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Factors affecting the career path choices of graduates at the Western College of Veterinary Medicine

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Abstract — The objective of this study was to describe the demographics of the Class of 2006, Western College of Veterinary Medicine, and to determine which factors influenced the graduates' career path choices. Data were collected via an on-line survey and the response rate was 95.7% (67/70). The majority (57%) of graduates were starting their veterinary career in a food animal-related (FAR) job. Two factors were significantly associated with this choice: 1) those raised in, or near, a small center (population < 10 000) were 3.4 times ($P = 0.03$) more likely to accept a FAR position than were those raised in a large center (> 10 000), and 2) graduates with a bachelor of science in agriculture (BSc Ag) were 4.5 times ($P = 0.04$) more likely to begin their career as a FAR practitioner than were those without such a degree. However, 9 of the 16 graduates having a BSc Ag had an urban upbringing.

Résumé — Facteurs influençant les choix de carrière chez les finissants du Western College of Veterinary Medicine. L'objectif de cette étude était de décrire la distribution démographique des finissants de 2006 du Western College of Veterinary Medicine et de déterminer les facteurs influençant leur choix de carrière. Les données ont été recueillies par une enquête en ligne et le taux de réponse a été de 95,7 % (67/70). La majorité des diplômés (57 %) débutaient leurs carrières vétérinaires dans un emploi relié aux animaux de consommation (RAC). Deux facteurs étaient significativement associés à ce choix : 1) les finissants originaires d'un petit centre ou de sa région (< 10 000 habitants) étaient 3,4 fois plus susceptibles d'accepter un travail RAC que ceux originaires d'un grand centre (> 10 000 habitants) et 2) les diplômés avec un baccalauréat en agronomie (BSc Ag) étaient 4,5 fois plus susceptible de commencer leur carrière comme praticien RAC que ceux qui n'avaient pas un tel diplôme. Pourtant, 9 des 16 diplômés en agronomie étaient d'origine urbaine.

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Introduction

The raison d'etre for establishing formalized veterinary education arose from the need to control the epizootics of disease sweeping though the livestock populations of continental Europe in the 1700s (1). The 1st veterinary school in the world was established in Lyon, France, in 1761 (2). England's 1st veterinary college was founded in 1791 by Charles Vial de Sainbel, but, unfortunately, he died of glanders within a year of the college's inception. His successor, Edward Coleman, was roundly criticized for lowering the college's entrance standards, focusing too much on horses, and for shortening the program from 3 y to a few months; apparently debates surrounding veterinary college entrance requirements and curricula are as old as veterinary education itself.

For a profession founded on serving the agricultural and transportation industries, times have changed. Veterinary market statistics for the USA show that only 9.8% of veterinarians are engaged in food animal practice and 8.3% are employed in

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mixed animal practice (3). Similar findings from the United Kingdom show that the percentages of veterinarians employed in small animal versus food animal practice are approximately 70% and 10%, respectively (4). This dramatic shift in veterinary medicine towards companion animal practice has led to calls for significant changes to both veterinary education and licensure (5–7). The proponents of change cite the need to establish quotas on the number and type of veterinary graduates, and for the profession to adopt the "engineering model" of education wherein students are required to focus on a specific track or discipline (6,7). The contrary view is that the number of people engaged in food animal practice is market driven (8) and that the shortage of practitioners is more an issue of retention than recruitment and education (9,10).

The objective of the present study was to describe the demographics of the graduating Class of 2006 (WCVM) and to identify the factors associated with a graduate's choice of a career path. Emphasis was given to determining what factors encourage students to pursue a career in beef cattle practice.

Materials and methods

Survey design

A survey was administered to the 70 members of the graduating Class of 2006 (WCVM), approximately 1 mo prior to graduation. The survey questionnaire was constructed through an iterative 3-phase Delphi process (11,12) involving a panel of 7 mixed and food animal veterinary practitioners with an interest in veterinary manpower issues. Within the 1st phase, the panel responded to broad, open-ended questions regarding the factors they believed influenced veterinary career path choices. The qualitative results were analyzed for themes; then, statements were developed to reflect the major topic areas. These statements formed the basis of a 2nd questionnaire that was provided to the same panel of veterinarians. Ratings on the extent to which items were perceived as a positive, neutral, or negative influence in choosing, continuing, or leaving a food animal career were recorded on a 7-point Likert Scale and summarized by using descriptive statistics. A 3rd questionnaire, containing the same statements as the previous questionnaire, along with the descriptive statistics (mean, median, and mode) and qualitative comments for each item, was then distributed to the same panel for final ratings and comments. Items for which a consensus was obtained were included in the final questionnaire.

Survey instrument

The questionnaire consisted of 65 questions, grouped into 4 sections. Section 1 asked about the graduates' background. Specifically, whether they had a rural or urban background, their involvement in 4-H clubs, population of the center where they were raised, Province of origin, prior education and degrees obtained, and whether they had a close friend or relative who was a veterinarian. The population centers were dichotomized into small ($<$ 10 000) and large ($>$ 10 000). Those raised on either a farm or acreage were labeled as having a rural background.

Section 2 included questions relating to the graduates' 1st job, namely: the type of practice or internship into which they were entering; specific areas of interest (small animal, food animal, mixed, etc.); the location of the practice and number of colleagues in the practice; size of center where the practice is located; salary and fringe benefits being offered; the number of hours worked/wk and evenings on call/mo; the number of years they expect to be employed in their 1st job; the number of years they expect to stay within their chosen career path; and the number of years they expect to be practising veterinary medicine. They were also asked to rank how "ideal" their 1st job choice is in regard to type of practice, its geographical location, number of veterinarians in the practice, and their expected responsibilities.

Section 3 focused on the factors that influenced the graduates' career path choice. A series of questions were used to determine how their interests in practice type (small, mixed, food animal, equine, etc) had evolved from the time of their preveterinary program to the present. A separate set of questions was given to assess what factors influenced the students' "initial" and "current" career choices. The following definitions for initial and current career choices were provided: "Initial career choice — is defined as the choice you may have made in your pre-veterinary years or in the early years at the WCVM. Current career choice — is the one that you are presently pursuing at the time of graduation." The graduates were also queried as to how their interactions with veterinarians and their summer work experiences had encouraged or discouraged their initial and current career path choices. A similar set of questions was asked of their formal education at the veterinary college. Graduates were then provided a list of 14 factors and asked to rank the top 5 factors that had influenced their choice of employment upon graduation. Students were also asked which work-lifestyle philosophy they most identified with, "Work to Live" or "Live to Work", and whether their career was guided more by personal satisfaction or by a need to serve society.

The final section gathered basic demographic information: age, gender, marital status, number of children, university attended in preveterinary program, and parents' level of education.

Survey administration and analyses

Following its development, the survey questionnaire was forwarded to a company that specializes in on-line survey design and administration (Insightrix, Saskatoon, Saskatchewan) and loaded onto its Web site; then, approximately 20, 2nd and 3rd year veterinary students were selected to pretest the survey. This resulted in some minor adjustments to the questions before the final version was loaded for access by the Class of 2006. A personalized letter explaining the purpose of the study and the company's involvement in the survey was placed in each student's mailbox. The company then contacted and provided each student with an individualized on-line access code. A cash incentive of $1000 was offered to the class with the caveat that the class' response rate had to exceed 90%. The proprietary software provided a real-time update on the response rate, which was posted for the students to monitor.

At the completion of the survey, the data were downloaded into data analysis and statistical software (Stata Version 8;

Table 1. Graduates by province of origin and future employment, urban or rural (farm/acreage) up-bringing, size of center raised in or nearby, and gender

	BC	AB	SK	MB	ON	Other	Total
Province of origin	16	24	12	11	3	1	67
Province of employment[a]	8	23	8	7	0	0	46
Urban upbringing	10	11	4	7	3	1	36
Rural upbringing	6	13	8	4	0	0	31
Size of center:							
Large (> 10 000)	13	9	4	6	3	0	32
Small (< 10 000)	3	15	8	5	0	1	35
Gender:							
Female	13	18	12	9	3	1	55
Male	3	6	1	2	0	0	12

[a] Only 46 graduates provided data on their province of employment
BC — British Columbia; AB — Alberta; SK — Saskatchewan; MB — Manitoba; ON — Ontario

Stata, College Station, Texas, USA) and reformatted for entry into statistical analysis software (Statistix Version 8.1; Statistix, Tallahasee, Florida, USA). A combination of descriptive and analytical statistics were used to assess the data at a significance level of $P < 0.05$ (two-tailed). Backwards stepwise logistic regression was used to assess the affects of multiple variables.

Results

Background and demographics

Sixty-seven of 70 students (95.7%) responded to the survey, 46 of which were able to provide data on their province of employment. Table 1 provides basic demographic data on the Class of 2006. Graduands were predominantly female (82%); 31.3% (n = 21) came from a farm; 14.9% (n = 10) grew-up on an acreage; and 53.7% (n = 36) were raised in an urban setting. Over half (58.2%) of the graduands had parents who were raised on the farm and 76.1% had grandparents who were raised on the farm.

On average, the graduates had their 1st meaningful interaction with a veterinarian at 12.8 y of age and shortly thereafter (average at 13.5 y of age) made their decision to become a veterinarian. Fourteen students (21%) had either a friend or a relative who was a veterinarian. Graduates averaged 4 y of preveterinary education before being admitted into the WCVM.

Career choices

Of the 67 graduates, 13 (19.4%) had chosen internships: 6 females and 2 males had obtained equine internships and 5 females were entering into small animal (SA) internships. Fifteen graduates (22.4%) chose exclusively SA practice and 1 was pursuing a career in equine practice. Five graduates (7.5%) were becoming food animal (FA) practitioners and 1 was employed by the government. Thirty-two graduates (47.8%) opted to start their career in mixed animal (MA) practice with specific areas of emphasis or interest as follows: beef cattle (n = 11), SA (n = 8), horses (n = 5), dairy cattle (n = 2), swine (n = 1), and did not know (n = 5). On a percentage basis, the average amount of time they planned to spend in each area of practice was as follows: SA 43%, beef cattle 26%, horses 12%, and dairy cattle 6%.

For all subsequent analyses, all SA and equine interns and practitioners were collapsed into a new variable called "companion animal (CA)". Similarly, the FA and MA practitioners, along with the sole government veterinarian, were collapsed into a new variable called "food animal related (FAR)." Following this consolidation, 38 (57%) students were pursuing a FAR career, while 29 (43%) were starting their career path in companion animals.

Table 2. Percentages of graduates' interested in each type of veterinary practice between time of their preveterinary program and graduation

	Type of practice					
	SA	FA	MA	Equine	Swine	Other
Preveterinary	13.4	16.4	47.8	11.9	1.5	9.0
1st y	16.4	17.9	47.8	11.9	1.5	4.5
2nd y	20.9	10.4	44.8	17.9	1.5	4.5
3rd y	28.4	10.4	35.8	19.4	3.0	3.0
4th y	29.9	14.9	26.9	17.9	1.5	9.0

SA — Small animal; FA — Farm animal; MA — Mixed animal

Factors influencing first career choice

There were strong trends for the FAR graduates to have parents (P = 0.052) or grandparents (P = 0.075) who were farmers. No association was found between a student's involvement in 4-H (a club that fosters agricultural skills) and his or her choice of a career (P = 0.61). Graduates used a 5-point scale to retrospectively assess their knowledge of agriculture at the time of entry into veterinary college; average scores from FAR graduates were numerically higher (P = 0.06) than those from CA graduates.

Univariate analysis showed that graduates raised in small centers were 3.4 times more likely to enter a FAR than a CA practice (P = 0.03); the inverse also applied, urban students were 3.4 more likely to pursue CA employment. Students with a BSc Ag degree were 4.5 times more likely to embark on a career in a FAR practice than were those without such a degree (P = 0.04). There was no association (P = 0.82) between being raised in the country and having obtained an agriculture degree: 9 out of 16 BSc Ag students had an urban background.

A backwards stepwise logistic regression was performed in which career type (FAR) was the dependent variable. The following unforced variables entered and exited the model at P = 0.05: BSc Ag degree, small center (population < 10 000), rural/urban upbringing, gender, and parents and grandparents from a farm. In this model, only 2 factors were associated with becoming a

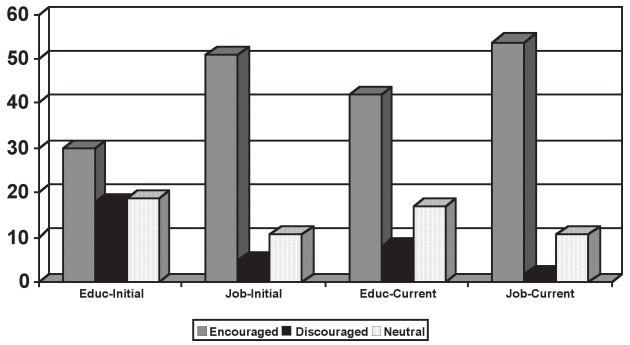

Figure 1. Responses from graduates indicating whether their veterinary education (Educ) and summer work experiences (Job) influenced (encouraged, discouraged, neutral) their initial and current career path choices.

FAR practitioner: being raised in a small center ($P = 0.01$) and having a BSc Ag degree ($P = 0.02$).

Table 2 shows the shift in students' attitudes towards practice type from the preveterinary period to the time of graduation. During this period, there was a marked reduction in interest in MA practice, with most graduates switching to SA practice. Five graduates with an urban upbringing and no ancestral links to farming were seeking a career in FAR practice. Conversely, 4 students with a farming background were entering SA practice and another 2 were seeking equine internships.

Figure 1 shows the relative influence of summer work experience and formal education on the graduates' initial and current career path choices. Education and summer work experience were generally positive influencing forces.

The 3 most influential factors associated with choosing a 1st employer were, in order of importance, the type of practice, the level of mentorship/support provided by the practice, and family/spousal considerations. None of the graduates ranked wages/benefits or hours worked/wk and nights on-call/mo higher than 3rd place. Table 3 shows the graduates' level of satisfaction with respect to 4 practice attributes: type of practice, geographical location, the number of practitioners working in the practice, and level or responsibility placed on the new employee. Approximately 15% of the graduates entering private practice were either poorly satisfied or not at all satisfied with the geographical location of the practice, and this level of dissatisfaction was unrelated to practice type.

Aspects of the 1st career choice

Table 4 shows the size of the centers where graduates planned on being employed; only 10 of the 15 graduates in SA practice answered this question. Nearly 80% of the FAR graduates planned on working in a small center (< 10 000).

All the FAR graduates provided data on salary and benefits, but only 10 SA graduates provided these same data. Thirteen (28%) respondents were earning an annual salary of $50 000–$60 000; 24 (52%) $60 000–$70 000; and the remaining 9 (20%) > $70 000. There was no difference ($P = 0.51$) in the mean wages of the CA and FAR graduates; however, the 9 highest paid (> $70 000) were FAR graduates, 6 females and 3 males. While there was a trend for FAR graduates to receive higher wages, their CA colleagues were offered more benefits,

Table 3. Graduates' percentage level of satisfaction with respect to 4 different practice characteristics associated with their 1st position in private practice

	Practice type	Geographical location	Number of practitioners	Level of responsibilities
Ideal	47.8	41.3	37.0	34.8
Moderate	32.6	39.1	32.6	39.1
Neutral	10.9	4.3	19.6	21.7
Poor	8.7	10.9	6.5	4.3
Not at all	0.0	4.3	4.3	0.0

such as membership dues, health coverage, and paid vacations (Table 5). The FAR graduates expected to work longer hours, averaging 50 h/wk and to be on-call 11 evenings/mo. Companion animal graduates only expected to work 37.5 h/wk and to be on-call 3.5 evenings/mo. These differences in hours worked/wk and evenings on-call were significant ($P < 0.01$). When asked which philosophical statement best described their lifestyle, "Work to Live" or "Live to Work," approximately 75% identified with "Work to Live." There was no relationship ($P = 0.97$) between career path (CA or FAR) and work philosophy, nor were there any relationships between work philosophy and hours worked/wk ($P = 1.00$) or evenings on-call/mo ($P = 1.00$). Approximately 66% of respondents stated that their careers were largely or solely guided by personal fulfillment, 2 graduates stated that their careers were guided by a sense of responsibility to society, and the remaining 33% were neutral on this question.

Graduates were entering into practices that averaged 3.5 full-time-equivalent veterinarians, a finding that was consistent ($P = 0.86$) across CA and FAR practices. Nearly 40% of graduates were returning to practices where they had either worked as a student or had some other personal interaction with the practice; this finding was not related ($P = 0.43$) to practice type. Fifty percent of the FAR and 75% of the CA graduates had signed an employer-employee contract, while 40% of the FAR and 67% of the CA graduates had discussed the potential of a future partnership. The median number of years that graduates planned to work for their 1st employer was 3, the minimum was 1 y. When asked a similar question regarding how long they planned to stay in their chosen career path, the means (medians) for FAR and CA graduates were 17.9 (20.0) and 22.5 (27.5) y, respectively. Over 90% of graduates expected to work in veterinary medicine until retirement. However, when asked if they would choose a DVM program again, 6 (9%) graduates answered "definitely not" or "probably not" and another 8 (12%) were not sure.

Discussion

This study dispelled a number of common myths regarding the career paths of recent graduates. Specifically, there are perceptions that the majority of WCVM graduates are only interested in CA practice, women are not interested in food animal practice, and rural students are underrepresented in the population of veterinary students. This study showed the opposite to be true. More than half of the graduates, of which 82% were female, were pursing a FAR career. It could be argued that these data represent only 1 class of graduates and hence the findings

Table 4. Stratification of graduates by practice type and the size of the center they planned to practice in

	< 5000	5001 to 10 000	10 001 to 50 000	50 001 to 100 000	> 100 000
Companion animal (n = 10)	0 (0%)	0 (0%)	1 (10.0%)	3 (30%)	6 (60%)
Food animal related (n = 36)	12 (33.3%)	16 (44.4%)	6 (16.7%)	2 (5.6%)	0 (0%)

Table 5. Summary of employee benefits offered to companion animal (CA) and food animal related (FAR) graduates

	FAR		CA	
	Yes	No	Yes	No
Membership dues	27	9	8	2
Continuing education	28	8	9	1
Vehicle allowance	21	15	0	10
After hours compensation	20	16	6	1
Paid vacation	20	16	9	1
Health coverage	16	20	8	2
Disability insurance	0	36	1	9
Registered retirement savings plan	1	35	1	9

cannot be extrapolated to other years. However, a review of demographic studies conducted by the WCVM involving the 3 previous graduating classes revealed that the demographics of these classes were comparable with those of the Class of 2006 (13–15). That is, approximately 80% of graduates were women; approximately 45% had a rural background; approximately 55% were locating in a rural-based practice; and approximately 50% were starting their careers in a FAR practice.

In the current study, 31.3% of the class came from a farm, which is in sharp contrast to the general population of western Canada, where the percentage of farm operators ranges from a low of 1.6% in British Columbia to a high of 12.6% in Saskatchewan (16). It is also of interest that 64.2% of preveterinary students were interested in FAR practice, which means that even those with an urban background were interested in food animals. The high level of interest in a FAR career waned over the course of the graduates' veterinary education, with those who were initially interested in MA practice switching to CA practice. These data underline a couple of important points when it comes to the WCVM's admission policies. First, while the profession may perceive that there is a shortage of FAR practitioners, it is unlikely, particularly given the demographics of western Canada, that the percentage of students interested in a FAR career at the time of admissions can be increased much above the current level. Second, if the profession desires more FAR graduates, some other means is needed to determine a student's level of commitment to FAR practice and to veterinary medicine in general. It was disconcerting to learn that 21% of students already had regrets about pursuing a degree in veterinary medicine. Similar results have been reported elsewhere, but the study populations were practitioners, not graduates (4,17).

While 55.2% of graduates were pursuing a FAR career, only 41.8% stated they had an interest in a FAR career. This discrepancy may be explained by the fact that 8 graduates (11.9%) accepted a position in MA practice, but their primary area of interest was either horses or small animals. It could be argued that these graduates should have been categorized as CA practitioners. At issue is the arbitrary cut-off values used to define CA, MA, and FA practitioners. We did, however, ask the panel of veterinarians involved in the survey design what they thought was the minimum percentage of time a practitioner needed to devote to beef practice to be considered as someone who services this industry? Responses ranged from 5% to 55%, with the average being 25%. Six of the 8 mixed animal graduates expected to spend > 25% of their time on food animals (beef cattle, dairy cattle, swine and poultry). This preference for CA within the FAR group may partially explain why veterinarians leave FAR practice within the 1st 5 y postgraduation, a finding that was common to the WCVM 2-year follow-up surveys (13,14) and to Heath's Australian research (17).

There was no indication that gender was an important factor when it came to choosing a career, a finding that is consistent with previous studies (9,10). Males and females were proportionally distributed between careers in CA and FAR practice. Similarly, there was no association between gender and having been raised in an urban or rural environment. While being raised in a small center and having a BSc Ag degree were associated with choosing a career in FAR practice, the data also highlight how difficult it to predict at the time of student selection which applicants will pursue a FAR career, a finding that has been reported elsewhere (18). Five urban students with no ancestral links to agriculture were starting their veterinary careers in FAR practice, while 6 rural students had chosen to begin their veterinary careers in CA practice. It is also noteworthy that 9 of 16 BSc Ag students were raised in an urban environment, which is probably reflective of the increasing urbanization of western Canada.

Mentorship by private practitioners and WCVM faculty was very influential in guiding the students' career choices. Furthermore, when it came to choosing a 1st job, employer mentoring and support was paramount to wages, benefits, hours of work/wk, and the number of evenings on call/mo. It is also of interest that 20% of respondents had a relative or family friend who was a veterinarian and 40% were joining a practice where they had an established relationship with the veterinarian(s). Clearly, private practitioners have a significant role when it comes to mentoring future employees, a finding that has been reported elsewhere (19,20). Veterinarians also need to appreciate that mentoring begins at a very early age, it involves practitioners and faculty alike, and practice owners need to cultivate relationships with potential new employees well in advance of graduation.

The contemporary view of employment compensation is that employees seek to maximize their utility (happiness) by obtaining jobs that maximize both their pecuniary and nonpecuniary

rewards (21). This principle was evident in the wage and benefit data. While the differences between the wages of the CA and FAR graduates were not statistically significant, the top 9 wages being offered were to FAR graduates. These higher wages could be interpreted as a market signal that there is a shortage of FAR practitioners, with higher wages being offered to attract graduates to FAR practice. Alternatively, the higher wages may reflect compensation for decreased benefits and longer hours of work. Interestingly, wages only became a factor after the graudate had chosen the type of practice, assessed the level of mentoring and support that they could be expected to receive, and placated family or spousal concerns. We suspect that wage only becomes an incentive, or disincentive, if it is substantially above or below the market average.

There was no relationship between work philosophy and the expected number of hours the graduates planned to work/wk or the number of evenings on-call/mo. The "Live to Work" philosophy is generally attributed to the work ethic of the Baby Boom generation, those born between 1946 and 1964. The "Work to Live" statement is attributed to people from Generation "X", those born between 1965 and 1975 (22). This question was included in the survey to expose the potential generational divide that may exist between older practice owners and much younger employees. These generational differences are real and are not restricted to veterinary medicine (23–25).

Many veterinarians have become reluctant to hire graduates because they believe new graduates plan on working for their 1st employer for only 1 to 2 y. This contention is consistent with the data that show that graduates planned on staying at their 1st job for a median of only 2.5 to 3.0 y. In addition, many accepted positions that were not ideal with regard to the type of practice, location of the practice, number of associates in the practice, and their expected responsibilities. These findings suggest that graduates make significant compromises when it comes to accepting their 1st offer of employment, but, presumably, this decision is made with the forethought that this position is just the 1st step in a much longer career. While graduates may expect to leave their 1st employer within 2 to 3 y, they plan on staying in their chosen career path for the next 20 y and in the profession until retirement.

Author contributions

Dr. Naylor instigated the research, secured the funding, and provided input into the final manuscript. Dr. Karen Lawson and Dena Derkzen were responsible for designing and administering the Delphi survey, which formed the basis of the survey instrument administered to the students, and assisted in drafting the manuscript. Drs. Campbell and Jelinski were responsible for the overall project, including the design of the survey, the administration of the survey, analysis of the data, and drafting the manuscript.

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