The New Zealand veterinary profession in 2029
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Each year when giving the fourth year veterinary class a lecture on selection bias students are shown a photo of a crowd at a rugby match in the 1950s (Figure 1). They’re then given the scenario that a researcher wants to work out the proportion of males in the general population by recording the gender of a sample of individuals attending the match. The routine concludes when they work out that this really wouldn’t be a good idea because most people attending rugby matches back in the 1950s were blokes so the population chosen for study wouldn’t be representative of the population we were trying to make inferences about.

![Figure 1: Crows watching a rugby test at Athletic Park in Wellington, 1955. Can you spot the female?](image)

This year after this story was presented a (male) student made the comment that there would be similar problems if the fourth year veterinary class was used to work out the proportion of males in the general population. He was right of course. In fact, each of the current five undergraduate classes in IVABS are dominated by females and, based on the Workforce Survey reports published by the Veterinary Council of New Zealand (VCNZ). (http://www.vetcouncil.org.nz/pubs.php), ‘feminisation’ of the profession has been a trend evident for some time.

Included with the application for an Annual Practising Certificate (APC) sent out by VCNZ in February each year is a workforce survey form (Figure 2). In the survey veterinarians are asked to record details of the number of hours they worked each week in the past year, the type of work they did and, if they are planning on not taking out an Annual Practising Certificate in the following year, their intended reason for not doing so.

In 2013 the Workforce Survey will be administered for the fifth time. Repeatedly carrying out a survey like this is an extremely valuable exercise because, over time, it allows us to get a good estimate of some really important population parameters such as professional longevity (i.e. the
probability that a given veterinarian of a given age will not take out an APC in a given year). With the Workforce Survey data we’ve now accumulated enough information to allow us to make some reasonable projections around the expected age and gender composition of the profession over the next 25 years. In this article we’ll briefly describe how we’ve gone about doing this and provide a description of some of our findings.

Figure 2: The Workforce Survey form included in the application for an Annual Practising Certificate.

**Key findings from the Workforce Survey**

Figure 3 is a bar chart showing the age distribution of veterinarians in 2011, by gender. No surprises here: we’re a profession comprised of young females and old males. Figure 4 shows average work hours per week, again by gender. On average, from 30 to 35 years of age on, females work around three quarters of the number of hours of their male counterparts.

To estimate the likely age and gender composition of the New Zealand veterinary profession over the next 20 years we’ve used a technique called Leslie matrix modelling. Leslie matrices are often used by ecologists when they’re trying to work out the best way to control a population (either by increasing survival or increasing fecundity). If you’re interested in learning more, Anderson et al. (2004) provide a nice example of how the technique can be used to manage free-roaming cat populations.

Briefly, the Leslie matrix technique requires three pieces of information: (a) the age composition of the standing population, (b) age-specific survival probabilities, and (c) age-specific fecundity (which determines replacement rate). Of course, fecundity didn’t come into our calculations because (hopefully most) veterinarians don’t typically reproduce to produce more veterinarians. To account for population replacement, for each year of our projections we simply introduced a given number of (younger) veterinarians into the system to reflect Massey graduates and a number of (typically older) graduates to reflect veterinarians entering the workforce each year from overseas.
Figure 3: Age distribution of practising veterinarians that took out an APC in 2011, by gender. Source: The New Zealand Veterinary workforce in 2010-2011 (URL: http://www.vetcouncil.org.nz/documentation/VCNZ_VeterinaryWorkforce2010-11.pdf).

Figure 4: Line plot showing the average routine work hours per week by practising veterinarians in their main work role by age and gender, 2010. Source: The New Zealand Veterinary workforce in 2010-2011 (URL: http://www.vetcouncil.org.nz/documentation/VCNZ_VeterinaryWorkforce2010-11.pdf).

Figure 5 shows our population projections for the veterinary profession for the period 2009 to 2029, by gender. Projections are expressed in two ways: as actual numbers of veterinarians (Figure 5a) and
numbers of full time equivalent veterinarians (Figure 5b). One full time equivalent (FTE) equals one veterinarian working a 40 hour week. Also shown in Figure 5 (as a line) is the projected population of New Zealand for the period 2009 to 2029.

In 2009 there were 1262 male FTE veterinarians with a valid APC. In 2029 this number is expected to decrease to around 830. In 2009 there were 997 female FTE veterinarians with a valid APC; by 2029 we expect this number to increase to around 1610 (Figure 5a).

What will the profession look like in 2029?
A number of interesting things are evident in Figures 5a and 5b:

- Over the next 10 to 20 years, the large group of (predominantly male) veterinarians currently 45 to 50 years of age and older (the ‘baby boomers’) will retire and these will be replaced by a predominantly female cohort of veterinarians. Of concern is that, because of the differences in work hours between males and females, there will be a reduction in the country's veterinary capacity as measured by the number of professional work hours accumulated each week. This means that if the ‘feminisation’ of the profession continues, we’ll need more veterinarians to carry out the same amount of work done by a profession comprised of roughly an equal split of males and females.
- In Figure 5a there’s a constant association between actual veterinarian counts and population size from 2009 to 2015. From 2015 on (when the baby boomers start to retire), the projected number of veterinarians starts to flatten out while the size of the New Zealand population continues to increase. This means that from 2015 onwards (and assuming the number of veterinarians registering with VCNZ for the first time remains static at 2010 levels and the demand for veterinary services in 2029 is similar to today’s levels) we’ll have a shortage of vets. This ‘loss of the baby boomer’ effect is even more pronounced when the size of the workforce is expressed in terms of FTEs (Figure 5b). In fact, while the actual veterinarian counts remain relatively static from 2015 to 2029 there’s a negative trend in FTE counts.

So, if current trends continue New Zealand is going to need more veterinarians to carry out the same amount of work. There are two ways to achieve this: (a) produce more graduates (or rely on overseas-trained veterinarians), and/or (b) minimise loss of veterinarians from the profession across all age groups.

A better understanding of things we can do to make it easier for female veterinarians to re-enter the profession after taking time off to raise a family would be one way to minimise veterinarian loss. Massey University has lobbied the government for an increase in places and, through its refurbishment plans, will increase training capability from 2016.

References and further reading


Figure 5: Projected numbers of male and female veterinarians taking out an Annual Practising Certificate with VCNZ, 2009 to 2029, expressed as: (a) actual numbers of veterinarians, and (b) full time equivalent veterinarians. On each plot the dashed line represents the estimated size of the New Zealand population.