Galloping Away: Factors affecting equine practitioners' desire to change veterinary sectors.

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Introduction

- The market for veterinarians is one of three vertically related markets in the veterinary industry
  - Society's demand for veterinary services signals the market for veterinarians which determines the number and cost of veterinarians
- The market for veterinarians is not one single homogenous market but rather a number of horizontally related markets
  - Geographical location, community size, type of practice
- **Becoming a veterinarian is not an overnight decision**

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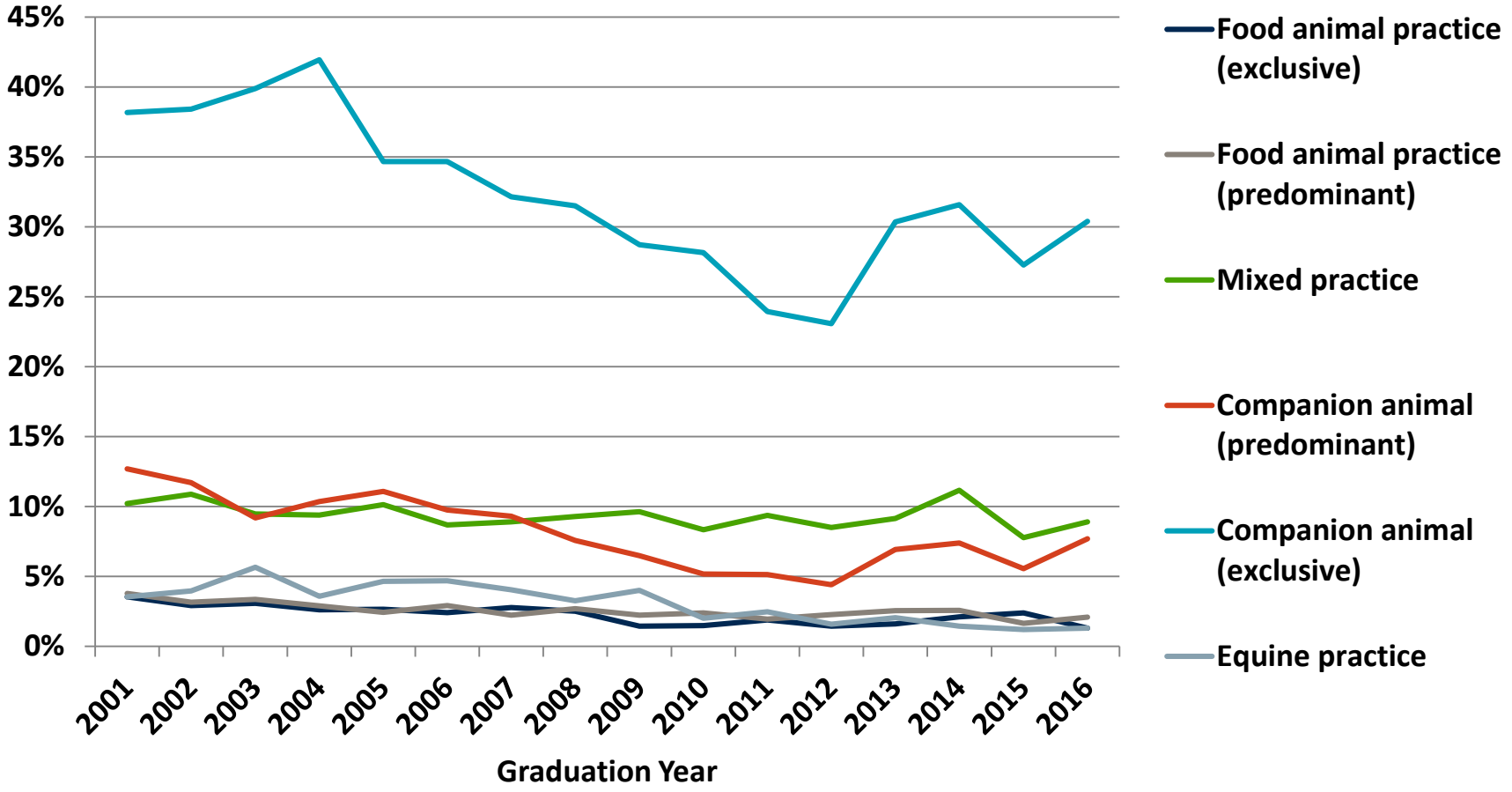
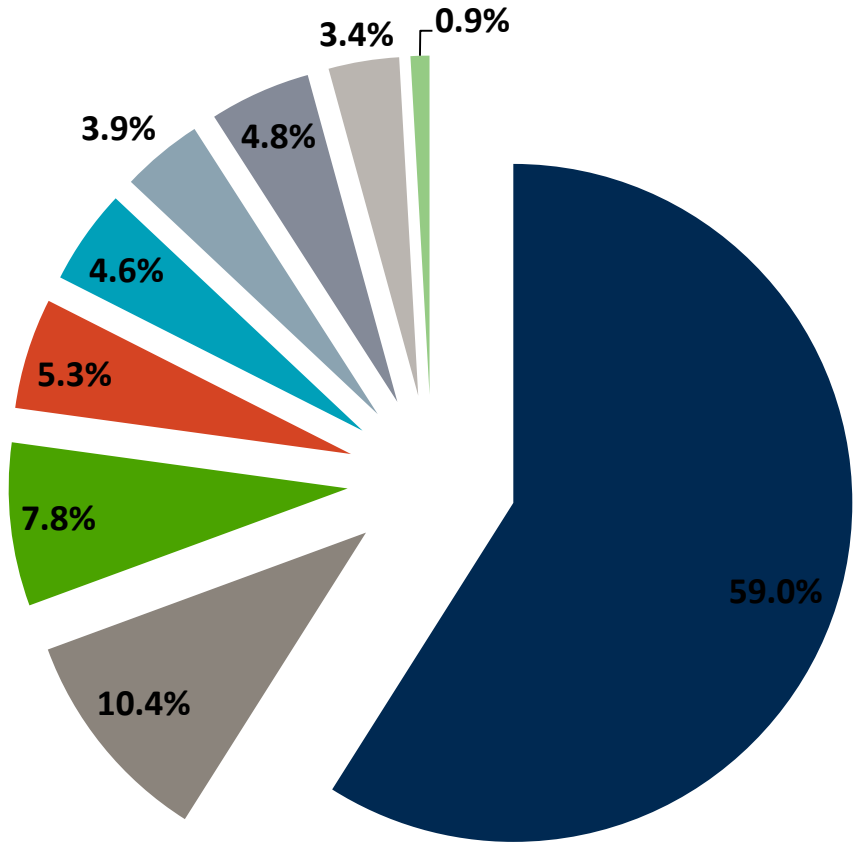
Distribution of New Veterinarians in Private Practice



Source: 2017 AVMA & AAVMC Report on The Market for Veterinary Education

Veterinary Population, 2016



- Companion Animal
- Other Veterinary Employment
- College or University
- Food Animal
- Equine
- Industry/Commercial
- Mixed Animal
- State/Local/Federal Gov.
- Uniformed Services

Estimated number of veterinarians as of December 31, 2016: 107,995

Source: 2017 Report on The Market for Veterinarians

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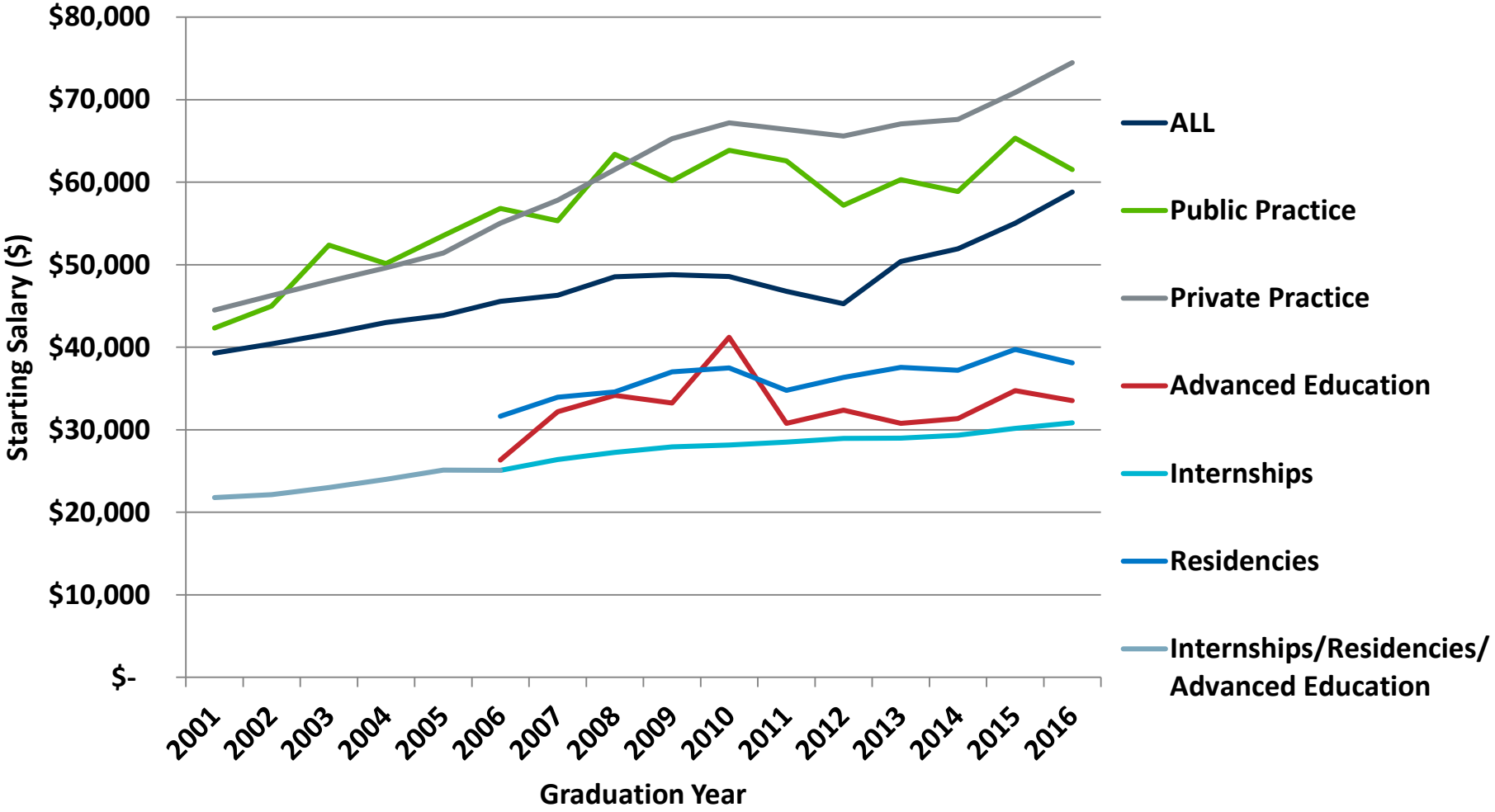
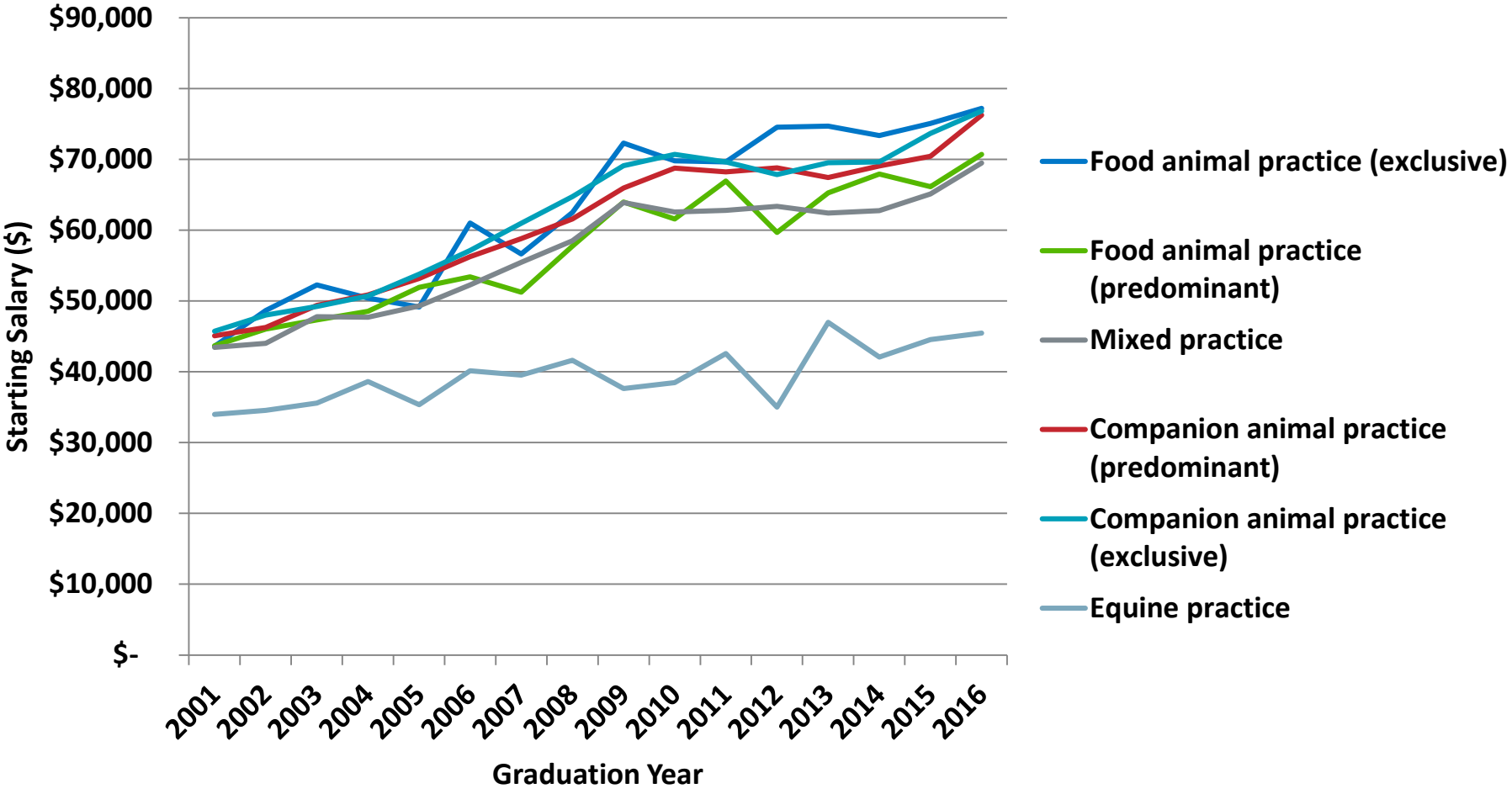
Mean Starting Salaries of New Veterinarians



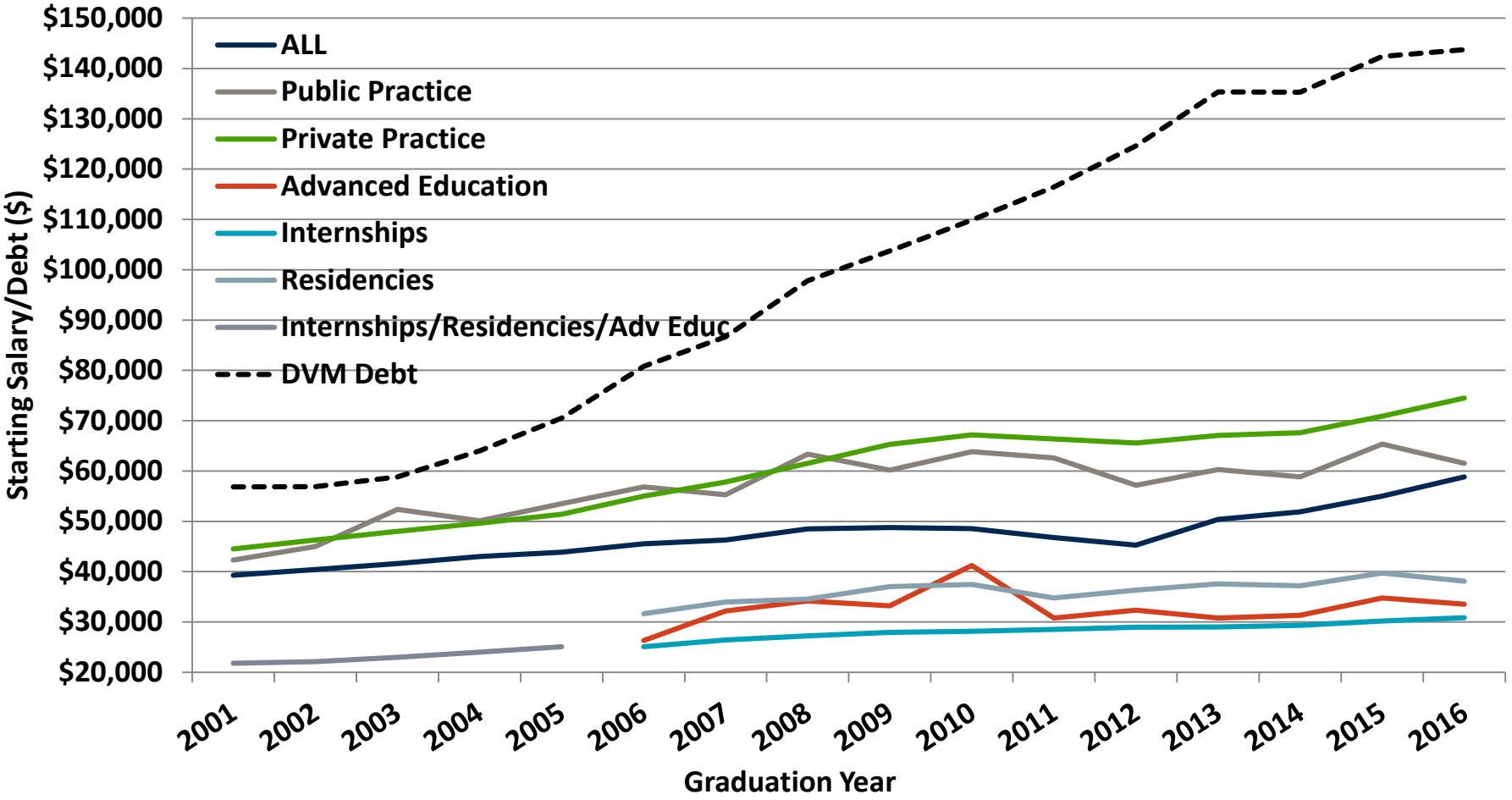
Source: 2017 AVMA & AAVMC Report on The Market for Veterinary Education

Mean Starting Salaries of New Veterinarians - Private Practice



Source: 2017 AVMA & AAVMC Report on The Market for Veterinary Education

Mean Starting Salaries & Debt of New Veterinarians



Source: 2017 AVMA & AAVMC Report on The Market for Veterinary Education

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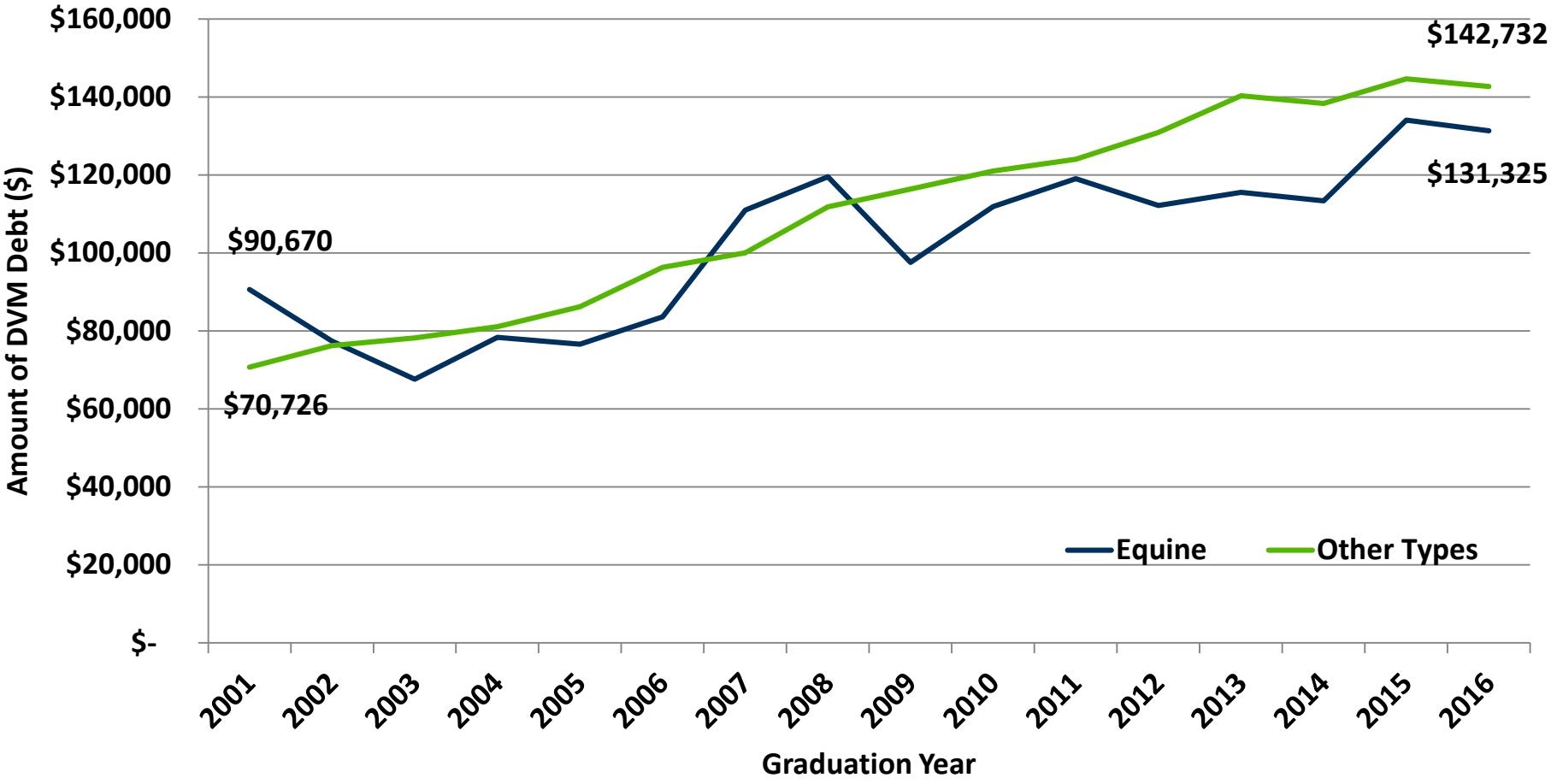
Real Mean Debt for New Graduates in the Equine Profession vs. All Other Veterinary Fields



Source: 2016 AVMA – AAEP Survey of Equine Practitioners & 2016 AVMA Census of Veterinarians

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Motivation

- Average decline in new veterinarians selecting a career in equine medicine over the past 10 years
- Reasons for the decline is unknown
  - Other attractive veterinary sectors
  - Exit

Objective

- Identify factors that contribute to a veterinarians' **desire** to change veterinary sectors
  - H1: Change veterinary sector in order to increase income and decrease debt (Lam, et. al, 2011; Huinink, et. al, 2013)
  - H2: Change veterinary sector because they accepted job based on need rather than choice
  - H3: Change veterinary sector if contribute more than 50 percent of household income (Clark & Withers, 1999)
  - H4: Change veterinary sector if preschool or juvenile aged children (Looze, 2017)
  - H5: Change veterinary sector if unhappy with current work environment (Andresen, et. al, 2016)

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Data Sources and Methods

- AVMA -AAEP Survey of Equine Practitioners (n=975)
  - August 2016
  - 5,657 AAEP members; **response rate: 17%**
- AVMA's 2017 Census of Veterinarians (n=2,780)
- Combined Equine Dataset (n=1,056)
  - AVMA-AAEP survey responses (n=975)
  - Plus, equine practitioners from 2016 Census of Veterinarians (n=81)

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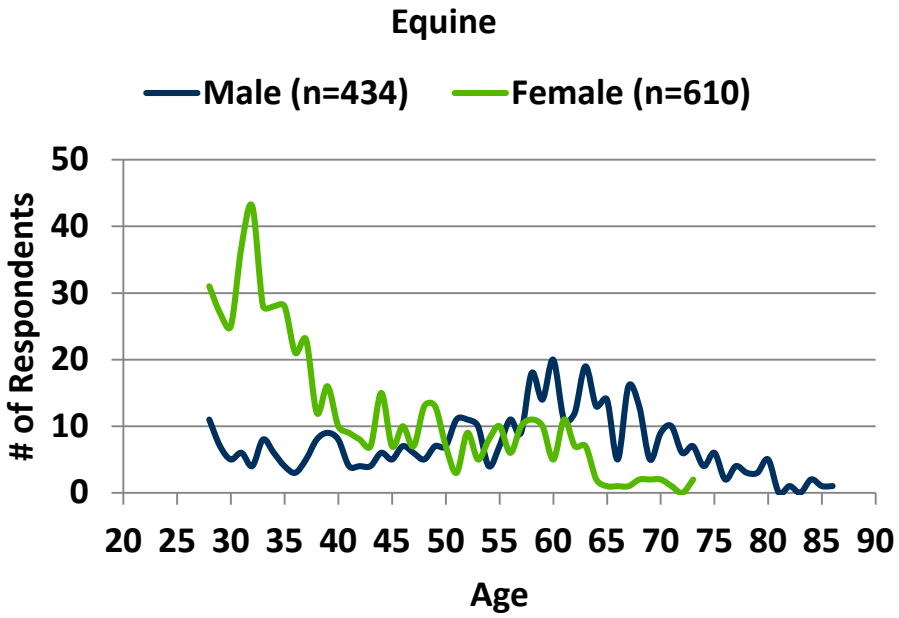
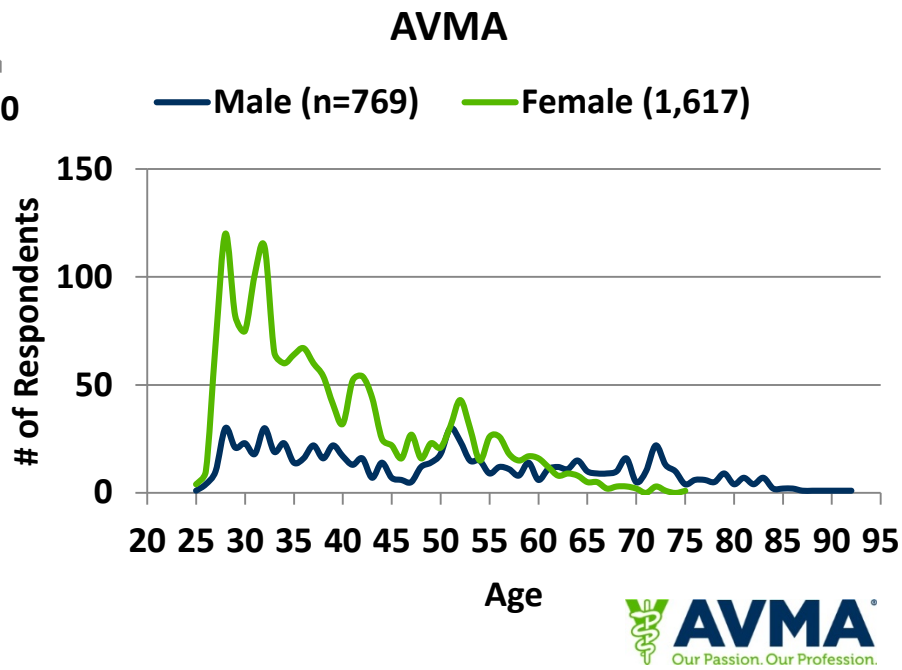
Survey Question

If you could, would you change the veterinary sector in which you currently work, for example, from equine to companion animal, equine to industry, food animal to not-for profit, etc., or would you not change the veterinary sector in which you currently work?

- Would change (1)
- Would not change (0)

Age and Gender





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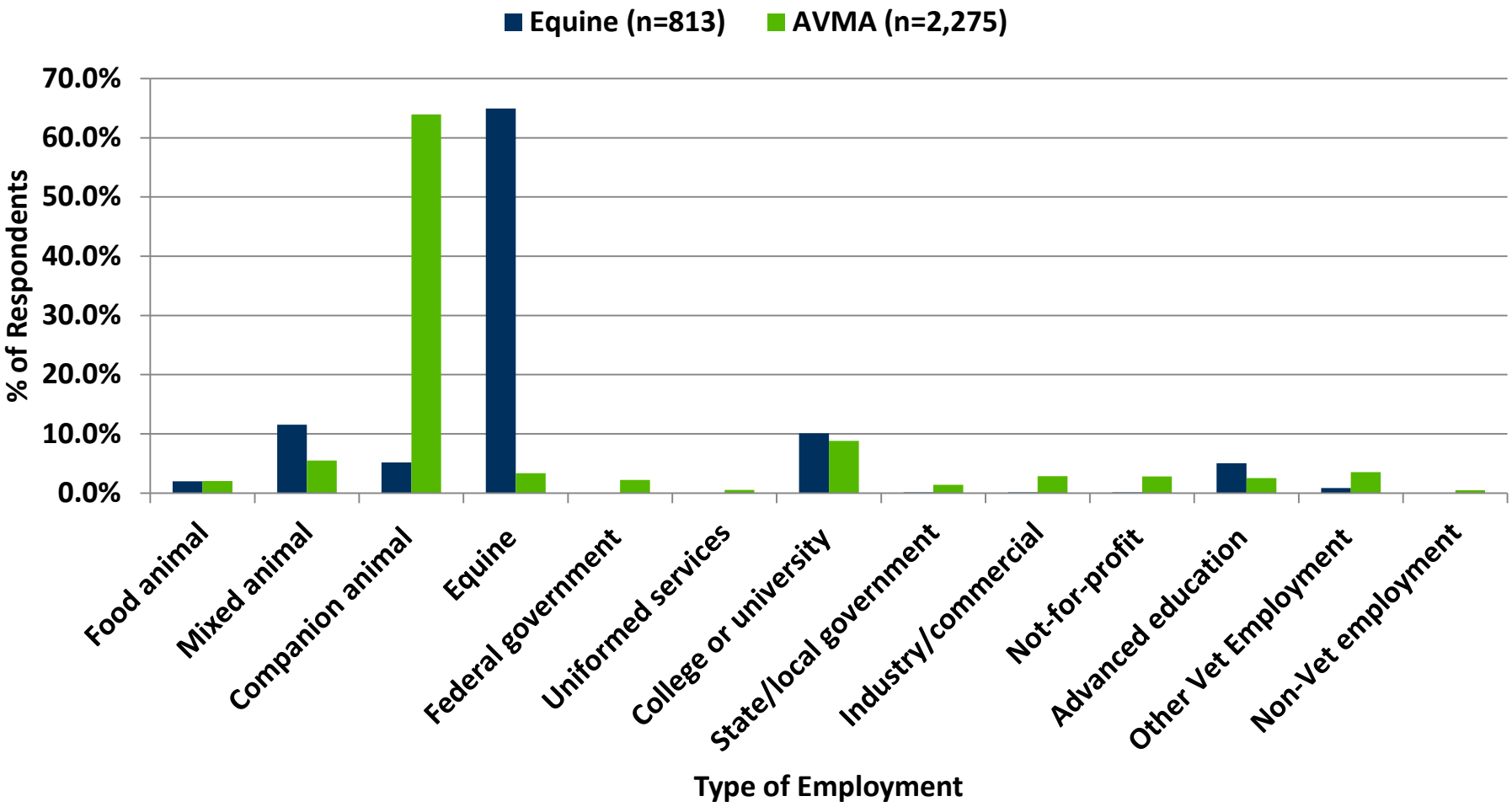
Type of Employment



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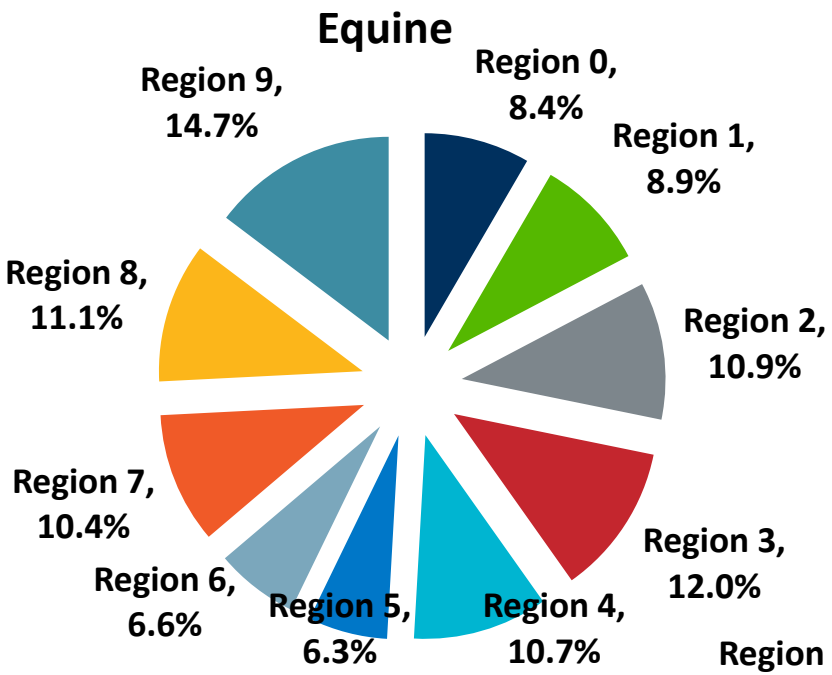
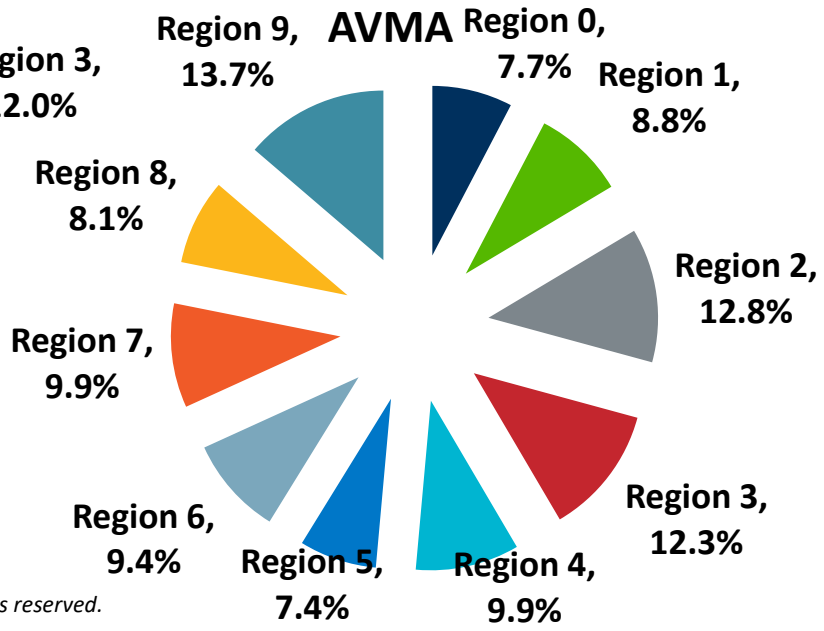
Where are they?





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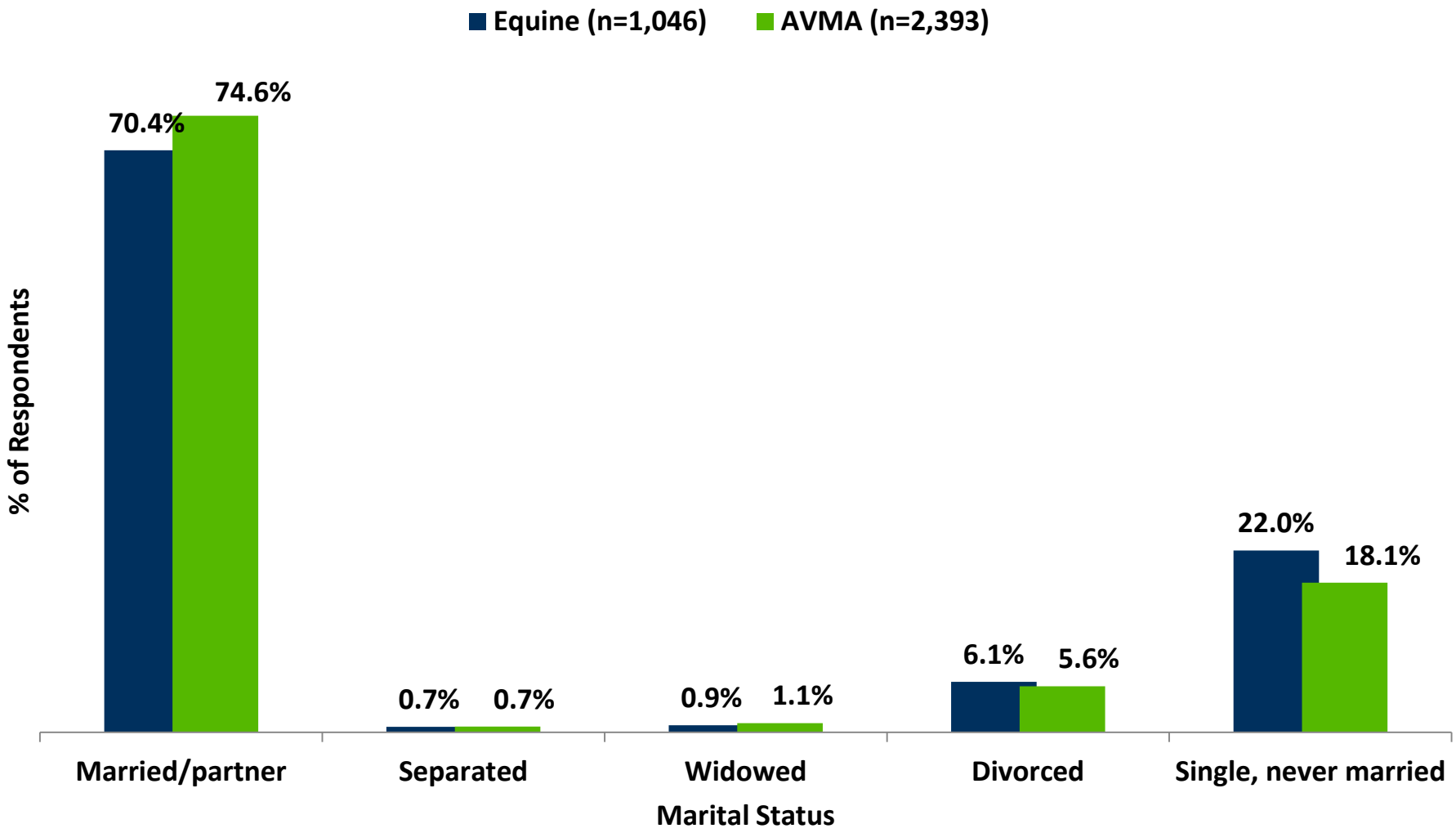
Marital Status



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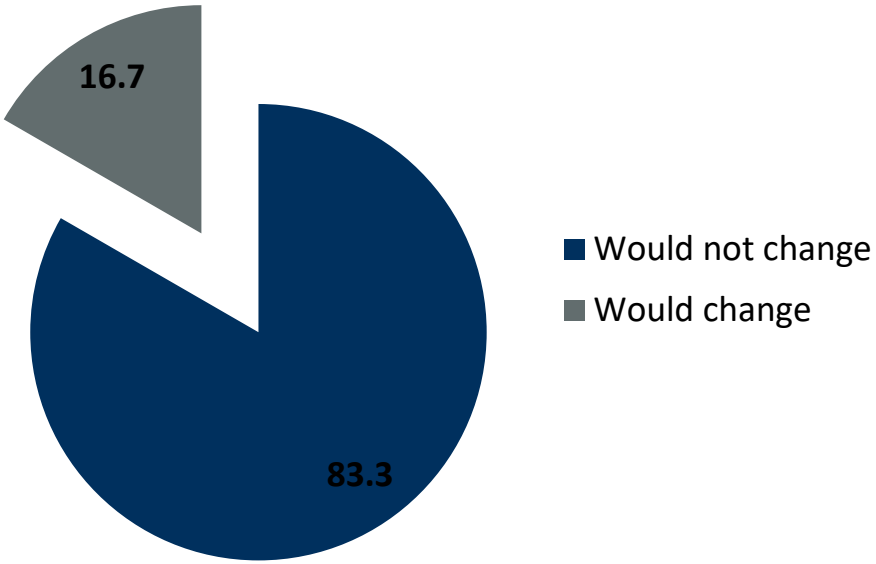
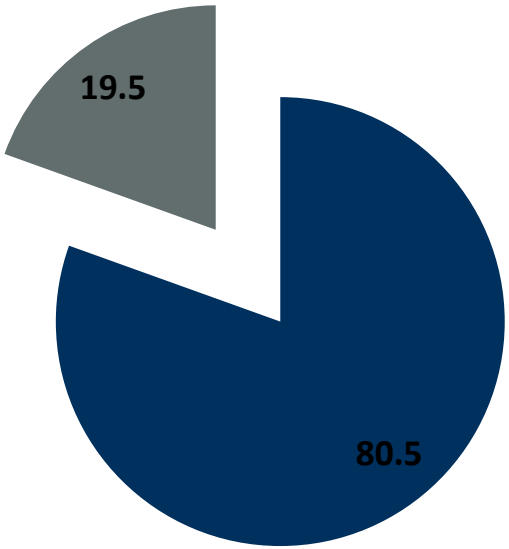
Distribution of Desire to Change Veterinary Sectors

Equine



- 60 percent are 25-35 years old

AVMA Equine Practitioners



- 28 percent of all general practitioners desired to change veterinary sectors
- 46 percent are 25-35 years old
  - Over 50 percent are in equine

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Empirical Model

- Binary logit estimates the probability that y=1 as a function of the independent variables
- Predicted probabilities are limited between 0 and 1
- F(x'β) is the cdf of the logistic distribution
  - 1 = **would** (if could) change veterinary sectors
  - 0 = **would not** change (if could) veterinary sectors

$$F(x') = \Phi(x'\beta) = \int_{-\infty}^{x'\beta} \Phi(z)dz$$

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Variables

	Equine Freq./Mean	AVMA Freq./Mean
Age 25 to 35 (Y=1; baseline)	32.8%	41.6%
Age 36 to 60 (Y=1)	47.0%	47.3%
Age Over 60 (Y=1)	20.2%	11.1%
Female (Y=1)	58.4%	71.4%
Changed veterinary sectors (Y=1)	25.4%	24.1%
Satisfied with current employment (5=Extremely satisfied/1=Not at all satisfied)	4.0	3.7
Satisfied with compensation (5=Extremely satisfied/1=Not at all satisfied)	4.5	4.6
Satisfied with profession (5=Extremely satisfied/1=Not at all satisfied)	4.5	4.3
Satisfied with lifestyle (5=Extremely satisfied/1=Not at all satisfied)	4.6	4.6
Preschool children	0.4	0.7
Juvenile children	0.9	0.9
Adult children (baseline)	1.1	0.3
Prefer smaller practice (Y=1)	7.2%	7.4%
Prefer larger practice (Y=1)	25.5%	18.2%
Prefer no change in practice (Y=1; baseline)	67.3%	74.4%

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Variables

	Equine	AVMA
	Freq./Mean	Freq./Mean
Prefer smaller community (Y=1)	12.8%	8.3%
Prefer larger community (Y=1)	11.1%	13.1%
Prefer no change in community (Y=1; baseline)	76.1%	78.6%
Home ownership (Y=1)	73.0%	72.1%
Married (Y=1; baseline)	70.4%	75.1%
Single (Y=1)	22.0%	18.6%
Divorced (Y=1)	6.1%	4.8%
Widowed (Y=1)	0.9%	0.6%
Separated (Y=1)	0.7%	0.9%
Percent of Household contribution	74.7	71.6
Accept out of need	25.2	31.9
Income	$104,255.30	$114,241.20
Work less or more hours (Y=1)	40.1%	31.5%
Compassion score	37.9	36.2
Burnout score	24.8	25.6
Traumatic stress score	21.2	21.6

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Variables - Equine specific

	Frequency/Mean
Working breeds (Y=1)	1.7%
English (Y=1)	15.6%
Companion (Y=1)	4.7%
Quarter Horse racing (Y=1)	1.0%
Standardbred racing (Y=1)	1.3%
Thoroughbred racing (Y=1)	5.7%
Reproduction (Y=1)	5.7%
Western (Y=1)	3.2%
General (Y=1; baseline)	60.9%
Total unique horse patients	693
Seasonal services (Y=1)	23.1%
Physical limit (5=A great deal/1=Not at all)	1.52
Mental limit (5=A great deal/1=Not at all)	1.45

Gaited breed was removed because the number of observations did not permit estimation.

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Results

Equine	Coef.	Std. Err.	P>z	Odds Ratio
Changed veterinary sectors	1.263	0.275	0.000	3.54
Satisfied with profession	-0.445	0.115	0.000	0.64
Preschool children	0.429	0.233	0.065	1.53
Prefer larger practice	0.804	0.275	0.003	2.23
Accept out of need	0.008	0.004	0.060	1.01
Compassion score	-0.098	0.031	0.002	0.91
Constant	3.477	3.242	0.284	32.35

AVMA	Coef.	Std. Err.	P>z	Odds Ratio
Satisfied with current employment	-0.470	0.081	0.000	0.62
Satisfied with profession	-0.204	0.051	0.000	0.82
Satisfied with lifestyle	-0.103	0.053	0.055	0.90
Prefer larger practice	0.288	0.144	0.046	1.33
Prefer smaller community	0.352	0.194	0.069	1.42
Divorced	-0.484	0.297	0.102	0.62
Income	-0.126	0.068	0.062	0.88
Work less or more hours	0.252	0.118	0.033	1.29
Compassion score	-0.047	0.013	0.000	0.95
Constant	4.184	1.092	0.000	65.64

Equine
Obs.: 687
Pseudo R2: .31

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Obs.: 1,901
Pseudo R2: .15

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Results - Home Ownership

Equine - Own	Coef.	Std. Err.	P>z	Odds Ratio
Age (Over 60)	-1.239	0.730	0.090	0.29
Changed veterinary sectors	0.970	0.320	0.002	2.64
Satisfied with profession	-0.503	0.139	0.000	0.60
Prefer larger practice	0.768	0.328	0.019	2.16
Accept out of need	0.009	0.005	0.092	1.01
Compassion score	-0.075	0.037	0.044	0.93
Constant	3.520	3.609	0.329	33.78

Equine - Rent	Coef.	Std. Err.	P>z	Odds Ratio
Changed veterinary sectors	2.432	0.839	0.004	11.39
Satisfied with profession	-0.526	0.294	0.073	0.59
Preschool children	1.915	0.908	0.035	6.79
Prefer smaller community	2.079	0.946	0.028	7.99
Percent of Household contribution	1.411	0.871	0.105	4.10
Compassion score	-0.250	0.096	0.009	0.78
Constant	9.086	12.417	0.464	8835.01

Own
Obs.: 533
Pseudo R2: .28

Rent
Obs.: 134
Pseudo R2: .50

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Results - Home Ownership

AVMA - Own	Coef.	Std. Err.	P>z	Odds Ratio
Satisfied with current employment	-0.409	0.102	0.000	0.66
Satisfied with profession	-0.220	0.064	0.001	0.80
Satisfied with lifestyle	-0.125	0.067	0.061	0.88
Juvenile children	-0.031	0.094	0.745	0.97
Prefer larger practice	0.363	0.183	0.047	1.44
Prefer smaller community	0.445	0.241	0.065	1.56
Work less or more hours	0.290	0.148	0.050	1.34
Compassion score	-0.048	0.017	0.004	0.95
Constant	3.835	1.298	0.003	46.29

AVMA - Rent	Coef.	Std. Err.	P>z	Odds Ratio
Satisfied with current employment	-0.634	0.141	0.000	0.53
Satisfied with compensation	0.161	0.080	0.044	1.18
Satisfied with profession	-0.163	0.086	0.059	0.85
Compassion score	-0.043	0.022	0.050	0.96
Constant	5.561	2.300	0.016	260.13

Own
Obs.: 1,282
Pseudo R2: .15

Rent
Obs.: 605
Pseudo R2: .14

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Results - Household Workers

Single HH
Obs.: 180
Pseudo R2: .43

Married, One worker
Obs.: 94
Pseudo R2: .46

Married, Two worker
Obs.: 370
Pseudo R2: .28

Single Worker HH	Coef.	Std. Err.	P>z	Odds Ratio
Changed veterinary sectors	1.075	0.549	0.050	2.93
Satisfied with compensation	-0.345	0.212	0.104	0.71
Prefer larger practice	1.611	0.578	0.005	5.01
Compassion score	-0.259	0.080	0.001	0.77
Constant	4.227	7.532	0.575	68.51

Married, One worker HH	Coef.	Std. Err.	P>z	Odds Ratio
Age (Over 60)	-4.540	2.764	0.100	0.01
Constant	21.333	16.375	0.193	1.84E+09

Married, two worker household	Coef.	Std. Err.	P>z	Odds Ratio
Changed veterinary sectors	1.247	0.386	0.001	3.48
Satisfied with profession	-0.361	0.159	0.023	0.70
Prefer larger practice	0.782	0.388	0.044	2.19
Constant	3.845	4.574	0.401	46.77

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Results - Equine Specific

	Coef.	Std. Err.	P>z	Odds Ratio
Changed veterinary sectors	1.738	0.543	0.001	5.69
Satisfied with profession	-0.778	0.215	0.000	0.46
Prefer larger practice	1.735	0.524	0.001	5.67
Accept out of need	0.015	0.008	0.051	1.01
Compassion Score	-0.151	0.055	0.006	0.86
Standardbred racing	2.474	1.499	0.099	11.87
Reproduction	-1.996	1.071	0.062	0.14
Physical limit	0.534	0.333	0.109	1.71
Constant	19.553	12.822	0.127	3.10E+08

Observations: 355
Pseudo R2: .50

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Discussion and Conclusion

- Dependent variable is respondents who would change veterinary sectors if they could (or not)
- Main equine model
  - Income was not significant (H1)
  - Accept job based on need increases probability of changing veterinary sectors (H2), as well as respondents with preschool age children (H4)
  - Dissatisfaction with the profession was significant in the equine models but not current work environment (H5)
- Respondents that contribute more than 50 percent of income to the household is significant in the equine renter model (H3)

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Discussion and Conclusion

- An increase in compassion satisfaction decreases the probability that a respondent would change veterinary sectors (significant across all models (Equine and AVMA), except married households)
- History of changing veterinary sectors increases the probability that a respondent would change veterinary sectors in the equine models
- Preference for larger practice is significant for both Equine and AVMA models
- Standardbred racing (+) and reproduction sectors (-), and physical limit (+) significant

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Agribusiness Implications

- Veterinarians play an important role in the health and welfare needs of every species of animals
  - Environmental protection, food safety, public health and research
- The results from this analysis can be used in decision making in how to address issues for the possible change in veterinary sectors, and even the profession

Future work

- Compare to other veterinary sectors
- Nested models, hazard ratios
- Dive deeper into
  - Health
  - Family
  - Early, mid and late career
- Look at respondents that changed veterinary sectors in the past

Questions?

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