ophthalmology	103	41	45	46	16	13	14	91
Paediatrics	239	137	40	50	47	54	21	164
Pathology	173	17	44	46	56	36	18	162
Primary care	695	-	44	40	-	-	-	-
Psychol med & psychiatry	499	171	44	45	137	130	29	291
Public health med & mgmt	197	166	43	44	34	32	16	89
Radiation oncology	35	75	42	51	13	11	31	26
Rehabilitation medicine	17	-	40	44	3	-	-	6
Sexual health medicine	20	400	43	35	6	2	10	7
Sports medicine	13	-	39	44	6	-	-	-
Surgery: cardiothoracic	27	-	43	62	6	-	-	19
Surgery: general(d)	244	75	41	56	67	160	24	192
Surgery: neurosurgery	21	-	39	57	1	-	-	15
Surgery: orthopaedic	221	-	41	57	28	-	-	166
Surgery: other subspecialties	43	-	43	53	2	-	-	-
Surgery: otolaryngology	79	-	43	49	6	-	-	71
Surgery: paediatric	15	-	45	57	1	-	-	13
Surgery: plastic & recon	46	-	40	53	10	-	-	33
Surgery: urology	40	-	45	55	8	-	-	39
Surgery: vascular	14	-	43	61	2	-	-	-
Invalid response / other	54	-	-	-	70	-	-	-
Not recorded	4	-	-	-	202	-	-	-
Total	**7,721**	**76**	**42**	**46**	**2,214**	**891**	**13**	**4,480**

(a) Includes registrars, MOSSs and others not on the vocational register
(b) Based on vocational groups, except for categories "basic medical science", "primary care other than GP" and "other surgical sub-specialties"
(c) Self-reported participation in training towards vocational registration
(d) Data in some categories is not available for earlier years. For comparison of the ratio of trainee positions to 1990, all surgical branches are combined

Table 3.3. Retention of new vocational registrations 1991-95 and 1995-99

Vocational branch	New voc'l registrations in 1991-95	% female	% overseas trained	% retained in NZ 2000	New voc'l registrations in 1995-99	% female	% overseas trained	% change 1991-95 to 1995-99
Anaesthetics	104	19	52	83	134	23	49	29
Dermatology	9	22	33	89	7	14	14	-22
Diagnostic radiology	62	26	45	89	79	35	34	27
Emergency medicine	4	25	50	75	20	15	75	400
General practice	212	29	43	92	558	39	37	163
Internal medicine	160	16	43	90	185	18	31	16
Obstetrics & gynaecology	50	36	66	82	56	41	64	12
Occupational medicine	4	50	0	100	13	23	23	225
Ophthalmology	21	10	14	90	21	10	14	0
Paediatrics	53	23	34	81	59	49	34	11
Pathology	50	26	38	76	49	37	59	-2
Psychol med & psychiatry	107	22	64	68	130	32	70	21
Public health med & mgmt	32	41	19	84	27	19	33	-16
Radiation oncology	11	9	73	64	12	50	83	9
Rehabilitation medicine	1	0	100	100	1	0	100	0
Surgery: cardiothoracic	8	0	63	63	8	13	50	0
Surgery: general	48	6	29	92	46	4	35	-4
Surgery: neurosurgery	2	0	50	100	4	25	0	100
Surgery: orthopaedic	50	10	6	88	43	7	9	-14
Surgery: otolaryngology	17	12	29	94	17	6	35	0
Surgery: paediatric	1	0	0	100	7	29	43	600
Surgery: plastic & recon	5	0	20	100	7	0	43	40
Surgery: urology	10	0	40	90	7	14	14	-30
TOTAL	**1021**	**22**	**43**	**85**	**1490**	**30**	**41**	**46**

Source: Medical Council registration data. Retention measured by 99/00 APC; reliable data not available before 1991 so there is one year's overlap between cohorts.

Table 3.3 compares two five year groups of recent vocational registrations. Registrations by both overseas and New Zealand-trained graduates are included. Reliable data on vocational registrations prior to 1991 is not readily available, so it is not possible to provide full comparisons over five and ten year periods, but Table 3.3 provides a benchmark for the future as well as valuable branch comparisons.

Considering only larger branches, those which have below average retention rates are, in ascending order, psychological medicine and psychiatry, emergency medicine, pathology, paediatrics, obstetrics and gynaecology, and anaesthetics. Among the larger branches those with the greatest growth in vocational registrations are general practice, anaesthetics, diagnostic radiology, psychological medicine and psychiatry, and internal medicine.

This table also shows emerging trends in career choice by gender, including the well documented shift of women into general practice, paediatrics and obstetrics and gynaecology. Others showing significant increases in the proportion of women are radiation oncology, several branches of surgery, pathology, psychological medicine and psychiatry, and diagnostic radiology.

4. Characteristics of the workforce

The growing proportion of women in the medical workforce is the single biggest change in recent years, rising from 24 percent in 1990 to 32.6 percent in 2000. Table 4.1 shows the pattern of change by age group. If current trends continue the workforce will be close to overall gender equality in thirty years. Among the many issues which will unfold over that time are differing career paths of the sexes, differing participation rates, and the extent to which training and work practices change for both women and men.

Table 4.1. Proportion of female doctors by age group (2000)

Age group	<30	30-34	35-39	40-44	45-49	50-54	55+	Total
Number female	473	564	593	557	289	165	170	2811
Number male	556	637	906	1037	847	637	1184	5804
% female	46.0	47.0	39.6	34.9	25.4	20.6	12.6	32.6

Table 4.2. Employment capacity by hours

Site1 Employment Capacity	Total hours per week all sites (average)	% of doctors on-call (1999)	% of doctors on-call over 20 hrs/wk	Average hours per week		% <40 hours per week	
				Male	Female	Male	Female
General practice	42	62	31	48	33	15	60
Primary care not GP	34	31	17	39	26	38	80
House officer	56	51	26	56	56	1	2
Registrar	55	59	32	56	53	1	8
Medical officer special scale	40	46	30	44	34	20	56
Specialist	48	73	46	50	42	12	35
Other	45	32	18	46	42	17	36

Hours at work and on-call continue to make medicine a demanding profession. Total average hours across all capacities are equal or increased since 1996, the first year that hours replaced tenths as a measure in the workforce survey. Table 4.2 shows the significant gender differences in hours worked across most work capacities. Despite this, the increased proportion of women has not lowered average hours worked to date. Hours replaced tenths from the 1996 survey and rose from an average of 46 for all practitioners in 1996, to 47 hours per week in 2000. The average for general practitioners rose from 41 in 1996 to 42 in 2000.

The flexibility which has attracted more women to general practice in recent years has also produced marked differences in hours worked by gender. Hours within some individual specialist branches are relatively equal, with the overall difference coming partly from the concentration of women in branches with lower average hours.

A newly introduced question asked how many weeks doctors worked during the year. Twenty-one percent (1819) reported working less than 48 weeks per year, with an average of 32 weeks. The accuracy is limited by a 73 percent response rate to this question.

Categories provided for the respondents' reasons were designed to identify any areas where doctors had difficulty obtaining work, but a relatively small number (32 house officers and 33 other doctors) cited such difficulties as the reason they worked less than 48 weeks.

Again only 27 doctors cited difficulty obtaining work as their reason for working part-time. Overall, 1731 or 20 percent of the workforce work less than 40 hours per week, with the average being 24 hours.

The use of a general "Personal Preference" category masked the total numbers but in the category "Other", maternity, childcare or family were cited by 98 women as the reason why they worked less than 48 weeks, and by 100 women as the reason they worked less than 40 hours. Comparative numbers for men were one and three.

Australian research has also found that a large proportion of female and some younger male specialists had selected a specialty on the basis that it was flexible and family friendly[vii]. In a New Zealand context, strategies have recently been promoted to improve career opportunities for women[viii]. Measurement of continuing change in career choices and hours worked will be one key component in estimating future workforce requirements, and a sensitivity analysis is provided in section six to promote discussion of possible impacts.

The proportions of doctors identifying as Māori and Pacific peoples were 2.4 percent and 1.1 percent respectively. These are under-representative of the New Zealand population, at 14.5 percent and 4.8 percent in the 1996 census, with a forecast increase in the population to 17 percent and eight percent by 2016[ix].

Finally in this section, changing delivery of services across the private and public sectors is another feature of the workforce which has seen considerable change in recent decades. The following table combines hours worked at all sites, analysed by employer and capacity. Grouped employer categories are used to illustrate recent changes.

Looking at the larger groups, the biggest changes are an increase in specialist participation in the non-medical sector (primarily universities), and a shift of house officers and particularly registrar positions into the private sector. Comparable information is only available from 1997 due to coding changes.

Table 4.3. Proportion of total hours worked by employer and capacity

	1997				2000				
Capacity	Public hospitals	Private medical	Non medical	Other	Public hospitals	Private medical	Non medical	Other	Total
General practice	2.5	90.2	2.7	4.6	1.2	89.8	3.9	5.2	100%
Primary care other than GP	5.7	54.8	18.2	21.2	5.3	57.3	15.8	21.6	100%
House officer	99.0	0.8	0.1	0.1	97.8	1.4	0.4	0.3	100%
Registrar	93.1	1.7	4.5	0.7	91.4	3.9	3.9	0.8	100%
Medical officer special scale	81.6	7.0	6.4	5.0	81.0	8.2	5.7	5.1	100%
Specialist	52.1	39.5	7.0	1.4	48.9	39.8	9.3	1.9	100%
Other	10.7	15.6	58.0	15.8	12.4	20.3	52.4	14.9	100%

Notes: Private includes sole and group private practice, commercial companies, private hospitals.
Non-medical includes universities, government, professional bodies.
Hours by capacity and employer at each site are combined and converted to percentage for comparison.

5. Geographical analysis of general practice

Following recent initiatives to address shortages in rural areas and ongoing policies to restrict general practice service levels in metropolitan centres, it is useful to consider changes over recent years. Table 5.1 compares the earliest available data on full-time equivalent general practitioners per 100,000 population. The level of regional variation is actually higher in 2000 than in 1996, measured by the standard deviation of service levels.

New Zealand's overall level of 87 full-time equivalent general practitioners per 100,000 has risen by 19 percent in the last decade, but comparison with the Australian Workforce Advisory Committee's benchmark for "lean and adequate supply" is interesting[x]. This figure was estimated at 105 GPs (head-count) per 100,000 population, whereas the 2000 survey estimate for New Zealand's current supply is 83 GPs per 100,000. There are significant differences in both survey method and medical practice, but the large gap suggests more careful comparison would be valuable.

Analysis of main workplaces by census area code categories allows calculation of a simplified indicator of service levels across urban and rural areas. The level for main urban areas has fallen from 94.7 in 1998, while minor urban and rural areas were 69.5 in 1998, but the accuracy of comparisons is limited by the lower response rate this year. Rural GPs continue to work longer hours, while women are under-represented.

Table 5.1. GP workforce by HFA locality of main work site

HFA Locality	FTE GPs per 100 000 in 1996	Number of GPs in 2000	Total FTEs all sites GPs	Population of locality 2000[(a)]	FTE GPs per 100,000 population	% change 1996-2000
Northland	77	119	134	145,600	92	19
Auckland	73	988	1001	1,206,200	83	14
Waikato(b)	71	278	307	366,500	84	18
Bay of Plenty	71	209	221	246,900	90	26
Tairawhiti/Hawkes Bay	71	145	165	192,300	86	21
Taranaki	64	75	83	104,700	80	24
Manawatu-Wanganui	70	142	167	213,000	78	12
Wellington	68	372	376	430,100	87	29
Nelson-Marlborough	74	110	115	122,000	95	28
Canterbury/West Coast	74	478	495	523,400	94	28
Otago/Southland	79	250	273	281,300	97	23
Total	**73**	**3166**	**3338**	**3,832,000**	**87**	**19**
Standard deviation	**4.1**				**6.3**	

(a) TLA populations estimated from previous year's trend as 2000 not available.
(b) Ruapehu TLA is included in Waikato HFA although a smaller part is in Manawatu-Wanganui.

Further detail is provided by the breakdown to Territorial Local Authorities (TLAs) in Table 5.4 (Appendix 1). The Health Funding Authority uses a general guideline of 1,400 people per full-time equivalent general practitioner as one criteria of evaluating applications to practise under Section 51. This is the equal to 71.4 full-time equivalents per 100,000 population, or 18 percent below the current national average (87 FTEs per 100,000, Table 5.4). Doctors making applications are advised to check local knowledge of service levels in smaller communities to support applications, as at this level of detail the response rate will cause significant variation.

Comparing TLAs, full-time equivalents for general practice ranged from 40 per 100,000 population (Manawatu district) up to 166 per 100,000 for the Queenstown district. Of the fifteen city-based territorial authorities, only one had a majority of overseas-trained doctors (Porirua). In contrast, 26 out of the 59 remaining district authorities had a majority of doctors with primary medical training from overseas.

Since one objective of workforce planning is to remove geographic maldistribution, the degree of mobility in the workforce is of some interest. Table 5.3 shows numbers of mobile doctors over the last year by capacity, measuring change between any TLA, and between city and district TLAs as measures of general and urban-rural mobility. The only large difference across gender and country of training is the higher level of mobility for women doctors.

Table 5.2. Rural/urban FTE GPs per 100,000

Category	Population range	Population estimate June 2000	GP FTEs per category	GP FTEs per 100,000	Median hours by GPs	% female GPs
Main urban areas	30,000+	2,682,100	2455	91.5	42	39
Secondary urban areas	10,000-29,999	268,100	293	109.5	45	33
Minor urban areas,	1,000-9,999	878,900	590	67.2	48	29
combined with rural and coastal areas	0-999					

Table 5.3. Indicators of mobility by capacity

Capacity	Number responding 1999 & 2000	Number changing TLA	% changing TLA	Number changing city-district	% changing city-district
Total male	5232	582	11.1	200	3.8
Total female	2461	365	14.8	126	5.1
Total overseas trained	2596	328	12.6	108	4.2
Total NZ trained	5097	619	12.1	218	4.3
General practice	2997	198	6.6	99	3.3
House officer	498	186	37.3	73	14.7
Registrar	1085	366	33.7	87	8.0
Medical officer special scale	257	40	15.6	19	7.4
Specialist	2500	119	4.8	35	1.4

Note: Only larger groups are included in analysis by capacity. Excludes Primary Care and Other.

6. Women doctors in the New Zealand workforce

Women are a major component of the medical workforce comprising 50 percent of trainees and 33 percent of the active workforce in 2000 (28.6 percent of FTE workforce). It is important to understand the influence of women's participation on the whole workforce. Participation in this context refers to: the retention of women in the workforce, the hours they work, the roles they undertake, geographical distribution and participation in public or private sectors.

Four cohorts of practitioners (including both New Zealand graduate and overseas-trained doctors) active in 2000 are studied at the completion of four, eight, 12 and 16 years' experience. These points were chosen as representative of the stages of a medical career. The cohorts comprise graduates from 1995, 1991, 1987 and 1983 who are entering their next year of practice in New Zealand. The year doctors completed their training is used as the base year rather than the year of graduation[4]. The analysis includes:

- composition of cohorts by gender
- retention
- work capacity, eg house officer, registrar
- distribution of doctors identifying as GPs
- average hours spent by doctors in each work capacity, and
- employment.

Composition of cohort and retention by gender

1995 cohort – 5th year

This cohort includes 193 doctors who graduated in 1995 and who are active in the New Zealand workforce in 2000. Overseas-trained doctors comprise 12 percent.

The retention rate for New Zealand graduates in this cohort is 62.1 percent, with 58.8 percent of women and 64.6 percent of men active in New Zealand.

Eighty-five percent of New Zealand graduates, and a third of the overseas-trained doctors, reported that they were undertaking training. Fewer women reported they were in vocational training (63%) compared with men (68%). A similar percentage of women (17%) and men (18%) work as house officers.

Of those women in vocational training 32 percent are training in general practice or primary care and 68 percent in other vocational specialties. In comparison, 19 percent of men are training in general practice or primary care and 81 percent in other vocational specialties (Fig. 6.1 and Fig. 6.2).

1991 cohort – 9th year

This cohort includes 248 doctors who graduated in 1991 and who are active in the workforce in 2000. Overseas-trained doctors comprise 36 percent.

The retention rate for New Zealand graduates in this cohort is 59.6 percent. Retention of women is 64 percent compared with 55 percent for men.

Seventy percent of the active doctors reported that they were in training. Sixty-two percent of women are in vocational training compared with 75 percent of men. Forty-six percent of women are training in general practice or primary care and the remainder in other vocational specialties. In comparison, 34 percent of men are training in general practice or primary care and 66 percent in other vocational specialties. (Fig. 6.1 and Fig. 6.2)

More women are working as house officers (6%), compared with men (3 %).

1987 cohort – 13th year

This cohort includes 274 doctors who graduated in 1987 and who are active in the workforce in 2000. Overseas-trained doctors comprise 46 percent.

The retention rate for New Zealand graduates is 63.9 percent. Retention of women is 74.7 percent, compared with 56.8 percent for men.

By thirteen years post-graduation approximately 19 percent of women are working in vocational specialties, other than general practice, compared with 33 percent of men. Forty percent of the overseas doctors reported that they were in vocational training – 18 percent in general practice training. (Fig. 6.2 and Fig. 6.3)

1983 cohort – 17th year

This cohort includes 326 doctors who graduated in 1983 and who are active in the workforce in 2000. Overseas doctors comprise 37 percent.

The retention rate for New Zealand graduates is 71.7 percent. Retention of women is 67 percent, compared with 74.4 percent of men.

Forty-six percent of women are working in general practice or primary care compared with approximately 38 percent of men. Approximately 18 percent of women and 33 percent of men are working in other vocational specialties.

Eighty practitioners report that they are still in training, 30 women and 50 men. Thirty-nine New Zealand graduates reported working in training positions, 23 in general practice. This may be due to the move for general practitioners to become vocationally registered[5]. (Fig. 6.1 and Fig. 6.2)

[4] Graduates from Otago and Auckland completing training in the same year graduate in different years.

[5] The Medical Practitioners Act 1995 introduced the categories of 'general'; and 'vocational' registration. A person holding general registration is entitled to practise in any branch of medicine but only when he or she is subject to the general oversight of a person holding vocational registration in that branch of medicine. A person holding vocational registration in a branch of medicine is entitled to practise in the branch of medicine without oversight. This provision impacted on general practitioners, many of whom only held general registration and have been required to gain vocational registration to practise independently.
A transitional provision in the Act permitted doctors who held a practising certificate for five consecutive years since gaining registration to be exempt from general oversight until July 2001.

Fig. 6.1. Percentage of women working in each work capacity at 5, 9, 13 and 17 years post-graduation

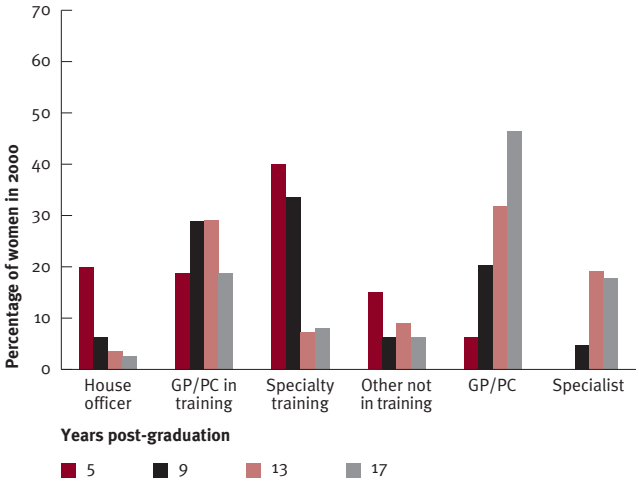
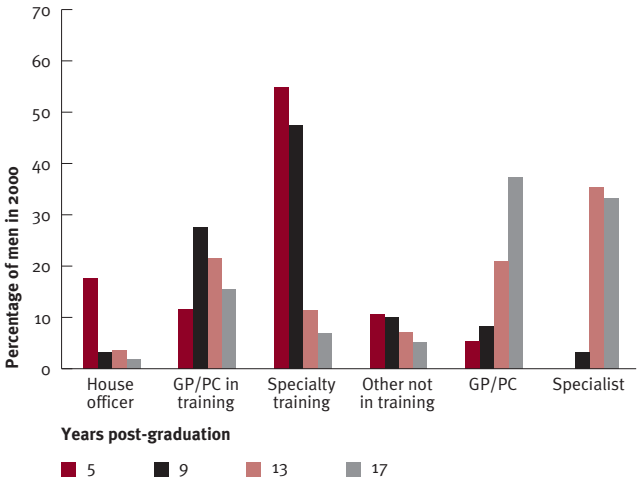


Fig. 6.2. Percentage of men working in each work capacity at 5, 9, 13 and 17 years post-graduation



Work capacity

House officer

Generally, less than 20 percent of doctors who graduated five years previously are working as house officers. But, small numbers of women and men up to 17 years post-graduation are still employed as house officers. (Fig. 6.1 and Fig. 6.2)

General practitioner/primary care training

Twenty-five percent of women in the five-year post-graduation cohort are in general practice training, compared with 18 percent of men from the same cohort. At nine years post-graduation over 29 percent of women reported working in general practice training compared with 28 percent of men. (Fig. 6.1 and Fig. 6.2)

Over 19 percent of women doctors and 15 percent of men from the 17 years post-graduation cohort also report that they are training in general practice or primary care. This may relate to the relatively recent introduction of vocational registration.

Specialty training

At five years post-graduation, 40 percent of women compared with 55 percent of men have entered specialty training other than general practice or primary care. (Fig. 6.1 and Fig. 6.2)

At nine years post-graduation, a small number of men and women start entering the specialist workforce. By 13 years post-graduation over 19 percent of women and 35 percent of men are in the specialist workforce.

Other not in training

Of the 1995 cohort approximately 15 percent of women reported that they were employed as MOSS or registrars but the positions were not training positions. This compares with 11 percent of men from the same cohort. (Fig. 6.1 and Fig. 6.2)

General practitioners

Small numbers of men and women, in the five-year post-graduation cohort, reported working in general practice or primary care but were not involved in training programmes. The proportion of doctors in training at nine, 13 and 17 years post-graduation may be affected by the move for all general practitioners to become vocationally registered. At nine years post-graduation 20 percent of women and eight percent of men are working as general practitioners or in primary care. At 17 years post-graduation 46 percent of women and 37 percent of men work in these areas (Fig. 6.1 and Fig. 6.2).

Specialists

A slightly higher proportion of women who graduated 13 years ago are in the specialist workforce (19%) compared with the cohort of women who graduated 17 years ago (18%). (Fig. 6.1 and Fig. 6.2) This may indicate an increasing trend for women to specialise. Thirty-five percent of men are in the specialist workforce at 13 years post-graduation.

Geographical distribution of General Practitioners

Women doctors in the cohorts analysed are working predominantly in main urban areas with low percentages working in secondary and rural areas. A higher percentage of men, particularly those with 13 and 17 years post-graduation experience are working in the secondary and rural areas (Table 6.1).

Table 6.1. Distribution of general practitioners main workplace at 5, 9, 13, and 17 years post-graduation by New Zealand or overseas training and gender.

Women – Percent by cohort and geographical distribution

Years post-graduation	**5**		**9**		**13**		**17**	
Country of graduation	NZ	OS	NZ	OS	NZ	OS	NZ	OS
Main urban areas[a]	100.0	100.0	90.7	87.5	95.1	78.9	89.4	91.7
Secondary urban areas[b]	0.0	0.0	9.3	0.0	4.9	15.8	6.4	4.2
Minor urban areas, rural and coastal areas[c]	0.0	0.0	0.0	12.5	0.0	5.3	4.3	4.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Men – Percent by cohort and geographical distribution

Years post graduation	**5**		**9**		**13**		**17**	
Country of graduation	NZ	OS	NZ	OS	NZ	OS	NZ	OS
Main urban areas	71.4	100.0	96.0	80.0	95.1	78.6	90.4	77.8
Secondary urban areas	21.4	0.0	4.0	20.0	2.4	10.7	5.5	11.1
Minor urban areas, rural and coastal areas	7.1	0.0	0.0	0.0	2.4	10.7	4.1	11.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) 30,000 + population
(b) 10,000-29,000 population
(c) 0-9,999 population

Hours of Work

House Officers

Generally, both men and women working as house officers work around 50 hours per week. Some of the variation noted by women may be attributed to the small numbers involved. (Fig. 6.3 and Fig. 6.4)

General Practice

Overall women general practitioners in the cohorts analysed tend to work approximately 30 hours per week compared to over 40 –50 hours per week for men. Men who graduated in the last five to nine years appear to be working fewer hours at around 40 per week compared with general practitioners graduating 13 to17 years ago.

Similar patterns in hours worked were noted for women whether or not they were in training – this possibly confirms that many general practitioners who reported being in training, are established in general practice and are undergoing the transition programme for vocational registration (Fig. 6.3 and Fig. 6.4).

Specialists

Both men and women registrars in non-general practice speciality training programmes tend to work similar hours of around 55 per week. Once qualified, women specialists in the cohorts studied tend to work around 45 hours per week. The analysis also shows that men who graduated more recently are working fewer hours, although they are still working, on average over 50 hours per week (Fig. 6.3 and Fig. 6.4).

Employment situation

Based on the results discussed earlier in this publication, more women work in private practice[6] and non-medical[7] employment. Women also appear to move out of the hospital setting into private employment and non-medical employment earlier than men. (Fig. 6.5 and Fig. 6.6)

In the early years after graduation more women hold secondary employment positions than men (Fig 6.7). But, this situation reverses later with almost 40 percent of women holding at least two positions at 17 years post-graduation compared with 50 percent of men. The main area for women's secondary employment is private practice (Fig. 6.9) and more women, compared with men, also work in non-medical and other areas. The main area of secondary employment for men is private practice followed by public hospitals (Fig. 6.10).

A higher proportion of women hold three or more positions (Fig. 6.8). While private practice is the main area for third employment positions for both men and women, a higher proportion of women work in non-medical areas (Fig. 6.11 and Fig. 6.12).

Fig. 6.3. Hours worked by women in 2000 in each work capacity at five, nine, 13 and 17 years post-graduation

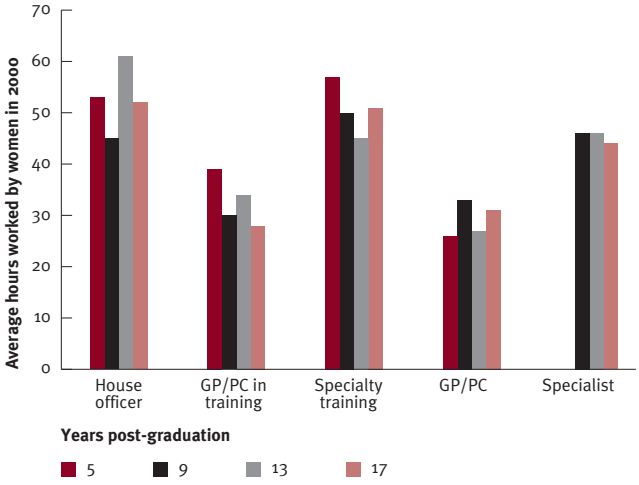


Fig. 6.4. Hours worked by men in 2000 in each work capacity at five, nine, 13 and 17 years post-graduation

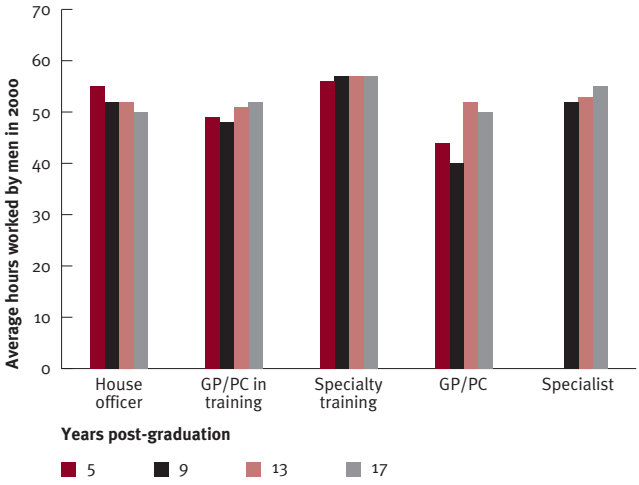


Fig. 6.5. Primary employment category for women in 2000 at five, nine, 13 and 17 years post-graduation

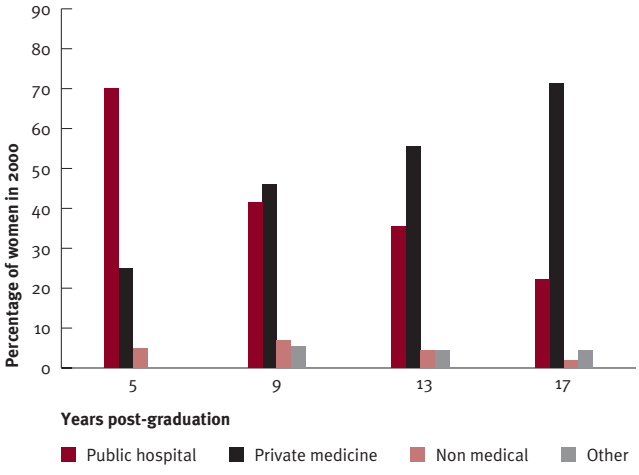
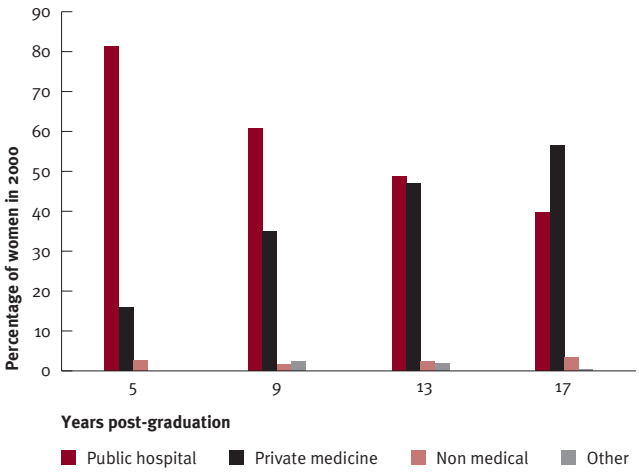


Fig. 6.6. Primary employment category for men in 2000 at five, nine, 13 and 17 years post-graduation



[6] Private practice includes sole practice, group practice, commercial companies and private hospitals.

[7] Non-medical employment includes university, government and professional bodies.

Fig. 6.7. Doctors with two or more jobs in 2000 at five, nine, 13 and 17 years post-graduation

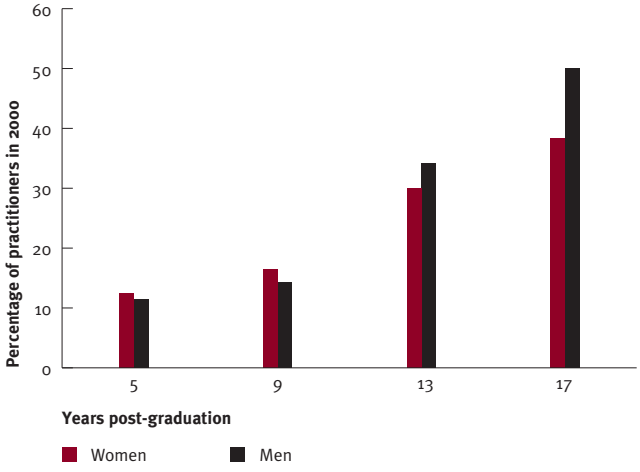


Fig. 6.8. Doctors with three or more jobs in 2000 at five, nine, 13 and 17 years post-graduation

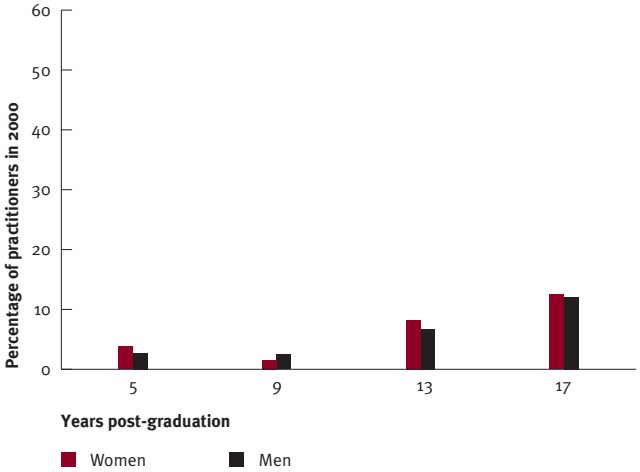


Fig. 6.9. Secondary employment categories for women in 2000 at five, nine, 13 and 17 years post-graduation

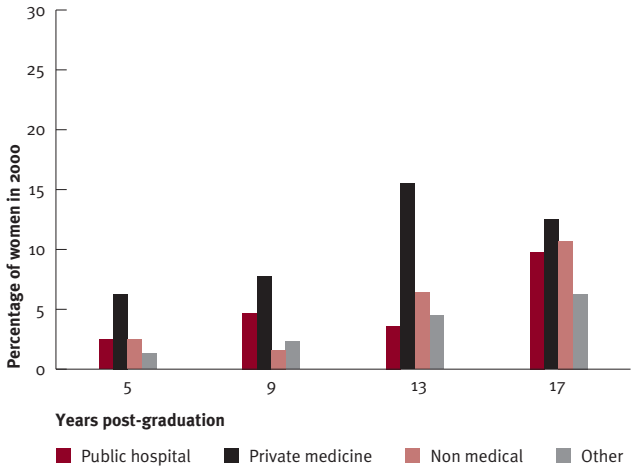


Fig. 6.10. Secondary employment categories for men in 2000 at five, nine, 13 and 17 years post-graduation

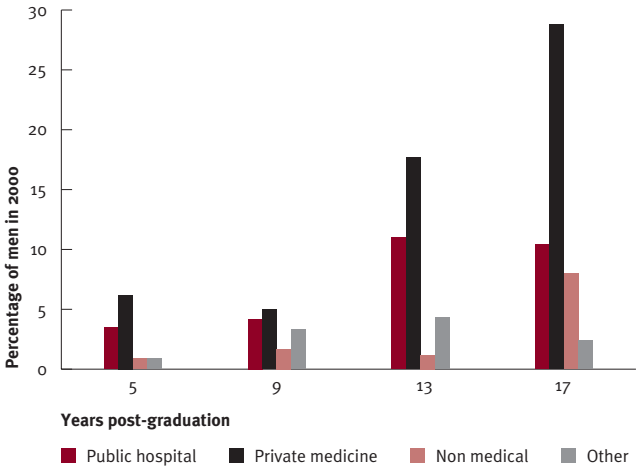


Fig. 6.11. Tertiary employment categories for women in 2000 at five, nine, 13 and 17 years post-graduation

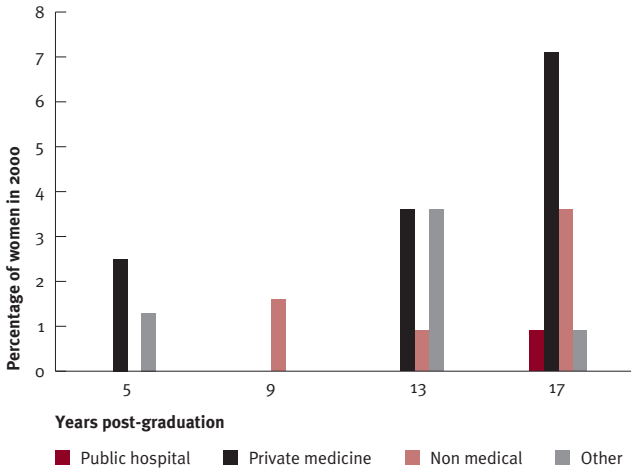
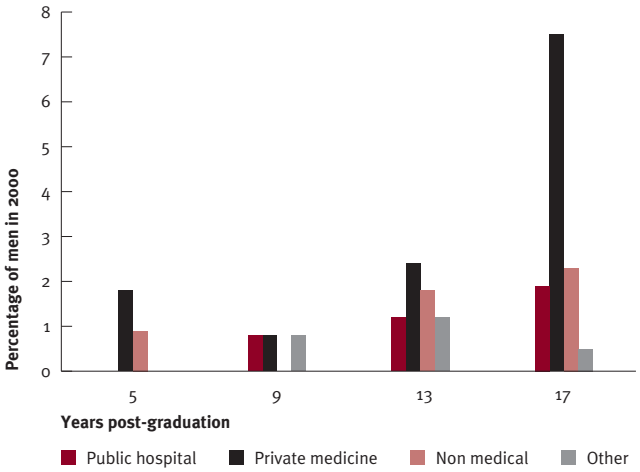


Fig. 6.12. Tertiary employment categories for men in 2000 at five, nine, 13 and 17 years post-graduation



Modelling of women's contribution to the medical workforce over the next 10 years

Predicting the future supply of women doctors is difficult as many factors are changing simultaneously and current patterns may not be relevant in the dynamic workforce environment. The impact of student loans, access to specialist training programmes, requirement for increasing numbers of general practitioners, changing immigration and emigration patterns and the role of substitutes such as nurses with prescribing rights will all play a part in determining the participation of women in the medical workforce.

Current trends are based on a large number of women working part-time in general practice and being retained in the workforce at a higher rate compared to men. Yet, the analysis of recent cohorts suggests that an increasing proportion of women are moving into the other vocational specialties and working longer hours. This move may also lead to more women seeking overseas training and/or consolidation of experience.

Recent trends in migration indicate that fewer overseas-trained doctors are entering New Zealand with the intention of staying permanently. But, more of those who come appear to be staying (Table 2.2, Fig. 2.2). More New Zealand doctors are moving overseas which impacts negatively on the long-term retention of local graduates.

No attempt has been made in this analysis to determine the requirements for women doctors. This model (Appendix 2) of women's participation should be viewed as an input into macro workforce analysis that is built up from microanalysis of the separate medical disciplines.

Assumptions:

- Base number is the 2811 women doctors active in the workforce at 30 June 2000.
- Estimate of full-time equivalent (FTE) = base number *1.03 (Table 6.2)
- Graduates estimated at 121.2 per annum - the average for the last five years
- Attrition is based on the average retention rate of 68.6 percent over the last five years.
- Retirement is based on practitioners retiring at 65 years of age, those older are phased out over the next five years.
- Immigration is based on the average number of overseas-trained women who have registered in New Zealand annually over the last ten years.
- Retention of immigrants is based on the average retention of 40 percent over the last ten years.

Table 6.2. Estimate of FTE participation for women and men in 2000

	Women			Men		
	Number	Hours/week	Est FTE	Number	Hours/week	Est FTE
General practice	1164	33	960.3	2002	48	2402.4
Primary care not GP	81	26	52.7	109	39	106.3
House officer	417	56	583.8	477	56	667.8
Registrar	461	53	610.8	766	56	1072.4
MOSS	112	34	95.2	165	44	181.5
Specialist	504	42	529.2	2149	50	2686.3
Other	72	42	75.6	134	46	154.1
Total	**2811**		**2907.6**	**5802**		**7270.7**
Average participation			**1.03**			**1.25**

Modelling Scenarios

Scenario 1 - Status quo
The above assumptions apply

Scenario 2 - Decreased immigration and increased retention of immigrants
Immigration decreases as per recent trend to 83 per annum
Retention of immigrants increases to 50 percent

Scenario 3 - Decreased immigration, increased retention of immigrants and NZ graduates, increased participation in terms of hours worked
Immigration decreases as per recent trend to 83 per annum
Retention of immigrants increases to 50 percent
Retention of NZ graduates increases by two percent

Scenario 4 - Women increase participation to 1.1 FTE on average

Table 6.3. Estimated supply of women doctors, 2005 and 2010

	Assumptions	2005 Number		2010 FTE	
Scenario 1	Status quo	3595	3703	4232	4359
Scenario 2	Decreasing participation	3515	3621	4085	4208
	Increasing retention of immigrants				
Scenario 3	Decreasing immigration	3530	3883	4112	4523
	Increased retention of immigrants				
	Increased retention of NZ graduates				
Scenario 4	Increased participation to 1.1 FTE	3595	3955	4232	4655

Summary

The analysis indicates that under status quo conditions the number of women doctors will increase from 2811 to 4232 or by about 51 percent in the next ten years. If the total workforce continues to increase at two percent per annum, it is estimated women will comprise 40 percent of the workforce (Table 6.3).

The participation of women in terms of hours worked, or FTE, may increase as more women move into the specialities other than general practice. The reduced level of permanent immigration may slow the growth of women doctors in the workforce unless hours worked increase.

Women are working predominantly in general practice but there is a trend of more moving into the other vocational specialties in recent years. Fewer women general practitioners are working in the secondary urban and rural locations.

Women move out of hospital employment into the private sector or non-medical employment earlier than men, and in the earlier post-graduation years a higher proportion of women hold more than one job.

7. Māori Workforce

In 2000, 198 doctors self-identified as Māori ethnicity, comprising 2.3 percent of the active doctor workforce in New Zealand[8].

The number of doctors identifying as Māori has decreased from 201 in 1997 to 198 in 2000, women comprise 38 percent (Table 7.1). Since 1997 the numbers of Māori house officers and specialists have remained stable. But, the number of registrars has increased and the number of GPs has decreased (Table 7.2). The retention of Māori doctors who graduated during the last 15 years is estimated to be 95 percent. This may be an overestimate of the retention rate as incomplete information is available on the ethnicity of graduates from the University of Otago (Table 7.3).

Based on the number of Māori students in training[9] (Table 7.4) it is estimated that the workforce could increase to 274 Māori doctors by 2005 (Table 7.5). This represents a 38 percent increase in the number of Māori doctors compared with the current 198. If the total medical practitioner workforce continues to increase at two percent per annum it is estimated that self-identified Māori doctors will comprise 2.9 percent of the workforce in 2005.

Table 7.1. Māori workforce by gender 1997 - 2000

	2000	1997
Female	75	77
Male	123	124
Total	**198**	**201**

Source: Medical Council of New Zealand annual workforce survey.

Table 7.2. Māori workforce by work capacity 1997 - 2000

Work capacity	2000	1997
House officer	41	40
Registrar	40	32
MOSS	5	5
General practitioner	63	78
Specialist	36	38
Other/not stated	13	8
Total	**198**	**201**

Source: Medical Council of New Zealand annual workforce surveys.

Table 7.3. Māori graduates 1985 - 1999, and retention in workforce 2000

Year	University of Auckland[a] Māori graduates	University of Otago[b] Māori graduates	Total Māori graduates	Active 2000[c] Māori graduates	Est. retention[d] Māori graduates
1997-99	21	16	37	35	
1994-96	14	12	26	25	
1991-93	18	8	26	22	
1988-90	15	8	23	23	
1985-87	7	3	10	11	
Total	**225**	**141**	**366**	**348**	**95.1**

(a) Ethnicity of University of Auckland graduates at graduation reported by University of Auckland.
(b) Active doctors who graduated from University of Otago as per Medical Council registration database.
(c) Doctors change ethnicity information after graduation.
(d) This retention may be overstated due to incomplete information of Otago graduates.

[8] Ethnicity information was first collected by the Medical Council in early 1990s and individuals may choose not to state their ethnicity or may change their recorded ethnicity. This leads to some anomalies in the available data.

[9] The University of Auckland provided ethnicity information on students and graduates and the University of Otago provided ethnicity information on students for this analysis. Students self-identify their ethnicity.

Table 7.4. Students, who self-identify as Māori, in training in 2000

	University of Auckland		University of Otago[a]		Total	
Class Year	Male	Female	Male	Female	Male	Female
1	0	9	-	-	0	9
2	9	12	8	9	17	21
3	1	3	37	4	10	
4	4	2	5	3	9	5
5	3	4	2	3	5	7
6	5	1	4	5	9	6
Total	**22**	**31**	**22**	**27**	**44**	**58**

(a) Ethnicity information is collected in year 2
Source: Universities of Auckland and Otago.

Table 7.5. Projected supply of Māori workforce 2000 - 2005

Year	Base number	Projected new graduates	Est. retirements	Est. projected attrition	Supply
2000	198	15	2.4	0.75	210
2001	210	12	2.4	0.6	219
2002	219	14	2.4	0.7	230
2003	230	14	2.4	0.7	241
2004	241	38	2.4	1.9	274
2005	274				

Notes: Retirements based on practitioners over 60 years of age retiring over next five years
Attrition based on loss of five percent of new graduates (estimated average over last 15 years)
New Graduates numbers projected from the self-identified ethnicity of current graduates supplied by University of Auckland and University of Otago.

8. Pacific Peoples Workforce

In 2000, 95 doctors self-identified their ethnicity as Pacific peoples, an increase from 67 in 1997. They now comprise 1.1 percent of the active workforce (Table 8.1). Since 1997 the number of house officers has decreased and the numbers of registrars, general practitioners and specialists have increased (Table 8.2).

The retention of Pacific peoples doctors who graduated during the last 15 years is estimated to be 91 percent although incomplete data on University of Otago graduates may lead to this being an overestimate of the retention rate (Table 8.3).

Based on students in training at the University of Auckland (Table. 8.4), it is estimated that the Pacific peoples workforce could increase to 128 doctors by 2005, a 35 percent increase (Table 8.5). But, if the total medical workforce continues to increase by two percent per annum the Pacific peoples practitioners will comprise 1.3 percent of the workforce.

Table 8.1. Pacific peoples workforce by gender 1994 - 2000

	2000	1997
Female	29	19
Male	66	48
Total	**95**	**67**

Source: Medical Council of New Zealand annual workforce survey, priority 1 ethnicity [10].

Table 8.2. Pacific peoples workforce by work capacity 1997 - 2000

Work capacity	2000	1997
House officer	15	19
Registrar	27	16
MOSS	*	6
General practitioner	27	13
Specialist	18	13
Other/not stated	8	0
Total	**95**	**67**

Source: Medical Council of New Zealand annual workforce survey.

Table 8.3. Pacific peoples graduates 1985 - 1999, and retention in workforce 2000

Year	University of Auckland[a] Pacific graduates	University of Otago[b] Pacific graduates	Total Pacific graduates	Active 2000[c] Pacific graduates	Est. Retention[d] Pacific graduates
1997-99	12	8	20	15	
1994-96	10	7	17	14	
1991-93	4	+	7	5	
1988-90	4	9	13	15	
1985-87	5	4	9	11	
Total	**35**	**31**	**66**	**60**	**90.9**

(a) Ethnicity of University of Auckland graduates at graduation reported by University of Auckland.
(b) Active doctors who graduated from University of Otago as per Medical Council registration database.
(c) Doctors change ethnicity information after graduation.
(d) This retention may be overstated due to lack of information of Otago graduates.

[10] Prioritised ethnicity: Mäori ethnicity takes precedence over Pacific peoples ethnicity in Priority 1.

Table 8.4. Students in training who self-identify as Pacific peoples in 2000

	University of Auckland	
Class Year	**Male**	**Female**
1	5	4
2	5	9
3	3	5
4	2	2
5	4	1
6		1
Total	**19**	**22**

Source: University of Auckland.
Note: Information on Pacific peoples students not available from University of Otago.

Table 8.5. Projected supply of Pacific peoples workforce 2000 - 2005

Year	Base number	Projected new graduates	Est. retirements	Est. projected attrition	Supply
2000	95	1	0.8	0.09	95
2001	95	5	0.8	0.45	99
2002	99	4	0.8	0.36	102
2003	102	8	0.8	0.72	108
2004	108	14	0.8	1.26	120
2005	120				

Notes: Retirements based on practitioners over 60 years of age retiring over next five years
Attrition based on loss of nine percent of new graduates (estimated average over last 15 years)

9. Conclusion

The beginning of a new decade provided an incentive for the Medical Council to prepare this summary of the annual survey with a much greater emphasis on workforce planning. Where the issues were too complex to be developed fully here, we have tried to compile the best information currently available to create a foundation for future discussion.

The questions we have discussed in this summary also emphasise that effective national planning requires much more than analysis of a single survey. Some of components used successfully overseas are:

- A coordinating body providing consultation, debate and accountability, with dedicated analytical support to provide sustained analysis;
- Integration of national analysis with the processes used to define training requirements for individual vocational branches;
- Supply and demand analysis, with development of an agreed range of measures which collectively indicate current market status;
- Benchmarking: based on these measures, with explicit debate on appropriate service levels;
- Targets and mechanisms to improve urban/rural variation in service levels;
- Supplementing survey data with other national datasets, eg patient claims data, hospital admissions, census, migration.

The creation this year of a Health Workforce Advisory Committee is therefore a timely development. The beginning of this new decade is a watershed year by any standard, as we look forward to the combined impact of a move away from the traditional countries for supply of overseas-trained doctors, a significant risk of losing more local graduates, and the uncharted impact of gender equality in the medical workplace.

Further information

Contact the New Zealand Health Information Service (angela.pidd@nzhis.govt.nz) for further information from the workforce survey. A selection of data is also available from the NZHIS website at http://www.nzhis.govt.nz/stats/medpracstats.html.

Please address any correspondence about this summary to the information officer at the Medical Council (dlatham@mcnz.org.nz). The Medical Council has a policy allowing approved researchers to complete further analysis of workforce survey data. Contact the information officer for further details.

Acknowledgements

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The Medical Council particularly thanks all the practitioners who took time to complete the workforce survey.

Appendix 1

Table 5.4. Medical workforce by Territorial Local Authority of main work site

Territorial authority	No. of GPs	FTEs GPs	FTEs per 100,000	Ave hours GPs	No. of all doctors	FTEs all per 100,000	O'seas doctors % of all	Territorial authority pop'n[a]
Cities								
North Shore City	156	152	80	39	442	264	33	189800
Waitakere City	105	105	61	40	136	79	37	173900
Auckland City	409	410	106	40	1,687	520	29	386000
Manukau City	193	196	69	41	602	253	36	286200
Hamilton City	111	113	95	41	526	539	41	118600
Napier City	52	56	102	43	66	130	44	54400
Palmerston North City	65	75	99	46	250	401	38	75500
Porirua City	30	27	57	36	67	150	57	47500
Upper Hutt City	31	31	82	40	33	88	36	37200
Lower Hutt City	72	74	75	41	211	238	34	97900
Wellington City	158	160	95	40	685	484	24	167800
Nelson City	39	43	104	44	113	321	17	41400
Christchurch City	350	350	107	40	1,019	373	26	325900
Dunedin City	110	117	98	43	473	476	32	119500
Invercargill City	44	43	87	39	125	293	46	49700
Districts								
Far North District	45	54	94	48	53	112	53	57300
Whangarei District	60	65	92	43	163	278	42	70400
Kaipara District	14	15	84	43	14	84	57	17900
Rodney District	56	63	83	45	62	93	24	75300
Papakura District	34	36	86	43	50	130	26	42000
Franklin District	35	39	74	45	39	82	46	53000
Thames Coromandel District	27	30	113	45	39	169	59	26900
Hauraki District	15	14	79	37	15	79	40	17600
Waikato District	14	19	45	53	14	45	57	41400
Matamata-Piako District	20	24	83	49	21	87	48	29400
Waipa District	29	31	76	43	32	83	56	40500
Otorohanga District	5	7	75	60	5	75	20	9900
South Waikato District	18	21	89	47	20	101	60	23800
Waitomo District	7	8	82	44	9	105	44	9400
Taupo District	24	28	85	46	35	118	34	32600
Western BOP District	19	22	55	45	21	58	38	39500
Tauranga District	97	98	110	40	248	322	33	89300
Rotorua District	55	57	85	42	150	265	39	67200
Whakatane District	28	32	93	45	59	213	68	33700
Kawerau District	5	5	69	40	5	69	100	7300
Opotiki District	5	7	75	59	5	75	60	9900
Gisborne District	32	41	88	51	75	198	51	46500
New Plymouth District	53	57	84	43	155	258	48	67800

Territorial authority	No. of GPs	FTEs GPs	FTEs per 100,000	Ave hours GPs	No. of all doctors	FTEs all per 100,000	O'seas doctors % of all	Territorial authority pop'n[a]
Districts								
Stratford District	8	10	110	50	9	111	33	9100
South Taranaki District	14	17	60	48	16	71	75	27800
Ruapehu District	8	12	73	60	10	82	70	16400
Wairoa District	5	7	71	56	5	71	80	9800
Hastings District	49	54	79	44	161	288	32	68000
Cent. HB District	7	8	61	45	8	69	63	12900
Wanganui District	34	38	86	45	100	273	63	44500
Rangitikei District	9	12	73	52	9	73	56	15800
Manawatu District	9	11	40	50	10	43	20	28600
Tararua District	11	12	65	43	12	74	58	18200
Horowhenua District	14	19	63	55	20	81	60	30400
Kapiti Coast District	56	59	140	42	65	162	38	41900
Masterton District	16	16	72	40	45	232	62	22400
Carterton District	4	4	55	37	4	55	50	6600
South Wairarapa District	5	7	74	52	5	74	80	8800
Tasman District	35	34	83	39	37	88	51	40500
Marlborough District	36	38	96	43	66	185	38	40100
Chatham Islands	0	0	0	-	0	0	-	700
Kaikoura District	5	5	133	39	5	133	60	3700
Buller District	5	6	63	51	6	73	83	10200
Grey District	6	6	41	38	18	148	56	13800
Westland District	5	6	77	51	7	86	43	8200
Hurunui District	4	4	41	41	8	90	50	9900
Waimakariri District	21	23	64	44	24	75	25	36200
Banks Peninsula District	7	7	84	38	8	96	38	8000
Selwyn District	21	22	79	42	22	85	23	28000
Ashburton District	17	22	85	51	28	137	50	25600
Timaru District	31	34	80	43	71	201	37	42200
Mackenzie District	(b)	(b)	113	98	(b)	145	100	4300
Waimate District	4	5	67	49	4	67	25	7400
Waitaki District	19	20	99	43	23	128	48	20700
Cent. Otago District	14	19	129	53	17	154	35	14400
Queenstown-Lakes District	24	27	166	45	24	166	25	16400
Clutha District	15	17	95	45	16	103	50	17700
Southland District	17	19	63	45	17	63	53	30100
Gore District	7	11	86	63	8	95	63	12800
Total	**3166**	**3338**	**87**	**42**	**8615**	**265**	**34**	**3,832,000**

(a) TLA populations estimated from previous year's trend as 2000 not available.
(b) To prevent identification of individuals, cell values with less than 4 doctors are omitted.

Appendix 2

Model Scenario 1

Year	Base number	Supply		Retention		Attrition	Estimated active practitioners	Estimated FTE 1.03
		NZ grads	Immigration	NZ grads	Immigration			
2000	2811	121	137	83	55	7	2942	3030.6
2001	2942	121	137	83	55	7	3074	3165.9
2002	3074	121	137	83	55	7	3205	3301.2
2003	3205	121	137	83	55	7	3336	3436.5
2004	3336	121	137	83	55	7	3468	3571.7
2005	3468	121	137	83	55	11	3595	3702.9
2006	3595	121	137	83	55	11	3722	3834.1
2007	3722	121	137	83	55	11	3850	3965.2
2008	3850	121	137	83	55	11	3977	4096.4
2009	3977	121	137	83	55	11	4104	4227.6
2010	4104	121	137	83	55	11	4232	4358.7

Notes: Base number = number of women in workforce at June 2000
Estimated FTE = Base number *1.03
NZ grads = average number of women who have graduated annually over the last five years.
Immigration = average number of women who have registered in NZ annually over the last ten years
Retention of NZ graduates is based on the average of 68.6 percent over the last five years
Retention of immigrants is based on the average retention of 40 percent over the last ten years
Retirement is based on those practitioners over 60 retiring during the next ten years.

Appendix 3: Method

Annual survey

The sampling frame for the workforce questionnaire includes doctors with General or Probationary registration, a current annual practising certificate (APC), and a New Zealand address at 31 March 1999. The questionnaire was posted out in February 2000 with APC applications, and those not responding were sent two reminder letters. Inclusion of responses closed off on 9 June 2000.

There were two changes for 2000. First, the addition of two questions asking weeks worked and reason if participating less than 40 hours per week or 48 weeks per year. Second, doctors were asked to report their hours on-call but not worked, to avoid double-counting with hours of work. This report also includes statistical information drawn from the Council's registration database, to avoid duplicating questions in the APC application (age, sex, registration date, graduation country and graduation year, temporary registrants).

Geographical analysis links the location of each doctor's main workplace to Territorial Local Authorities and Health Funding Authority localities. Addresses of work sites were coded using census area unit data supplied by Statistics New Zealand. 2000 population data will not be available from Statistics New Zealand until late in the year, so values were calculated using the trend between 1998 and 1999 projections. HFA populations were amalgamated from Territorial Local Authority population estimates[xi]. Full time equivalents (FTEs) are calculated proportionately, so that 44 hours per week equals 1.1 FTE.

Ethnicity refers to the cultural group or groups with which the respondent identified. Where a respondent reports they identify with more than one ethnic group, the Statistics NZ prioritisation algorithm is applied to report a single ethnicity.

Where the Council's registration database is cited as a source for additional analysis, purchase of an APC is used as the measure of workforce participation. Results were generated using Access software.

New Zealand graduates

Data used in the 2000 CRR has been standardised to the following protocol.
The cohort remainder rate is calculated by comparing the number of New Zealand-trained doctors active at 30 June 2000 with the number of doctors who graduated in New Zealand during a previous period. For example, the one to three year post-gradua-

tion cohort relates to those doctors who graduated in New Zealand in the years 1997-1999 and who are practising in New Zealand at 30 June 2000. The doctors who comprise this cohort include those who completed training in any of these years regardless of the date of their graduation.

All graduates funded within the New Zealand government quota who qualify in New Zealand in any specified year are included. Not all graduates register with the Medical Council. Both the University of Auckland and the University of Otago train sponsored or self-funded international students and these doctors are excluded from the analysis.

Overseas registrants

Data used in the 2000 CRR has been standardised to the following protocol.
The cohort remainder rate is calculated by comparing the number of overseas-trained doctors active at 30 June 2000 with the number of overseas-trained doctors who registered in New Zealand during a previous period. For example, the one to three year post-registration cohort relates to those doctors who registered in New Zealand in the years 1997-1999 and who are practising in New Zealand at 30 June 2000. The doctors who comprise this cohort include those who registered in New Zealand regardless of the date of graduation in their home country.

Definitions

Active workforce
Doctors included in workforce survey results, being respondents who stated they worked a total of at least four hours in medical (including non-clinical) work during a typical working week.

Full time equivalent
Proportional calculation based on 40 hours per week as one full-time equivalent (FTE) and 60 hours calculated as 1.5 FTE.

Hours worked
Unless otherwise stated, the combined total hours worked per week across all work sites as self-reported by the respondent. Based on a typical working week during the previous year, or the most recent week if the respondent cannot identify a typical week. Includes only that part of on-call time which is worked. In the editing of survey responses maximum total hours have been limited to 120 hours per week.

Main work site
The work and location in which a practitioner spends the largest portion of their working hours.

Specialist
Self-reported by the practitioner from the following categories of capacity; general practice, primary care other than GP, house officer, registrar, medical officer special scale, specialist, other. Generally understood to require membership of the relevant specialist college but self-reporting leads to broader usage in survey results. Does not include general practitioners, although both GPs and specialists are eligible for vocational registration.

Vocational registration
A general practitioner or specialist who has met the criteria for vocational registration with the Medical Council of New Zealand, including completion of the requirements of the relevant college or professional association.

Overseas-trained doctor
A doctor who obtained their primary medical qualification in a country other than New Zealand.

Temporary registrant
A doctor who practises in New Zealand under the category of temporary registration, for up to two years with a possible third year extension.

Appendix 4

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