

# A survey of the New Zealand rheumatology workforce

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## ABSTRACT

**AIM:** To characterise the demographics, size and distribution of the New Zealand rheumatology workforce.

**METHOD:** An online survey was sent to New Zealand rheumatologists in February 2018.

**RESULTS:** The survey was completed by 63 of 64 practising New Zealand rheumatologists (response rate 98%). In public practice, the number of half-day clinics per FTE was five (R2 linear 0.87), so a half-day session in private practice was counted as 0.2 FTE. There were 28.71 FTE in the public sector, 14.97 in private and 43.68 total FTE. By district health board (DHB), public FTE per capita ranged from 0.20 FTE per 100,000 population in Nelson-Marlborough DHB to 0.96 in Whanganui DHB. None of the 20 DHBs met the Royal College of Physicians guideline of 1.16 FTE per 100,000 population in the public sector, and only four DHBs reached this level when private FTE were included. Rheumatologists under the age of 50 years were predominantly female (62% female), and older rheumatologists predominantly male (7.7% female,  $p < 0.001$ ). In the next five years 6.58 FTE public rheumatologists intended to retire, (94% male). 23/53 (43%) of public hospital rheumatologists offer appointments for non-inflammatory conditions, compared to 30/31 (97%) of private practice rheumatologists. Between 1999 and 2011, the FTE per 100,000 population increased by 35.4%, but the rate of improvement slowed in the interval between 2011 and 2018, increasing by 3.0%.

**CONCLUSION:** The New Zealand rheumatologist workforce is becoming more gender-balanced but is below recommended FTE levels, is unevenly distributed, and previously documented improvements in overall FTE have now reached a plateau.

Rheumatic and musculoskeletal diseases are an important cause of disability worldwide<sup>1</sup> and are becoming increasingly prevalent.<sup>2</sup> While the management of these diverse conditions is shared between a number of health professional disciplines in various service configurations, management of inflammatory musculoskeletal disease is usually supervised by a rheumatologist, ideally throughout the course of the disease.<sup>3</sup>

The degree to which the rheumatologist workforce meets the needs of a given population will depend on the size of the workforce, which will in turn be determined by the level to which the funder provides the service and the availability of suitably trained rheumatologists. Studies of various national rheumatologist workforces have shown a wide variation in the level of provision within and between countries.<sup>4-6</sup> A EULAR taskforce on workforce requirements has reviewed the literature on workforce

prediction and has recommended that data should be expressed as full-time equivalents (FTE) as well as head counts per reference population in order to account for part-time work and work outside rheumatology.<sup>7</sup>

Workforce data can potentially assist in service planning in a number of ways. Geographic maldistribution of rheumatologists can help district health boards consider the priorities for new specialist positions, shortfalls in FTE against recommendations can help strengthen arguments for rheumatology departments in their requests for additional FTE, distribution of private practice FTE can help identify market opportunities for individual practitioners and secular trends can help show whether current strategies for boosting rheumatologist FTE are being successful. Innovation in service delivery that leverages fewer rheumatologist FTE to greater service provision can also be targeted to the areas of most

need using workforce data. It is very helpful for rheumatologist training purposes to know the likely need for new rheumatologists over a 5–10 year time-horizon.

The New Zealand rheumatologist workforce was previously surveyed in 1999 and 2003,<sup>8</sup> and an unpublished follow-up survey was undertaken in 2011. The majority of rheumatology clinic visits in New Zealand are government-funded and free of charge to New Zealand residents, but approximately one-third of New Zealanders have private health insurance,<sup>9</sup> and a significant but previously unmeasured proportion of rheumatology clinic visits is provided in private practice. The previous surveys measured full-time rheumatologists *per capita* and provided regional comparisons but were limited by the lack of data from the private sector, age and gender data, predictions of upcoming retirements or inclusion of information on scope of practice. No attempt was made to predict future workforce size, demographics or requirements. This information could help determine whether the number of rheumatologists currently being trained will meet the future needs of the population.

This study was undertaken to<sup>1</sup> determine the size of the current New Zealand rheumatologist workforce;<sup>2</sup> to compare it with historical data, with international data and with published benchmarks;<sup>3</sup> to compare workforce levels in different parts of the country;<sup>4</sup> to examine the demographics of the current workforce; and<sup>5</sup> to determine the impact of projected retirement on service provision over the next five years. In addition, the study sought to compare provision of care for inflammatory and non-inflammatory rheumatic conditions in the public and private sectors.

## Methods

### Survey data

In February 2018 a link to an online survey was sent to all consultant rheumatologists who were current members of the New Zealand Rheumatology Association (NZRA). One rheumatologist who is not a member of the NZRA was also invited to participate, which extended the coverage to all rheumatologists known to be practicing

rheumatology at the time of the survey. The following data were collected in the survey (compulsory questions in italics): *name, main DHB of work, age, public hospital rheumatology appointment (yes/no), FTE in public, number of public clinics per month, referrals for non-inflammatory conditions accepted (yes/no), plans to cease public rheumatology work in the next five years (yes/no), private practice (yes/no), referrals for non-inflammatory conditions accepted (yes/no), plans to cease private practice in the next five years (yes/no), and any unusual working circumstances.*

Reminder notices were sent by email until all rheumatologists had either responded or had declined to participate. Survey data were collated by one member of the research team, who had sole access to the data on individual participants. Privacy was maintained by storing identifying data on a password-protected computer. Only summary data are published here. These data were transferred to SPSS (version 24) and analysed using the Chi-square statistic for between group comparisons, and linear regression for determining the relationship between FTE and number of weekly clinics. There were less than 2% missing data for any variable. Population data for whole country calculations were taken from Statistics New Zealand data, whereas population data for DHBs used Ministry of Health statistics.

The study was outside the scope of the Health and Disability Ethics Committee, and was approved as a low-risk study by the Capital and Coast DHB and Hutt Valley DHB combined Research Governance Group. All submitted data were anonymous and privacy was maintained by secure storage of the data on password-protected computers.

## Results

### Size of the workforce

The survey was completed by 63 of 64 practising New Zealand rheumatologists (response rate 98%). Overall there were 28.71 FTE in the public sector, or 0.59 per 100,000 population. In the public sector, the average number of half-day clinics worked each week per FTE of employment was five ( $R^2$  linear 0.87), meaning that a full-time

**Table 1:** Fulltime-equivalent rheumatologist workforce levels in the public and private sectors expressed as total numbers, FTE per 100,000 population and population per FTE. Based on a total population of 4,871,260, taken from the Statistics New Zealand population estimate for March 2018.

	FTE	FTE per 100,000 pop.	Population per FTE
Public	28.71	0.59	169,671
Private	14.97	0.31	325,401
Total	43.68	0.90	111,522

rheumatologist works five half-day clinics per week. Private practice half-day clinics were therefore regarded as equivalent to 0.2 FTE. On that basis, it was determined that there were 14.97 FTE rheumatologists in the private sector, or 0.31 per 100,000 population, making a total of 43.68 FTE rheumatologists, or 0.90 per 100,000 population (Table 1).

### Geographical distribution

Figure 1 shows the distribution of the public, private and total rheumatologist

FTE per capita and numbers of individual rheumatologists in the 20 DHBs, arranged on the x-axis from north to south. The level of provision of FTE rheumatologists per 100,000 population ranges from 0.2 FTE in Nelson-Marlborough DHB to 0.96 in Whanganui DHB in the public sector, and from 0.3 in the West Coast DHB and 1.44 in Auckland DHB when total FTE are considered. The ratio of private:public FTE is 0.52 for the country as a whole but ranges from 0 (Tairawhiti, Whanganui, West Coast) to 5.33 for Nelson-Marlborough DHB.

**Figure 1:** Fulltime-equivalent rheumatologist workforce levels in the public and private sectors by district health board (primary y-axis). The ratio of private:public FTE is plotted on the secondary y-axis. Bracketed values on the x-axis are number of rheumatologists. The dashed line represents the number of FTE per 100,000 population recommended by the Royal College of Physicians.

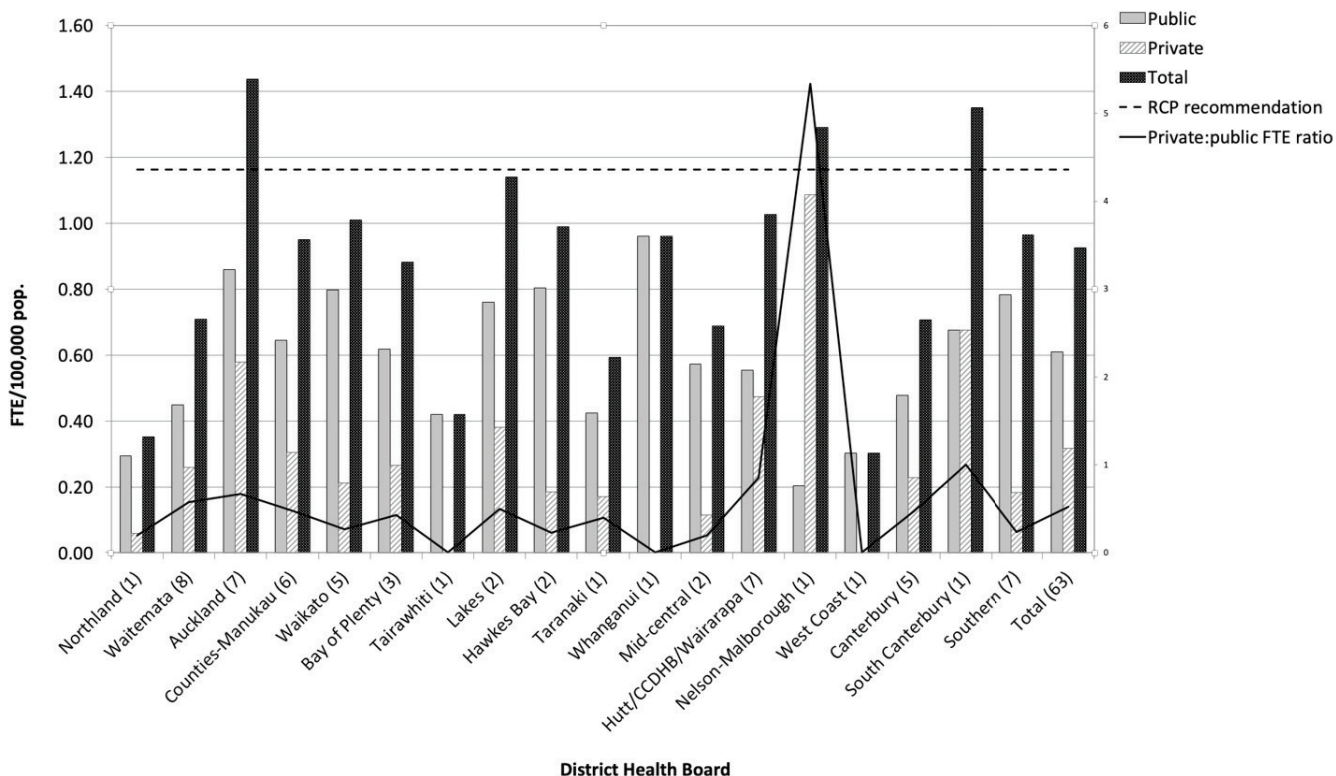
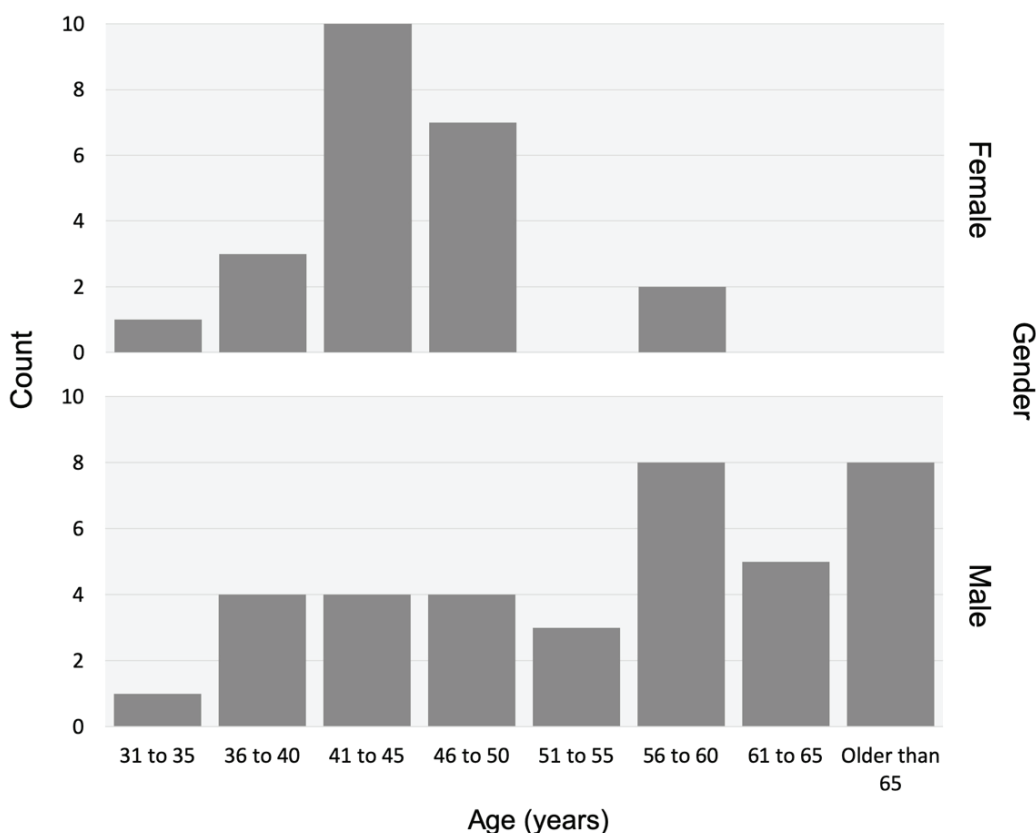


Figure 2: New Zealand rheumatologist numbers by age and gender.



Age and gender

The majority of female rheumatologists (22/25, 88%) were under the age of 50, whereas the majority of male rheumatologists (24/37, 65%) were over the age of 50 (Figure 2). No female rheumatologist was older than 65 years, whereas 22% of male rheumatologists were older than 65 years.

Impending retirement

Of those who responded to the question on retirement, 13/52 (25%) said they were planning to retire from public practice within the next five years. By gender, 2/23 (8.7%) of female rheumatologists said they were planning to retire from public practice within the next five years, compared with 11/29 (38%) of male rheumatologists. This would result in the retirement of 6.58 FTE rheumatologists (0.4 FTE female rheumatologists and 6.18 FTE male rheumatologists), representing 21.9% of the FTE rheumatology workforce. With no further recruitment, or with equal recruitment of male and female rheumatologists, the proportion of the rheumatology workforce that is female will reach 50% within five years.

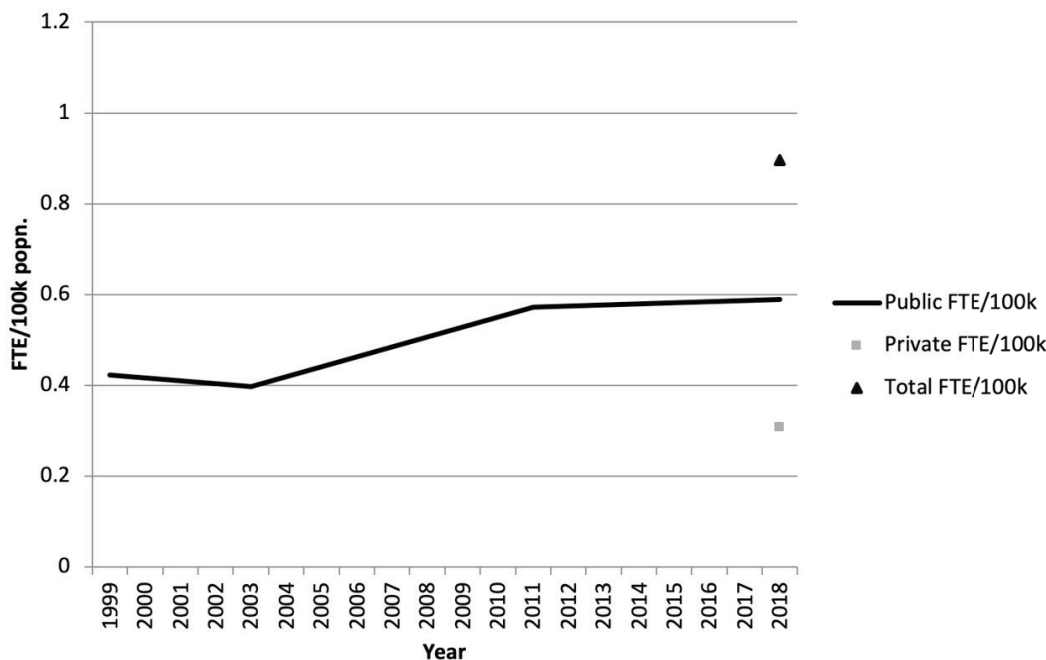
Differences in scope of practice between the public and private sectors

In order to gauge whether there were any major differences in the scope of rheumatology practice between the public and private sectors, a question on acceptance of referrals for non-inflammatory conditions was included. In the public sector 23/53 (43%) of rheumatologists accepted referrals for non-inflammatory conditions *versus* 30/31 (97%) of private rheumatologists (Chi-square = 23.9, *p*<0.001).

The trend in public sector workforce capacity the past two decades

In Figure 3, data from the current survey on public sector FTE *per capita* are compared with previous surveys undertaken in 2011 (unpublished), 2003 and 1999.<sup>8</sup> The FTE per 100,000 population increased from 0.422 in 1999 to 0.572 in 2011. There was a further small increase to 0.589 per 100,000 in 2018 with increases in FTE matched by population growth between 2011 and 2018.

**Figure 3:** Changes in New Zealand rheumatology workforce levels, expressed as fulltime-equivalents per 100,000 total population. Previous data were derived from surveys undertaken in 1999, 2003 and 2011.



## Discussion

This survey found that in February 2018 the public sector New Zealand rheumatology workforce comprised 0.59 per 100,000 people. This equates with one full-time rheumatologist per 169,683 people, which is well below the Royal College of Physicians' recommendation of one rheumatologist per 86,000 people. Unlike previous New Zealand surveys, the current survey included data from private practice. Even with these private practice data, the New Zealand rheumatology workforce falls below the RCP's recommendation, with one rheumatologist per 111,529 people. In a 2015 survey of adult rheumatologists in the US, there was one FTE rheumatologist per 52,000 adults, representing an estimated shortfall of 12.9%.<sup>4</sup> If the same supply and demand model were applied to the New Zealand adult population, the New Zealand rheumatology workforce would need to increase by 13 FTE rheumatologists to achieve the RCP recommendation.

Although changing models of care such as nurse-led clinics might reduce the need for so many rheumatologist FTE, it is relevant to note the RCP recommendation made the important assumption that rheumatology services would include nurse-led clinics and

should also provide services for non-inflammatory disorders. Furthermore, advances in treatment options for non-inflammatory diseases, particularly osteoarthritis, are likely to increase the demand for rheumatologist-led care. It therefore seems reasonable to aim for the RCP recommendation.

We identified potential problems with combining the private and public sector workforce data. Firstly, public hospital appointments in New Zealand include non-patient-contact time, whereas private rheumatologists tend to measure their time in clinical contact sessions, with administrative tasks being undertaken 'out-of-hours'. For this reason, we counted a half-day session in private practice as equivalent to two half-day sessions in public; that being the FTE that would need to be provided to care for those patients in the public sector. Secondly, non-clinical activities are likely not equivalent between public and private rheumatologists so the 'exchange rate' in work-load is difficult to standardise. The relationship between non-clinical and clinical time observed in the public sector may not hold for the private sector. Nevertheless, the ratio observed in the public sector represents the best available approximation to the private sector. We have not been able to find other

New Zealand attempts to reconcile private and public practice.

In addition, rationing of services in the public sector could result in differences in the profile of cases seen in private versus public. As a result, some of the rheumatology work undertaken in private may not be regarded as directly equivalent to public clinic work. On the other hand, private rheumatologists are unlikely to practice outside the scope provided by their training, and the non-inflammatory conditions seen in the private sector could be considered to meet unmet need caused by the public sector opting out of non-inflammatory rheumatology. It is not clear how current public hospital rheumatology trainees will learn to diagnose and manage these non-inflammatory conditions, which they may encounter in private practice once they complete their training.

None of the individual DHBs achieved the Royal College of Physicians recommendation of one FTE rheumatologist per 86,000 population,<sup>10</sup> or 1.162 FTE per 100,000 population, and only four of the DHBs approached or exceeded that level when both private and public FTE were considered. There was a large variation in the level of FTE per capita across the 20 DHBs, with total FTE per 100,000 ranging from 0.3 to 1.44; a 4.8-fold difference, which is considerably greater than the regional variation seen in the US and UK.<sup>4,6</sup> The larger urban centres did not necessarily out-perform provincial and remote areas, with three of the top five DHBs ranked by FTE *per capita* being provincial.

This survey reveals that older rheumatologists approaching retirement are predominantly male, whereas rheumatologists under 50 years of age are predominantly female, which will result in an increasingly female workforce in the coming years. This is a highly positive development and suggests that rheumatology is an attractive career option for women. Aspects of care highly relevant to rheumatology, such as patient-centredness have been shown to be more commonly practiced by women.<sup>14</sup> Flexible work arrangements are likely to become more common, particularly for men and women raising families.<sup>15</sup>

Longitudinal public sector survey data reveal an improvement in rheumatologist FTE per capita over the last two decades. The data suggest that this improvement may be slowing down and may have reached a plateau. If the rate of growth observed over the last seven years continues, and if the rate of growth in private is the same as that in public, the national average combined private and public FTE *per capita* could reach the Royal College of Physicians' recommendation in about 15 years. However, at the current rate of growth, the public sector FTE *per capita* is unlikely to reach this level in the next 50 years.

One important omission from the data that were collected concerns ethnicity. Previous surveys of the rheumatologist workforce have also not included ethnicity data, but this will be rectified for future surveys. It is clearly necessary to better document the likely under-representation of Māori and Pasifika practitioners among the rheumatologist workforce.

The strengths of this survey include the high participation rate, with all but one of the 64 eligible rheumatologists providing data, and the inclusion of data from both the private and public sectors. A possible weakness is the difficulty comparing and combining data from the public and private sectors, given the differences in allocation of time and scope of practice.

## Conclusion

The New Zealand rheumatologist workforce is below the levels recommended by the RCP and ACR, even with the inclusion of data from private practice; is unevenly distributed geographically; and the recent rate of increase is only just ahead of the rate of population growth. The demographics are changing from a predominance of males to a more gender-balanced workforce. Referrals for non-inflammatory conditions are declined by the majority of public sector rheumatologists, but accepted by almost all private practitioners. These data could inform decision-making about training and recruitment of rheumatologists and provision of rheumatology services in New Zealand.

**Competing interests:**

Nil.

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