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Australian veterinary workforce survey 2012

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(This updated version omits a section reporting on an unreliable data set)

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1 Introduction

The Australian Veterinary Association, together with the state and territory veterinary surgeons' boards and the Australian Veterinary Boards Council conducted a workforce survey of veterinarians during 2012. The purpose of the survey was to collect data suitable for planning and for use in the Association's advocacy efforts which, to date, have mainly relied on qualitative measures.

This report provides a summary of responses to the 2012 veterinary workforce survey.

2 Methods

The workforce survey was adapted from a similar survey administered by the New Zealand Veterinary Council. Each state veterinary surgeons' board distributed a printed copy of the survey questionnaire with registration renewal forms or with board newsletters. In the printed material sent with renewal forms and/or board newsletters veterinarians were directed to a dedicated web page where they could enter their survey responses:

<http://ava.informz.net/survistapro/s.asp?id=1284>

A copy of the on-line survey form is included in Section 5.1. The on-line version of the survey was made available to veterinarians between 4 January and 10 December 2012.

An electronic copy of completed survey responses was provided for analysis. Survey responses were entered into a relational database and summarised as frequency tables. Details from the 2006 Census of Population and Housing (Australian Bureau of Statistics, 2006) were retrieved from the Australian Bureau of Statistics. These data were used to create a map showing human population density throughout Australia. Respondents were asked to record their residential and principal business postcode. The geographical point location for each respondent was defined as the centroid of their respective business postcode area using the digital map of Australian postcodes.¹ The geographical distribution of veterinarians that responded to the survey were compared with human population density.

The analyses in this report are based on responses to the 14 questions that comprised the workforce survey. With each of the data summaries interpretive comments are provided. Also included are suggestions to: (1) improve survey response rate, and (2) improve data quality in surveys of this type that might be conducted in the future.

3 Results

3.1 Response

A total of 1760 rows of data were provided in the electronic copy of completed survey responses. Of this group 1447 rows contained valid data. The remaining 313 records presumably occurred when veterinarians opened the survey web page but did not complete any questions. The total number of registered veterinarians in Australia on 30 June 2012 was 10,317. The overall response rate (i.e. the number of veterinarians that responded to the survey divided by the total number of registered veterinarians) was 14%.

Response rates varied by state-territory with New South Wales, the ACT, Tasmania and North Territory had response rates ranging from 22% to 37% (figures typical for on-line surveys). Response rates for Queensland, Victoria, South Australia and Western Australia were all very low (Table 1).

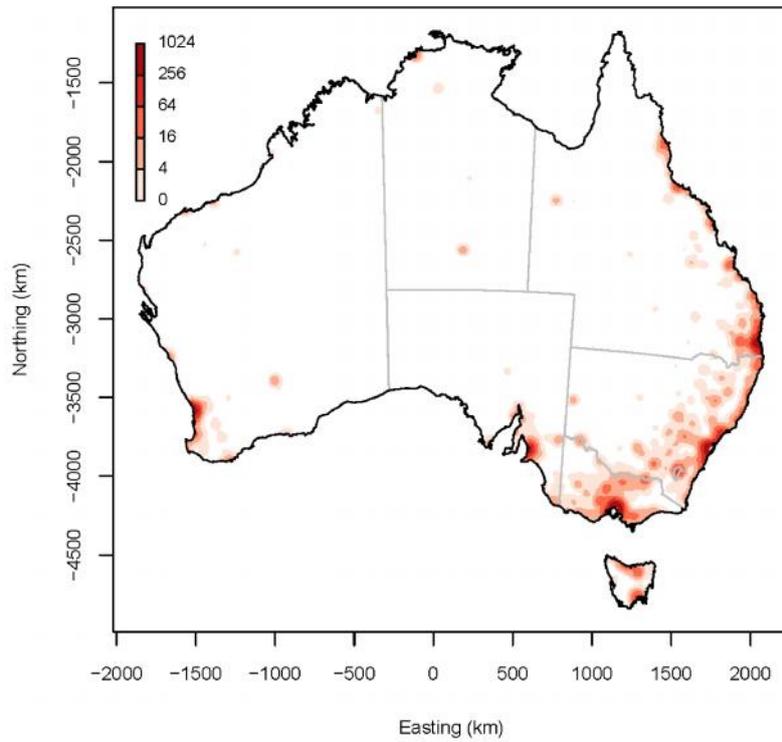
One hundred and sixty seven of the 1147 respondents did not record a business postcode which meant that we were unable to allocate them to their respective state or territory. Since it is unlikely that all of the non-responders were from a single state or territory it is unlikely that the observed pattern of response would change markedly if their business location was actually known.

¹URL: <http://www.abs.gov.au/ausstats>

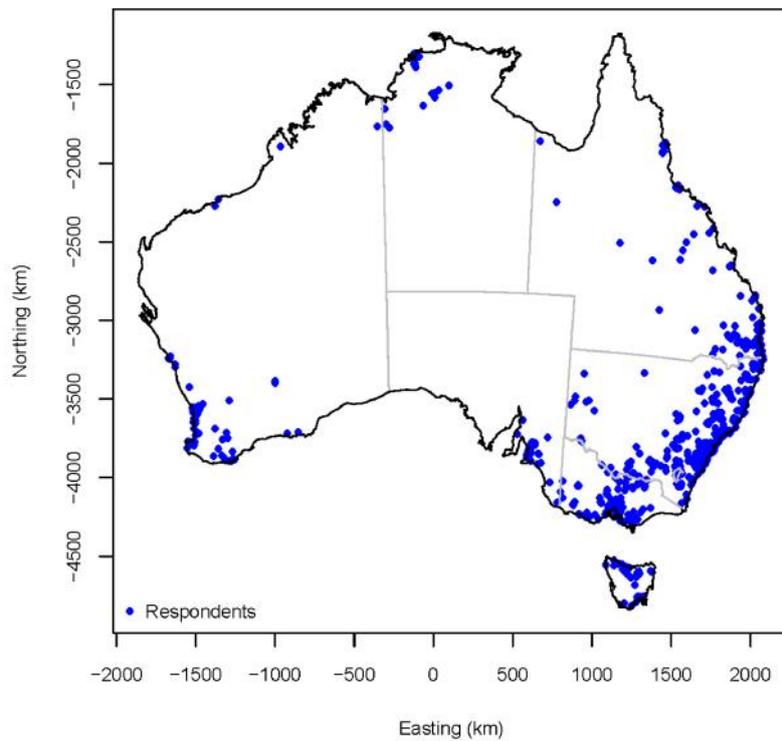
Figure 1 is a map of Australia showing human population density and the point location of the postcode of the business address of the 1280 respondents that provided postcode details in their completed questionnaire. Overall, the geographic distribution of respondents was consistent with human population density throughout Australia.

Table 1: State-territory of business address of respondents at the time of answering the 2012 veterinary workforce survey, number of veterinarians registered with their state veterinary surgeons' board on 30 June 2012 and survey response rate.

State-Territory	Respondents <i>n</i>	Veterinarians <i>n</i>	Response rate
Queensland	131	2856	5%
New South Wales	571	2632	22%
ACT	73	255	29%
Victoria	172	2395	7%
Tasmania	84	240	35%
Northern Territory	43	117	37%
South Australia	40	613	7%
Western Australia	166	1209	14%
Not stated	167	-	-
Total	1447	10,317	14%



(a) Population density 2006



(b) Survey respondents

Figure 1: Map of Australia showing: (a) human population density (expressed as population per square kilometre) and (b) the point location of the postcode of the business address for the 1280 respondents that provided postcode details in the 2012 veterinary workforce survey.

Recommendations:

Valid inferences can only be made from surveys of this type if those that responded were representative of the population of Australian veterinarians. Given the highly variable response rates by state-territory (Table 1) it is unlikely that those who responded to the survey were a representative sample of Australian veterinarians. Inferences from the analyses presented in this report should be made bearing this important caveat in mind.

Analysis of demographic data routinely recorded by each of the state-territory veterinary surgeons' boards would allow the 'representativeness' of workforce survey data to be objectively assessed. Analyses of this type would provide at least two additional pieces of useful information.

1. Assuming Australian veterinarians are identified by a unique code within each of the state-territory register of veterinary surgeons' and assuming registration details can be made available for analysis on a yearly basis analyses can be carried out to estimate the probability that an individual will no longer register as a veterinarian as a function of either their age or the number of years since graduation. These details can then be used with the number of veterinarians entering the profession each year (i.e. the number graduating from each of the veterinary schools) to estimate the future age and gender composition of the veterinary workforce. The appendix (see Section 5.2) provides an example of how this approach was used to support decision making around increasing the number of veterinary graduates per year from Massey University in New Zealand (Stevenson & Eden, 2012).
2. Postcode details of all registered veterinarians can be used to compare the geographical distribution of the veterinary workforce with the geographical distribution of the Australian population (similar to the approach taken in Figure 1). Because of the key role veterinarians play in surveillance for exotic and emerging diseases this information can be used to provide a more objective basis for identifying 'weak spots' in surveillance coverage.

Arguments about privacy invariably come up when a request is made to use registration details in the manner described above. This is not an issue if individual veterinarian records are identified by a (unique) code and geographical location is defined only in terms of business address postcode. The returns from intelligent analysis of workforce demographic data in the manner suggested above far outweigh concerns about privacy, all of which can easily be addressed.

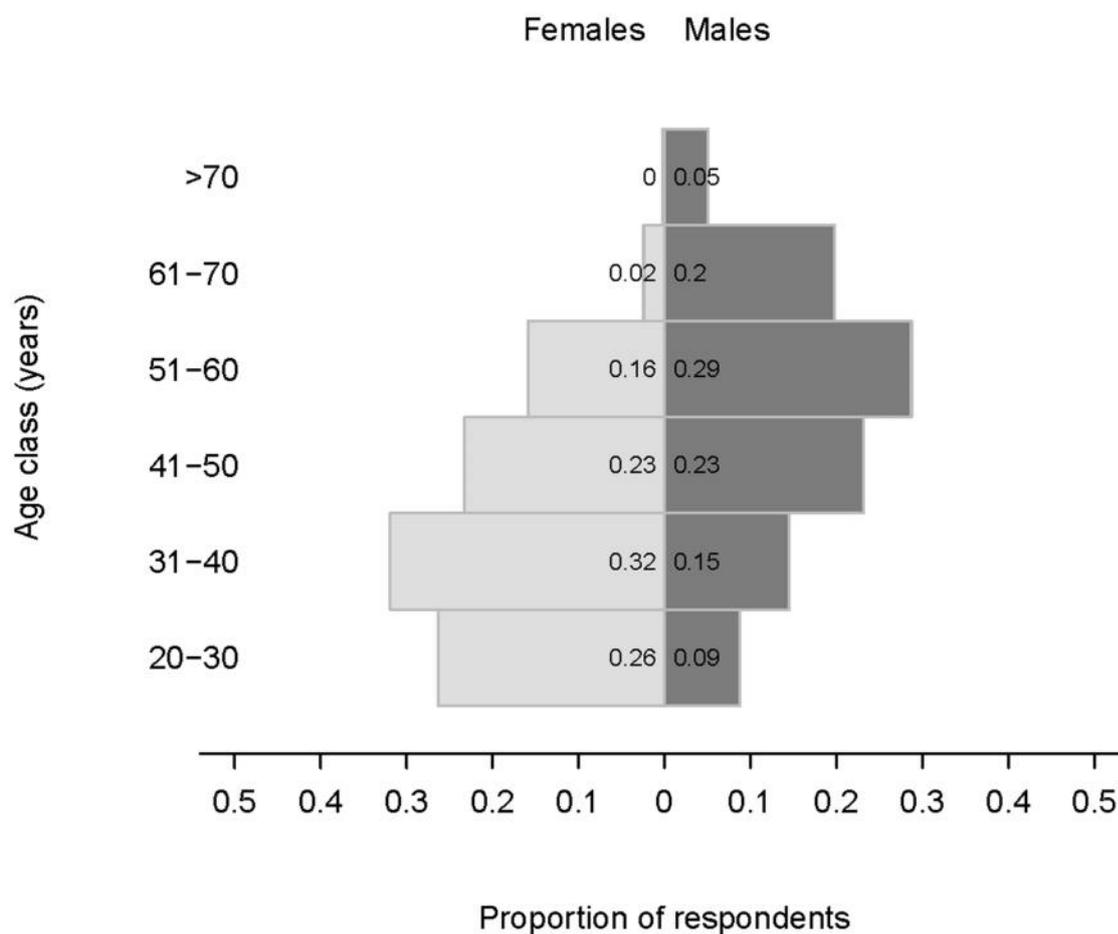
If a survey of this type is to be carried out by the AVA in future, states and territories with acceptable response rates (NSW, the ACT, Tasmania and the Northern Territory) should share their general approach to 'marketing' the survey to those states with poorer response rates (Queensland, Victoria, South Australia and Western Australia).

3.2 Age and gender

Table 2 lists the number of veterinarians that responded to the survey by age group and gender. Figure 2 presents the same information as a population pyramid. Of particular note here is that while the proportion of respondents in the 20-30 year, 31-40 year, 41-50 year and 51-60 year age groups are similar (Table 2) there are marked differences in age distribution by gender, with younger age groups dominated by females and older age groups dominated by males. These findings reflect the recent 'feminisation' of the veterinary profession.

Table 2: Age of respondents at time of answering the 2012 veterinary workforce survey, by gender.

Age group	Female	Male	Not stated	Total (%)
20 - 30 years	206	52	63	321 (22%)
31 - 40 years	250	86	1	337 (23%)
41 - 50 years	182	137	2	321 (22%)
51 - 60 years	124	170	1	295 (20%)
61 - 70 years	19	117	4	140 (10%)
>70 years	2	30	1	33 (2%)
Total	783	592	72	1447 (100%)

**Figure 2:** Population pyramid comparing the age distribution of female (left) and male (right) veterinarians that responded to the 2012 veterinary workforce survey.

3.3 Employment and work roles

Respondents were asked to provide details of their current employment using the categories listed in Table 3. A descriptor of work role was requested using the categories listed in Table 4. Most respondents were employed in either group or solo private practice (35% and 30%, respectively). Consistent with this category of employment, most respondents cited clinician as their work role.

Table 3: Employment type at the time of completing the 2012 veterinary workforce survey, by gender.

Employment	Female	Male	Not stated	Total (%)
Commonwealth govt	48	50	2	100 (7%)
State government	1	1	0	2 (0%)
Local govt	1	4	0	5 (0%)
Corporate practice	13	16	1	30 (2%)
Group private practice	324	183	2	509 (35%)
Solo private practice	208	165	62	435 (30%)
Industry	29	21	1	51 (4%)
Laboratory	6	8	0	14 (1%)
Self employed/locum	65	55	2	122 (8%)
University	38	44	1	83 (6%)
Other	50	45	1	41 (3%)
Not stated	0	0	0	0 (0%)
Total	783	592	72	1447 (100%)

Table 4: Work role at the time of completing the 2012 veterinary workforce survey, by gender.

Work role	Female	Male	Not stated	Total (%)
Clinician	580	373	65	1018 (70%)
Education	26	20	1	47 (3%)
Management	33	31	2	66 (5%)
Service	2	11	0	13 (1%)
Specialist-consultant	36	63	0	99 (7%)
Technical	95	89	3	187 (13%)
Voluntary	11	5	1	17 (1%)
Not stated	0	0	0	0 (0%)
Total	783	592	72	1447 (100%)

Counts of veterinarians and numbers of full time equivalent veterinarians working in various activities at the time of completing the 2012 veterinary workforce survey are shown in Table 5. Females FTEs outnumbered male FTEs in work relating to avian health, welfare, companion animals, equine, goats, hobby farm practice, pathology, pharmacy, reproduction, reptiles, industry, and wildlife. Care needs to be exercised when interpreting this data because of the likely 'unrepresentativeness' of the survey population.

Recommendations:

If a survey of this type is to be carried out by the AVA in future the questionnaire form needs to be modified to provide respondents with the opportunity to record multiple employment, work role and work activities — recognising that many veterinarians are involved in more than one work activity in a given week.

A total of 30% of all respondents reported that they were in solo private practice (Table 3). This is very high. In future surveys explanatory text fields adjacent to each of the employment categories might help to avoid misinterpretation of the available employment options.

A category for 'Research' needs to be included in the employment categories group.

3.4 Hours worked per week

Respondents were asked to record the number of routine hours worked per week as a veterinarian in 2012. Figure 3 is a box and whisker plot showing the distribution of cited work hours by age group and gender. Descriptive statistics of the number of routine hours worked per week are shown in Table 6.

For women (across all age groups) the median routine hours worked per week was 40 (interquartile range [IQR] 27-48) and for men it was 45 (IQR 38-55). Differences in work hours by gender were greatest in the 31-40 and 41-50 year age brackets with males working, on average, 11 hours per week more than females. These findings are consistent with females taking time out from work starting in their early 30's to raise a family.

Table 5: Counts of veterinarians and number of full time equivalent (FTEs) veterinarians working in various activities at the time of completing the 2012 veterinary workforce survey, by gender. A full time equivalent is defined as 45 hours worked per week in a given veterinary activity.

Work type	Female		Male		Total	
	<i>n</i>	FTEs	<i>n</i>	FTEs	<i>n</i>	FTEs
Aquaculture	9	1.1	10	1.0	19	2.1
Avian	189	8.6	94	3.7	283	12
Welfare	168	20	131	18	299	38
Beef	100	13	125	22	225	36
Camelids	35	1.0	24	0.6	59	1.6
Companion animals	494	320	309	230	803	560
Compliance	65	9.7	80	11	145	21
Dairy	45	6.9	74	19	119	26
Deer	3	0.1	4	0.0	7	0.1
Biosecurity	93	29	91	30	184	59
Export certification	48	6.1	53	9.3	101	15
Epidemiology	43	7.3	42	9.7	85	17
Equine	135	46	132	40	267	86
Goats	53	1.3	36	0.9	89	2.2
Meat inspection	13	3.2	16	7.0	29	10
Hobby farm	55	3.9	38	3.5	93	7.4
Pathology	122	12	68	12	190	24
Pharmaceutical	42	6.6	25	5.5	67	12
Sheep	67	5.0	72	8.4	139	13
Reproduction	54	4.0	34	3.7	88	7.7
Pigs	10	0.6	22	1.9	32	2.6
Practice management	145	26	152	28	297	53
Poultry	44	1.9	22	4.0	66	5.9
Reptiles	193	6.7	69	3.0	262	9.6
Research	71	16	61	16	132	32
Industry	35	18	27	13	62	31
Teaching	92	14	76	16	168	30
Wildlife	223	13	96	3.8	319	17

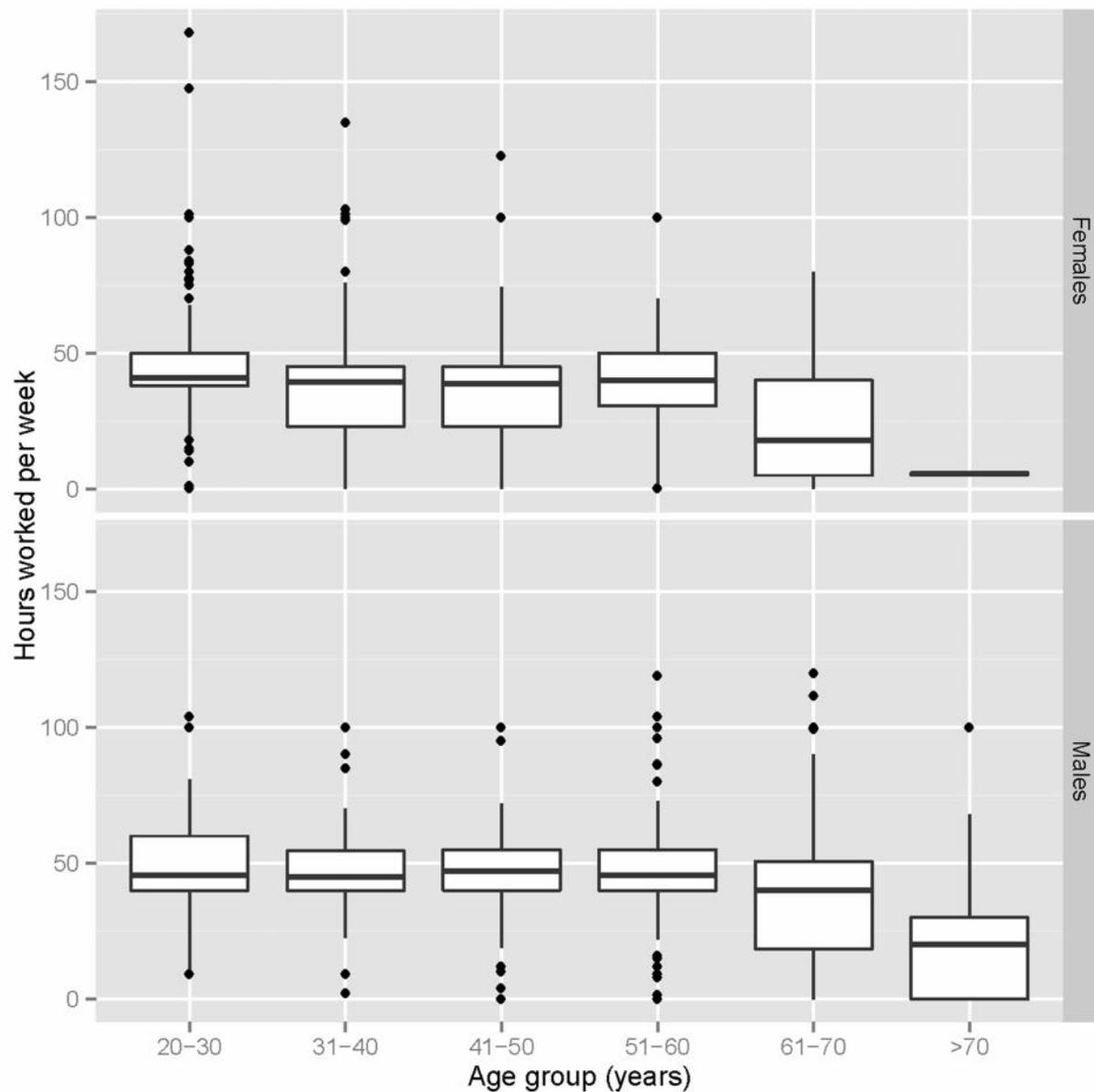


Figure 3: Box and whisker plot showing the distribution of hours worked per week by age group and gender. In the above plot the horizontal lines within each box represent the median number of hours worked per week for each age group. The lower and upper bound of each boxes represent the 25th and 75th quantiles of the distribution of work hours, respectively. The lower and upper whiskers represent the lower and upper bounds of the 95% confidence interval around the distribution of work hours. The closed circles represent outliers.

Table 7 provides descriptive statistics of the number of hours spent on call per week, by gender. The distribution of hours on call per week was highly skewed due to considerable numbers of respondents (e.g. those working in government or laboratories) recording that they spent no time on call. The median number of hours on call for males was 0 (IQR 0-24) hours; the median number of hours on call for females was 0 (IQR 0-15) hours.

Table 6: Descriptive statistics of the number of hours worked per week as a veterinarian, by gender.

Gender	<i>n</i>	Mean (SD)	Median (Q1, Q3)	Min, Max	Not stated
Male	592	45 (21)	45 (38, 55)	0, 120	73
Female	783	39 (22)	40 (27, 48)	0, 168	87
Total	1447	41 (22)	40 (31, 50)	0, 168	216

Table 7: Descriptive statistics of number of hours on call worked per week, by gender.

Gender	<i>n</i>	Mean (SD)	Median (Q1, Q3)	Min, Max	Not stated
Male	592	18 (31)	0 (0, 24)	0, 168	92
Female	783	14 (25)	0 (0, 15)	0, 141	107
Total	1447	15 (28)	0 (0, 20)	0, 168	257

Recommendations:

If a survey of this type is to be carried out by the AVA in future an explanatory note that accompanies the work hours question should clearly state that 'work hours' equals the time spent working as a veterinarian during business hours in addition to veterinary work done while on call.

Similarly, 'on call hours' should refer to the additional hours veterinarians were on call but were not required to work.

3.5 International graduates

Table 8 presents counts of survey respondents stratified by gender and the country where their first veterinary degree was obtained. A notable feature of these data is that that overwhelming majority of respondents were domestic (Australian) graduates, 94%.² There are two explanations for these findings. Firstly, it may be that those veterinarians who responded to the workforce survey were, for some reason, biased towards Australian graduates. A second (more likely) explanation is that of the population of veterinarians working in Australia in 2012, greater than 90% had graduated from Australian universities.

²For the 2012 workforce survey conducted by the Veterinary Council of New Zealand the percentage of domestic (New Zealand) graduates was 72%.

Table 8: Country where first veterinary degree was obtained, by gender.

Country	Female	Male	Not stated	Total (%)
Australia	738	551	71	1360 (94%)
European Union	4	4	0	8 (1%)
New Zealand	19	11	0	30 (2%)
North America	3	2	0	5 (0%)
Other ^a	7	14	0	21 (1%)
Other European ^b	2	0	0	2 (0%)
United Kingdom	10	10	1	21 (1%)
Total	783	592	72	1447 (100%)

^a Includes South Africa, The Philippines, Malaysia.

^b Non European Union countries such as Denmark and Switzerland.

3.6 Continuing professional development

The final component of the 2012 workforce survey comprised questions related to continuing professional development (CPD). Respondents were asked to list the CPD methods they used in 2011 and 2012. These included collegial discussion, conference attendance, face-to-face course work, informal reading, online course work, shadowing, and teaching. Table 14 provides counts of respondents that used up to six of the listed CPD methods in 2012. Nineteen *percent* of respondents reported that they undertook no CPD; the majority (44%) reported using one method.

Table 14: Number of CPD methods reported for 2012, by gender.

Number CPD methods	Female	Male	Not stated	Total (%)
0	118	106	65	289 (19%)
1	64	34	1	99 (44%)
2	95	81	1	177 (25%)
3	179	128	2	309 (7%)
4	217	160	2	379 (3%)
5	74	66	1	141 (2%)
6	36	17	0	53 (0%)
Total	783	592	72	1447 (100%)

Table 15 lists the frequency of CPD methods for 2011 and 2012. In Table 15 the counts of CPD methods are greater than the number of survey respondents because more than one CPD method could be quoted per respondent. A total of 1990 individual methods were used by the 1147 survey respondents in 2011. In 2012 this increased by a factor of 1.8 to 3761.

In 2011 the most frequently cited CPD method was conference attendance (29%). In 2012 conference attendance (21%), face-to-face course work (19%) and informal reading (23%) were the most commonly cited CPD methods.

Table 15: Frequency of stated CPD methods, 2011 and 2012.

Method	2011 (%)	2012 (%)
Collegial discussion	107 (5%)	420 (11%)
Conference	578 (29%)	807 (21%)
Face-to-face course	456 (23%)	711 (19%)
Informal reading	298 (15%)	875 (23%)
Online course	178 (9%)	584 (16%)
Shadowing	44 (2%)	63 (2%)
Teaching	329 (17%)	301 (8%)
Total	1990 (100%)	3761 (100%)

4 Acknowledgements

The Australian Veterinary Association thanks all veterinarians who took time to complete the 2012 workforce survey.

5 Appendix

Australian veterinary workforce survey

Please complete this brief survey about Australia's veterinarians and their careers. The information is being gathered and analysed by the Australian Veterinary Association but results will be shared with other veterinary organisations such as registration boards and university veterinary schools. We hope to gain valuable insight into workforce trends, educational needs and other issues relating to the future of the profession. It is anticipated that a similar survey will be run each year to gather workforce data annually. Your information will not be published or shared in any way that could identify you as an individual, and if you have any questions, please contact the AVA on 02 9431 5000.

1. Did you work as a veterinarian (clinical or non-clinical role) at any time during the year ending 31 Dec 2011?

Yes – Please complete all questions

No— Please select a reason below. Complete all applicable questions

Select a reason for not being employed as a veterinarian in 2011

Casual work in non-vet role **OR** Other:

2. Postcode

Residential postcode:

Principal business postcode:

3. Demographics

Select the age bracket you belong to

20-30 years

Gender

Female

Male

Select the university you attended for your first qualification to practice as a veterinarian

Sydney University **OR** Other:

4. Select the option that best describes your current employment

Solo private practice **OR** Other:

5. Select the option that best describes your current role

Clinician **OR** Other:

Australian veterinary workforce survey

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6. At your current workplace, type in the hours spent with the type of work you do in a typical week

Please fill in the hours that apply to you only

Aquaculture

Avian

Animal Welfare

Beef Cattle

Camelids

Companion Animals

Compliance

Dairy Cattle

Deer

Disease Control & Biosecurity

Export Certification

Epidemiology

Equine

Goats

Meat Inspection

Hobby Farm

Pathology

Pharmaceutical

Sheep

Reproduction

Pigs

Practice Management

Poultry

Reptiles / Pocket Pets

Research

Industry

Teaching

Wildlife

7 Approximately how many hours do you work in a typical week including hours working while on call?

Total hours worked for the week :

This total should equal the total hours in Question 6

Approximately how many hours typically do you work in a typical week are you on call but not doing work?

Hours in addition to your normal hours of work per week

8. If the total number of hours worked in a typical week is less than 38, please select the option that most closely describes the main reason.

Casual work (short term contract)

9. If you worked less than 46 weeks in the last 52 weeks, please select the option that most closely describes the main reason.

Casual work (short term contract)

10. If you are thinking about not working as a veterinarian during the year commencing 1 Jan 2012, please select the option that most closely describes the main reason.

Casual work in non-vet role

11. If you are applying for a practising certificate after a period of not working as a veterinarian, please select the option that most closely describes the main reason for your absence from practice.

Casual work in non-vet role

12. How much do you earn before tax from veterinary work during 2011?

<\$20k

Next >>

Australian veterinary workforce survey

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13. What CPD activities did you undertake in 2011?

Select up to 4 options

- Formal course
- Conference attendance
- Workshop
- Online course
- Collegial discussions
- Informal reading
- Shadowing
- Workshop commercial
- Workshop NFP
- Online commercial
- Online NFP
- Uninstructed
- Teaching, lecturing or presenting

14. What CPD activities do you plan to undertake in 2012?

select up to 4 options

- Formal course
- Conference attendance
- Workshop
- Online course
- Collegial discussions
- Informal reading
- Shadowing
- Workshop commercial
- Workshop NFP
- Online commercial
- Online NFP
- Uninstructed
- Teaching, lecturing or presenting

Submit

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