

Food Supply Veterinary Medicine

Job satisfaction, changes in occupational area, and commitment to a career in food supply veterinary medicine

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Major concerns in the demand and supply of veterinarians for food supply veterinary medicine (FSVM) involve job satisfaction, changes in occupational area (ie, switching careers within veterinary medicine), and commitment to a career in FSVM. To create meaningful strategies aimed at increasing the commitment of veterinary students and practitioners to this area of veterinary medicine, a thorough understanding of the forces that influence job satisfaction, changes in occupational area, and career commitment in the field of FSVM is needed. The study reported here was conducted to generate information about veterinary students and practitioners who change their focus from food animal medicine to other occupational areas in the veterinary profession.

The phenomenon of switching careers in veterinary medicine has been discussed in terms of the early years during the career of veterinarians, when they choose to leave their first job and change their occupational area. It has been reported¹ that switching from a career track in FSVM is high among veterinarians during the early part of their career. In that study,¹ it was determined that approximately half of all new graduates initially entering food animal practice exit within 5 years. This figure is aggravated by anecdotal stories of rural practitioners who are unable to retain employees, decreases in the numbers of members in veterinary medical associations targeted at veterinarians involved with FSVM, and changes in the numbers of AVMA members in various food animal or related categories.² Other anecdotal stories about the inability of retiring senior FSVM practitioners to sell their practices have also brought attention to the issue.³

Other trends may affect employee turnover and retention in food animal medicine and are part of the changing nature of careers. The reported¹ high rate of turnover in veterinarians involved with FSVM may be a reflection of the fact that most Americans change jobs every 4.5 years.⁴ Current veterinary students have come of age in an era when firms are downsizing and

the traditional psychological contract between firms and workers has changed from exchanging employee loyalty for job security and retirement benefits to exchanging employee performance for continuous learning opportunities and marketability.^{4,6} This loss of employee loyalty coincides with the move from a career that is, at the extreme, a 1-employer-for-life mutual commitment to a career with few or no boundaries that is characterized by frequent changes in jobs, employers, and occupational areas^{7,8} in a search for meaningful work⁹ and the desire to have responsibility for one's own career management and retirement.¹⁰ It is widely believed that the ability of food animal veterinarians to transfer skills to other career areas makes them less bound to a single employer and more marketable in the workforce.¹¹

Job stress and attractive career alternatives may also contribute to employee turnover.¹² Job demands, such as on-call hours and emergency work, are currently increasing for many employers or practices and may generate stress.¹³ A greater number of career alternatives can increase the desire and intention to change careers.¹⁴

An occupation represents an important and meaningful focus in the lives of many people and often involves a strong emotional connection.^{15,16} This is especially true for occupations that require a high degree of education and training, such as FSVM.¹⁷ Two important constructs that have been proposed to affect employee turnover and career switching are job satisfaction and commitment to a career.¹⁸⁻²⁰ These 2 constructs also relate to job performance and retention in an occupation.²¹⁻²³ Research^{15,24} suggests that organizational commitment and job satisfaction are positively related to length of employment in a position. Occupational commitment refers to a person's emotional attachment to their occupation, sense of obligation to remain in the occupation, and perception that there are high costs associated with leaving the occupation.²⁵ It would appear logical that most veterinarians have made an emotional commitment to the welfare of animals and feel obligated to protect and treat animals.

Materials and Methods

Three surveys^a were conducted to examine job satisfaction, changes in occupational area, and commitment to a

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career in FSVM. The first survey was conducted to examine issues related to the propensity and motivation for veterinary students to change career focus while in veterinary medical school. The second survey was conducted to examine career switching behavior, amount of job satisfaction, and occupational commitment among recent graduates (5 or fewer years after graduation) who became food animal practitioners. Finally, the third survey was conducted to provide information on the propensity to switch careers, occupational commitment, and satisfaction of long-term (6 or more years after graduation) veterinarians. Before it was sent to the participants, each survey was reviewed and approved by the Food Supply Veterinary Medicine Coalition and the Association of American Veterinary Medical Colleges.

A pervasive theme throughout the research project was a strong focus on understanding phenomena from the perspective of "customers." As such, we sought to gain insight into career switching and occupational commitment by directly obtaining the opinions of veterinary students and practicing veterinarians.

Survey of veterinary students (survey 1)—The survey examined the prevalence of students who switched from 1 occupational focus area within veterinary medicine (eg, food animal practice, mixed-animal practice, companion animal [which was considered to be the same as small animal and comprised canine, feline, avian nonpoultry, and exotic species] practice, equine practice, or industry) to another occupational area during their time in veterinary medical school. Specifically, we examined the propensity of students to switch occupational area, the time during veterinary medical school at which they switched their occupational area, the occupational area they switched into, and the reasons that they switched.

All 32 colleges or schools of veterinary medicine in the United States and Canada were contacted and asked to participate in the survey by supplying e-mail contact information for their second- and fourth-year veterinary students. Nineteen veterinary medical colleges or schools provided secured e-mail listings to the authors, and the other 13 veterinary medical colleges or schools agreed to send the survey to their students. The survey was administered in April 2005.

The Dean's office at each institution sent an e-mail to potential participants (second- and fourth-year students) that endorsed the project and encouraged participation. The research team sent an e-mail to each potential participant that explained the purpose of the research project, identified the sponsoring groups, and invited participation in the survey. That message also included a Web URL that linked directly to the online survey. The research team sent 2 additional e-mails at weekly intervals to encourage participation in an attempt to increase response rates.

Survey of food animal veterinarians early during their career (survey 2)—The purpose of survey 2 was to explore the respondents' occupational commitment and job satisfaction as well as factors leading to intentions of food animal veterinarians with 5 or fewer years of work experience to change their veterinary career focus. The veterinarians were asked whether they had graduated from veterinary medical school within the past 5 years. Next, they were asked whether they spent $\geq 50\%$ of their current job working in FSVM. Additional survey items were developed on the basis of insights gleaned from an extensive review of the literature on veterinary medical careers and literature on general human resource or career selection information as well as discussions with numerous veterinarians.

Fifteen veterinary medical associations that had an international, national, or regional scope provided e-mail addresses for their association members. The research team

sent an e-mail to each potential participant that explained the purpose of the research project, identified the sponsoring groups, and invited participation in the survey. That message also included a Web URL that linked directly to the online survey. The research team sent 2 additional e-mails at weekly intervals to encourage participation in an attempt to increase response rates. The survey was administered in December 2004. The survey was sent to 20,967 unique e-mail addresses.

Survey of long-term veterinarians (survey 3)—The purpose of survey 3 was to assess current employment challenges, occupational commitment, occupational stress, job satisfaction, and intentions to change occupational area among food animal veterinarians who had been in the workforce for ≥ 6 years. This survey also examined responses from experienced veterinarians who had made a major change in their veterinary medical occupation within the past 5 years and the reasons that caused them to change to a new job.

For survey 3, we used the same e-mail list (20,967 unique e-mail addresses) that was generated by the veterinary medical associations for survey 2. Similar to the procedure for surveys 1 and 2, potential participants were sent an initial e-mail message from the research team that explained the purpose of the research project, identified the sponsoring groups, and invited participation in the survey. That message also included a Web URL that linked directly to the online survey. The research team sent 2 additional e-mails at weekly intervals to encourage participation in an attempt to increase response rates. The survey was administered in December 2004.

Similar to survey 2, survey 3 asked potential respondents whether they had graduated from veterinary medical school before August 1999. They were then asked whether they spent $\geq 50\%$ of their current job working in FSVM. Additional questions were used to elicit the desired information necessary for our analysis.

Results

Survey of veterinary students (survey 1)—The survey was sent to 1,590 valid e-mail addresses of second- and fourth-year veterinary students. Responses were received from 759 students (response rate of 47.7%). Responses were received from veterinary students at all 32 colleges or schools of veterinary medicine in the United States and Canada.

Of the 759 respondents, 240 (31.6%) were from suburban areas and large communities, with a sizeable group (188 [24.8%]) from farms, ranches, or rural areas near a city. Undergraduate degrees were primarily in the biological sciences (403 [53.1%]) and agriculture (205 [27.0%]). Three hundred twenty-four (42.7%) respondents were between 20 and 24 years of age, and 311 (41.0%) were between 25 and 29 years of age. Females accounted for 605 (79.7%) veterinary student respondents, and 699 (92.1%) respondents indicated that they were Caucasian. Three hundred forty-five (45.5%) respondents expected an annual income in the range of \$60,000 to \$79,000 within 5 years after graduation, whereas 188 (24.8%) expected an annual income in the range of \$80,000 to \$99,000. Typically, income expectations of male veterinary students were higher than those of female veterinary students.

Respondents were asked to identify their current career area and whether they had changed their career area since entering veterinary medical school. When

Table 1—Results for second- and fourth-year veterinary students who changed their career area after entering veterinary medical school.

Original career area	New career area			
	Most common		Second-most common	
	Area	%	Area	%
Food animal (n = 11)	Mixed animal	45.5	Equine	18.2
Mixed animal (35)	Companion animal	68.6	Government	11.4
Companion animal (42)	Mixed animal	52.3	University	21.4
Equine (16)	Companion animal	50.0	Mixed animal	25.0

Results represent the percentage of all second- and fourth-year veterinary student respondents who reported that they had changed their career area after entering veterinary school. For example, 45.5% of the students whose original career choice was a food animal focus changed their career area to a mixed-animal focus.

Companion animal was considered to be the same as small animal and comprised canine, feline, avian nonpoultry, and exotic species.

Table 2—Mean scores* of second- and fourth-year veterinary students with regard to occupational commitment and changes in career area while in veterinary medical school.

Survey item	Change in career area	No change in career area	F value	P value†
I am very likely to make a lifetime commitment to this occupational area in veterinary medicine.	5.73	6.14	24.384	0.001
I am very unlikely to change from this occupational area in veterinary medicine over the course of my lifetime.	4.43	5.00	17.275	0.001
I get a strong sense of identity from making a lifetime commitment to this occupational area in veterinary medicine.	5.01	5.51	16.615	0.001
I am satisfied with making a lifetime commitment to my occupational area in light of my veterinary career expectations.	5.64	5.94	11.902	0.001
I am satisfied making a lifetime commitment to my occupational area when I compare it to other areas of veterinary medicine.	5.60	5.96	15.061	0.001

*Values represent mean scores for each item determined for responses on a 7-point scale (1, very strongly disagree; 2, disagree; 3, somewhat disagree; 4, neutral; 5, somewhat agree; 6, agree; and 7, very strongly agree). †Represents results for a multivariate ANOVA.

they indicated that they had changed career area, respondents were asked to identify their original career area when entering veterinary school. This information was used to identify the year in veterinary school when students changed their career focus.

The highest rate of change was for both second- and fourth-year veterinary students who were initially interested in an academic career but switched to another career area (7/28 [25.0%]), followed by those who switched from interest in a career in mixed-animal (35/150 [23.3%]), equine (16/74 [21.6%]), food animal (12/65 [18.5%]), or companion animal (51/316 [16.1%]) medicine to another career area. Overall, we found that approximately one fifth of 184 fourth-year respondents changed their career area from that when they first entered veterinary school. Among the 39 fourth-year veterinary students who reported that they had changed their career area during veterinary school, they did so in nearly equal amounts for each of the 4 years in veterinary school, with a slightly higher prevalence toward the latter years (first year, 7 [18.0%]; second year, 9 [23.1%]; third year, 13 [33.3%]; and fourth year, 10 [25.6%]).

When respondents had changed their career area, those entering veterinary medical school with a food animal predominant or food animal exclusive focus were most likely to change to a mixed-animal focus (only 1/11 [9.1%] of those originally interested in food

animal medicine who changed career area switched to companion animal medicine). For students with an initial interest in both mixed-animal and equine medicine, the most popular area to which they changed their career focus was companion animal medicine, whereas students initially interested in companion animal medicine who changed career focus were most likely to switch to a mixed-animal focus (Table 1).

To explain the propensity to change career area, comparisons were made for several demographic variables of interest between veterinary students who had changed their career area and veterinary students who had not changed their career area. Analysis revealed that there were no differences between those who changed career focus and those who did not change on the basis of gender, size of town in which a student grew up, size of town in which a student desired to live after graduation, or marital status. For example, neither males nor females were more likely to change their career area while in veterinary medical school. However, veterinary students who maintained the same career area throughout veterinary school reported a higher degree of commitment to their area than students who changed their career area during veterinary school, as determined on the basis of results of ANOVAs (Table 2).

In an effort to better understand the reason that veterinary students would change career focus while in

veterinary medical school, 40 factors were identified that could potentially influence a veterinary student to change their career area after entrance into veterinary school. These 40 factors were rated by veterinary students who had changed their career area. Analysis indicated that the development of new interests as a result of a student's veterinary courses was overwhelmingly rated as having the most influence. Indeed, the other 39 factors had mean values less than the scale midpoint, and less than half of the respondents agreed with each statement. The 10 highest-rated reasons to change career area were determined (Table 3).

The quantitative assessment was followed by an open-ended question that asked respondents to provide the primary reason they had changed their career area while in veterinary medical school. The top 5 reasons provided in response to this open-ended question were exposure to the new career area while in veterinary school, veterinarians employed in the new career area are better compensated than veterinarians employed in the original career area, new career area is more personally enjoyable, difficult for spouse to find employment in rural geographic area, and a desire to practice high-quality, hands-on medicine.

Differences between veterinary students were examined to better understand the reasons that students would change from a particular initial career area to another career area. Data were analyzed by use of a multivariate ANOVA with between-groups design. This analysis revealed a significant ($P < 0.001$) effect for planned occupational area. Post hoc follow-up tests (Tukey multiple comparison tests) were then used to identify the groups that differed significantly and the specific dependent variables for which they differed. Compared with results for respondents who changed from an initial intent to be involved in companion animal medicine, veterinary students who indicated a change from food animal practice to another career area were more concerned with heavy time demands associated with being on-call, not enough use of their medical or surgical skills, not being able to efficiently pay off student debt because of their salary, inadequate career opportunities for their spouse, excessive travel

to serve clients, physical demands of the work, high amounts of gender discrimination, limited recreational and cultural activities, a lack of retail stores and restaurants, and objections of a spouse or significant other to the career area (Table 4).

Survey of food animal veterinarians early during their career (survey 2)—The survey was sent to 20,967 unique e-mail addresses. There were 254 respondents, of which 133 replied that they spent $\geq 50\%$ of their current job working in FSVM. To calculate the response rate, we estimated that the total population of food animal veterinarians who graduated during this 5-year period was 1,280 (32 colleges or schools of veterinary medicine, each of which typically yielded 8 food animal graduates/y for 5 years). Thus, the 133 respondents represented a response rate of 10.4% (133/1,280).

Demographically, most of the respondents for survey 2 grew up on a farm or ranch and currently lived in a town with $< 5,000$ people or a rural area near a small town. Most respondents were between 25 and 34 years of age, 67 (50.4%) were males, and 97 (72.9%) were married. Most respondents were employed in practices that were food animal exclusive, food animal predominant, or mixed animal and had been employed for 1 to 3 years.

Overall, this group was proud and enthusiastic about their careers as food animal veterinarians. Furthermore, the respondents reported that they were extremely satisfied with their career choice and had a low propensity to change their career area, despite having many attractive career alternatives and relatively low costs for changing career areas.

More specifically, 124 of 133 (93.2%) respondents were proud to be in the FSVM sector and liked being a food supply veterinarian. The majority (118 [88.7%]) were enthusiastic about FSVM, and most (105 [78.9%]) believed they had a responsibility to continue in it. Most respondents had many desirable career options (100 [75.2%]) as well as attractive job alternatives outside of FSVM (107 [80.4%]). However, most respondents did not ponder leaving

Table 3—Mean \pm SD scores* and the percentage of second- and fourth-year veterinary students who agreed or disagreed with each statement for each of the top 10 reasons that they believed students changed their career area while in veterinary medical school.

Survey item	Mean \pm SD	Agreed† (%)	Disagreed‡ (%)
Veterinary courses; developed new interests.	5.08 \pm 1.72	75	25
Interactions with other students about original career area.	3.85 \pm 1.78	43	57
Lack of flexible work hours in original career area.	3.42 \pm 1.82	36	64
Poor balance between work and family in original career area.	3.40 \pm 1.86	33	67
Heavy on-call time demands in original career area.	3.39 \pm 1.99	36	64
Too much time working evenings or weekends in original career area.	3.35 \pm 1.91	35	65
Faculty mentor encouraged new area.	3.29 \pm 1.84	33	67
Difficult to get time off for vacations in original career area.	3.28 \pm 1.85	30	70
Not enough use of medical or surgical skills in original career area.	3.18 \pm 1.99	30	70
Difficult to arrange time off for parental or family responsibilities in original career area.	3.11 \pm 1.80	27	73

†Represents the percentage of respondents who rated the item with a score of 5 to 7. ‡Represents the percentage of respondents who rated the item with a score of 1 to 4.
See Table 2 for remainder of key.

Table 4—Mean scores* of second- and fourth-year veterinary students for factors that they believed caused students to change their career area while in veterinary medical school.

Concerns related to original career area	Original career area			
	Food animal	Mixed animal	Companion animal	Equine
Veterinary courses; developed new interests.	4.77 ^{ab}	4.98 ^{ab}	5.48 ^a	3.94 ^b
Heavy on-call time demands in original career area.	4.77 ^a	4.11 ^a	2.77 ^b	4.35 ^a
Faculty mentor encouraged new area.	3.15 ^{ab}	3.38 ^{ab}	3.81 ^a	2.12 ^b
Not enough use of medical or surgical skills in original career area.	4.46 ^a	3.22 ^{ab}	2.55 ^b	3.29 ^{ab}
Uncertain work hours in original career area.	3.23 ^{ab}	3.76 ^a	2.79 ^b	2.35 ^b
Too much veterinary competition in original career area.	2.31 ^{ab}	2.16 ^a	3.32 ^b	3.18 ^{ab}
Could not efficiently pay off student debt because of salary in original career area.	4.08 ^a	3.67 ^a	2.31 ^b	2.35 ^b
Clients expect very low fees in original career area.	3.46 ^{ab}	3.44 ^a	2.50 ^b	2.29 ^{ab}
Low compensation in original career area.	3.23 ^{ab}	3.31 ^a	2.45 ^b	1.94 ^b
Inadequate career opportunities for spouse in geographic regions in which I would be employed.	3.77 ^a	2.69 ^{ab}	2.34 ^b	2.94 ^{ab}
Excessive travel to serve clients in original career area.	3.54 ^a	3.00 ^a	2.06 ^b	3.00 ^{ab}
Work was too physically demanding in original career area.	3.77 ^a	2.87 ^a	1.97 ^b	2.82 ^{ab}
Too much gender discrimination in original career area.	3.77 ^a	2.87 ^{ab}	2.15 ^b	2.24 ^b
Poor quality of medicine being practiced in original career area.	3.15 ^{ab}	3.13 ^a	2.15 ^b	2.18 ^{ab}
Inadequate health care benefits in original career area.	3.38 ^a	2.69 ^{ab}	2.34 ^{ab}	2.00 ^b
Limited recreational and cultural activities in geographic regions in which I would be employed.	3.38 ^a	2.80 ^{ab}	2.16 ^b	2.12 ^{ab}
Lack of retail stores and restaurants in geographic regions in which I would be employed.	3.23 ^a	2.58 ^{ab}	1.97 ^b	1.88 ^b
Objection of spouse or significant other to original career area.	2.92 ^a	2.18 ^{ab}	1.76 ^b	1.71 ^b

^{a-c}Within a row, means with different superscript letters differ significantly ($P < 0.05$).
See Table 2 for remainder of key.

FSVM (95 [71.4%]) and had not applied for a position outside of FSVM within the past year (120 [90.2%]). The majority (94 [70.6%]) of respondents predicted that they would still be in FSVM 5 years from the date of the survey, and most (112 [84.2%]) indicated they were not actively seeking another position or career in place of their current job in FSVM. One hundred ten (82.7%) respondents indicated that they were satisfied with their current occupation in veterinary medicine.

Principal components analysis was used as a data-reduction method to identify representative factors from the larger set of variables. The goal was to reduce the larger set of variables into a more parsimonious set that retained the nature and character of the original variables. For the study reported here, we applied principal components analysis to items dealing with factors that influenced veterinarians to change their career area.

We examined items that the principal components analysis identified as belonging to the same factor for common substantive meaning among the items. For example, the first 5 items (all of which dealt with a balanced lifestyle between work and family) were included in the factor termed balanced lifestyle. We were then able to use a scale score that represented each separate factor in subsequent regression analyses, instead of having to use the separate items. This simplified the analysis, reduced multicollinearity among factors, and facilitated interpretation.

Principal components analysis was performed to reduce the large number of items into a smaller set of homogeneous factors on all construct questions

involving job satisfaction, occupational commitment, employment challenges, continuing education, veterinary education, and intention to seek another career in veterinary medicine. From this analysis, 11 multiple-item factors emerged that had adequate factor structure (eg, high factor loadings and minimal cross-loadings), acceptable Cronbach α values, and logical substantive meaning among items. These factor constructs were used to identify factors that veterinarians who were early in their career believed were the underlying reasons that veterinarians change occupational areas in veterinary medicine (Table 5).

The 11 factors were subsequently used in a stepwise multiple regression analysis to predict intentions of veterinarians to change careers (ie, turnover intentions). Regression analysis was conducted by use of 10 factors identified in the principal components analysis as independent variables to predict the 11th factor, turnover intentions. The 10 independent factors included in the initial stepwise multiple regression equation were food animal curriculum, job satisfaction, enthusiastic pride, loyalty, limited activities, income or pricing, continuing education, career options, information exposure, and balanced lifestyle. Variables remained in the model for values of $P < 0.05$.

Five factors did not make significant incremental contributions over the variables already in the equation and thus were eliminated from the stepwise solution; however, the other 5 factors met the statistical criterion (Table 6). A positive beta weight indicated that as respondents' agreement with the constructs increased, the likelihood to change jobs increased (ie, the higher

Table 5—Principal components analysis of factors and items that veterinarians who were early in their veterinary career (5 or fewer years after graduation from veterinary medical school) believed were the underlying reasons that veterinarians changed occupational areas in veterinary medicine.

Factor	Scale item	Factor loading
Balanced lifestyle (variance accounted for, 27.18%; Eigenvalue, 3.53; scale mean value, 4.02; and Cronbach α value, 0.842*)	Difficulty finding time off work for parental or family responsibilities.	0.807
	Difficulty finding time off work for vacations.	0.800
	Need better balance between work and family.	0.766
	Spend too much time working evenings and weekends.	0.699
	Times that I work are very inflexible.	0.668
Income or pricing (variance accounted for, 21.59%; Eigenvalue, 2.80; scale mean value, 3.36; and Cronbach α value, 0.812)	Clients expect me to charge very low fees.	0.788
	Very limited flexibility in pricing my veterinary services.	0.787
	Reduction in demand for veterinary services has greatly reduced my income.	0.744
	Client base is too small to make a good income.	0.761
Limited activities (variance accounted for, 15.02%; Eigenvalue, 1.95; scale mean value, 2.27; and Cronbach α value, 0.816)	Very limited recreational and cultural activities where I live.	0.881
	Frustrated by a lack of retail stores and restaurants where I live.	0.867
Enthusiastic pride (variance accounted for, 27.26%; Eigenvalue, 3.27; scale mean value, 5.95; and Cronbach α value, 0.913)	I like being a food supply veterinarian.	0.926
	I am enthusiastic about FSVM.	0.918
	I am proud to be in the FSVM sector.	0.842
	I feel a responsibility to continue in the FSVM sector.	0.781
Loyalty (variance accounted for, 23.26%; Eigenvalue, 2.79; scale mean value, 4.05; and Cronbach α value, 0.787)	I have too much invested in FSVM to change occupations.	0.783
	I am in FSVM because of a sense of loyalty to it.	0.779
	It would be very costly income-wise to switch from FSVM.	0.760
	I would feel guilty if I left FSVM.	0.670
Career options (variance accounted for, 19.32%; Eigenvalue, 2.31; scale mean value, 5.04; and Cronbach α value, 0.845)	If I left FSVM, I have desirable options to pursue.	0.894
	Given my experience, there are other attractive alternatives available to me outside FSVM.	0.870
	I would have many options if I decided to change my occupational area in veterinary medicine.	0.847
Information exposure (variance accounted for, 31.39%; Eigenvalue, 1.88; scale mean value, 4.86; and Cronbach α value, 0.695)	I wish I had received more information about an FSVM career during my veterinary education.	0.826
	I would be more confident in my ability if I had more exposure to food animal practice during veterinary school.	0.825
	Veterinary medical students need more career mentoring by faculty.	0.624
Food animal curriculum (variance accounted for, 31.26%; Eigenvalue, 1.87; scale mean value, 5.21; and Cronbach α value, 0.653)	Veterinary medical school places too much emphasis on companion animal practice.	0.827
	Veterinary medical school should offer more courses on FSVM and public health.	0.797
	I would be better prepared for a career in FSVM if I had received more in-depth courses rather than broad exposure to many areas.	0.629
Continuing education (variance accounted for, 59.40%; Eigenvalue, 1.78; scale mean value, 4.50; and Cronbach α value, 0.655)	I am very likely to enroll in a distance education course in FSVM offered by a veterinary medical school or college.	0.825
	I am very interested in obtaining a Master's degree in FSVM.	0.745
	I would attend a 5-day continuing education course on FSVM topics.	0.739
Job satisfaction (variance accounted for, 79.49%; Eigenvalue, 3.18; scale mean value, 5.35; and Cronbach α value, 0.912)	My current occupation in veterinary medicine is satisfying.	0.922
	I am satisfied with my current occupation in light of my veterinary career expectations.	0.913
	I am satisfied with my current occupation when I compare it to occupations in other areas of veterinary medicine.	0.908
	I am satisfied with the chance my occupation gives me to perform what I do best.	0.820
Intention of changing careers (variance accounted for, 77.27%; Eigenvalue, 2.31; scale mean value, 1.16; and Cronbach α value, 0.728)	I am actively seeking a substitute for my current job in FSVM.	0.910
	I think a lot about leaving FSVM.	0.870
	I intend to leave FSVM in the next year.	0.856

*The Cronbach α value is a measure of reliability that ranges from 0 to 1, with a value of 0.600 deemed the lower limit of acceptability.

[more positive] the positive value, the greater the likelihood of changing jobs). A negative beta weight indicated that as respondents' disagreement with the constructs increased, the likelihood to change jobs increased (ie, the lower [more negative] the negative value, the greater the likelihood of changing jobs).

The regression analysis indicated that veterinarians who were most likely to change from a career in FSVM would do so because of a desire for a more balanced lifestyle between work and family, desire for more cultural and recreation activities near work, less satisfaction with their current occupation in FSVM, less enthusiasm about their veterinary work and less

pride in their job, and many attractive career alternatives within veterinary medicine.

Survey of long-term veterinarians (survey 3)—Survey 3 was sent to the same 20,967 unique e-mail addresses used for survey 2. Potential respondents were asked whether they had graduated from veterinary medical school before August 1999. This generated 2,482 respondents. We assumed there were typically 2,000 veterinary students who graduated annually from colleges or schools of veterinary medicine in the United States and Canada between 1984 and 1999. Thus, we calculated the response rate was 8%.

Table 6—Stepwise regression analysis of 5 factors that veterinarians who were early during their veterinary career (5 or fewer years after graduation from veterinary medical school) believed impacted the intention among veterinarians to change occupational areas within veterinary medicine during the past 5 years.

Predictors	Beta weight	t value	P value
Balanced lifestyle*	0.149	2.096	0.001
Limited activities*	0.153	2.378	0.038
Job satisfaction†	-0.440	-5.774	0.001
Enthusiastic pride†	-0.274	-3.986	0.001
Career options*	0.138	2.231	0.027

The dependent variable was the planned intention to change jobs. Values for the model were as follows: R^2 , 0.551; adjusted R^2 , 0.533; F statistic, 30.704; and $P < 0.001$.

*A positive beta weight indicates that as respondents' agreement with the constructs increases, the likelihood to change jobs increases (ie, the higher [more positive] the positive value, the greater the likelihood of changing jobs). †A negative beta weight indicates that as respondents' disagreement with the constructs increases, the likelihood to change jobs increases (ie, the lower [more negative] the negative value, the greater the likelihood of changing jobs).

In terms of demographic characteristics, most respondents for survey 3 grew up on a farm, ranch, or suburban area. They currently lived in a suburban area or large city (population, 50,000 to 499,999) and desired to live in a rural area near the city limits or in a suburban area. Most respondents were between 30 and 50 years of age, and 1,596 (64.3%) were male. Most respondents were employed as practitioners at companion animal exclusive practices, at a university setting, or in industry. Mean annual income was \$85,000.

Respondents were asked to identify their current veterinary occupation (eg, food animal, mixed-animal, or companion animal practice; government; or industry) and their former veterinary occupation if they had made a substantial change in their veterinary occupation during the past 5 years. Four hundred twenty-three of 2,482 (17.0%) respondents had changed their veterinary occupational area during the past 5 years. Of the 423 veterinarians who

Table 7—Results for 423 long-term (6 or more years after graduation from veterinary medical school) veterinarians who changed their career focus within veterinary medicine during the past 5 years.

Original career area	New career area			
	Most common		Second-most common	
	Area	%	Area	%
Food animal (n = 44)	Companion animal	27.2	Government	25.0
Mixed animal (83)	Companion animal	46.9	Government	21.6
Companion animal (72)	Government	29.1	Industry	29.1
University (27)	Companion animal	44.4	Industry	22.2
Government or public (13)	Companion animal	38.4	University	30.7
Industry (18)	Companion animal	33.3	University	33.3

Results represent the percentage of all long-term veterinarians who reported that they had changed their career focus. For example, 27.2% of the veterinarians whose original career choice was a food animal focus changed their career area to a companion animal focus.

Table 8—Mean \pm SD scores* and the percentage of long-term (6 or more years after graduation from veterinary medical school) veterinarians who agreed or disagreed with each statement regarding the reasons that they believed veterinarians changed occupational areas in veterinary medicine during the past 5 years.

Survey item	Mean \pm SD	Agreed† (%)	Disagreed‡ (%)
I had a very attractive alternative employment opportunity.	4.38 \pm 2.30	61	39
Lack of clear path for advancement.	3.51 \pm 2.32	47	53
Lack of flexible work hours.	3.77 \pm 2.23	47	53
Heavy time demands from on-call hours.	3.58 \pm 2.39	47	53
Compensation was extremely low in my former position.	3.56 \pm 2.04	42	58
Inadequate retirement benefits.	3.40 \pm 2.20	35	65
Poor relationship with supervisor.	3.13 \pm 2.21	33	67
Verbal promises made at hiring were ignored.	3.22 \pm 2.12	31	69
Inadequate health care benefits.	3.05 \pm 2.08	28	72
Needed to relocate to new geographic area.	2.91 \pm 2.11	25	75
Work was too physically demanding.	2.67 \pm 1.94	25	75
Uncertain financial stability of employer.	2.77 \pm 2.00	22	78
Excessive travel in my former occupation.	2.54 \pm 1.94	22	78
Poor-quality medicine being practiced.	2.38 \pm 1.82	18	82
I started my own practice.	2.20 \pm 2.05	16	84
Not enough use of my medical or surgical skills.	2.66 \pm 2.08	9	91
Not enough hands-on work with animals.	1.88 \pm 1.59	9	91
I retired.	1.76 \pm 1.68	8	92
Position was terminated.	1.96 \pm 1.71	8	92
Undesirable rural area in which to live.	1.82 \pm 1.51	8	92

See Tables 2 and 3 for key.

Table 9—Principal components analysis of factors and items that long-term (6 or more years after graduation from veterinary medical school) veterinarians believed were the underlying reasons that impacted veterinarians to change occupational areas in veterinary medicine during the past 5 years.

Factor	Scale item	Factor loading
Balanced lifestyle (variance accounted for, 27.07%; Eigenvalue, 3.80; scale mean value, 3.69; and Cronbach α value, 0.841*)		
	Difficulty finding time off work for parental or family responsibilities.	0.846
	Difficulty finding time off work for vacations.	0.842
	Need better balance between work and family.	0.835
	Spend too much time working evenings and weekends.	0.699
Income or pricing (variance accounted for, 24.42%; Eigenvalue, 1.57; scale mean value, 3.99; and Cronbach α value, 0.779)		
	There is too much veterinary competition in my geographic area.	0.762
	Reduction in demand for veterinary services has greatly reduced my income.	0.760
	Very limited flexibility in pricing my veterinary services.	0.728
Limited activities (variance accounted for, 15.77%; Eigenvalue, 1.35; scale mean value, 2.01; and Cronbach α value, 0.710)		
	Very limited recreational and cultural activities where I live.	0.873
	Frustrated by a lack of retail stores and restaurants where I live.	0.866
Enthusiastic pride (variance accounted for, 32.23%; Eigenvalue, 3.48; scale mean value, 5.97; and Cronbach α value, 0.919)		
	I like being in my occupational area in veterinary medicine.	0.923
	I am proud to be in my occupational area in the veterinary profession.	0.905
	I am enthusiastic about my occupational area in veterinary medicine.	0.898
Loyalty (variance accounted for, 20.53%; Eigenvalue, 1.26; scale mean value, 4.04; and Cronbach α value, 0.772)		
	I am in my occupational area in veterinary medicine because of a sense of loyalty to it.	0.892
	I would feel guilty if I left my occupational area in veterinary medicine.	0.881
Career options (variance accounted for, 30.63%; Eigenvalue, 1.92; scale mean value, 4.15; and Cronbach α value, 0.887)		
	If I leave my occupational area in veterinary medicine, I have desirable options to pursue.	0.898
	I would have many options if I decided to change my occupational area in veterinary medicine.	0.895
	Given my background and experience, there are attractive alternatives available to me outside of my occupational area in veterinary medicine.	0.887
Burnout (variance accounted for, 74.57%; Eigenvalue, 2.23; scale mean value, 3.84; and Cronbach α value, 0.829)		
	After a working day, I frequently feel too fatigued to engage in any other activity.	0.889
	Because of my occupation in veterinary medicine, I feel rather exhausted at the end of a working day.	0.852
	When I come home, I must be left alone for a while.	0.838
Job satisfaction (variance accounted for, 79.49%; Eigenvalue, 3.18; scale mean value, 5.78; and Cronbach α value, 0.912)		
	My current occupation in veterinary medicine is satisfying.	0.922
	I am satisfied with my current occupation in light of my veterinary career expectations.	0.913
	I am satisfied with my current occupation when I compare it to occupations in other areas of veterinary medicine.	0.908
	I am satisfied with the chance my occupation gives me to perform what I do best.	0.820
Intention of changing careers (variance accounted for, 77.27%; Eigenvalue, 2.31; scale mean value, 2.26; and Cronbach α value, 0.889)		
	I am actively seeking a substitute for my current occupational area in veterinary medicine.	0.910
	I think a lot about leaving my current occupational area in veterinary medicine.	0.870
	I intend to leave my current occupational area in veterinary medicine within the next 2 years.	0.856
*See Table 5 for key.		

changed occupational area during the past 5 years, 44 (10.4%) were food animal veterinarians who entered a new occupational area within veterinary medicine.

For the 44 food animal veterinarians who changed career area, companion animal (12 [27.3%]) and government (11 [25.0%]) jobs were the most common

new areas of employment. Similarly, companion animal veterinarians were also most likely to switch to government (21/72 [29.2%]) or industry (21/72 [29.2%]) jobs (Table 7).

On the basis of a review of the veterinary literature, results from focus groups, and interviews with practicing veterinarians, 20 variables were identified

that may impact a long-term veterinarian's decision to change occupational area in veterinary medicine. The 423 veterinarians who indicated they had changed career area during the past 5 years responded to the 20 items, which revolved around issues relating to employment conditions or lifestyle.

Analysis of the results indicated that most of the 423 long-term veterinarians who changed occupational area believed that in their former jobs, they received adequate healthcare benefits, worked for a financially stable employer who practiced high-quality medicine, and were able to use their medical or surgical skills. Most did not need to relocate to a new area (309 [73.0%]), did not retire (360 [85.1%]), and did not start their own practice (342 [80.8%]) when they left their former employer. Almost all (372 [87.9%]) did not believe that they lived in an undesirable rural area for their former position, and most (363 [85.8%]) indicated that their former job provided them with sufficient hands-on work with animals. Furthermore, these respondents generally did not believe that the work was too physically demanding (302 [71.4%]) or that there was excessive travel (315 [74.5%]) in their former position.

The most common factor that influenced a change in career was simply that the veterinarians who changed jobs had received an extremely attractive alternative employment opportunity (243/423 [57.4%]). However, there was some dissatisfaction with opportunities for advancement as well as the lack of flexible work hours and heavy time demands from on-call hours. Thus, we found that, in general, veterinarians who changed career area were not dissatisfied with specific aspects of their career but, rather, believed that a better opportunity was available (Table 8).

To reduce the large number of items into a smaller set of homogeneous factors, principal components analysis was performed on all current occupation construct questions involving job satisfaction, occupational commitment, employment challenges, occupational stress, and intention to seek another career area from their current occupational area in veterinary medicine. The analysis used only those respondents who reported that they were currently food animal veterinarians. From this analysis, 9 multiple-item factors emerged that had adequate factor structure (eg, high factor loadings and minimal cross-loadings), acceptable Cronbach α values, and logical substantive meaning among items (Table 9).

Subsequently, 8 factors were used as independent variables in a stepwise multiple regression analysis to predict the ninth factor, turnover intentions. All respondents who reported that they were currently food animal veterinarians were included in this portion of the analysis. The 8 independent factors included in the initial stepwise multiple regression equation were job satisfaction, enthusiastic pride, loyalty, limited activities, income or pricing, career options, burnout, and balanced lifestyle. Variables remained in the model for values of $P < 0.05$.

Two factors, loyalty and limited activities, did not make significant incremental contributions over the variables already in the equation and were thus eliminated from the stepwise solution. However, the remaining 6 factors met the statistical criterion. Again,

Table 10—Stepwise regression analysis of factors that impacted the intention among long-term (6 or more years after graduation from veterinary medical school) veterinarians to change occupations in veterinary medicine during the past 5 years.

Predictor	Beta weight	t value	P value
Job satisfaction†	-0.371	-18.626	0.001
Career options*	0.210	12.641	0.038
Enthusiastic pride†	-0.209	-10.536	0.001
Burnout*	0.128	6.663	0.001
Balanced lifestyle*	0.104	5.381	0.001
Income or pricing*	0.056	3.080	0.002

The dependent variable was the planned intention to change jobs. Values for the model were as follows: R^2 , 0.370; adjusted R^2 , 0.369; F statistic, 242.339; and $P < 0.001$.
See Table 6 for remainder of key.

a positive beta weight indicated that as respondents' agreement with the constructs increased, the likelihood to change jobs increased (ie, the higher [more positive] the positive value, the greater the likelihood of changing jobs), and a negative beta weight indicated that as respondents' disagreement with the constructs increased, the likelihood to change jobs increased (ie, the lower [more negative] the negative value, the greater the likelihood of changing jobs).

Analysis of results from the stepwise multiple regression model indicated that veterinarians who were most likely to change from a career in FSVM were less satisfied with their current occupation in food animal medicine, had many attractive career alternatives within veterinary medicine, were less likely to be enthusiastic about their veterinary work and have pride in their job, had more stress and burnout in their current veterinary job, desired a more balanced lifestyle between work and family, and desired more income and wanted to charge higher prices for veterinary services (Table 10).

Discussion

Change in career area is a phenomenon seen with low frequency among students enrolled in colleges or schools of veterinary medicine. Among fourth-year veterinary students, approximately only 1 in 5 reported that they had changed their initial (at the time of entrance to veterinary medical school) career area to another career area.

The overwhelming factor that generated the change in career focus was the development of a new interest as a result of course work. Exposure to new material in courses interested veterinary students so much that they decided to explore new areas of veterinary medicine as a career option. Comparing the food animal students who changed to a new occupational area in veterinary medicine with companion animal students who changed revealed that those changing from the food animal area were more concerned with time demands as a result of being on-call, being unable to make full use of their medical or surgical skills, and not making enough money to pay off student loans.

Veterinary students and food animal practitioners have differing perspectives on these issues. Employed food animal veterinarians reported that they were able to make full use of their medical or surgical skills and

did not have more issues with time management, compared with results for veterinarians employed in other occupational areas. It should be mentioned that being unable to make full use of medical or surgical skills and time demands as a result of being on-call were reported by veterinary students as being minor reasons for changing their occupational area from FSVM, compared with their motivation to change career area because of developing new interests through course work. Opportunities exist for colleges or schools of veterinary medicine to develop FSVM interest among veterinary students who are focusing in other career areas and to retain those currently interested in FSVM careers by developing and offering interesting and exciting courses focused on FSVM during the first year of veterinary school. To the fullest extent possible, positive faculty role models should teach these courses.

Veterinarians during the early portion of their career (5 or fewer years after graduation) in the FSVM sector were satisfied in their current job and did not intend to leave it. When comparing FSVM to other areas of the veterinary profession, veterinarians involved in FSVM reported a high degree of satisfaction. This may be 1 reason that contributed to the low turnover rate, despite the fact that many had desirable career options outside of FSVM as well as many job offers. The few who did change occupational area during the first 5 years after graduation indicated that the desire for a more balanced life between work and family as well as more recreational or cultural activities were strong motivators to change jobs. Veterinarians who changed jobs early during their career had less pride and less enthusiasm for FSVM, low job satisfaction, and many attractive career alternatives.

Career changes were also uncommon among employed long-term veterinarians (6 or more years after graduation). Most long-term veterinarians who changed jobs stated that they were happy in their former positions and had received adequate benefits, worked for a stable employer in a desirable area, and were able to use their medical or surgical skills. The main reason that those long-term veterinarians left their former jobs was because they received a more attractive offer in an alternative employment setting.

The high praise for the life of a food animal veterinarian as reported by those who actually perform this occupation explained much about the low amount of employee turnover in the profession. Long-term food animal veterinarians indicated that they were satisfied, proud, and enthusiastic about their careers. They preferred FSVM to other areas in the profession and did not intend to leave it. Information regarding the high job satisfaction and low intentions to change careers among all FSVM veterinarians, including those early during their career as well as long-term veterinarians, should be shared with veterinary students during the early stages of the students' career selection process.

a. Copies of the surveys are available from the authors by request.

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