



The New Zealand Veterinary Workforce in 2009-2010

Abstract

Of the 2833 annual practising certificate forms sent to veterinarians by the Veterinary Council of New Zealand (VCNZ) in early 2010 a total of 2251 were returned and of this group 2122 responded to a questionnaire of work activities carried out in 2009. Of the group that returned a completed APC form, the response rate to the questionnaire was 94%.

Among those veterinarians that applied for an APC in 2010 48% were female, a minor increase from the 47% recorded in 2009. Twenty-eight percent of the country's veterinarians received their primary degree overseas. Based on questionnaire responses relating to work carried out in 2009 40% of the country's veterinarians worked with large animals, 37% worked with companion animals and the remainder worked in laboratories, regulatory activities, teaching, and/or research.

Changes to the format of the 2010 APC form (Appendix 1) included a request for veterinarians to list their work place address instead of their contact address. Assuming that this change had little effect on veterinarian counts in the designated Rural Bonding Scheme areas it appears the scheme has had some effect on regional veterinarian counts. Changes in veterinarian counts for the Rural Bonding Scheme areas were as follows: Gisborne +3, Wairoa +4, Tararua -1, Buller, Grey and Westland +9, and Southland and Gore +7. Monitoring the impact of the scheme over the next few years will be an important piece of work in regard to the international issue of retaining young vets in rural areas.

The age distribution of the profession remains unchanged from 2009. Of note is the relatively high proportion of practising veterinarians 50-60 years of age and low proportion 25-40 years of age, compared with 2002. As the current cohort of veterinarians 50-65 year of age start to retire it is expected that there will be smaller numbers of domestic veterinarians available to replace them. While it is likely that this deficit will be overcome by admission of more international graduates into the country, of greater concern is that the number of veterinarians with experience working in New Zealand will reduce. In the medium to long term future this has important implications influencing the productivity of livestock, the ability to detect new and emerging disease conditions, and animal welfare.

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1 Introduction

This report presents a summary of the most relevant results from the 2009-2010 survey of veterinarians conducted by the Veterinary Council of New Zealand.

It follows the report of the New Zealand Veterinary Workforce in 2008-2009, which presented details on demographics and work activities of the profession and trends in retention.

2 Methods

The eligible population for the workforce survey questionnaire included veterinarians with general or provisional registration and a current APC at the date APC application forms for 2010-2011 were mailed out between January and May 2010.

The analyses in this report are presented in two categories. The first provides details of the status of the veterinary profession based on veterinarians who applied for an APC for 2010-2011. The second relates specifically to the questionnaire where veterinarians were asked to describe key aspects of their work activities for the twelve month period from 1 January to 31 December 2009 (inclusive). Work details were collected in the categories 'Employment', 'Role' and 'Work type' for up to four individual work areas.

A copy of the questionnaire is provided in Appendix 1. It should be noted that a small number of modifications were made to the 2010 questionnaire, based on analyses of survey responses from the 2009 questionnaire. These include: (1) a request to provide the physical address of work location (as opposed to contact address); and (2) inclusion of the following work type codes: MX (mixed practice), PA (production animals), RG (regulatory), and SR (small ruminants).

3 Results

3.1 Response

A total of 2833 APC forms were sent out between 6 January and 16 May 2010 by VCNZ to practising and non practising veterinarians. By June 2010 2251 APC forms had been returned of which 2122 included a completed workforce questionnaire. Of the group that received an APC form, the response rate was 75%, a decrease from the 85% response rate for the 2009 survey. Of the group that returned a completed APC form (presumably those that took out an APC for 2010-2011), the response rate to the questionnaire was 94%.

The analyses relating to the status of those applying for an APC or non practising status for 2010-2011 are based on the 2251 veterinarians that returned a completed APC form by June 2010. The analyses relating to work activities carried out in 2009 are based on the 2122 completed questionnaires.

3.2 Size of the veterinary workforce

Details of the numbers of registered practising and non-practising veterinarians in New Zealand for 2003 to 2010 (as at 30 June each year) are shown in Table 1. On 30 June 2010 there were 2392 practising veterinarians, an increase of 30% from 2002. This represents 55 practising veterinarians per 100,000 head of population, an increase in veterinarian availability from 48 per 100,000 in 2002. Note that the 30 June veterinarian counts are quoted here to document long term trends in the size of the veterinary workforce. All other analyses provided in this report relate to those applying for an APC or non-practising status for 2011 and/or those completing the questionnaire about activities carried out in 2009.

Table 1: Counts of registered, practising and non-practising veterinarians in the Veterinary Council of New Zealand database as at 30 June, 2003-2010. Population counts derived from Statistics New Zealand.

| Outcome | Year | | | | | | | |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Practising | 1940 | 2047 | 2122 | 2171 | 2275 | 2312 | 2360 | 2392 |
| Non-practising | 401 | 369 | 347 | 320 | 310 | 258 | 219 | 168 |
| Total | 2341 | 2416 | 2469 | 2491 | 2585 | 2570 | 2579 | 2560 |
| Population ^a | 4,009,200 | 4,061,400 | 4,098,900 | 4,140,300 | 4,228,000 | 4,268,600 | 4,315,800 | 4,367,700 |
| Vets.head pop ⁻¹ | 2067 | 1984 | 1932 | 1907 | 1858 | 1846 | 1829 | 1826 |
| Vets.100,000 ⁻¹ | 48 | 50 | 52 | 52 | 54 | 54 | 55 | 55 |

^a Data from Statistics New Zealand (URL: http://www.stats.govt.nz/browse_for_stats/population.aspx).

Table 2: Counts of full time equivalent veterinarians for 2009 by specialist status, gender and role code. Source: the 2122 veterinarians who completed the 2010 workforce questionnaire and the Veterinary Council of New Zealand database.

| Type | Role | | | | | | | Total |
|-----------------|-----------|------------|-----------|---------|-------|-----------|------------|-------|
| | Clinician | Consultant | Education | Manager | Other | Technical | Not stated | |
| Non-specialist: | | | | | | | | |
| Female | 739 | 19 | 32 | 26 | 13 | 100 | 0 | 929 |
| Male | 819 | 57 | 28 | 82 | 21 | 183 | 0 | 1190 |
| Total | 1558 | 76 | 60 | 108 | 34 | 283 | 0 | 2119 |
| Specialist: | | | | | | | | |
| Female | 8 | 4 | 2 | 0 | 0 | 2 | 0 | 16 |
| Male | 18 | 7 | 11 | 1 | 2 | 4 | 0 | 43 |
| Total | 26 | 11 | 13 | 1 | 2 | 6 | 0 | 59 |
| All: | | | | | | | | |
| Female | 747 | 23 | 34 | 26 | 13 | 102 | 0 | 945 |
| Male | 837 | 64 | 39 | 83 | 23 | 187 | 0 | 1233 |
| Total | 1584 | 87 | 73 | 109 | 36 | 289 | 0 | 2178 |

Respondents were asked to record their role, the type of work performed and the total number of hours per week spent working in up to four individual work areas. Work hours were summed across all respondents for each role and work type category allowing the number of veterinarians in each category to be expressed in terms of full time equivalents (FTEs). Full time equivalents were calculated proportionately, so that 60 hours worked per week equals 1.5 FTE. Total numbers of veterinary FTEs vary across Tables 2 to 4 due to rounding.

Counts of veterinary FTEs by role code and stratified by specialist status and gender are shown in Table 2. Table 3 presents the same data, stratified by age. In the tables that follow the work category 'manager' should be interpreted in a broad sense, that is someone who oversees (i.e. manages) activities carried out by others in the workplace.

Table 3: Counts of full time equivalent veterinarians for 2009 by age, specialist status and role code. Source: the 2122 veterinarians who completed the 2010 workforce questionnaire and the Veterinary Council of New Zealand database.

| Type | Role | | | | | | | Total |
|-----------------|-----------|------------|-----------|---------|-------|-----------|------------|-------|
| | Clinician | Consultant | Education | Manager | Other | Technical | Not stated | |
| Non-specialist: | | | | | | | | |
| 20-30 | 308 | 5 | 3 | 1 | 0 | 5 | 0 | 322 |
| 30-40 | 448 | 10 | 18 | 16 | 7 | 62 | 0 | 561 |
| 40-50 | 396 | 15 | 22 | 29 | 9 | 75 | 0 | 546 |
| 50-60 | 297 | 27 | 13 | 42 | 13 | 100 | 0 | 492 |
| 60+ | 107 | 20 | 4 | 21 | 4 | 41 | 0 | 197 |
| Unknown | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 1558 | 77 | 60 | 109 | 33 | 283 | 0 | 2120 |
| Specialist: | | | | | | | | |
| 20-30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30-40 | 7 | 1 | 1 | 0 | 0 | 1 | 0 | 10 |
| 40-50 | 10 | 4 | 2 | 0 | 1 | 2 | 0 | 19 |
| 50-60 | 5 | 2 | 6 | 1 | 1 | 3 | 0 | 18 |
| 60+ | 4 | 3 | 4 | 0 | 0 | 1 | 0 | 12 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 26 | 10 | 13 | 1 | 2 | 7 | 0 | 59 |
| All: | | | | | | | | |
| 20-30 | 308 | 5 | 3 | 1 | 0 | 5 | 0 | 322 |
| 30-40 | 455 | 11 | 19 | 16 | 7 | 63 | 0 | 571 |
| 40-50 | 406 | 19 | 24 | 29 | 10 | 77 | 0 | 565 |
| 50-60 | 302 | 29 | 19 | 43 | 14 | 103 | 0 | 510 |
| 60+ | 111 | 23 | 8 | 21 | 4 | 42 | 0 | 209 |
| Unknown | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 1584 | 87 | 73 | 110 | 35 | 290 | 0 | 2179 |

Figure 1 is a population pyramid comparing the ages of practising veterinarians in 2002 with 2010. This plot is derived from details of practising veterinarians in 2002 ($n = 1800$) and 2010 ($n = 2251$). Figure 1 shows that in 2010 the proportion of veterinarians 25-30 years of age was 10%, a decrease from 12% recorded in 2002. In 2010 the proportion of veterinarians 50-55 years of age was 12%, an increase from 10% recorded in 2002.

The age distribution of the profession remains unchanged from 2009. Of note is the high proportion of practising veterinarians 50-60 years of age and low proportion 25-40 years of age, compared with 2002. As the current cohort of veterinarians 50-65 year of age start to retire it is expected that there will be smaller numbers of New Zealand trained veterinarians available to replace them. While it is likely that this deficit will be overcome by admission of more international graduates into the country of greater concern is that the number of veterinarians with experience working in New Zealand will reduce. This raises a number of important issues:

- Care needs to be taken to ensure that the international graduates that join the New Zealand workforce have skill sets that match the country's animal health needs. Given the trend, common among many western countries, for the majority of graduates to work in the small animal sector it is conceivable that many of those seeking to work in New Zealand will be companion animal vets. Will these individuals fill New Zealand's acknowledged need for vets to work in the agricultural sector?
- The ability to detect new and emerging disease syndromes relies on a veterinary workforce (both clinical and non-clinical) with good local knowledge. Smaller numbers of practitioners with local knowledge represents a risk in that the profession's ability to detect unusual and subtle changes in a previously stable disease profile will be reduced.
- A lack of training in prevailing conditions of livestock raised under New Zealand farming conditions could result in potential negative impacts on the health and welfare of farmed animals.

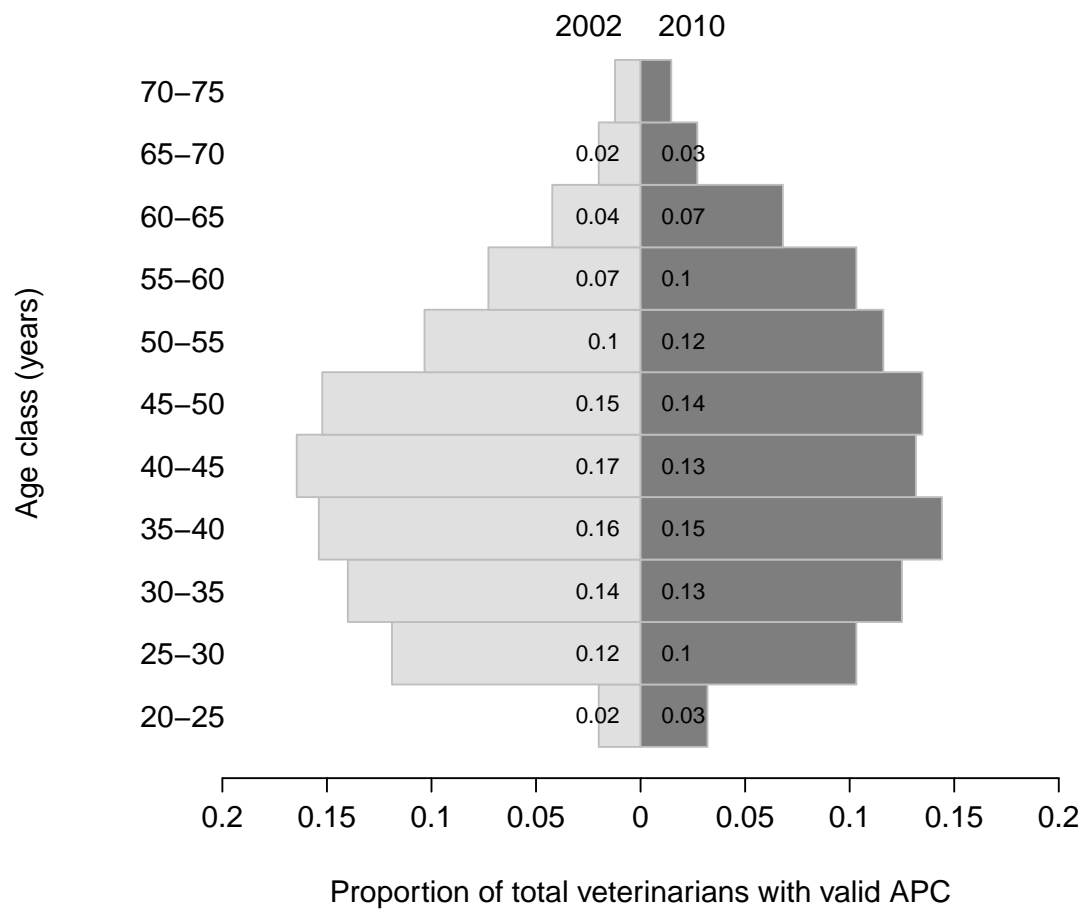


Figure 1: Population pyramid comparing the proportion of veterinarians in 5-year age groupings for 2002 (left) with 2010 (right).

Table 4 provides counts of veterinary FTEs, by work type classification and workplace region in 2009.

3.3 Hours worked per week

Counts of veterinarians (not veterinary FTEs) by categories of routine hours worked as a veterinarian in 2009 and stratified by primary role code are presented in Table 5. The median number of routine hours worked per week was 40 (interquartile range [IQR] 25-45), an increase from the median of 36 hours (IQR 20-45) reported for 2008.

For women the median routine hours worked per week was 35 (IQR 20-42) and for men it was 40 (IQR 30-46). The number of routine hours worked per week varied by role (Table 5 and Figure 2) with a greater variability in hours worked reported by clinicians, compared with those in other roles. The variability of hours worked per week was greater for males than it was for females, particularly for clinicians.

Compared with 2008, there has been a substantial decrease in the numbers of individuals working less than 40 hours per week in 2009 (Table 5). In 2008 766 of 2136 (36%) veterinarians reported that they worked 20-30 hours per week; in 2009 this had decreased to 583 of 2122 (27%).

Counts of veterinarians by categories of additional work hours are shown in Table 6. 'Additional work hours' in this context refers to work carried out as a veterinarian that did not relate to the four work areas listed in the body of the questionnaire. Table 7 shows the total number of hours worked per week, i.e. routine hours worked (Table 5) plus additional hours (Table 6).

Table 4: Counts of full time equivalent veterinarians for 2009 by region and work type classification. Key: BC beef cattle; CA companion animals (including avian, lifestyle block animals); DC dairy cattle; EQ equine; LA large animal (including production animals, deer); MISC miscellaneous (epidemiology, pharmaceutical, pathology, research, teaching); MONO monogastrics (pigs, poultry); MX mixed animal practice; OT other (including wildlife); PM practice management; REG regulatory (animal welfare, compliance, disease control, export certification, meat inspection); SR small ruminants (sheep, goats). Source: the 2122 veterinarians who completed the 2010 workforce questionnaire.

| Region | BC | CA | DC | EQ | LA | MISC | MONO | MX | OT | PM | REG | SR | Total |
|---------------|----|-----|-----|-----|-----|------|------|-----|----|----|-----|----|-------|
| Auckland | 2 | 226 | 11 | 38 | 6 | 19 | 0 | 23 | 12 | 9 | 22 | 1 | 368 |
| Bay of Plenty | 0 | 31 | 9 | 2 | 5 | 1 | 0 | 7 | 1 | 4 | 7 | 0 | 67 |
| Canterbury | 4 | 123 | 29 | 31 | 27 | 8 | 3 | 33 | 5 | 7 | 28 | 1 | 299 |
| East Cape | 2 | 12 | 1 | 1 | 3 | 0 | 0 | 5 | 0 | 1 | 6 | 1 | 31 |
| Hawke's Bay | 2 | 27 | 2 | 5 | 6 | 2 | 0 | 5 | 3 | 3 | 13 | 1 | 69 |
| Manawatu | 5 | 65 | 24 | 24 | 14 | 55 | 4 | 26 | 13 | 5 | 35 | 5 | 273 |
| Marlborough | 0 | 16 | 3 | 1 | 2 | 0 | 0 | 0 | 1 | 2 | 4 | 0 | 29 |
| Nelson | 0 | 19 | 1 | 1 | 1 | 1 | 0 | 11 | 0 | 2 | 4 | 1 | 40 |
| Northland | 1 | 31 | 14 | 2 | 2 | 1 | 0 | 18 | 0 | 3 | 6 | 0 | 78 |
| Otago | 0 | 27 | 10 | 0 | 9 | 5 | 0 | 19 | 1 | 2 | 16 | 1 | 90 |
| Southland | 1 | 20 | 20 | 4 | 11 | 1 | 0 | 19 | 1 | 2 | 20 | 3 | 100 |
| Taranaki | 1 | 12 | 14 | 2 | 2 | 1 | 0 | 11 | 1 | 0 | 3 | 0 | 49 |
| Waikato | 3 | 101 | 119 | 50 | 24 | 16 | 1 | 46 | 5 | 16 | 36 | 1 | 419 |
| Wellington | 1 | 85 | 24 | 4 | 4 | 19 | 0 | 19 | 21 | 6 | 54 | 1 | 237 |
| West Coast | 0 | 10 | 8 | 3 | 0 | 0 | 0 | 3 | 0 | 1 | 3 | 0 | 28 |
| Total | 21 | 804 | 291 | 167 | 116 | 129 | 9 | 245 | 65 | 62 | 255 | 16 | 2178 |

Table 5: Routine hours worked by veterinarians in 2009 (including hours doing work while on call), stratified by primary role code. Source: the 2122 veterinarians who completed the 2010 workforce questionnaire.

| Hours | Role | | | | | | | Total |
|---------|-----------|------------|-----------|---------|-------|-----------|------------|-------------|
| | Clinician | Consultant | Education | Manager | Other | Technical | Not stated | |
| 20-30 | 460 | 45 | 18 | 14 | 9 | 37 | 0 | 583 (27%) |
| 30-40 | 313 | 21 | 18 | 14 | 6 | 36 | 0 | 408 (19%) |
| 40-50 | 473 | 17 | 17 | 41 | 13 | 193 | 0 | 754 (36%) |
| 50-60 | 189 | 11 | 10 | 16 | 2 | 15 | 0 | 243 (11%) |
| 60+ | 110 | 2 | 3 | 6 | 3 | 4 | 0 | 128 (6%) |
| Missing | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 6 (0%) |
| Total | 1547 | 96 | 66 | 91 | 34 | 287 | 1 | 2122 (100%) |

Table 6: Additional work hours by veterinarians in 2009 (in other work types), stratified by primary role code. Source: the 2122 veterinarians who completed the 2010 workforce questionnaire.

| Hours | Role | | | | | | | Total |
|---------|-----------|------------|-----------|---------|-------|-----------|------------|-------------|
| | Clinician | Consultant | Education | Manager | Other | Technical | Not stated | |
| 20-30 | 47 | 3 | 0 | 0 | 0 | 5 | 0 | 55 (3%) |
| 30-40 | 39 | 1 | 1 | 2 | 0 | 3 | 0 | 46 (2%) |
| 40-50 | 34 | 3 | 2 | 3 | 0 | 5 | 0 | 47 (2%) |
| 50-60 | 10 | 1 | 2 | 0 | 0 | 0 | 0 | 13 (1%) |
| 60+ | 4 | 1 | 0 | 0 | 0 | 1 | 0 | 6 (0%) |
| Missing | 1413 | 87 | 61 | 86 | 34 | 273 | 1 | 1955 (92%) |
| Total | 1547 | 96 | 66 | 91 | 34 | 287 | 1 | 2122 (100%) |

Table 7: Total work hours (i.e. routine work hours + additional hours) by veterinarians in 2009, stratified by primary role code. Source: the 2122 veterinarians who completed the 2010 workforce questionnaire.

| Hours | Role | | | | | | | Total |
|---------|-----------|------------|-----------|---------|-------|-----------|------------|-------------|
| | Clinician | Consultant | Education | Manager | Other | Technical | Not stated | |
| 20-30 | 308 | 34 | 6 | 4 | 6 | 22 | 0 | 380 (18%) |
| 30-40 | 143 | 8 | 9 | 4 | 4 | 15 | 0 | 183 (9%) |
| 40-50 | 569 | 25 | 24 | 49 | 18 | 213 | 0 | 898 (42%) |
| 50-60 | 341 | 21 | 20 | 24 | 2 | 28 | 0 | 436 (21%) |
| 60+ | 184 | 8 | 7 | 10 | 3 | 7 | 0 | 219 (10%) |
| Missing | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 6 (0%) |
| Total | 1547 | 96 | 66 | 91 | 34 | 287 | 1 | 2122 (100%) |

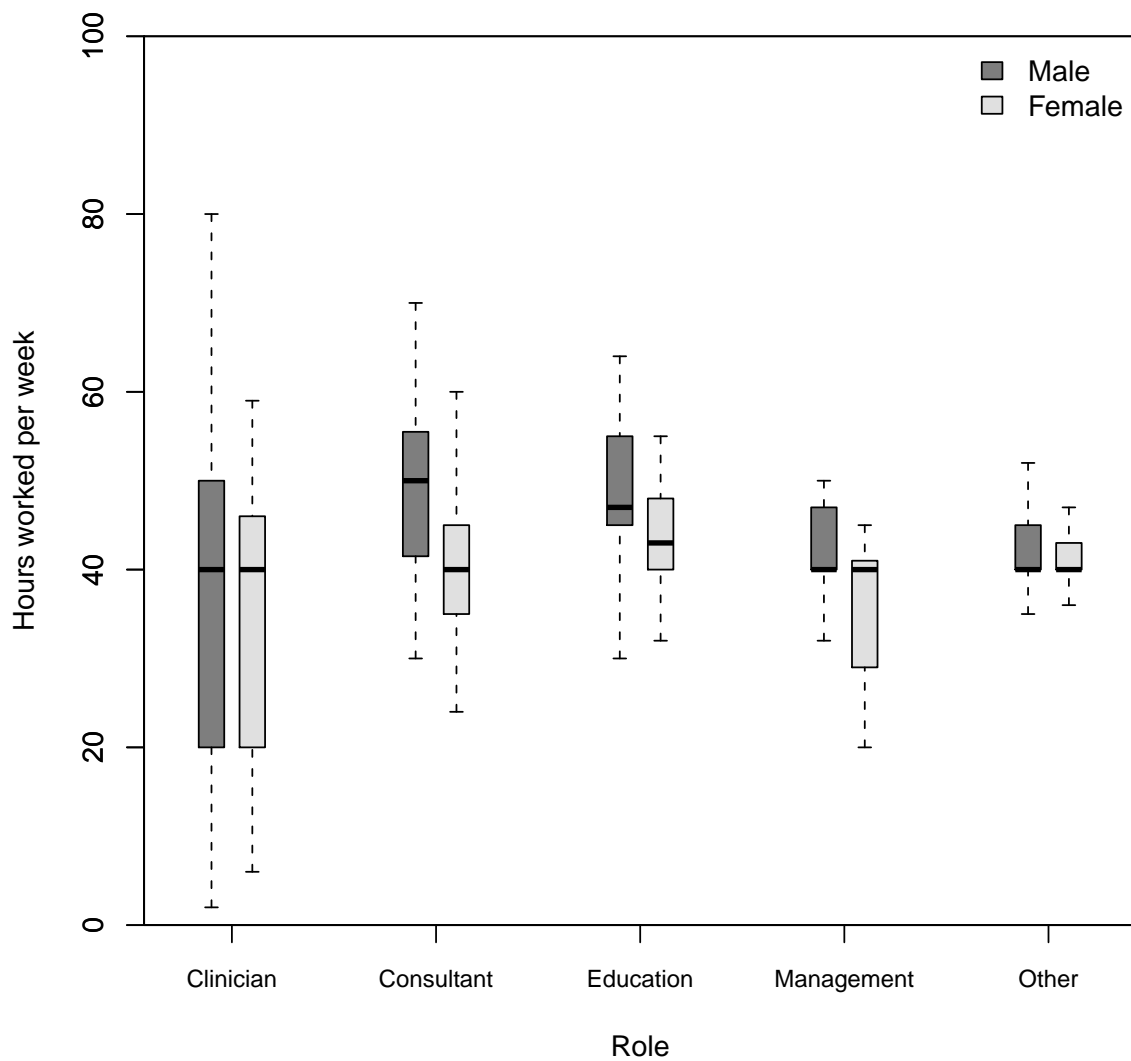


Figure 2: Box and whisker plot showing the number of hours worked per week by veterinarians in their primary work role in 2009 by gender. In the above plot the ends of each box are the upper and lower quartiles, so the box spans the interquartile range. The median is marked by a line inside each box. The whiskers are the two lines above and below each box that extend to the highest and lowest observations. Source: the 2122 veterinarians who completed the 2010 workforce questionnaire.

Table 8: Counts of veterinarians in categories of hours per week spent on call but not actually working by role codes worked in 2009. Source: the 2122 veterinarians who completed the 2010 workforce questionnaire.

| Hours | Role | | | | | | | Total |
|-------|-----------|------------|-----------|---------|-------|-----------|------------|-------------|
| | Clinician | Consultant | Education | Manager | Other | Technical | Not stated | |
| 5 | 46 | 0 | 2 | 1 | 0 | 3 | 0 | 52 (2%) |
| 10 | 73 | 3 | 1 | 5 | 0 | 5 | 0 | 87 (4%) |
| 20 | 253 | 7 | 4 | 5 | 1 | 5 | 0 | 275 (13%) |
| 30 | 259 | 3 | 1 | 1 | 1 | 1 | 0 | 266 (13%) |
| 40 | 253 | 9 | 2 | 7 | 1 | 5 | 0 | 277 (13%) |
| None | 663 | 74 | 56 | 72 | 31 | 268 | 1 | 1165 (55%) |
| Total | 1547 | 96 | 66 | 91 | 34 | 287 | 1 | 2122 (100%) |

Total work hours for 2009 (Table 7) varied little from those reported in 2008. This implies that those working part time (i.e. less than 40 hours per week in routine veterinary work) were spending the remainder of their time in other work activities.

Table 8 provides counts of veterinarians by categories of the number of hours per week spent on call but not actually working. Nine hundred and fifty seven of the 2122 veterinarians (45%) that responded to the questionnaire spent time during the week on-call during 2009. The median time spent on-call in any week was 20 (IQR 12-30) hours. Hours per week spent on call were similar for males (median 22 hours; IQR 14-30) and females (median 20 hours; IQR 12-30).

A greater proportion of the workforce reported up 40 hours per week on call in 2009 (277 of 2122 veterinarians, 13%) compared with 2008 (47 of 2136, 2%). It is not clear if this change has been due to a change in the way the question about on-call work activity was interpreted (the text of the question was the same for both questionnaires) or due to other factors. One explanation might be that in 2009, due to the recession, practices were less likely to employ part time veterinarians for on-call work (reducing the numbers working 20-30 hours, Table 5) preferring instead to cover this task using full time staff.

Table 9: Counts of veterinarians working less than 40 hours per week in their primary role in 2009 and their stated reasons for doing so. Source: the 2122 veterinarians who completed the 2010 workforce questionnaire.

| Reason | Number (%) |
|---------------------------|------------|
| Contract requirements | 17 (2%) |
| Casual work | 27 (3%) |
| Difficulty obtaining work | 7 (1%) |
| Family care | 77 (8%) |
| Health | 6 (1%) |
| Work overseas | 0 (0%) |
| Other | 16 (2%) |
| Parental leave | 8 (1%) |
| Personal preference | 99 (10%) |
| Working part time | 263 (27%) |
| Retired or semi-retired | 38 (4%) |
| Study | 4 (0%) |
| Not stated | 429 (43%) |
| Total | 991 (100%) |

Table 9 provides a breakdown of the reasons cited for working less than 40 hours per week in their primary role in 2009. Of note here is the relatively high proportion that have not cited a reason (429 of 991, 43%). The most common reason among those providing a reason was (presumably) an elective decision to work part time (263 of 991, 27%).

3.4 Geographical distribution

Counts of veterinarians by region were based on the town or suburb of the work place address provided by each veterinarian on their workforce questionnaire. Note that this differs from the 2009 questionnaire in which respondents were asked to provide their contact address.

Regional population counts were obtained from the 2006 Census of Population and Dwellings (Anonymous, 2006). Regional livestock population counts were derived from the January 2008 version of AgriBase (Sanson & Pearson, 1997). Livestock population counts were expressed in terms of livestock units (LSUs). One LSU was defined as 250 kg liveweight, with cattle (beef and dairy) contributing 2 LSUs, sheep 0.2 LSUs, and pigs 0.5 LSUs.

Numbers of veterinarians, population counts, livestock unit counts and numbers of veterinarians per 100,000 head of human population and number of veterinarians per 100,000 LSUs in each of the 16 regions of New Zealand are listed in Table 10. The same data at the 2006 territorial land authority (TLA) level is provided in Appendix 2.¹

Throughout New Zealand the number of veterinarians per 100,000 head of population was 56. The number of veterinarians ranged from 0 per 100,000 in the Kawera and Mackenzie Districts to 239 per 100,000 in Matamata-Piako (Appendix 2).

A colour shaded map showing the numbers of veterinarians per 100,000 head of population by TLA is shown in Figure 3. Figure 4 shows the number of veterinarians per 100,000 LSUs. Figures 5 and 6 show for the North and South Islands (respectively) the change in veterinarian counts per TLA in 2010 relative to 2009. A marked decrease in veterinarian numbers was recorded for the Wellington TLA (Figure 5). This is most likely to be due to the 2009 questionnaire asking for work place address rather than contact address. This change is likely to have increased veterinarian counts in regional locations and, as a result, the change in TLA veterinarian counts for 2010 are not a true reflection of regional changes that occurred in 2010. Figures 5 and 6 should be interpreted accordingly.

Assuming that this change had little effect on veterinarian counts in the designated Rural Bonding Scheme areas it appears the scheme has had some effect on regional veterinarian counts. Changes in veterinarian counts for the Rural Bonding Scheme areas were as follows: Gisborne +3, Wairoa +4, Tararua -1, Buller, Grey and Westland +9, and Southland and Gore +7. Collaboration with MAF will be required to determine if the increased numbers in these areas are directly attributable to the bonding scheme. Monitoring the impact of the scheme over the next few years will be an important piece of work in regard to the international issue of retaining young vets in rural areas.

¹http://www.stats.govt.nz/browse_for_stats/people_and_communities/geographic-areas/download-digital-boundaries.aspx

Table 10: Counts of veterinarians who had applied for an APC for 2010-2011 by June 2010, regional human and livestock unit population counts and the estimated number of veterinarians per 100,000 head of population and the estimated number of veterinarians per 100,000 livestock units. Source: the 2251 veterinarians who applied for an APC from the VCNZ by June 2010, the 2006 New Zealand Census of Population and Dwellings, and AgriBase (2010).

| Region | Vets ^a | Population ^b | LSU ^c | Vets/pop ^d | Vets/LSU ^e |
|---------------|-------------------|-------------------------|------------------|-----------------------|-----------------------|
| Auckland | 385 (+34) | 1,319,349 | 968,636 | 29 | 40 |
| Bay of Plenty | 71 (-27) | 260,808 | 1,192,851 | 27 | 6 |
| Canterbury | 320 (+65) | 520,278 | 3,607,048 | 62 | 9 |
| East Coast | 30 (+10) | 44,463 | 941,787 | 67 | 3 |
| Hawkes Bay | 73 (-9) | 147,639 | 1,697,391 | 49 | 4 |
| Manawatu | 266 (+42) | 222,213 | 3,462,243 | 120 | 8 |
| Marlborough | 29 (+6) | 42,549 | 320,048 | 68 | 9 |
| Northland | 88 (+5) | 148,443 | 1,870,275 | 59 | 5 |
| Otago | 95 (+12) | 195,348 | 2,325,747 | 49 | 4 |
| Southland | 100 (+22) | 90,876 | 2,315,347 | 110 | 4 |
| Taranaki | 47 (-29) | 104,280 | 1,659,046 | 45 | 3 |
| Tasman-Nelson | 47 (+3) | 87,516 | 314,715 | 54 | 15 |
| Waikato | 411 (+75) | 362,895 | 4,775,808 | 113 | 9 |
| Wellington | 262 (-116) | 448,941 | 919,909 | 58 | 28 |
| West Coast | 27 (+9) | 31,326 | 412,450 | 86 | 7 |
| Unknown | 0 (-185) | - | - | - | - |
| Total | 2251 (-83) | 4,026,924 | 26,783,301 | 56 | 8 |

^a Numbers in parentheses indicate the change in veterinarian counts from 2009.

^b Based on 2006 New Zealand Census of Population and Dwellings.

^c Livestock units \times 100,000.

^d Veterinarians per 100,000 head of population.

^e Veterinarians per 100,000 livestock units.

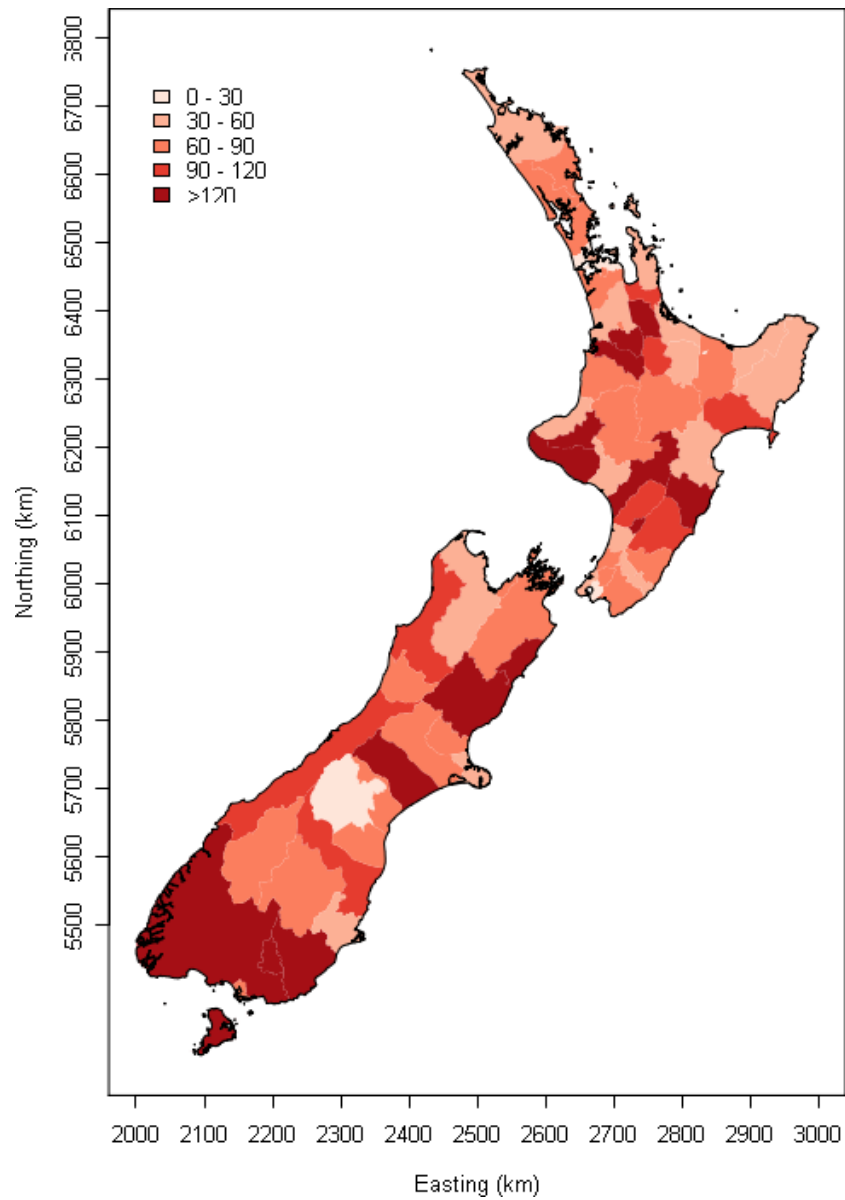


Figure 3: Map of New Zealand showing the number of veterinarians per 100,000 head of population in 2010 by territorial land authority. Source: the 2251 veterinarians who applied for an APC from the VCNZ by June 2010.

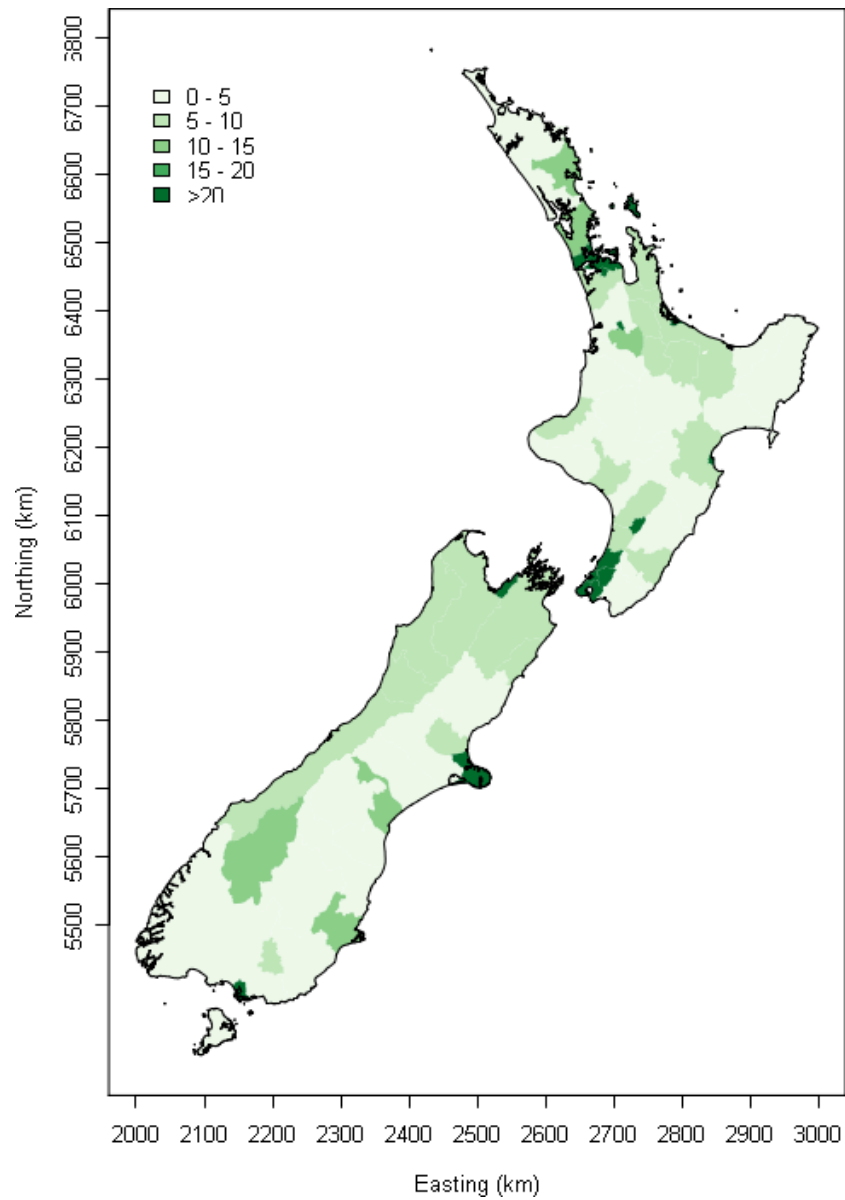


Figure 4: Map of New Zealand showing the number of veterinarians per 100,000 livestock units in 2010 by territorial land authority. Source: the 2251 veterinarians who applied for an APC from the VCNZ by June 2010.

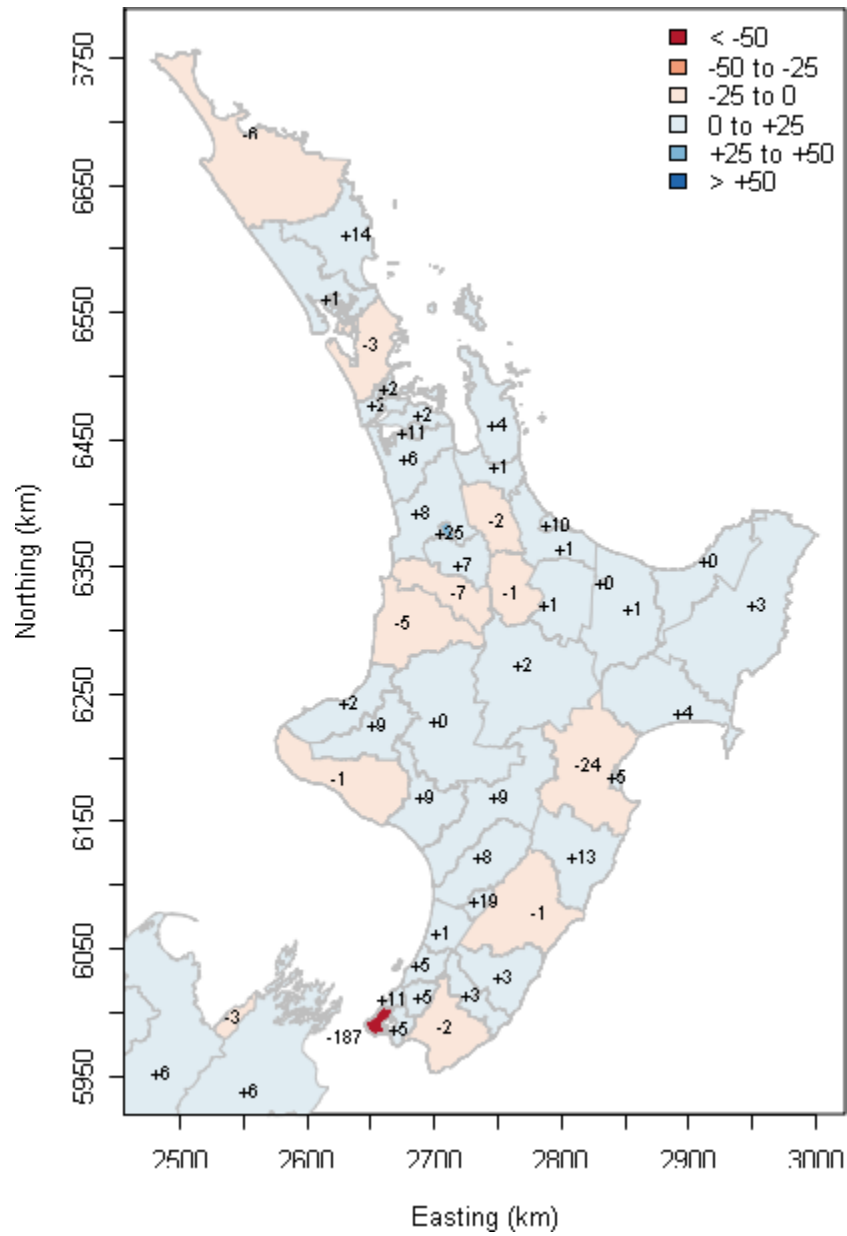


Figure 5: Map of the North Island of New Zealand showing the change in veterinarian counts per TLA in 2010 relative to 2009. Source: the 2251 veterinarians who applied for an APC from the VCNZ by June 2010.

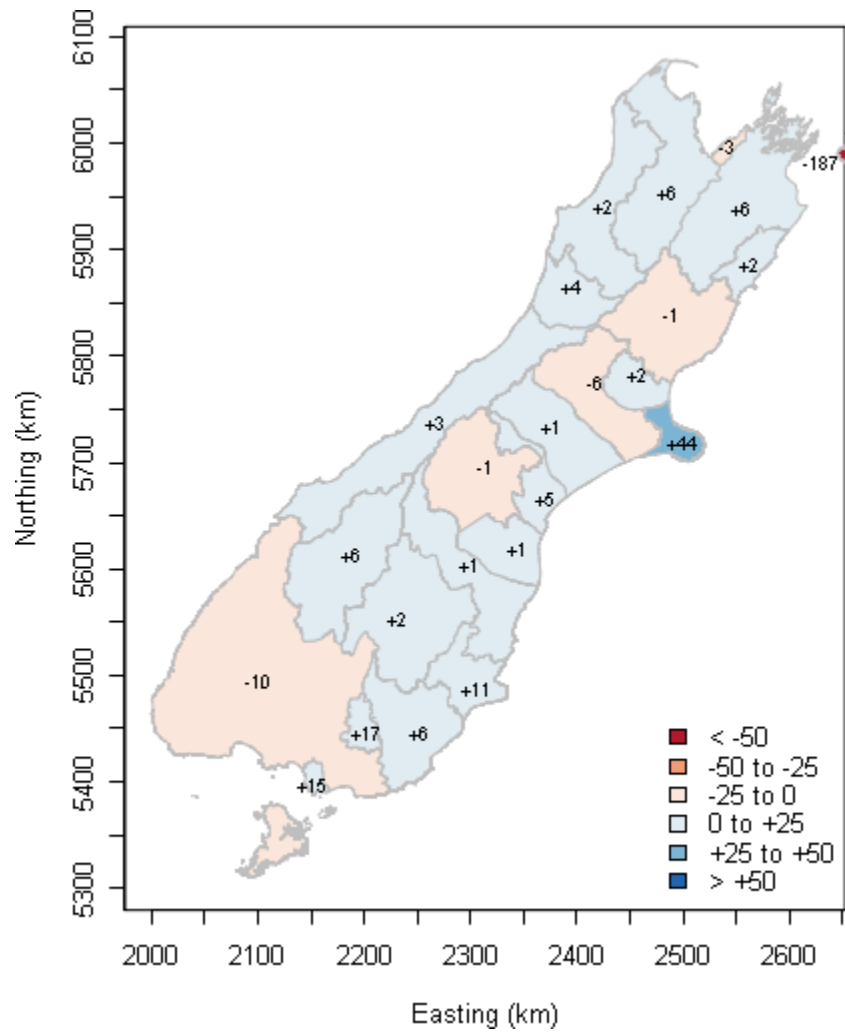


Figure 6: Map of the South Island of New Zealand showing the change in veterinarian counts per TLA in 2010 relative to 2009. Source: the 2251 veterinarians who applied for an APC from the VCNZ by June 2010.

Table 11: Counts of veterinarians in 2010, by country where their first veterinary qualification was obtained. Source: the 2251 veterinarians who applied for an APC from the VCNZ by June 2010.

| Country where first veterinary qualification obtained | Number (%) |
|---|-------------|
| Australia | 144 (6%) |
| European Union (excluding UK) | 100 (4%) |
| New Zealand | 1610 (72%) |
| North America | 63 (3%) |
| Other | 95 (4%) |
| Other European | 25 (1%) |
| United Kingdom | 210 (9%) |
| Not stated | 4 (0%) |
| Total | 2251 (100%) |

3.5 International graduates

In 2010 the proportion of international graduates (i.e. veterinarians who obtained their primary veterinary qualification in a country that was not New Zealand) was 28% (Table 11). Graduates from the United Kingdom comprised the largest group of international graduates (210 of 2251, 9%) followed by Australia (144 of 2251, 6%).

Table 12: Counts of veterinarians registered and provisionally registered with the VCNZ for the first time in 2009 by country where their first veterinary qualification was obtained.

| Country where first veterinary qualification obtained | Number (%) |
|---|------------|
| Australia | 18 (8%) |
| European Union (excluding UK) | 21 (11%) |
| New Zealand | 110 (52%) |
| North America | 11 (5%) |
| Other | 5 (2%) |
| Other European | 1 (0%) |
| United Kingdom | 42 (20%) |
| Not stated | 2 (1%) |
| Total | 212 (100%) |

Figure 8 shows the number of international graduates taking out an APC for the first time by year and country where their first veterinary qualification was obtained.

Although UK-trained veterinarians were the largest non-New Zealand group of veterinarians registering in New Zealand for the first time in 2009 (Table 12), numbers entering the country to work have shown a progressive decline since 2005 (Figure 7).

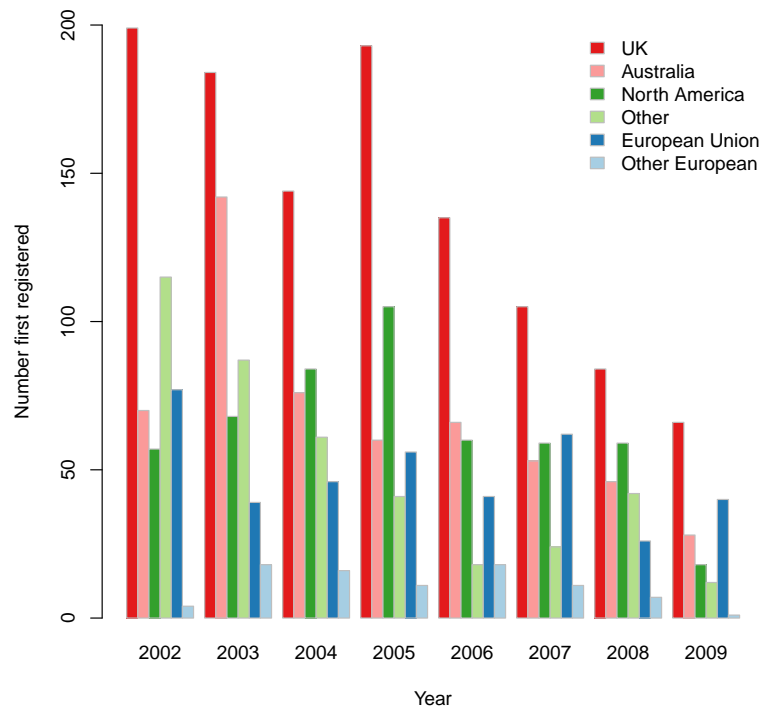


Figure 7: Bar chart showing counts of international graduates taking out an APC for the first time by year and country where their first veterinary qualification was obtained.

Table 13: Counts (and percentages) of veterinarians taking out an APC with the VCNZ at one, two, three, four and five years following year of first registration, 2002-2008.

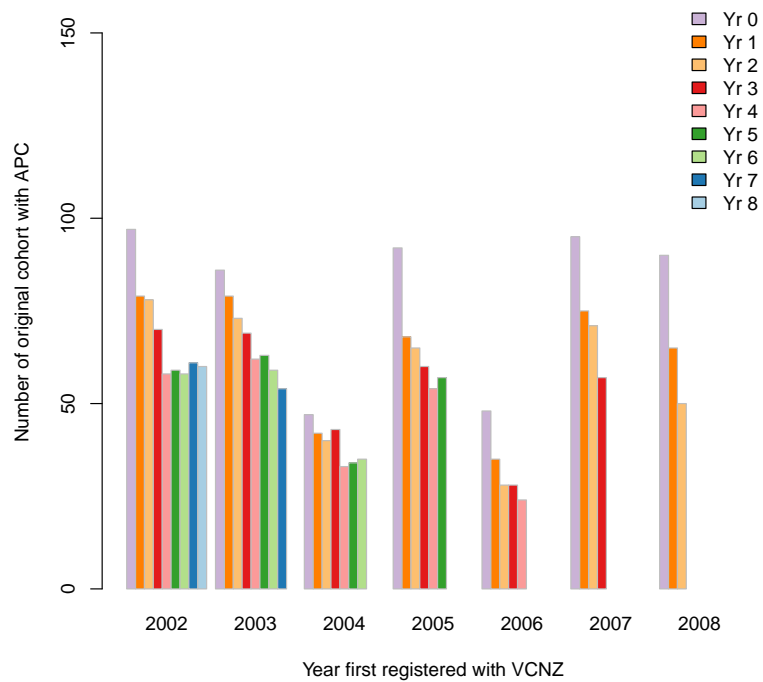
| Final year class | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 |
|--------------------------|------------|----------|----------|----------|----------|----------|----------|----------|----------|
| New Zealand graduates: | | | | | | | | | |
| 2002 | 97 (100%) | 79 (81%) | 78 (80%) | 70 (72%) | 58 (60%) | 59 (61%) | 58 (60%) | 61 (63%) | 60 (62%) |
| 2003 | 86 (100%) | 79 (92%) | 73 (85%) | 69 (80%) | 62 (72%) | 63 (73%) | 59 (69%) | 54 (63%) | - |
| 2004 | 47 (100%) | 42 (89%) | 40 (85%) | 43 (91%) | 33 (70%) | 34 (72%) | 35 (74%) | - | - |
| 2005 | 92 (100%) | 68 (74%) | 65 (71%) | 60 (65%) | 54 (59%) | 57 (62%) | - | - | - |
| 2006 | 48 (100%) | 35 (73%) | 28 (58%) | 28 (58%) | - | - | - | - | - |
| 2007 | 95 (100%) | 75 (79%) | 71 (75%) | - | - | - | - | - | - |
| 2008 | 90 (100%) | 65 (72%) | - | - | - | - | - | - | - |
| International graduates: | | | | | | | | | |
| 2002 | 126 (100%) | 72 (57%) | 57 (45%) | 57 (45%) | 51 (40%) | 46 (37%) | 39 (31%) | 37 (29%) | 38 (30%) |
| 2003 | 136 (100%) | 80 (59%) | 67 (49%) | 61 (45%) | 50 (37%) | 47 (35%) | 46 (34%) | 43 (32%) | - |
| 2004 | 104 (100%) | 71 (68%) | 60 (58%) | 55 (53%) | 52 (50%) | 42 (40%) | 42 (40%) | - | - |
| 2005 | 137 (100%) | 87 (64%) | 70 (51%) | 59 (43%) | 59 (43%) | 50 (36%) | - | - | - |
| 2006 | 127 (100%) | 74 (58%) | 49 (39%) | 46 (36%) | - | - | - | - | - |
| 2007 | 130 (100%) | 72 (55%) | 52 (40%) | - | - | - | - | - | - |
| 2008 | 121 (100%) | 75 (62%) | - | - | - | - | - | - | - |

3.6 Retention

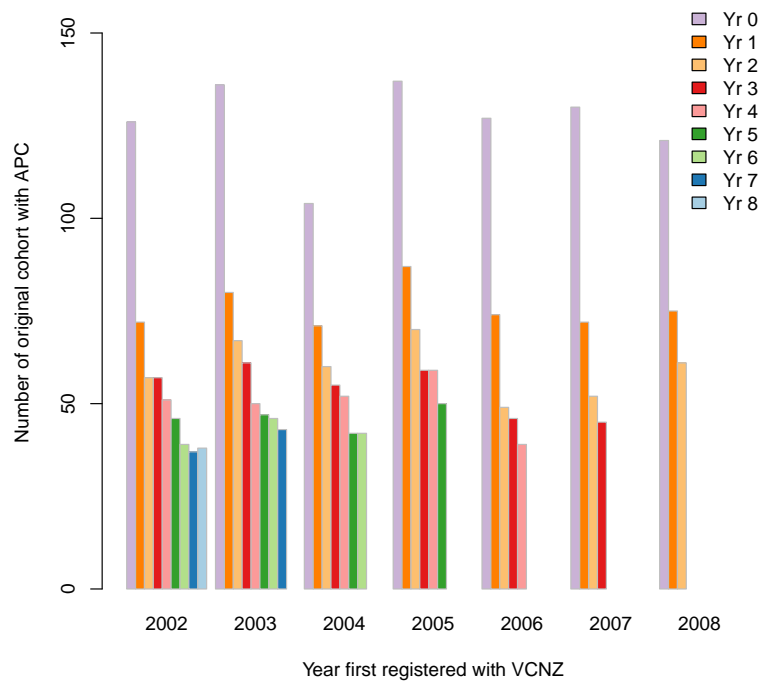
Table 13 provides details of retention rates for New Zealand and international graduates. In Table 13 the column titled 'Year 0' lists the number of veterinarians registering with VCNZ for the first time in the specified year. The columns titled Year 1, Year 2, ..., Year 8 show the number of the original cohort that took out a practising certificate in successive years following the year of first registration. Figures 8a and 8b present the same information as bar charts.

For both groups there was a marked decrease in numbers taking out an APC in Year 1, relative to Year 0. This decrease was greater for international graduates than New Zealand graduates, presumably due to those returning to their country of origin following a working holiday in New Zealand.

For New Zealand graduates numbers continue to decline up to Year 4, after which time they appear to become more stable (see, for example, the 2002, 2004 and 2005 cohorts, Figure 8a). As noted in the 2008-2009 report, ongoing monitoring is required to determine if these patterns are consistent over time.



(a) New Zealand graduates



(b) International graduates

Figure 8: Bar charts showing counts of: (a) New Zealand and (b) international graduates taking out an APC with the VCNZ at one to eight years following year of first registration with the VCNZ, 2002-2008.

Table 14: Counts of active veterinarians in 2009 who did not apply for an APC in 2010, by reason.

| Reason | Number (%) |
|--------------------------------|------------|
| Contract requirements | 1 (1%) |
| Casual work | 0 (0%) |
| Difficulty obtaining work | 5 (5%) |
| Family care | 4 (4%) |
| Health | 5 (5%) |
| Work overseas | 10 (9%) |
| Other | 14 (13%) |
| Parental leave | 32 (29%) |
| Personal preference | 10 (9%) |
| Working part time ^a | 6 (6%) |
| Retired or semi-retired | 17 (16%) |
| Study | 5 (5%) |
| Total | 109 (100%) |

^a Presumably a decision to work part time not as a veterinarian.

Table 14 provides a breakdown of the reasons 109 veterinarians did not apply for an APC in 2010. The most frequently cited reason for not applying for an APC was parental leave (32 of 109, 29%). Compared with the same data for 2009, there was a substantial decrease in the proportion citing work overseas as a reason for not applying for an APC (22% in 2009 compared with 9% in 2010). Establishing the proportion of veterinarians that take parental leave that subsequently fail to return to the veterinary workforce is an area that will be monitored closely as the appropriate data becomes available.

4 Acknowledgements

The Veterinary Council of New Zealand thanks Mark Stevenson, Massey University, who undertook the analysis and developed this report and all veterinarians who took time to complete the workforce survey.

6 Appendix 2

Table 15: Counts of veterinarians with an APC from the VCNZ by June 2010, territorial land authority human and livestock unit population counts and the estimated number of veterinarians per 100,000 head of population and the estimated number of veterinarians per 100,000 livestock units.

| Region | Vets ^a | Population ^b | LSU ^c | Vets/pop ^d | Vets/LSU ^e |
|------------------------------|-------------------|-------------------------|------------------|-----------------------|-----------------------|
| Far North District | 28 (-6) | 55,845 | 734,811 | 50 | 4 |
| Whangarei District | 51 (+14) | 74,463 | 492,585 | 68 | 10 |
| Kaipara District | 13 (+1) | 18,135 | 642,879 | 72 | 2 |
| Rodney District | 54 (-3) | 89,559 | 391,831 | 60 | 14 |
| North Shore City | 45 (+2) | 205,605 | 1,732 | 22 | 2598 |
| Waitakere City | 31 (+2) | 186,444 | 6,070 | 17 | 511 |
| Auckland City | 130 (+12) | 404,658 | 17,889 | 32 | 727 |
| Manukau City | 50 (+2) | 328,968 | 54,902 | 15 | 91 |
| Papakura District | 31 (+11) | 45,183 | 17,054 | 69 | 182 |
| Franklin District | 42 (+6) | 58,932 | 479,158 | 71 | 9 |
| Thames-Coromandel District | 15 (+4) | 25,938 | 151,975 | 58 | 10 |
| Hauraki District | 20 (+1) | 17,193 | 394,079 | 116 | 5 |
| Waikato District | 22 (+8) | 43,959 | 910,560 | 50 | 2 |
| Matamata-Piako District | 73 (-2) | 30,483 | 843,947 | 239 | 9 |
| Hamilton City | 100 (+25) | 129,249 | 7,973 | 77 | 1254 |
| Waipa District | 76 (+7) | 42,501 | 598,000 | 179 | 13 |
| Otorohanga District | 13 (-7) | 9,075 | 554,547 | 143 | 2 |
| South Waikato District | 22 (-1) | 22,641 | 354,231 | 97 | 6 |
| Waitomo District | 7 (-5) | 9,438 | 529,412 | 74 | 1 |
| Taupo District | 20 (+2) | 32,418 | 431,084 | 62 | 5 |
| Western BOP District | 18 (+1) | 42,075 | 304,195 | 43 | 6 |
| Tauranga City | 32 (+10) | 103,632 | 7,718 | 31 | 415 |
| Rotorua District | 34 (+1) | 65,901 | 414,369 | 52 | 8 |
| Whakatane District | 23 (+1) | 33,300 | 355,294 | 69 | 6 |
| Kawerau District | 0 (0) | 6,924 | 2,400 | 0 | 0 |
| Opotiki District | 4 (0) | 8,976 | 108,875 | 45 | 4 |
| Gisborne District | 23 (+3) | 44,463 | 941,787 | 52 | 2 |
| Wairoa District | 8 (+4) | 8,481 | 367,629 | 94 | 2 |
| Hastings District | 37 (-24) | 70,842 | 606,440 | 52 | 6 |
| Napier City | 17 (+5) | 55,359 | 8,093 | 31 | 210 |
| Central Hawke's Bay District | 18 (+13) | 12,957 | 715,229 | 139 | 3 |
| New Plymouth District | 36 (+2) | 68,901 | 423,049 | 52 | 9 |
| Stratford District | 11 (+9) | 8,892 | 301,075 | 124 | 4 |
| South Taranaki District | 39 (-1) | 26,487 | 934,922 | 147 | 4 |
| Ruapehu District | 11 (0) | 13,569 | 639,568 | 81 | 2 |
| Wanganui District | 24 (+9) | 42,636 | 290,992 | 56 | 8 |
| Rangitikei District | 26 (+9) | 14,712 | 702,400 | 177 | 4 |

Table 14 (continued)

| Region | Vets ^a | Population ^b | LSU ^c | Vets/pop ^d | Vets/LSU ^e |
|---------------------------|-------------------|-------------------------|------------------|-----------------------|-----------------------|
| Manawatu District | 32 (+8) | 28,254 | 626,655 | 113 | 5 |
| Palmerston North City | 143 (+19) | 75,543 | 48,569 | 189 | 294 |
| Taranua District | 16 (-1) | 17,634 | 941,603 | 91 | 2 |
| Horowhenua District | 17 (+1) | 29,865 | 212,456 | 57 | 8 |
| Kapiti Coast District | 28 (+5) | 46,200 | 36,126 | 61 | 78 |
| Porirua City | 21 (+11) | 48,546 | 10,796 | 43 | 195 |
| Upper Hutt City | 24 + (5) | 38,415 | 12,162 | 62 | 197 |
| Lower Hutt City | 25 (+5) | 97,701 | 3,082 | 26 | 811 |
| Wellington City | 94 (-187) | 179,466 | 14,902 | 52 | 631 |
| Masterton District | 19 (+3) | 22,626 | 345,515 | 84 | 5 |
| Carterton District | 4 (+3) | 7,098 | 187,854 | 56 | 2 |
| South Wairarapa District | 6 (-2) | 8,889 | 309,472 | 67 | 2 |
| Tasman District | 17 (+6) | 44,625 | 306,694 | 38 | 6 |
| Nelson City | 30 (-3) | 42,891 | 8,021 | 70 | 374 |
| Marlborough District | 29 (+6) | 42,549 | 320,048 | 68 | 9 |
| Kaikoura District | 5 (+2) | 3,621 | 87,282 | 138 | 6 |
| Buller District | 9 (+2) | 9,702 | 140,530 | 93 | 6 |
| Grey District | 10 (+4) | 13,221 | 123,701 | 76 | 8 |
| Westland District | 8 (+3) | 8,403 | 148,219 | 95 | 5 |
| Hurunui District | 14 (-1) | 10,476 | 661,917 | 134 | 2 |
| Waimakariri District | 34 (+2) | 42,834 | 505,169 | 79 | 7 |
| Christchurch City | 148 (+44) | 348,435 | 29,913 | 42 | 495 |
| Selwyn District | 25 (-6) | 33,666 | 564,382 | 74 | 4 |
| Ashburton District | 35 (+1) | 27,372 | 789,431 | 128 | 4 |
| Timaru District | 35 (+5) | 42,867 | 340,294 | 82 | 10 |
| Mackenzie District | 0 (-1) | 3,801 | 233,373 | 0 | 0 |
| Waimate District | 6 (+1) | 7,206 | 395,287 | 83 | 2 |
| Waitaki District | 20 (+1) | 20,223 | 482,299 | 99 | 4 |
| Central Otago District | 10 (+2) | 16,647 | 466,637 | 60 | 2 |
| Queenstown-Lakes District | 14 (+6) | 22,956 | 126,990 | 61 | 11 |
| Dunedin City | 42 (+11) | 118,683 | 293,154 | 35 | 14 |
| Clutha District | 23 (+6) | 16,839 | 956,667 | 137 | 2 |
| Southland District | 39 (-10) | 28,440 | 1,997,715 | 137 | 2 |
| Gore District | 20 (+17) | 12,108 | 276,097 | 165 | 7 |
| Invercargill City | 41 (+15) | 50,328 | 41,535 | 81 | 99 |
| Unknown | 4 (-181) | - | - | | |
| Total | 2251 (-83) | 4,026,924 | 26,783,301 | 56 | 8 |

^a Numbers in parentheses indicate the change in veterinarian counts from 2009.

^b Based on 2006 New Zealand Census of Population and Dwellings.

^c Livestock units \times 100,000.

^d Veterinarians per 100,000 head of population.

^e Veterinarians per 100,000 livestock units.

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- Sanson, R., & Pearson, A. (1997). Agribase — a national spatial farm database. In *Proceedings of the 8th International Symposium on Veterinary Epidemiology and Economics* (p. 12.16.1 - 12.16.3). Paris.