



2018 AVMA Report on

# THE MARKET FOR VETERINARY SERVICES







# 2018 AVMA Report on **THE MARKET FOR VETERINARY SERVICES**

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# SUMMARY

The U.S. population of veterinarians has witnessed an approximate 32 percent increase during the past decade, going from 83,730 in 2007 to 110,531 in 2017. On average, the U.S. veterinary population has grown by 2.8 percent per year during the period 2007- 2017. While the proportion of men entering the profession has declined by an average annual rate of 2.7 percent, that for women increased by 2.2 percent annually. In 2017, women represented about 60 percent of U.S. veterinarians, and this trend is expected to continue as the number of female graduates from veterinary colleges is still way above that of males. Using the current veterinarian population, the analysis reveals that the population of veterinarians in the United States will reach 124,257 by 2027.

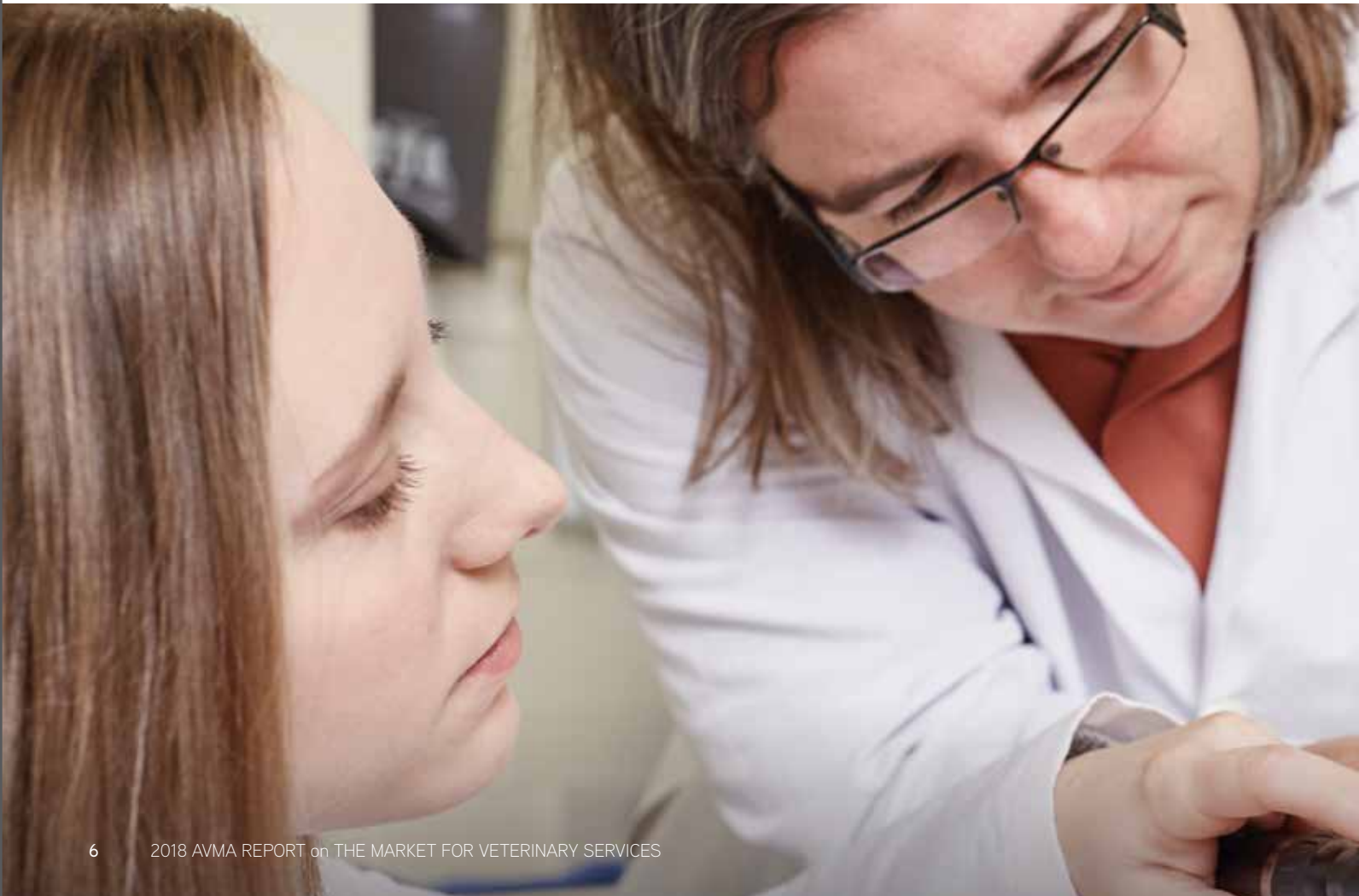
The mean earnings (in real value) for associate veterinarians exhibit a declining pattern while that for practice owners has shown an increasing trend during the period 2010-2016. In 2016, the real mean income varied between \$66,000 and \$90,000 for associate veterinarians, with the highest mean income obtained by companion animal exclusive practitioners. For practice owners, the highest mean income (\$162,000) is obtained by

companion animal exclusive veterinarians, followed by mixed animal practitioners (\$134,000). The lowest mean income goes to food animal predominant practice owners (\$92,000).

Usually populated areas with a large number of households, and high-income areas, report the greatest number of private practitioners. The South Atlantic Region (20.7 percent), the East North Central Region (15 percent), the Pacific Region (14.4 percent), and the West South-Central Region (11.3 percent) encompass more than 60 percent of the U.S. veterinarians.

## KEY FINDINGS ON VETERINARY PRACTICES

Between 2011 and 2017, the average gross revenue for all type of practices except for equine practices has increased. The largest share of practice revenues is attributable to wellness, followed by drug sales and laboratory services. For companion animal exclusive practices, small to medium-size practices are getting the largest share of their revenues from wellness exams (23 percent to 30 percent). The larger practices (eight or more veterinarians) receive the largest share of their revenues from laboratory services.



## VETERINARIANS AND VETERINARY EMPLOYMENT

In 2017, the large majority (79.3 percent) of U.S. veterinarians were employed in private practices. Of the 79.3 percent employed in private practices, more than 80 percent (N = 61,606) practice general medicine/surgery. The number of private practice veterinarians has increased by 9.4 percent between 2007 and 2012 and by 7 percent during the period 2012-2017.

## MARKET FOR VETERINARY SERVICES

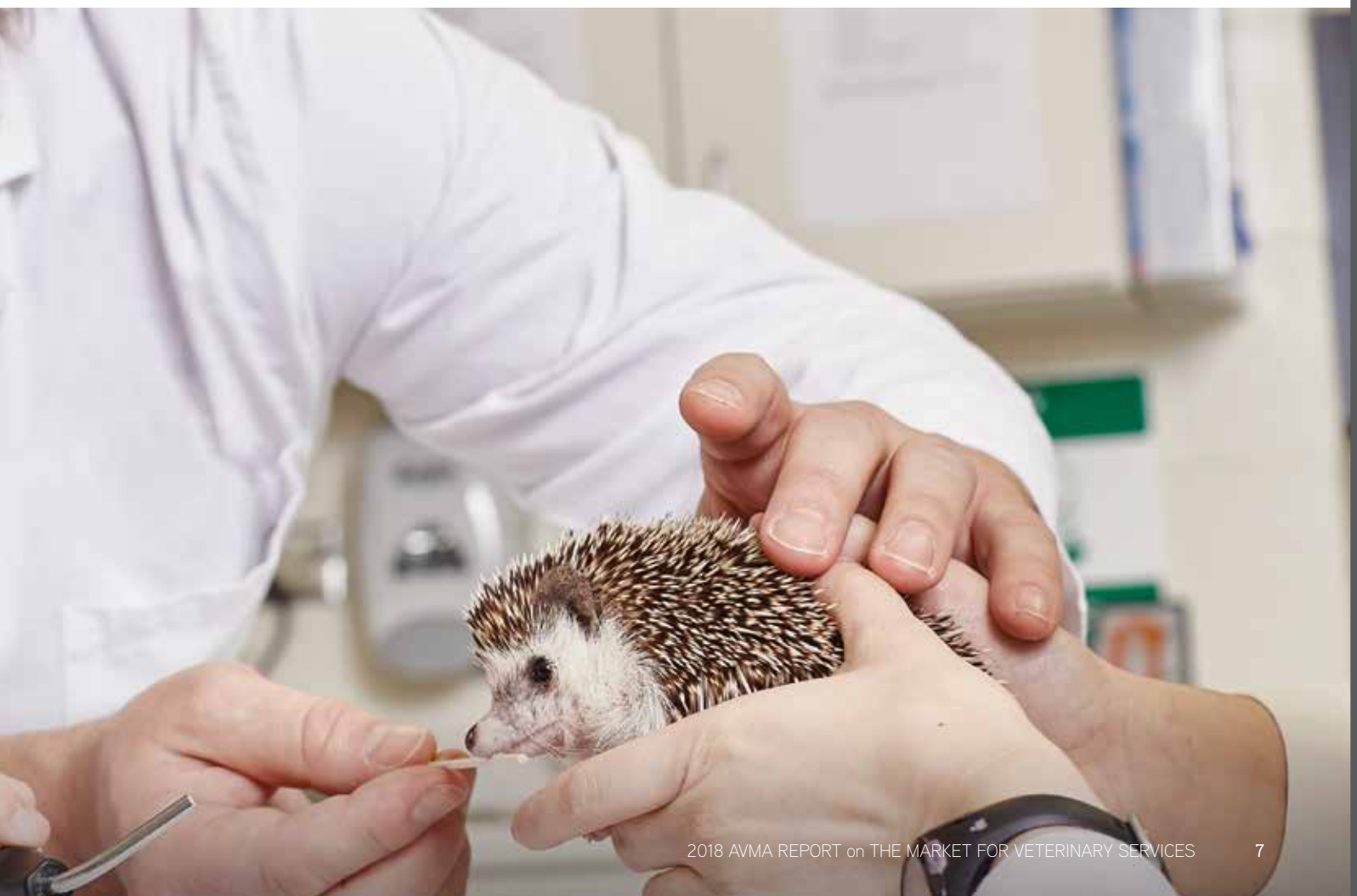
Considering the legal form of the practices, the analysis shows that the number of S-corporations have increased by 11 percent between 2010 and 2013 and by 12 percent between 2013 and 2016. Between 2010 and 2013, partnerships, and not-for-profit organizations have increased by 3 percent and 21 percent, respectively. The percentage change between 2016 and 2013 was 6 percent for partnerships and 10 percent for not-for-profit organizations. Not all types of businesses have increased in number: Individual proprietorships have declined by 11 percent between 2010 and 2013, and by 12 percent between 2013 and 2016. The number of corporations has increased slightly (2 percent) between 2010 and 2013 but has drastically

decreased (14 percent) between 2013 and 2016. In terms of size, the analysis shows that the number of practices that employ 10 employees or more has sharply increased during the period 2010- 2016.

## ECONOMIC IMPACT OF VETERINARY PRACTICES

Economic Impact Analysis (EIA) aims to provide a comprehensive assessment of the economic impacts of veterinary businesses on the local economy. The results of such an analysis are summarized below:

- Veterinary practices generate a total of 458,800 direct jobs, and support 135,000 indirect and 231,500 induced jobs, leading to a total effect of 825,353 jobs nationwide.
- The direct effect on labor income is estimated at \$18.5 billion.
- Total value added as a result of private practice veterinary activity is estimated at \$18.8 billion.
- Direct effect on output is estimated at \$38.4 billion.
- Federal and state revenues are estimated at \$4.6 billion and \$4.7 billion, respectively.



# INTRODUCTION

This report mainly focuses on the market for veterinary services but provides an overview of the two other vertically related markets (market for veterinary education and market for veterinarians). The market for veterinary services is a combination of the need for veterinary medical services or other skills and training that veterinarians have to offer, and the ability of the profession to provide these services by educating, training and certifying veterinary medical professionals. The demand for veterinary services comes from a variety of sources: households, government, firms, and foreign entities.

The report starts with an overview of the veterinary workforce. The workforce analysis is important to understand the dynamics of the veterinary profession and to explain the changes that occur in each of the three markets. Trends in age and gender distribution of veterinarians are presented and discussed. The current situation of the veterinary profession is also discussed by showing statistics about the veterinary population and the work conditions in veterinary practices.

The second part of this report focusses on the demand for veterinary services. A large share of this section presents the summary statistics of the most recent U.S. Pet Ownership and Demographics Survey. The statistics presented include the pet population, the veterinary medical use and expenditures. This section also describes the level of competition on the market for veterinary services using statistics from the AVMA 2017 Capacity Survey.

The third part of the report assesses the economic impact of the veterinary businesses on the U.S. economy. The analysis uses IMPLAN 2013 data to estimate the economic impact of the veterinary sector on the national economy. These incidences are classified into five groups: the effect on the employment, the effect on income, the effect on output, the effect on value added, and the effect on federal and state revenues.

In addition to these three report sections, a fourth section that summarizes the key findings from the study on the effect of pet health insurance on veterinary service use and expenditure conducted with the collaboration of Mississippi State University was added.

## VETERINARIANS AND VETERINARY PRACTICES

This section describes the veterinary workforce over the past 10 years (2007- 2017), presents key statistics about workforce changes, and provides a projection of the veterinary population for the next 10 years (2017- 2027). The AVMA membership database was used as a sample frame and the results were then extrapolated to the entire population of veterinarians in the United States.

The AVMA membership data were obtained from the APTIFY database for year 2007 to year 2017. APTIFY data sets contained information on membership demographics and employment-related characteristics. The total number of U.S. veterinarians was obtained from the Market Research Statistics (MRS) annual reports. The analysis consists of determining the distribution of the sample for selected characteristics and applying the sample distribution to the population. Variables under examination are gender, age, type of position and employment, earnings and location.

In addition to the demographic variables, key statistics about veterinary practices are presented in this section. The mean number of exam rooms per type of practice, the average number of DVM and non-DVM full-time equivalents (FTE) per practice, the average number of operation days per week, the average number of animals seen per DVM per day, and the mean revenues per practice as well as the main sources of revenues are discussed in this section.

## Workforce Demographics

One of the major components of the veterinary workforce analysis that calls for special focus is the gender distribution and its movement over time. The veterinary profession is one of the rare professional sectors to have witnessed a gender shift. This gender shift could have some social and economic implications for the entire profession. This report, however, presents facts about the gender shift, but will not discuss potential consequences of this change.

In 2017, the MRS estimated the total number of active veterinarians in the United States at 110,531 veterinarians, equivalent to a 32 percent increase (or about 26,000 more veterinarians) over the 2007 estimates. On average, the U.S. veterinary population has grown by 2.8 percent per year during the period 2007- 2017.



Currently, about six out of 10 veterinarians in the United States are women, according to the MRS (2017) estimates. Figure 1 shows the gender distribution of U.S. veterinarians between 2007 and 2017. The distribution has shifted from majority male to majority female in 2009. Since then, the proportion of males has consistently declined at an average annual rate of 2.7 percent while the proportion of females has increased by 2.2 percent on average per

year during the same period. The trend in the gender distribution is expected to continue as the proportion of female graduates from veterinary colleges remains considerably higher than that of males. In early 2000s, the proportion of women population in the veterinary medical colleges was estimated at around 80 percent of the total DVM student population (Slater & Slater, 2000).

### GENDER DISTRIBUTION OF THE U.S. VETERINARIAN WORKFORCE

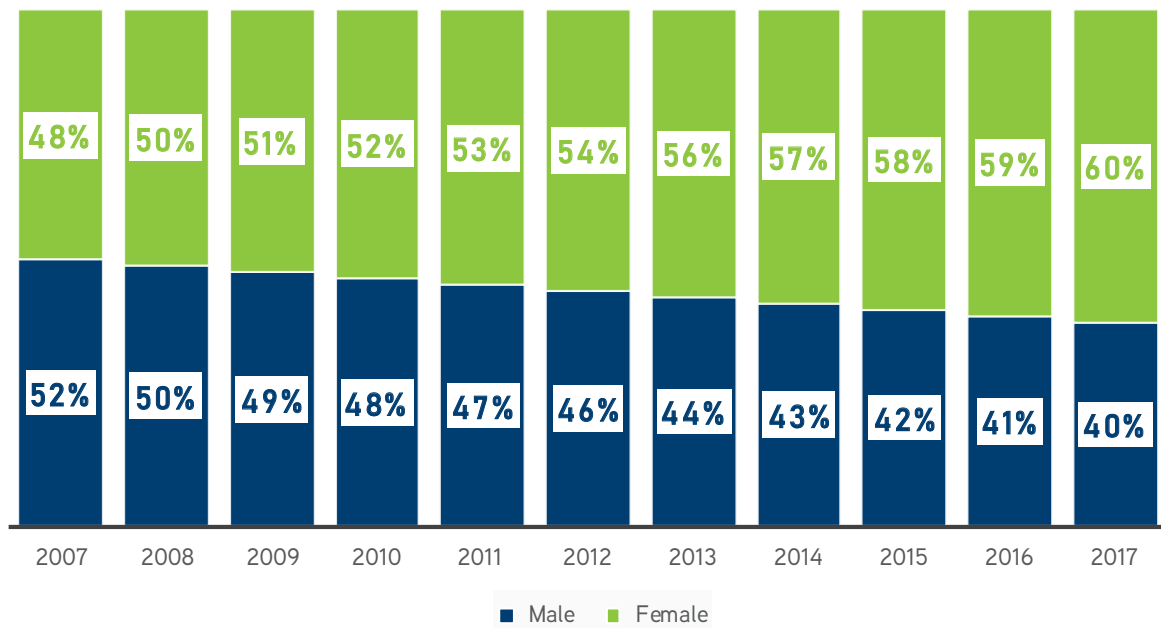
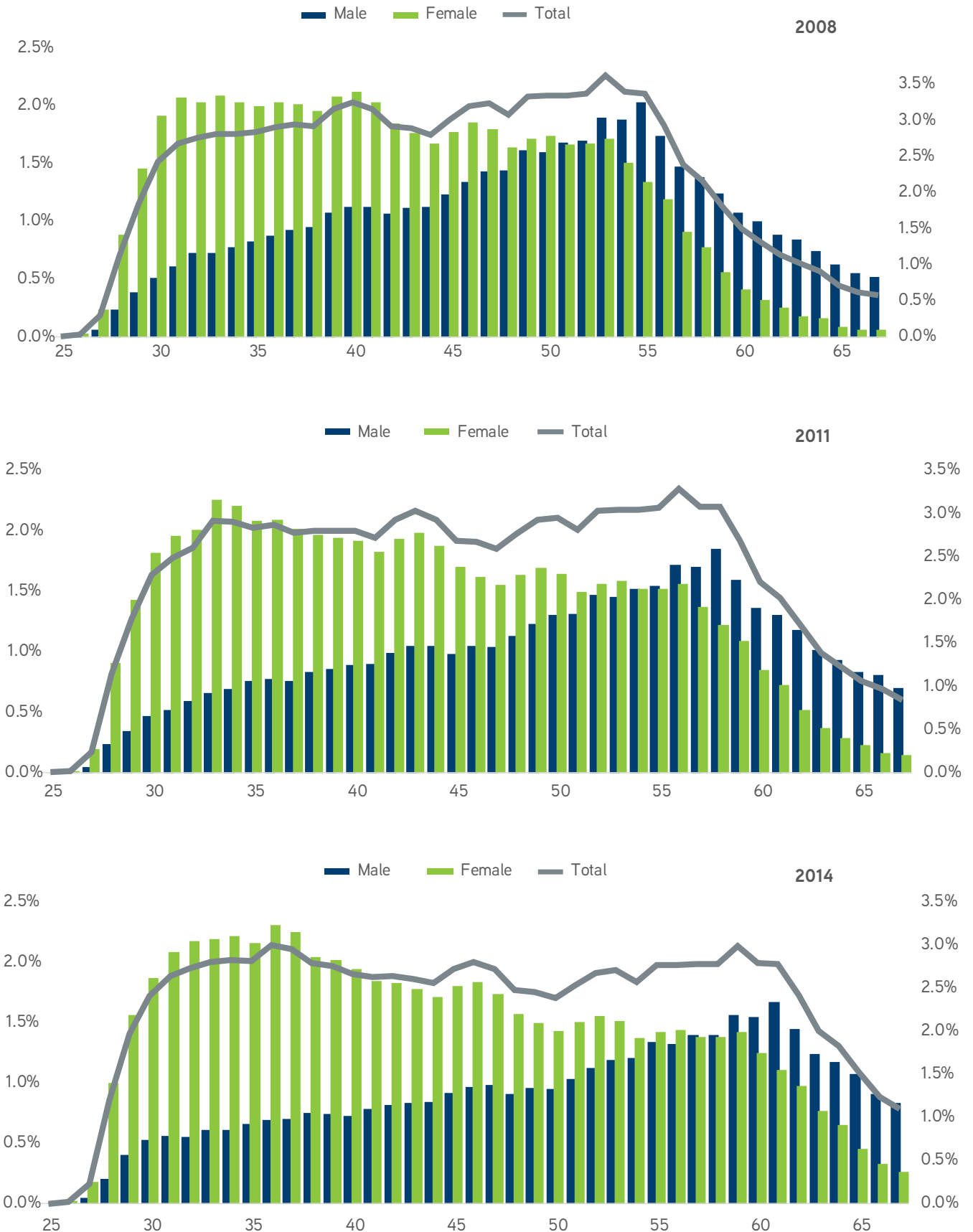


Figure 1

Another component of the workforce that will be discussed is the age distribution. Non-normality in the age distribution (skewed distribution) could have significant implications for the veterinary profession. A left-skewed distribution implies that there are more older veterinarians than younger ones. This situation could eventually lead to a workforce shortage due to a high rate of retirement. A right-skewed distribution implies that the profession is losing employees (early retirement or changing career).

The age distribution of AVMA members was used as a proxy to represent the age distribution of the U.S. veterinarians. Theoretically, three out of four U.S. veterinarians are AVMA members. Figure 2 shows the age distribution of veterinarians for four selected years between 2007 and 2017. Age distribution of females is skewed to the right while that for men is skewed to the left. But overall, the age distribution of U.S. veterinarians exhibits two modes: one for people aged between 30 and 45 (majority female) and another for people between 55 and 60 years of age (majority male).

## CHANGE IN GENDER-AGE DISTRIBUTION



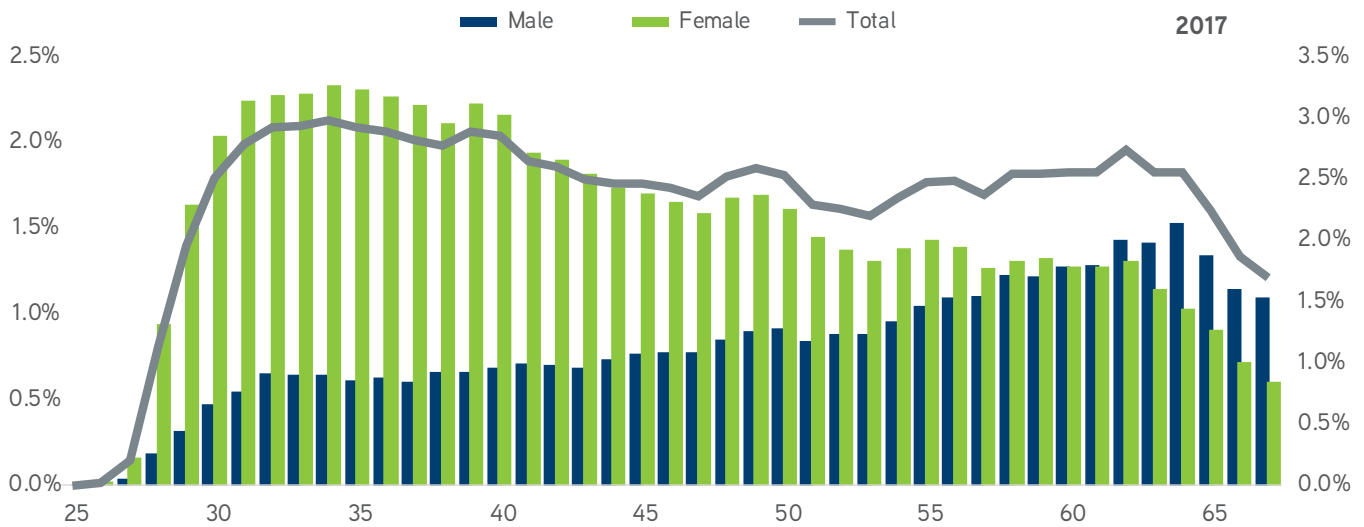


Figure 2

Using the age distribution of veterinarians for the past 10 years, a prediction model was developed to determine the total number of veterinarians for the next decade. The model for estimating the current population of veterinarians ( $P_t$ ) uses information from the previous year as estimated by the MRS ( $P_{t-1}$ ) plus the total number of new graduates ( $G_{t-1}$ ) who have accepted a position in the United States, minus the total number of veterinarians who retired from the veterinary profession workforce ( $R_{t-1}$ ).

The problem with these estimates is that the number of new graduates relies on the assumption that the number of seats remains unchanged between 2017 and 2027, which is not necessarily true because schools are expanding their capacity and new veterinary colleges are entering the market for veterinary education. In addition, it is assumed that 90 percent of new graduates accept a position at graduation and the rest either

continue in higher education or are unemployed at least during their first year after graduation. The 90 percent is the average rate observed between 2001 and 2016 and is based on the Senior Survey responses, which capture about 90 percent of all DVM graduates from U.S. veterinary colleges. One of the shortcomings of this estimation is that it does not account for veterinarians who graduated from non-AAVMC member institutions, but who eventually make their way to become licensed veterinarians practicing veterinary medicine in the United States.

$$P_t = P_{t-1} + G_{t-1} - R_{t-1}$$

The result of the prediction is presented in Figure 3. The green part of the figure represents the predicted population for the upcoming decade (2017-2027). The veterinary workforce will grow on average by 1.3 percent between 2017 and 2027, reaching 124,257 veterinarians by 2027.

### PROJECTION OF NUMBER OF VETERINARIANS IN THE UNITED STATES (2007-2027)

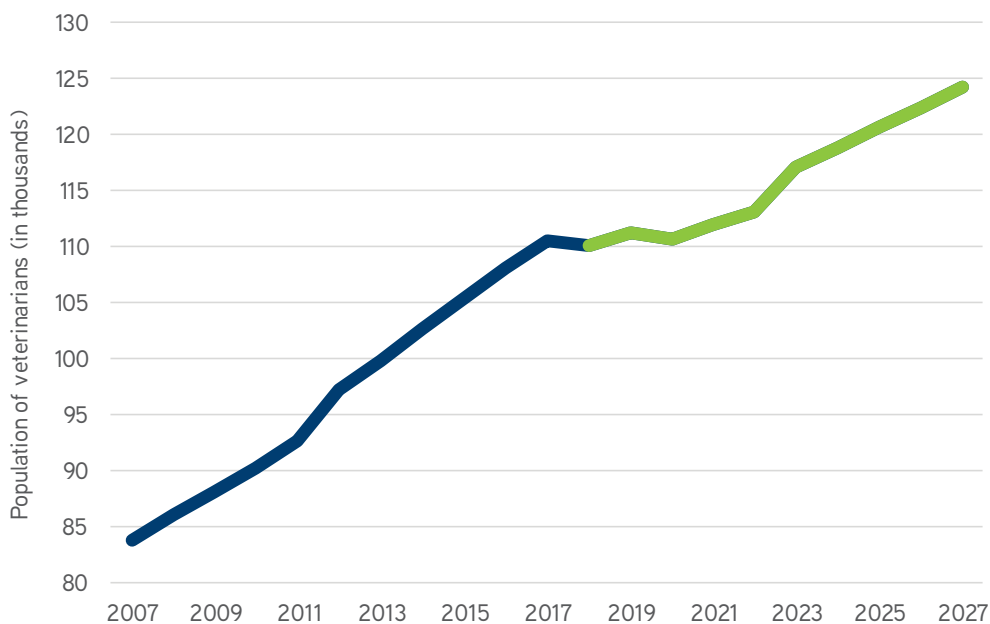


Figure 3



## VETERINARY EMPLOYMENT



The trends indicate an increase in the number of veterinarians during the period 2012-2017, except for veterinary medical college/school and veterinary science departments, which witnessed a population decline of 5.2 percent and 16 percent, respectively.

Veterinarians perform in various sectors of activities. In 2017, the large majority of U.S. veterinarians were employed in private practices (79.3 percent). Of these, more than 80 percent (N = 61,606) practice general medicine/surgery. Emergency/critical care medicine (6.1 percent, N = 4,637), referral/specialty medicine (5.7 percent, N = 4,336), and production veterinary medicine (5.6 percent, N = 4,318) come in second, third and fourth, respectively. About 2.2 percent work in all other private practices not listed above.

In terms of percentage change, the population of private practice veterinarians has increased by 9.4 percent between 2007 and 2012 and by 7 percent during the period 2012-2017. This increase in the population has been detrimental to the production medicine group, which has witnessed a drop of 8.5 percent between 2007 and 2012 and 8.2 percent between 2012 and 2017. Referral/specialty medicine has made the largest change with an approximately 90 percent increase between 2007 and 2012 and a 33.8 percent increase during the period 2012- 2017. Emergency and critical care medicine, and general medicine and surgery have increased by 20 percent and 5.4 percent, respectively, during the period 2012- 2017.

## VETERINARIANS IN PRIVATE PRACTICES

	2007	2012	2017	2007-2012	2012-2017
General medicine/surgery	55,380	58,460	61,606	5.6%	5.4%
Production medicine	5,141	4,702	4,318	-8.5%	-8.2%
Referral/specialty medicine	1,708	3,240	4,336	89.8%	33.8%
Emergency/critical care medicine	2,360	3,861	4,637	63.6%	20.1%
Other private clinical practice	781	1,270	1,656	62.7%	30.4%
<b>Total/private practices</b>	<b>65,369</b>	<b>71,534</b>	<b>76,552</b>		

Table 1

Academia is the second sector behind private practice in employing the largest number of veterinarians. In 2017, 7.3 percent of U.S. veterinarians were employed at animal health-related colleges. The largest share of those veterinarians is found in veterinary medical colleges (76.5 percent, N = 5,409), followed by veterinarians employed in veterinary technician programs (N = 454), and those employed in veterinary science departments (N = 116). Notice that 965 veterinarians (13.6 percent) are

employed in academic sectors other than those listed. The trends indicate an increase in the number of veterinarians during the period 2012-2017, except for veterinary medical college/school and veterinary science departments, which witnessed a population decline of 5.2 percent and 16 percent, respectively. The population of veterinarians in academia increased by 5.3 percent during the period 2007-2012 but stayed the same during the period 2012-2017.

## VETERINARIANS IN ACADEMIA

	2007	2012	2017	2007-2012	2012-2017
Veterinary medical college/school	5,753	5,704	5,409	-0.8%	-5.2%
Veterinary science department	113	138	116	22.1%	-16.0%
Veterinary technician program	246	356	454	44.8%	27.5%
Animal science department	53	91	128	73.3%	40.8%
Other academia	554	784	965	41.5%	23.1%
<b>Total/academia</b>	<b>6,719</b>	<b>7,074</b>	<b>7,072</b>		

Table 2

Government (federal, state, or local) employs approximately 4.3 percent (N = 4,115) of the veterinary workforce. The distribution of veterinarians in government positions by type of employment is presented in Table 3. The federal government employees represent nearly 48 percent of all veterinarians employed in government agencies. State governments represent 20.4 percent, followed by the U.S. Army (16.7%). The rest

(18.2 percent) encompasses local government, air force, public health commission corps, foreign, and other government positions.

The population of veterinarians employed by government has increased by 5.6 percent between 2007 and 2012 and then declined by 2 percent between 2012 and 2017. Except for federal government, local government, and foreign services, all other groups have witnessed a decline in their population.

## VETERINARIANS IN PUBLIC SECTORS

	2007	2012	2017	2007-2012	2012-2017
Federal	1,641	1,818	1,838	10.8%	1.1%
State	912	861	841	-5.6%	-2.4%
Local	214	247	300	15.5%	21.3%
Foreign	15	14	20	-7.3%	43.0%
Army	591	734	689	24.2%	-6.2%
Air force	126	120	114	-4.2%	-5.5%
Public health commission corps	61	70	65	15.9%	-7.5%
Other government	414	332	249	-19.9%	-25.0%
<b>Total public sector</b>	<b>3,975</b>	<b>4,198</b>	<b>4,115</b>		

Table 3

Industry employed 3.9 percent (N = 3,793) of U.S. veterinarians in 2017. The largest industrial employers are the pharmaceutical and biological sectors (37.1 percent, N = 1,406). Business and consulting services represented 16 percent (N = 980), laboratory employed 354 (9.3 percent), agriculture and livestock production employed 248 veterinarians (6.5 percent), and feed/nutrition companies employed 197 veterinarians (5.2 percent). All other commercial industries represent 25.9 percent.

The population of veterinarians employed in industry has increased by 3.7 percent between 2007 and 2012 and by 2.7 percent between 2012 and 2017. The largest increase comes from agriculture and livestock production, with a 65 percent increase between 2007 and 2012 and a 41 percent increase between 2012 and 2017.

## VETERINARIANS IN INDUSTRIES

	2007	2012	2017	2007 - 2012	2012 - 2017
Pharmaceutical/biological	1,040	1,289	1,406	23.9%	9.1%
Feeds/nutrition	127	177	197	39.1%	11.3%
Laboratory	209	301	354	44.3%	17.7%
Agriculture/livestock production	106	176	248	65.0%	41.2%
Business/consulting services	677	627	607	-7.5%	-3.1%
Other industry/commercial	1,401	1,125	980	-19.7%	-12.8%
<b>Total industry</b>	<b>3,560</b>	<b>3,694</b>	<b>3,793</b>		

Table 4

The share of the U.S. veterinarian population at not-for-profit organizations in 2017 was about 2.7 percent. The majority of those employed in non-profit organizations are in humane organizations (50.4 percent), followed by wildlife (17.2 percent), and zoo/aquarium institutions (14.1 percent). Membership associations, professional societies, foundations, charitable organizations, and missionary services represent about 18 percent of this subpopulation.

Although not-for-profit organizations represent the smallest group, this category has had the largest percentage change over the period 2007-2012 and 2012-2017. In fact, the population of not-for-profit veterinarians has grown by 21.3 percent and 22 percent during the two periods of time listed above. The largest change came from foundation or charitable organizations and humane organizations.

## VETERINARIANS IN NOT-FOR-PROFIT ORGANIZATIONS

	2007	2012	2017	2007 - 2012	2012 - 2017
Humane organization	667	907	1,331	35.9%	46.8%
Membership assn./professional society	192	206	192	7.4%	-6.9%
Foundation/charitable organization	86	149	218	73.5%	46.8%
Missionary/service	64	69	72	8.9%	4.5%
Zoo/aquarium	243	323	372	32.8%	15.3%
Wildlife	532	509	453	-4.4%	-11.0%
<b>Total not-for-profit organization</b>	<b>1,784</b>	<b>2,163</b>	<b>2,639</b>		

Table 5

Not all the veterinarians are employed full time. Table 6 expresses the total number of full-time and part-time veterinarians employed in the private sector in 2017. Note that some veterinarians might have held more than one position, hence, the possibility of double counting could yield an overestimation of the population.

## PRIVATE PRACTICE VETERINARIANS BY FULL-TIME STATUS

	Full-time	Part-time	Total
Food animal exclusive	1,217	120	1,338
Food animal predominant	3,128	309	3,437
Mixed animal	4,096	405	4,501
Companion animal predominant	6,180	611	6,790
Companion animal exclusive	46,143	4,560	50,703
Equine	3,923	388	4,311
Other	285	28	313
<b>Total</b>	<b>64,972</b>		<b>71,393</b>

Table 6

## PROFESSIONAL INCOME OF VETERINARIANS

Figures 4 and 5 present the average real professional income for associate veterinarians and practice owners, respectively, for each type of private practice in 2010, 2012, 2014 and 2016. The mean income for associate veterinarians has shown a declining pattern for all groups. Practice owners on the other hand have witnessed a somewhat increasing trend. In 2016, companion animal exclusive reported the highest mean income with

\$90,000 among associate veterinarians working in private practices. The group with the lowest mean earnings was equine veterinarians with roughly \$66,000. Among practice owners, companion animal practice owners have the highest mean income (\$162,000), followed by mixed animal practice owners (\$134,000).

### REAL MEAN INCOME OF ASSOCIATE VETERINARIANS

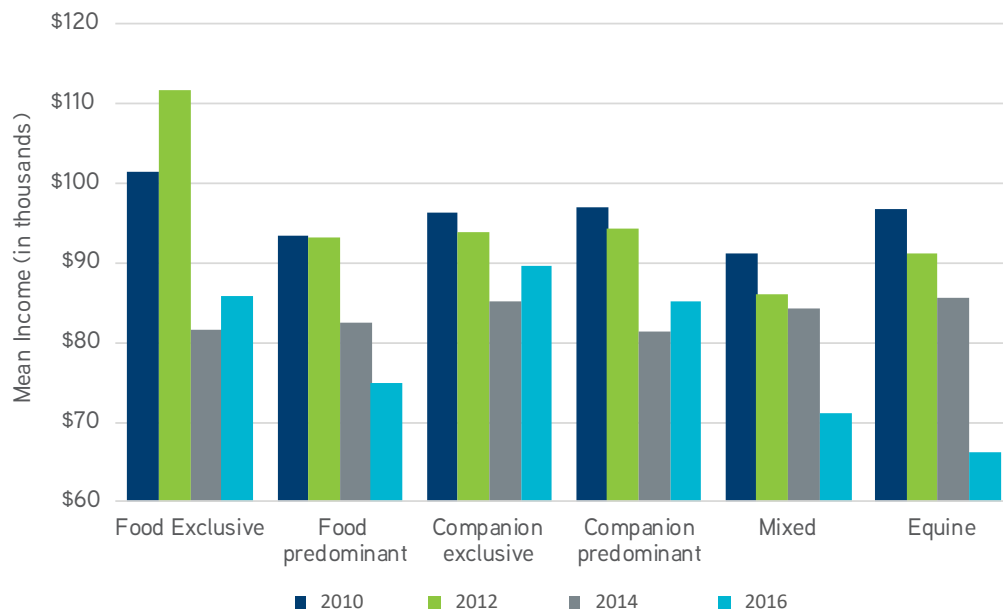


Figure 4

## REAL MEAN INCOME OF PRACTICE OWNERS

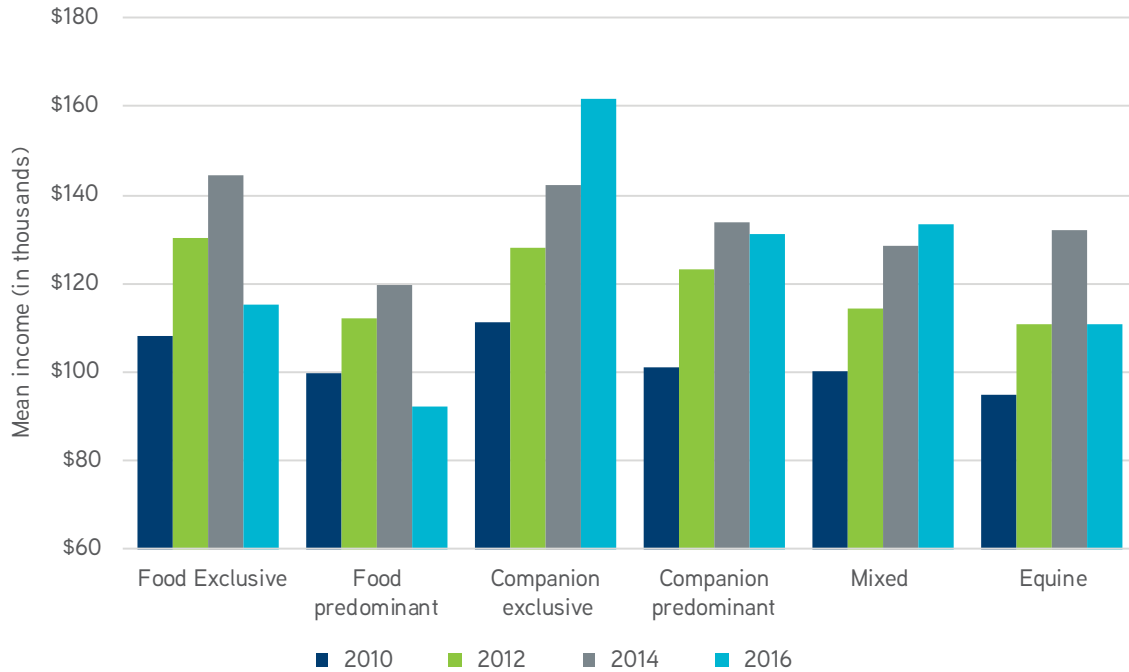


Figure 5

## LOCATION OF VETERINARIANS

The last part of this section analyzes the location of veterinarians across the United States. Demand for private veterinarians depends on the size of the local market. Regions with a high demand for veterinary services are more attractive to private veterinarians. Usually populated areas with a large number of households and high-income areas report the highest number of private practitioners. The South Atlantic Region (20.7 percent),

the East North Central Region (15 percent), the Pacific Region (14.4 percent), and the West South-Central Region (11.3 percent) comprise more than 60 percent of U.S. veterinarians. These four regions also represent the most populated regions in the country, with approximately 62 percent of the U.S. population (U.S. Census Bureau, 2010).



## DISTRIBUTION OF VETERINARIANS BY CENSUS REGION

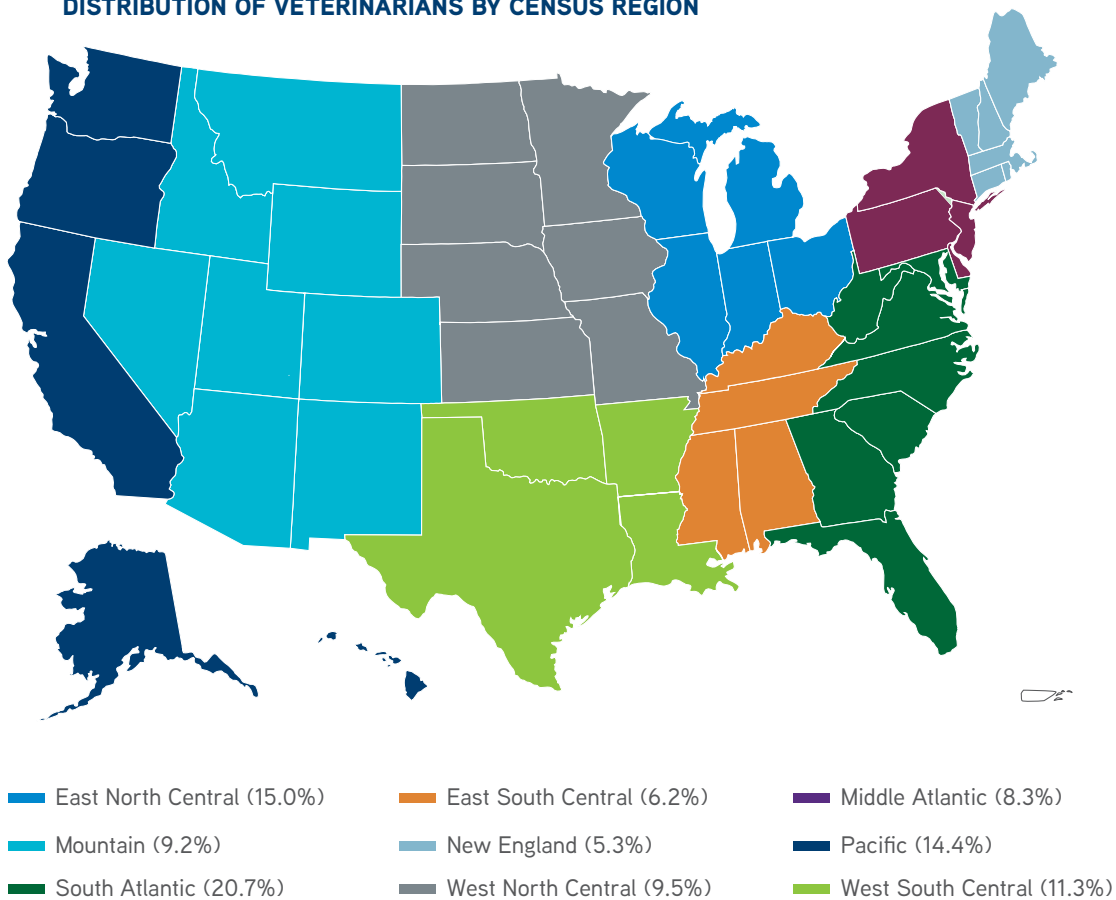


Figure 6

## VETERINARY PRACTICES

This section provides a benchmark analysis of the work conditions and work environment inside veterinary practices. Due to the lack of observations, only selected types of practices will be considered. According to the 2017 Barnes Reports on U.S. Industry & Market Outlook, there were in total 44,301 veterinary establishments across the nation. Veterinary establishment in the Barnes Reports is defined as “a single physical location at which business is conducted and/or services are provided.” The AVMA 2017 Capacity Survey collected information from a sample of this population of veterinary establishments. The capacity survey divided the establishments into four groups: hospitals, mobile practices, ambulatory/emergency practices, and both ambulatory and hospitals. In addition, establishments were classified into four major employment sectors: private practices, private referral practices, corporate owned practices, and other private practices. From the 1,344 observations that returned useful responses, 95 percent were private practices, 2.4 percent private referral practices, 1.9 percent corporate-owned practices, and 0.5 percent other types. Three respondents (0.2%) did not provide information about their employment sector and were excluded from the analysis. In addition to their sector of employment,

respondents were asked to specify their practice’s primary focus. The summary statistics indicate that 64 percent (860 establishments) are in companion animal exclusive medicine, 16.7 percent are in companion animal predominant medicine, 8.7 percent in mixed animal health care, and 10.3 percent in the care of all other types of animals. The section below presents the key findings for each type of establishments.

### General Characteristics of Veterinary Practice

For private companion animal exclusive, the descriptive statistics show that in 2017 the mean square footage for hospitals, ambulatory and hospitals, and mobile practices was 4,340 sq. ft., 4,309 sq. ft., and 382 sq. ft., respectively. The average number of exam rooms was approximately three for hospitals; 1.8 for ambulatory and hospitals; and one for mobile practices.

Businesses in this category are open 5.2 days to 5.8 days a week on average for approximately nine hours each day for hospitals and eight hours a day for mobile practices. Exam rooms are utilized more than 80 percent of the time during the operating hours of hospitals.

The maximum number of patients that each FTE veterinarian could see per week was estimated at 103, 90 and 40, respectively, for each of these three business types. The number of animals that each FTE veterinarian should see is around 81, 77 and 34 animals, respectively, and the average number of animals that each FTE veterinarian saw in 2016 was 73 animals a week for veterinarians in hospitals, 76 animals for veterinarians in both ambulatory and hospitals, and 30 animals for mobile practitioners.

The number of veterinarians per hospital was estimated at around 2.5 veterinarians working with two certified vet technician FTEs, three non-certified vet technician FTEs, and three other non-technician staffs. In term of ratio, a typical hospital was characterized by one veterinarian for three non-veterinarian staff. In ambulatory and hospitals, the number of FTEs veterinarians was estimated at around 1.8 veterinarians working with 6.2 non-veterinarian staffs, a ratio of about 1:3.

## CHARACTERISTICS OF COMPANION EXCLUSIVE PRACTICES

	Hospitals	Ambulatory & hospitals	Mobile
Square footage of the practice	4,340.0	4,309.5	382.2
Number of exam rooms	3.5	3.1	0.3
Maximum number of patients per DVM FTE	102.6	89.7	40.0
Ideal number of patients per DVM FTE	80.7	76.9	33.6
Actual number of patients per DVM FTE	73.2	76.1	30.2
Days open per week	5.8	5.6	5.2
Hours open per week	55.8	50.5	41.9
Hours exam rooms are used per week	44.4	41.2	13.2
FTEs veterinarians	2.5	1.8	0.9
FTEs certified vet. technicians	2.0	1.8	0.3
FTEs non-certified vet. technicians	3.0	2.1	0.3
FTEs non-technical staff	3.3	2.3	0.2
Total number of veterinarians	2.5	1.8	0.9
Total number of non-veterinarians	8.3	6.2	0.9
Total number of non-medical staffs	3.3	2.3	0.2
Number of co-owners	1.0	0.8	0.8
Number of associate veterinarians	1.8	1.1	0.2

Table 7

For private companion animal predominant, the descriptive statistics show that the mean square footage in 2017 was approximately 3,600 sq. ft. for hospitals and 664 sq. ft. for mobile practices. The average number of exam rooms was three rooms for hospitals and 2.7 for ambulatory and hospitals.

Businesses are open for six days a week on average for all types of businesses. Average hours of operation per day was estimated at nine for hospitals and seven for mobile practices.

As for companion exclusive, mobile practices are open for about 40 hours a week, but exam rooms are used about 30 percent of the total time.

The maximum number of patients that each FTE veterinarian could see per week was estimated at 97, 121 and 37, respectively, for hospitals, ambulatory and hospitals, and mobile practices.

The number of animals that each FTE veterinarian should see is around 82, 101 and 31 animals, respectively, and the average number of animals that each FTE veterinarian saw in 2016 was about 76 animals a week for veterinarians in hospitals, 88 animals for veterinarians in both ambulatory and hospitals, and 19 animals for mobile practitioners.

The number of veterinarians per hospital was estimated at around 2.1 veterinarians working with 1.5 certified vet technician FTEs, 2.4 non-certified vet technician FTEs, and 2.4 other non-technician staff. In term of ratio, a typical hospital was characterized by one veterinarian for three non-veterinarian staff. In ambulatory and hospitals, the number of FTEs veterinarians was estimated at approximately two veterinarians working with 6.2 non-veterinarian staff, a ratio of about 1:3.

## CHARACTERISTICS OF COMPANION PREDOMINANT PRACTICES

	Hospitals	Ambulatory & hospitals	Mobile
Square footage of the practice	3,605.1	3,607.5	664.0
Number of exam rooms	3.0	2.7	0.7
Maximum number of patients per FTE	97.4	121.5	36.8
Ideal number of patients per FTE	82.1	101.4	30.8
Actual number of patients per FTE	76.1	88.0	19.0
Days open a week	5.7	5.8	5.4
Hours open per week	51.1	50.8	40.0
Hours exam rooms are used per week	39.6	37.9	12.0
FTEs veterinarians	2.1	2.0	1.0
FTEs certified vet. technicians	1.5	1.2	0.1
FTEs non-certified vet. technicians	2.4	2.7	0.5
FTEs non-technical staff	2.4	2.2	0.4
Total number of veterinarians	2.1	2.0	1.0
Total number of non-veterinarians	6.3	6.2	1.0
Total number of non-medical staff	2.4	2.2	0.4
Number of co-owners	0.9	1.0	0.5
Number of associate veterinarians	1.2	1.2	0.0

Table 8

For mixed animal practices, the descriptive statistics show that the mean square footage for hospitals in 2017 was approximately 2,920 sq. ft., for ambulatory and hospitals, 5,646 sq. ft., and for mobile practices, 1,437 sq. ft. The average number of exam rooms was 2.3 for hospitals and 2.6 for ambulatory and hospitals.

All types of businesses in the profession are open for about six days a week on average. The average hours of operation per day was estimated at eight hours for hospitals and 12 for mobile practices. While at hospitals exam room are used more than 70 percent of the time the facility is open time, at mobile practices, exam rooms are used less than 20 percent of the time.

The maximum number of patients that each FTE veterinarian could see per week was estimated at 115, 120 and 94,

respectively for each of these business types. In 2016, the ideal number of animals that each FTE veterinarian at these types of businesses should see is around 100, 83 and 70, respectively, and the average number of animals that each FTE veterinarian was seeing per week in 2016 was about 96 at hospitals, 78 in both ambulatory and hospitals, and 60 at mobile practices.

The number of veterinarians per hospital was estimated at around 1.3 who are working with 1.8 certified vet technician FTEs, 0.3 non-certified vet technician FTEs, and 0.5 other non-technician staffs. In terms of ratio, a typical hospital was characterized by 1 veterinarian for 1.9 non-veterinarian staff. In ambulatory and hospital operations, the number of FTE veterinarians was estimated at around 2.6 veterinarians working with 5.7 non-veterinarian staff members, about a 1:2.2 ratio.

## CHARACTERISTICS OF MIXED PRACTICES

	Hospitals	Ambulatory & hospitals	Mobile
Square footage of the practice	2,920.0	5,646.2	1,437.4
Number of exam rooms	2.3	2.6	0.7
Maximum number of patients per FTE	115.0	119.8	94.1
Ideal number of patient per FTE	100.0	83.0	70.5
Actual number of patient per FTE	96.3	78.5	60.0
Days open a week	6.0	5.8	5.7
Hours open per week	48.0	49.2	70.2
Hours exam rooms are used per week	36.3	36.2	13.0
FTEs veterinarians	1.3	2.6	1.7
FTEs certified vet. technicians	1.8	1.1	0.1
FTEs non-certified vet. technicians	0.3	2.2	0.8
FTEs non-technical staff	0.5	2.4	0.1
Total number of veterinarians	1.3	2.6	1.7
Total number of non-veterinarians	2.5	5.7	1.0
Total number of non-medical staffs	0.5	2.4	0.1
Number of co-owners	1.0	0.9	0.8
Number of associate veterinarians	0.3	1.3	0.3

Table 9

The descriptive statistics show that the mean square footage of space at food animal exclusive practices in 2017 was approximately 625 sq. ft. for ambulatory and hospitals, and 280 sq. ft., for mobile practices. Business are open for more than six days a week on average for all types of businesses. Average hours of operation per day was estimated at 18 hours at ambulatory and hospital establishments and 11 at mobile practices.

The maximum number of patients that each FTE veterinarian could see per week was estimated at 345 for ambulatory and hospital businesses and 28 for mobile practices. The ideal number of animals that each FTE veterinarian should see is around 153 and 35, respectively, for ambulatory and hospitals, and mobile practices.

## CHARACTERISTICS OF FOOD EXCLUSIVE PRACTICES

	Ambulatory & hospitals	Mobile
Square footage of the practice	625.0	280.0
Number of exam rooms	0.0	0.0
Maximum number of patients per FTE	345.5	28.3
Ideal number of patient per FTE	153.4	35.0
Actual number of patient per FTE	196.8	217.0
Days open a week	6.6	6.3
Hours open per week	119.6	70.0
Hours exam rooms are used per week	0.0	0.0
FTEs veterinarians	1.0	1.4
FTEs certified vet. technicians	0.0	0.0
FTEs non-certified vet. technicians	0.0	0.1
FTEs non-technical staff	0.1	0.1
Total number of veterinarians	1.0	1.4
Total number of non-veterinarians	0.1	0.3
Total number of non-medical staffs	0.1	0.1
Number of co-owners	1.0	1.0
Number of associate veterinarians	0.2	0.5

Table 10

For food animal predominant practices, the descriptive statistics show that the mean square footage in 2017 was approximately 7,133 sq. ft. for ambulatory and hospitals, and 667 sq. ft., for mobile practices. Business are open for about six days a week on average for all types of businesses. Average hours of operation per day was estimated at nine for ambulatory and hospitals and 10 for mobile practices.

The maximum number of patients that each FTE veterinarian could see per week was estimated at 210 for ambulatory and hospitals and 19 for mobile practices. The ideal number of animals

that each FTE veterinarian should see is around 214 and 16, respectively for ambulatory and hospitals and mobile practices.

The number of veterinarians per hospital was estimated at around 2.8 veterinarians working with 0.6 certified vet technician FTEs, 0.8 non-certified vet technician FTEs, and 1.1 other non-technician staffs. In terms of ratio, a typical hospital was characterized by one veterinarian for one non-veterinarian staff. In ambulatory and hospitals, the number of FTEs veterinarians was estimated at around 7.7 veterinarians working with 0.1 non-veterinarian staff, a ratio of about 1:0.4.

## CHARACTERISTICS OF FOOD PREDOMINANT PRACTICES

	Ambulatory & hospitals	Mobile
Square footage of the practice	7,133.4	666.7
Number of exam rooms	1.3	0.2
Maximum number of patients per FTE	210.0	18.8
Ideal number of patient per FTE	214.2	16.3
Actual number of patient per FTE	172.1	13.0
Days open a week	6.1	6.3
Hours open per week	55.5	63.3
Hours exam rooms are used per week	15.4	3.3
FTEs veterinarians	2.8	7.7
FTEs certified vet. technicians	0.6	0.1
FTEs non-certified vet. technicians	0.8	0.1
FTEs non-technical staff	1.1	0.1
Total number of veterinarians	2.8	7.7
Total number of non-veterinarians	2.5	0.3
Total number of non-medical staffs	1.1	0.1
Number of co-owners	1.5	1.9
Number of associate veterinarians	1.1	0.1

Table 11

For equine practices, the descriptive statistics indicate that the mean square footage at a facility in 2017 was approximately 4,067 sq. ft. for ambulatory and hospitals, 5,852 sq. ft., for mobile practices, and 837 sq. ft. for ambulatory/emergency practices. All of the types of practices are open about six days a week on average. The average hours of operation per day was estimated at 11 for ambulatory and hospitals, 12 for mobile practices, and 11 for ambulatory/emergency practices.

The maximum number of patients that each FTE veterinarian could see per week was estimated at 77 for ambulatory and hospitals, 101 for mobile practices, and 62 for ambulatory/emergency practices. The ideal number of animals that each FTE veterinarian should see is around 67, 60 and 50, respectively. The ratio of veterinarians to non-veterinarians is 1:1.5 for ambulatory and hospitals, 1:0.5 for mobile practices, and 1:0.7 for ambulatory/emergency practices.

## CHARACTERISTICS OF EQUINE PRACTICES

	Ambulatory & hospitals	Mobile	Ambulatory / emergency
Square footage of the practice	4,067.4	5,852.4	837.5
Number of exam rooms	1.4	0.2	0.3
Maximum number of patients per FTE	77.0	100.7	62.4
Ideal number of patient per FTE	66.5	59.6	50.2
Actual number of patient per FTE	43.2	52.7	46.9
Days open a week	5.9	5.9	6.3
Hours open per week	65.0	71.8	71.6
Hours exam rooms are used per week	19.2	4.2	1.0
FTEs veterinarians	4.8	1.5	1.2
FTEs certified vet. technicians	0.7	0.1	0.0
FTEs non-certified vet. technicians	4.0	0.4	0.6
FTEs non-technical staff	2.6	0.3	0.2
Total number of veterinarians	4.8	1.5	1.2
Total number of non-veterinarians	7.4	0.8	0.8
Total number of non-medical staffs	2.6	0.3	0.2
Number of co-owners	2.0	2.9	0.5
Number of associate veterinarians	4.3	1.3	0.3

Table 12

For specialty/exotic practices, the descriptive statistics show that the mean square footage in 2017 was approximately 7,089 sq. ft. for hospitals and 2,450 sq. ft. for ambulatory and hospitals. Business are open for about 5.6 to six days a week on average. The average hours of operation per day was estimated at 11 for hospitals and eight for ambulatory and hospitals.

The maximum number of patients that each FTE veterinarian could see per week was estimated at 80 for hospitals and 35 for ambulatory and hospitals. The ideal number of animals that each FTE veterinarian should see is 70 and 26, respectively. The ratio of veterinarians to non-veterinarians is 1:6.4 for hospitals and 1:2.2 for ambulatory hospitals.

## CHARACTERISTICS OF EXOTIC/SPECIALTY PRACTICES

	Hospitals	Ambulatory & hospitals
Square footage of the practice	7,088.9	2,450.0
Number of exam rooms	6.1	2.0
Maximum number of patients per FTE	80.3	35.0
Ideal number of patient per FTE	69.8	26.0
Actual number of patient per FTE	72.1	23.5
Days open a week	5.6	6.0
Hours open per week	62.0	50.5
Hours exam rooms are used per week	49.7	45.5
FTEs veterinarians	7.2	2.5
FTEs certified vet. technicians	30.4	3.0
FTEs non-certified vet. technicians	4.8	0.0
FTEs non-technical staff	10.7	2.5
Total number of veterinarians	7.2	2.5
Total number of non-veterinarians	45.9	5.5
Total number of non-medical staffs	10.7	2.5
Number of co-owners	1.4	0.5
Number of associate veterinarians	6.2	1.5

Table 13

## Revenues and Revenue Components

The chart summarizes the trend in mean gross revenue between 2011 and 2017 by type of private practices. The chart indicates that for companion exclusive, the gross revenue has increased by approximately 17 percent between 2011 and 2017. For mixed animal practices, the average revenue has grown from \$604,000

in 2011 to more than \$700,000 in 2017, equivalent to a 32 percent increase. Companion predominant has witnessed a modest but positive increase in gross revenue. Gross revenue has declined for both equine and food predominant practices.



### GROSS REVENUE BY TYPE OF PRACTICE

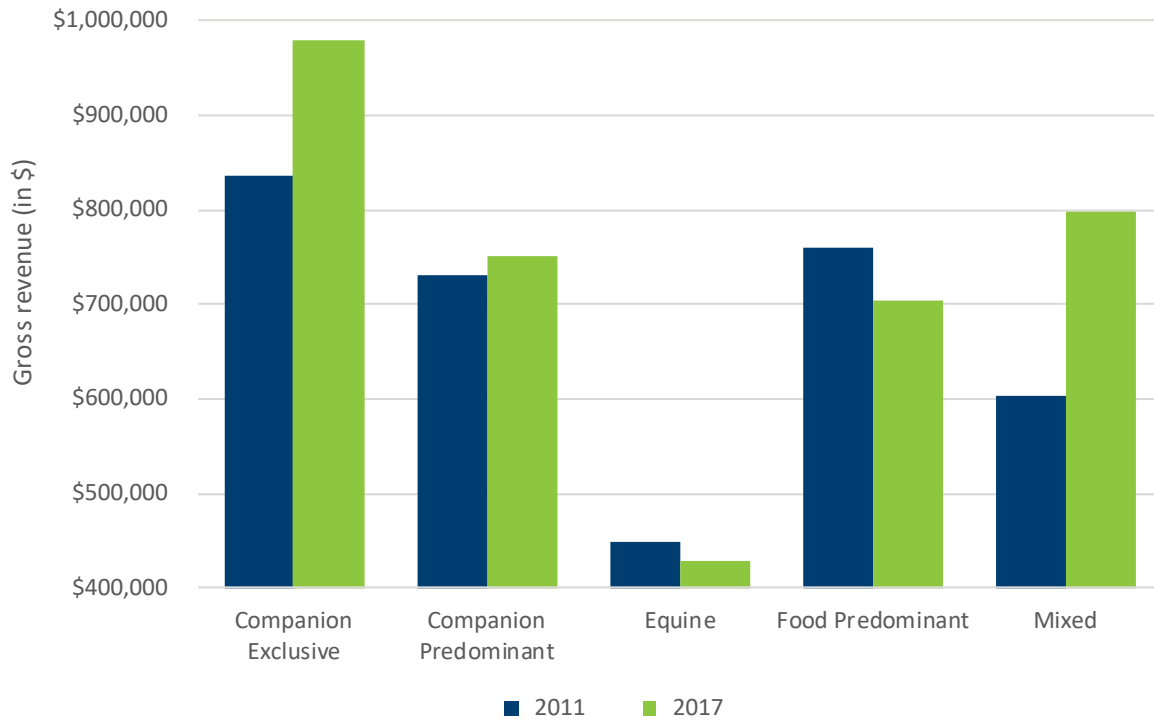


Figure 7

Figure 8 presents survey findings to give an understanding of the market for veterinary services and products, and to cast light on the revenue components of veterinary practices. Owners were asked to report the percentage of revenue attributable to the following categories: imaging, laboratory, wellness exam and vaccinations, prescription drug sales, food and feed sales,

dentistry, surgery and anesthesia, and others. The results, organized by practice type, show the largest share of practice revenue is attributable to wellness exams and vaccinations followed by drug sales. For equine practices, imaging is also one of the largest contributors to the practice gross revenue.

## SOURCES OF PRACTICE REVENUES

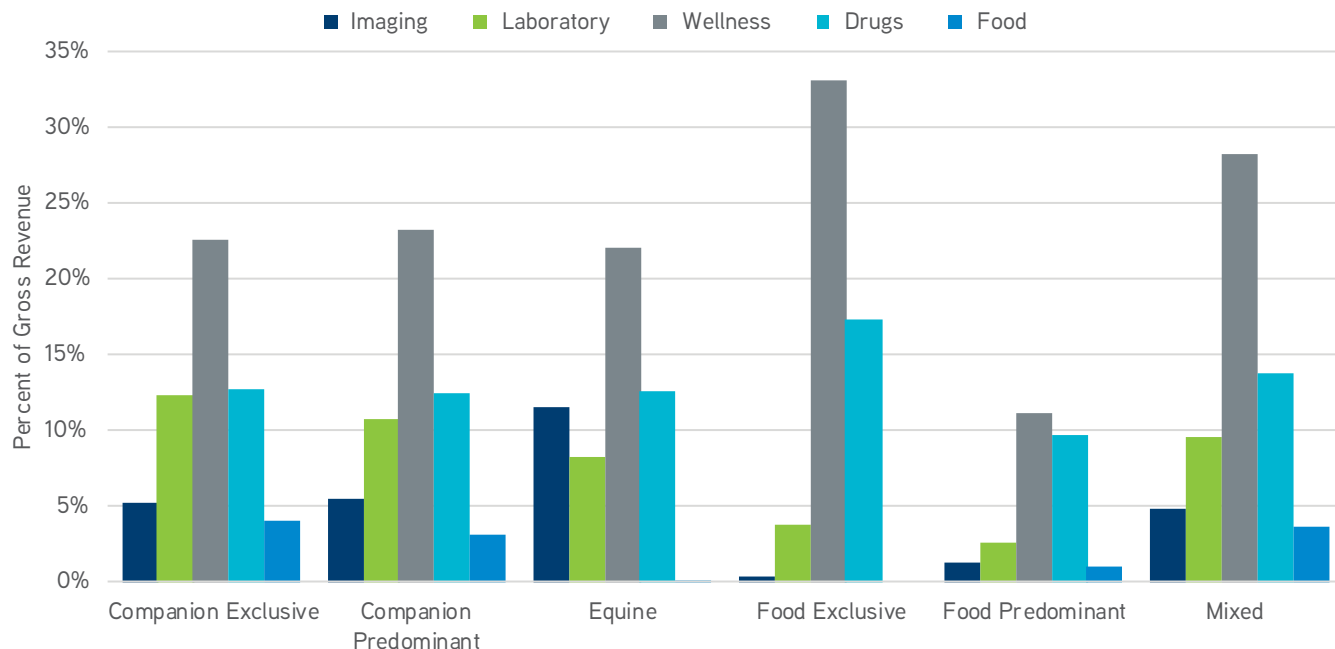


Figure 8

The same analysis was applied to companion animal exclusive and companion animal predominant practices, but this time, controlling for the size of the practice. These two types of practices were selected for analysis, due to their large number of observations.

Among companion exclusive practices, larger ones (more than eight veterinarians) tend to receive the greatest share of revenue from laboratory services, whereas practices with fewer than eight veterinarians get the largest share of their revenues from wellness exams and vaccinations. In both cases, food and feed sales represent between 3 percent and 7 percent of the gross revenue.

## SOURCES OF PRACTICE REVENUES BY PRACTICE SIZE (COMPANION EXCLUSIVE PRACTICES)

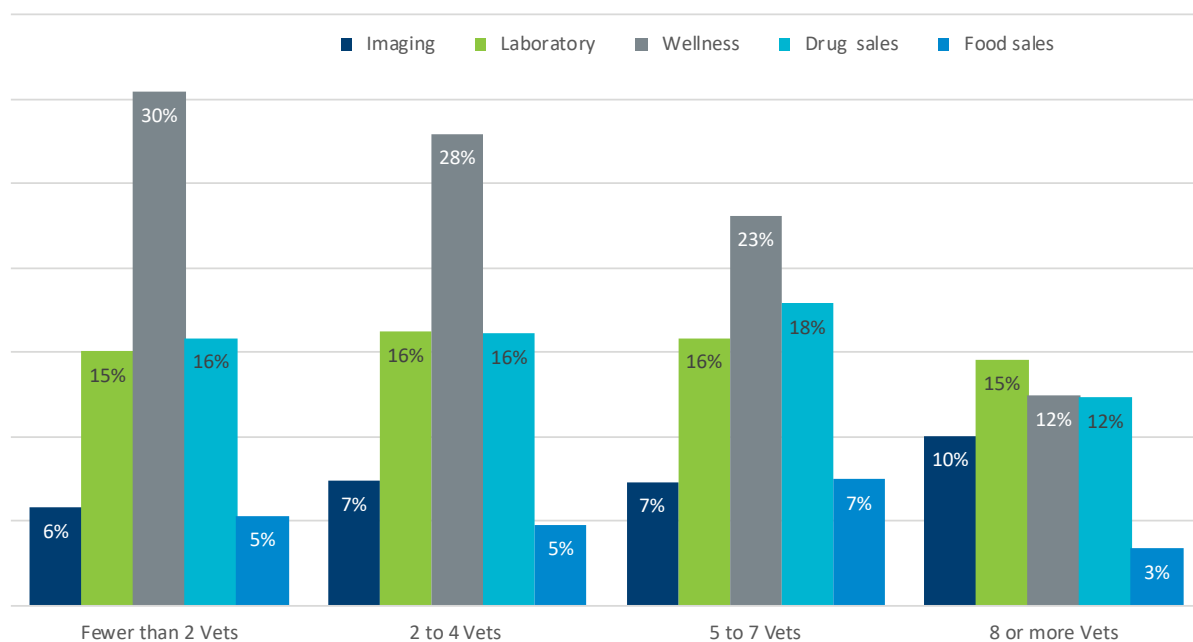


Figure 9

## SOURCES OF PRACTICE REVENUES BY PRACTICE SIZE (COMPANION PREDOMINANT PRACTICES)

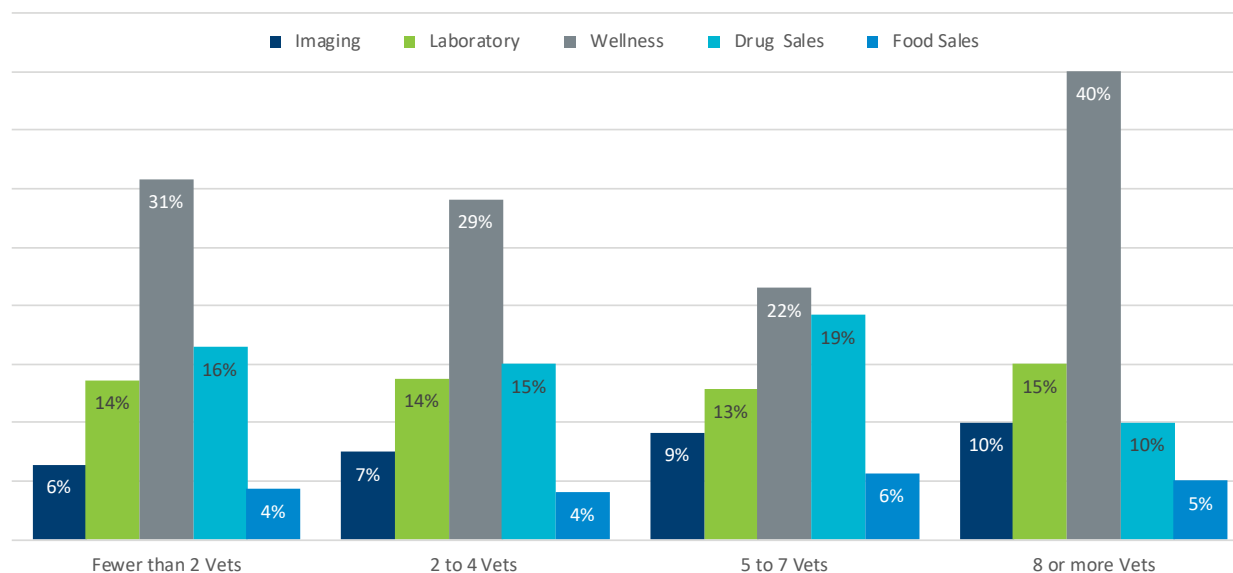


Figure 10

## MARKET FOR VETERINARY SERVICES

This section presents the economic impacts of veterinary practices on the United States economy. Using the North American Industry Classification System (NAICS), the U.S. Department of Commerce (DOC) surveys, tracks and reports on each “industry” sector in the nation’s economy, both for goods produced and services provided. According to the DOC, “Developed in cooperation with Canada and Mexico, the North American Industry Classification System (NAICS) represents one of the most profound changes for statistical programs focusing on emerging economic activities. NAICS uses a production-oriented conceptual framework to group establishments into industries based on the activity in which they are primarily engaged. Establishments using similar raw material inputs, similar capital equipment, and similar labor are classified in the same industry. In other words, establishments that do similar things in similar ways are classified together. NAICS was introduced in 1997 and is periodically revised to reflect changes in the industrial structure of the U.S. and North American economy.”<sup>1</sup>

Each of the segments of the nation’s economy are identified with a NAICS number that reflects the larger sector, specific subsector within the sector, and industries within the subsector. The Veterinary Service Industry is identified as NAICS 541940. The first two digits, 54, refer to the Professional, Scientific and Technical Services Sector.

Subsector 541, also identified as Professional, Scientific, and Technical Services, groups “establishments engaged in

processes where human capital is the major input. These establishments make available the knowledge and skills of their employees, often on an assignment basis, where an individual or team is responsible for the delivery of services to the client. The individual industries of this subsector are defined on the basis of the particular expertise and training of the services provider. The distinguishing feature of the Professional, Scientific, and Technical Services subsector is the fact that most of the industries grouped within have production processes that are almost wholly dependent on worker skills. In most of these industries, equipment and materials are not of major importance, unlike health care, for example, where ‘high-tech’ machines and materials are important collaborating inputs to labor skills in the production of health care. Thus, the establishments classified in this subsector sell expertise.”<sup>2</sup>

The NAICS 541940 category includes establishments of licensed veterinary practitioners (primarily engaged in the practice of veterinary medicine, dentistry, or surgery for animals) and establishments primarily engaged in providing testing services for licensed veterinary practitioners. A number of sectors typically related to pet care, however, were excluded from NAICS 541940. These entities are establishments whose main focus is to provide veterinary research and development services, to conduct research and development in the physical, engineering, and life sciences, to provide non-veterinary pet care services, such as boarding or grooming pets, and to provide animal breeding services or horse boarding.

<sup>1</sup> <https://www.bls.gov/bls/naics.htm>

<sup>2</sup> [https://www.census.gov/eos/www/naics/2017NAICS/2017\\_NAICS\\_Manual.pdf](https://www.census.gov/eos/www/naics/2017NAICS/2017_NAICS_Manual.pdf)

Data collected through surveys and records from the establishments in the veterinary services industry are integrated into an “input-output” model of the U.S. economy. This model is known as IMPLAN and is available as IMPLAN software. IMPLAN contains an abbreviated set of industries and only the industry coded “459” corresponds to the definition of the veterinary services as provided by the NAICS 541940.

The first part of this report section provides an overview of the veterinary practices in the United States, and the second part focuses on the contributions of these practices to the state and national economy.

### Private Veterinary Businesses in the United States

Veterinary practices data used in this analysis come from the United States Census Bureau. Information on veterinary businesses classified by size and type of business at the county, state and national level is available through the American Fact Finder (<https://factfinder.census.gov>). In 2016 the number of veterinary businesses (included in the NAICS 541940) in the United States was estimated at approximately 31,205

establishments corresponding to a .0 percent increase from 2015 and a 12.7 percent increase from 2006. Veterinary businesses were categorized into six legal forms of organizations (corporations, S-corporations, individual proprietorships, partnerships, not-for-profit organizations, and all other noncorporate legal forms of organizations). Figure 11 shows the number of businesses by legal form of organization in 2010, 2013 and 2016. S-corporations, partnerships, and not-for-profit organizations exhibit an increasing trend. The number of S-corporations has increased by 11 percent between 2010 and 2013 and by 12 percent between 2013 and 2016. Between 2010 and 2013, partnerships, and not-for-profit organizations increased by 3 percent and 21 percent, respectively. The percentage change between 2013 and 2016 was 6 percent for partnerships and 10 percent for not-for-profit organizations.

Not all types of businesses have increased in number. Individual proprietorships have declined by 11 percent between 2010 and 2013, and by 12 percent between 2013 and 2016. The number of corporations has increased slightly (2 percent) between 2010 and 2013 but drastically decreased (14 percent) between 2013 and 2016.

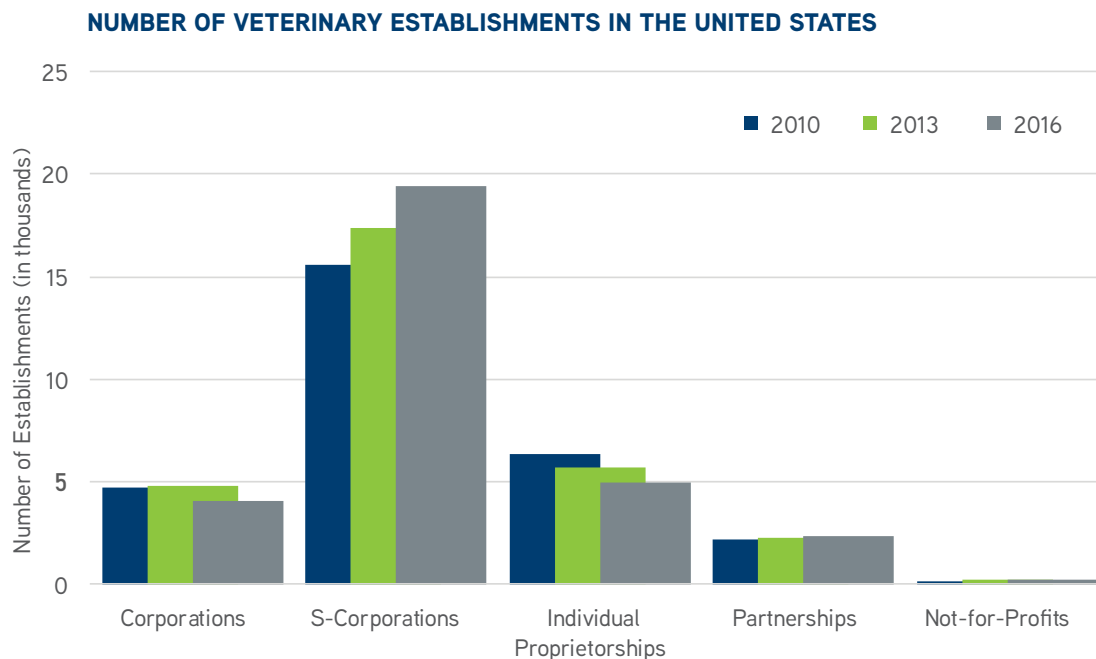


Figure 11

Accounting for the size of the business, the results show that all groups have increased in number between 2010 and 2013. Between 2013 and 2016, however, the number of establishments that employ one to four people has neither increased nor declined. The number of practices that employ between five and nine employees has decreased by 3 percent. The rest of

the groups of businesses have grown sharply. Large businesses (more than 100 employees) have increased in number by 51 percent and businesses that employ 50 to 99 people have grown by 31 percent. This indicates that either medium-size businesses have merged to create larger firms, or that large corporations have bought medium-size practices.

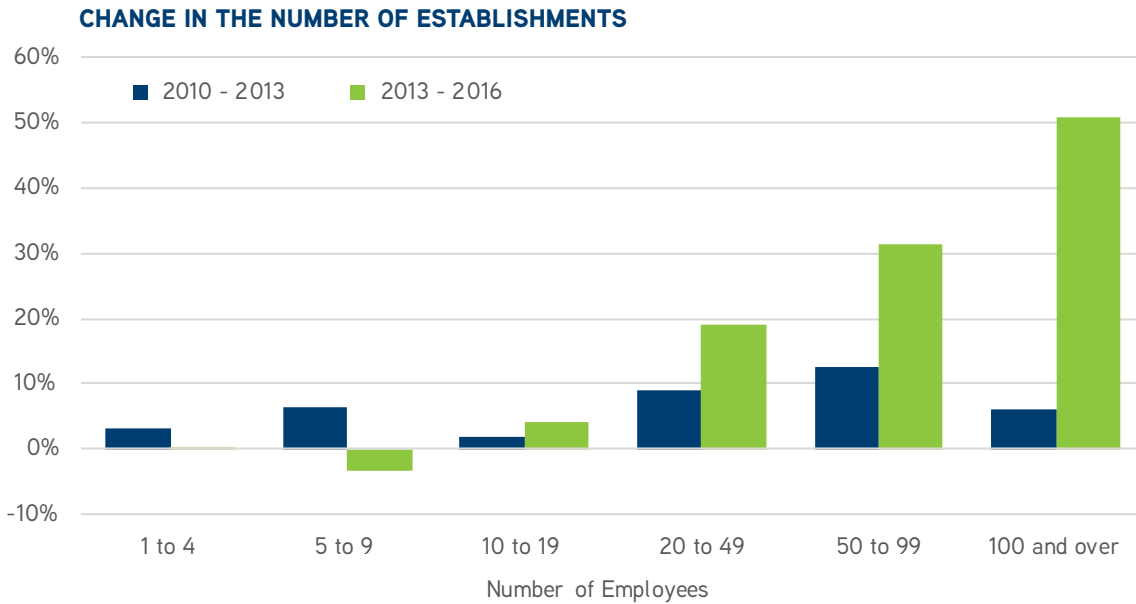
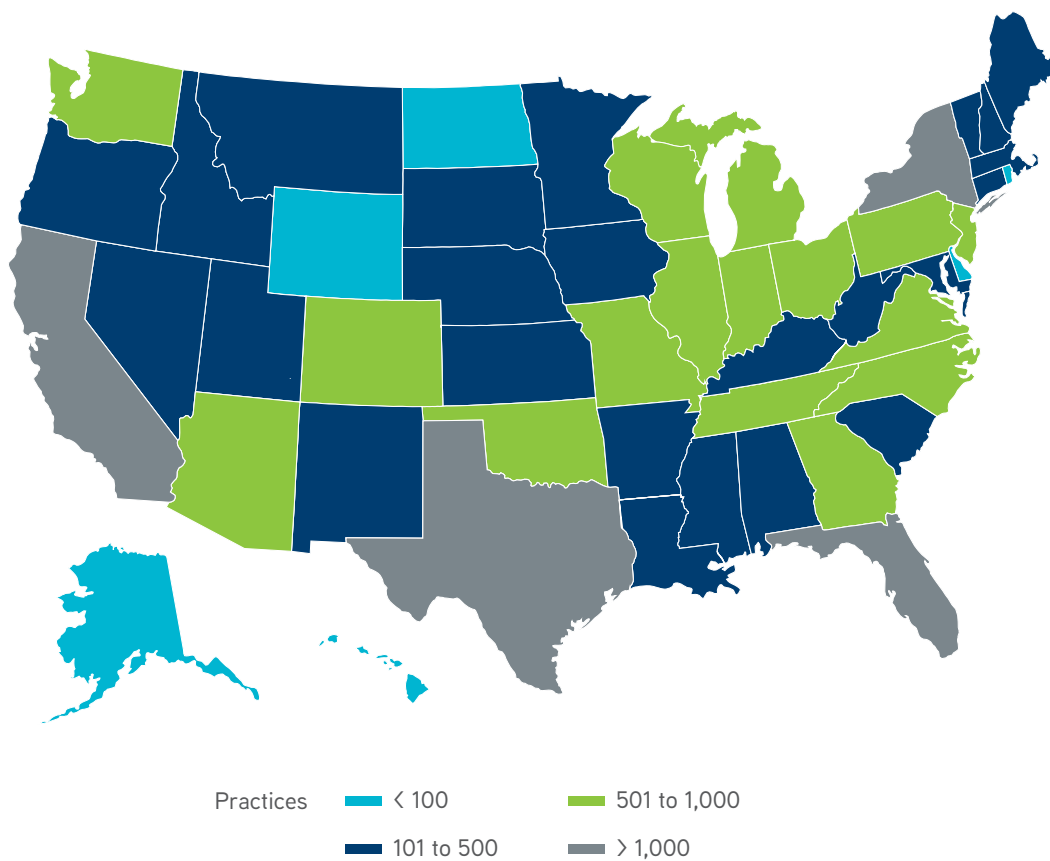


Figure 12

Figures 13 and 14 show the location of veterinary establishments in the United States by size (smaller practices employ fewer than 20 employees and larger practices employ 20 or more employees). States were categorized based on the number of establishments. The three states with the largest number of

establishments are California, Texas and Florida. Establishments that employ at least 100 people are more numerous in California, Texas, Washington, Illinois, New York, Pennsylvania and Massachusetts.

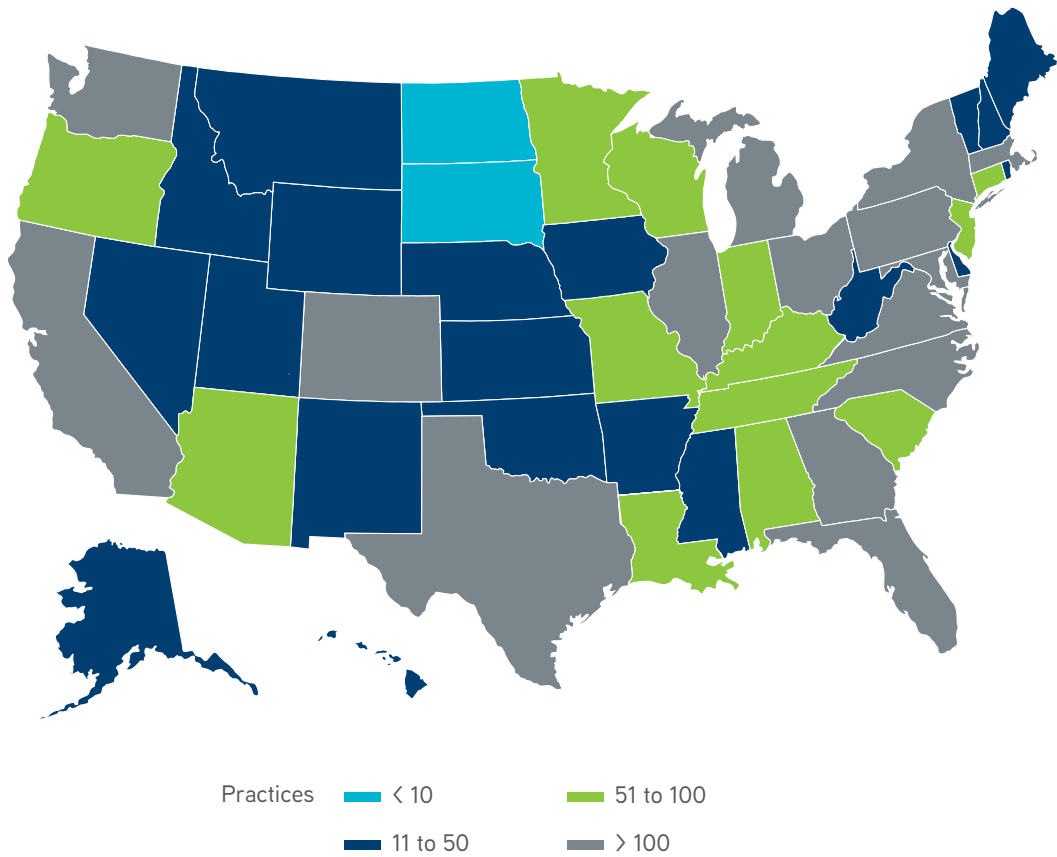
**DISTRIBUTION OF ESTABLISHMENTS (FEWER THAN 20 EMPLOYEES)**



Source: U.S. Census Bureau (2016 data)

Figure 13

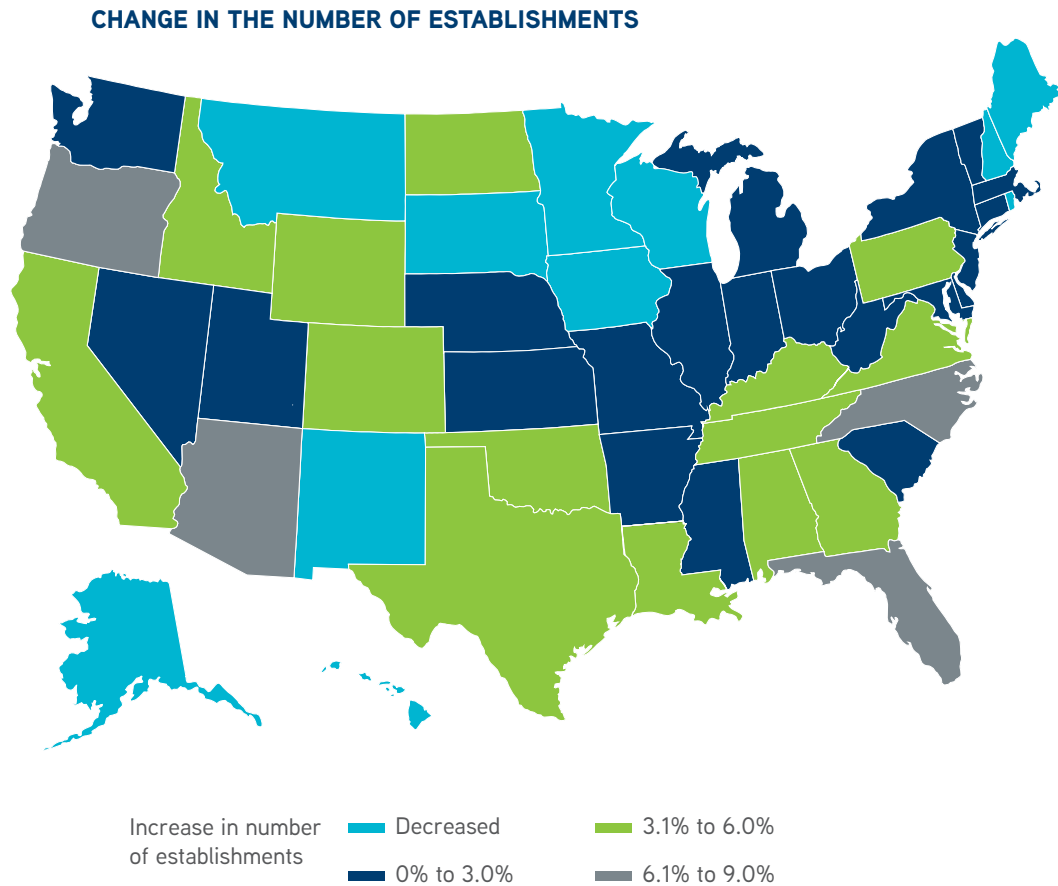
**DISTRIBUTION OF ESTABLISHMENTS (20 EMPLOYEES OR MORE)**



Source: U.S. Census Bureau (2016 data)

Figure 14

Figure 15 depicts the dynamics in the number of veterinary practices across the country. The highest percentage change (more than 6 percent) in the number of establishments between 2012 and 2016 is reported in Oregon, Arizona, Florida, and North Carolina. The change has been negative in some states such as Alaska, Hawaii, Montana, South Dakota, Minnesota, Iowa, Wisconsin, Maine, New Hampshire and Rhode Island.



Source: U.S. Census Bureau (2016 data)

Figure 15

## DEMAND FOR VETERINARY SERVICES

The U.S. veterinarians produce veterinary services worth \$30 billion or more a year (IMPLAN, 2013) to meet the local demand with a supply/demand ratio of 1.

### Intermediate Demand

Intermediate demand refers to demand made by other industries that use veterinary output as their production inputs. The intermediate demand represents less than 10 percent of total demand. The top industries with the highest demand in veterinary services are presented in Table 14. Animal hospitals

are the largest consumers of veterinary services with more \$1 billion (64 percent of total intermediate demand) a year. Poultry and egg production account for 19 percent of the total demand for industries, and the remaining seven industries represent together about 17 percent.



## DEMAND FOR VETERINARY SERVICES – INTERMEDIATE INDUSTRIES

	Gross Commodity Demand	Local Commodity Demand
Hospitals	\$1,134,878,000	\$1,134,878,000
Poultry and egg production	\$330,345,200	\$330,345,200
Scientific R&D services	\$86,078,310	\$86,078,300
Commercial hunting and trapping	\$66,567,030	\$66,567,030
Dairy cattle and milk production	\$50,198,860	\$50,198,860
Animal production, except cattle and poultry and eggs	\$43,032,030	\$43,032,030
Beef cattle ranching and farming,	\$41,806,420	\$41,806,410
Investigation and security services	\$13,688,170	\$13,688,170
Management of companies	\$3,913,065	\$3,913,065
<b>Total intermediate demand</b>	<b>\$1,770,507,085</b>	<b>\$1,770,507,065</b>

Source: IMPLAN, 2013

Table 14

### Institutional Demand

Institutional demand is also known as “final demand,” and represents the total amount spent by end-users such as dog owners. The consumer pool encompasses households, federal government agencies, and state/local non-education government entities. The statistics are presented in Table 15. Household demand represents approximately 98 percent of total demand and the rest is shared by state/local government non-education

(2 percent) and federal government defense (less than 1 percent). A close look at household consumption reveals that more than three-quarters of the total household demand comes from households with an annual income of at least \$75,000. Households with annual income no more than \$15,000 represent less than 5 percent of the total household demand.

## DEMAND FOR VETERINARY SERVICES – FINAL USERS

	Gross Commodity Demand	Local Commodity Demand
Households 150k+	\$7,037,447,000	\$7,037,446,000
Households 100-150k	\$5,644,909,000	\$5,644,908,000
Households 50-75k	\$4,635,204,000	\$4,635,204,000
Households 75-100k	\$3,901,789,000	\$3,901,789,000
Households 35-50k	\$2,591,726,000	\$2,591,726,000
Households 25-35k	\$1,705,185,000	\$1,705,185,000
Households 15-25k	\$1,357,094,000	\$1,357,094,000
Households LT10k	\$653,215,700	\$653,215,700
State/local govt non-education	\$592,870,000	\$592,870,000
Households 10-15k	\$565,564,400	\$565,564,400
Federal government defense	\$110,474,000	\$110,474,000
<b>Total institutional demand</b>	<b>\$28,795,478,100</b>	<b>\$28,795,476,100</b>

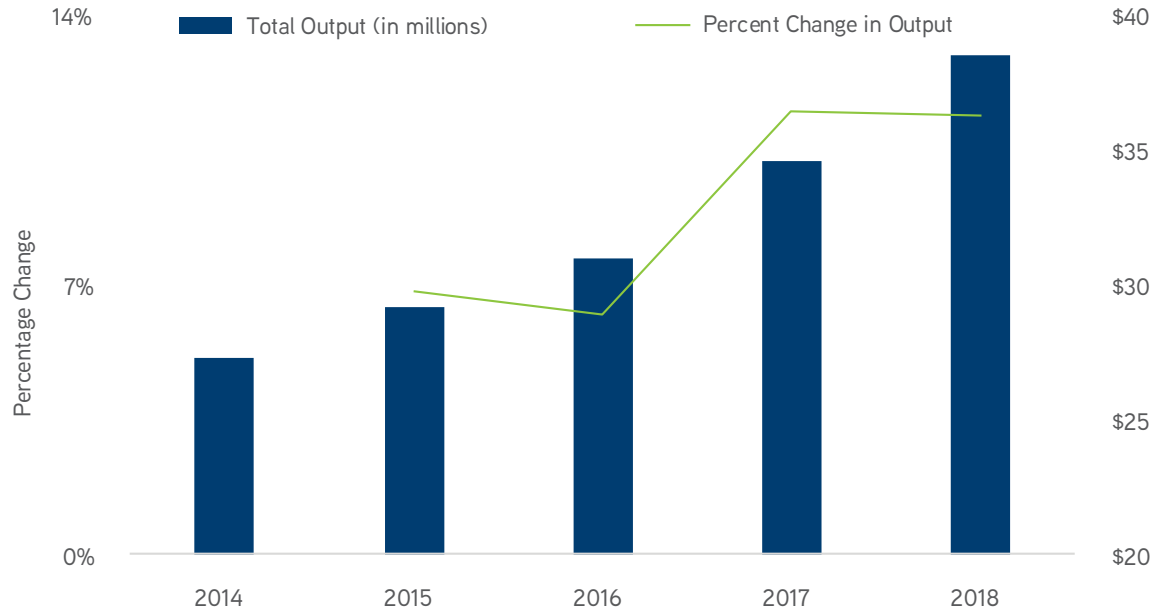
Source: IMPLAN, 2013

Table 15

The 2017 Barnes *U.S. Industry & Market Outlook* show that the market for veterinary services has consistently increased in size since 2014 (Figure 20). According to their estimations, U.S. veterinary services have increased on average by 8 percent

between 2014 and 2017, with an 11 percent increase expected between 2017 and 2018. In 2017, the total veterinary industry output was estimated at around \$35 billion.

### VALUE AND PERCENTAGE CHANGE OF VETERINARY SERVICES OUTPUT



Source: Barnes Report 2017  
Figure 16

## THE PET OWNERSHIP, DEMOGRAPHICS, AND DEMAND FOR PET CARE

This section summarizes key findings from the AVMA 2017 U.S. Pet Ownership and Demographics Survey (PDS). For more detailed information, refer to the forthcoming *Sourcebook*. Key findings from the PDS, such as pet population, average number of veterinary visits per pet, and average expenditure on pet health per household, will be compared with findings from similar studies.

### Pet Population and the Demand for Veterinary Services

There are currently three major studies that estimate the U.S. pet population and the demand for pet health care services in the United States. Packaged Facts (PFACTS) releases on an annual basis the report on the U.S. Pet Market Outlook. This report mostly focuses on the market for pet products, and presents trends on the demand for pet food, veterinary services, non-food pet supplies, and non-medical pet supplies. In addition, this report highlights trends in the drivers of the demand, including changes in the pet population. The American Pet Product Association (APPA) also releases each year its Pet Owners' Survey results. This report presents statistics on pet ownership and the demand/supply for pet health services in the United States. The AVMA Pet Ownership Demographics Sourcebook reports on the pet population, pet owner demographics, and demand for veterinary services.

Figure 17 summarizes key findings of these three reports with respect to the percentage of U.S. households that own pets at the end of 2016. Both AVMA and Packaged Facts report that approximately 38 percent of U.S. households owned at least one dog in 2016, 25 percent owned at least one cat, and 3 percent owned at least one type of bird during the same period. The values of the APPA are slightly higher than those of the two other sources. In fact, the APPA estimates that the rates of pet ownership in 2016 were 48 percent for dogs, 38 percent for cats, and 6 percent for birds.

## PET OWNERSHIP RATES

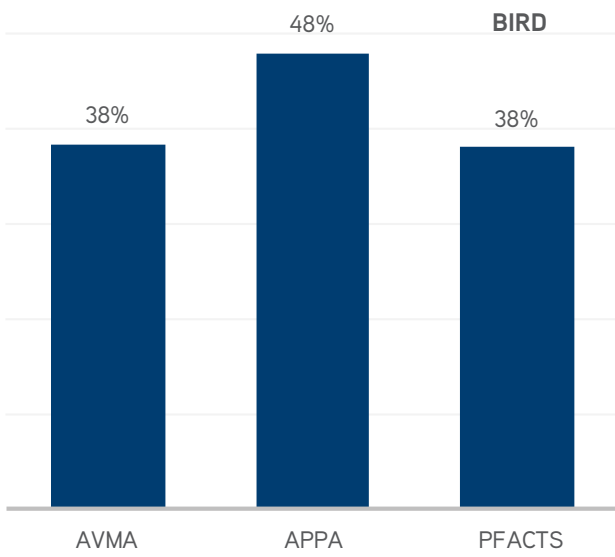
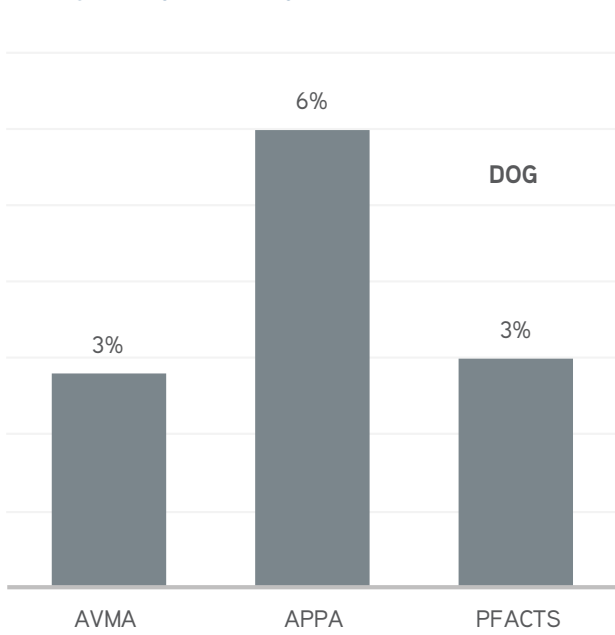


Figure 17

The U.S. dog population was estimated at approximately 77 million in 2016 (AVMA, 2018). Approximately 38 percent of U.S. households owned dogs at the year-end 2016, with an average of 1.6 dogs per household. Figure 18 shows the distribution of dog-owning households by census regions in 2016. For more details or for state-level statistics, purchase the 2017 edition of the AVMA U.S. Pet Ownership and Demographic Sourcebook (PDS).

The East South Central Region has the highest percentage of households (47.4 percent) with dogs followed by West South Central Region (43.9 percent), and the Mountain Region (43.0 percent). More than 66 percent of respondents in all age groups surveyed reported that they consider their dogs as family members, while about 33 percent consider them as companions, and fewer than 1 percent as property.

Cats are the second most popular household pets in the United States. In 2016, 25.4 percent of households in the United States owned at least one cat, and the population of cats at year end 2016 was estimated at approximately 58 million.

The East South Central Region (29.9 percent), the West North Central region (29.5 percent), and the East North Central Region (29.3 percent) had the highest percentage of households owning cats at year end 2016. The South-Atlantic with 28.5% households maintains the lowest rate of cat ownership. As with dog owners, a majority (more than 56 percent) of cat owners consider their

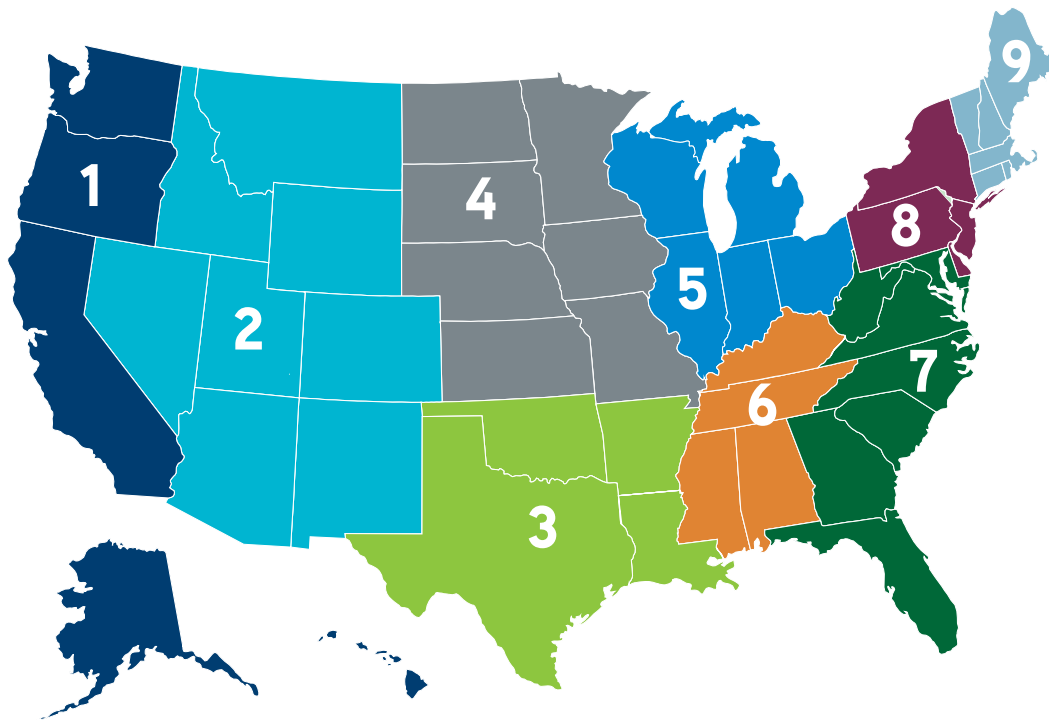
cats to be family members. The study revealed that 78 percent of owners consider their cats to be average weight, 16.5 percent think their cats are overweight, and about 6 percent see their cats as underweight.

About 3 percent of U.S. households owned birds at year end 2016. The bird population in the United States was estimated at 3.5 million in 2016 (AVMA, 2018). The distribution of bird ownership by census region is summarized in Figure 18. Bird ownership varies between 1 percent (West North Central Region) and 3.1 percent (New England Region). Some 57 percent of respondents consider their birds to be family members, while 9.6 percent of the respondents see their birds as property under their care.

The 2017 PDS reported that 0.7 percent of U.S. households owned pet horses at the end of 2016. The regions with the highest percentage of horse-owning households are West South-Central Region (1.3 percent), and the Mountain Region (1.1 percent); the regions with the largest number of household that owned horses are the South Atlantic with about 25 million households, the East North Central with 18.9 million households, and the Pacific with approximately 18 million households. The lowest population of pet horses was found in New England (27,000 horses) and the Middle Atlantic (98,000 horses). Approximately 47 percent of pet-horse owners consider their horses to family members and 11 percent consider them to be property.



## PET OWNERSHIP RATES BY CENSUS REGION



<p><b>1. PACIFIC</b></p> <p>Dog: 40%</p> <p>Cat: 24%</p> <p>Bird: 3%</p> <p>Horse: 1%</p>	<p><b>2. MOUNTAIN</b></p> <p>Dog: 43%</p> <p>Cat: 26%</p> <p>Bird: 2%</p> <p>Horse: 1%</p>	<p><b>3. WEST SOUTH CENTRAL</b></p> <p>Dog: 44%</p> <p>Cat: 22%</p> <p>Bird: 3%</p> <p>Horse: 1%</p>	<p><b>4. WEST NORTH CENTRAL</b></p> <p>Dog: 40%</p> <p>Cat: 29%</p> <p>Bird: 1%</p> <p>Horse: 1%</p>	<p><b>5. EAST NORTH CENTRAL</b></p> <p>Dog: 38%</p> <p>Cat: 29%</p> <p>Bird: 3%</p> <p>Horse: 1%</p>
<p><b>6. EAST SOUTH CENTRAL</b></p> <p>Dog: 47%</p> <p>Cat: 30%</p> <p>Bird: 2%</p> <p>Horse: 1%</p>	<p><b>7. SOUTH ATLANTIC</b></p> <p>Dog: 39%</p> <p>Cat: 24%</p> <p>Bird: 3%</p> <p>Horse: 1%</p>	<p><b>8. MIDDLE ATLANTIC</b></p> <p>Dog: 31%</p> <p>Cat: 23%</p> <p>Bird: 3%</p> <p>Horse: 0.3%</p>	<p><b>9. NEW ENGLAND</b></p> <p>Dog: 27%</p> <p>Cat: 27%</p> <p>Bird: 3%</p> <p>Horse: 0.3%</p>	

Figure 18

## VETERINARY MEDICAL USE AND EXPENDITURES

Veterinary visits come with costs and pet owners spend substantial amount of money each year on their animals' wellbeing. Figures 19-22 summarize the total expenditures on dogs, cats, birds and horses for each state in 2016. The values for each type of pet were estimated by multiplying the average expenditure per pet by the total number of pets in the state. This captures the potential size of the market assuming that no pet is left untreated, and that all pets in the state visit a veterinary clinic or other healthcare facility at least once a year.

The statistics show that the size of the market for dog veterinary services is above \$1 billion in Texas, California and Florida, and ranges between \$100 million and \$999 million in most states. The size of the market for cats is over \$1 billion in California, between \$400 million and \$999 million in Texas, Florida, Ohio, Pennsylvania, and New York. For the rest of the states, the majority have a market size of between \$100 million and \$399 million. The majority of the states have a potential market of \$10 million or more for each of these two market segments.

### ESTIMATED TOTAL EXPENDITURES FOR DOG VETERINARY SERVICES

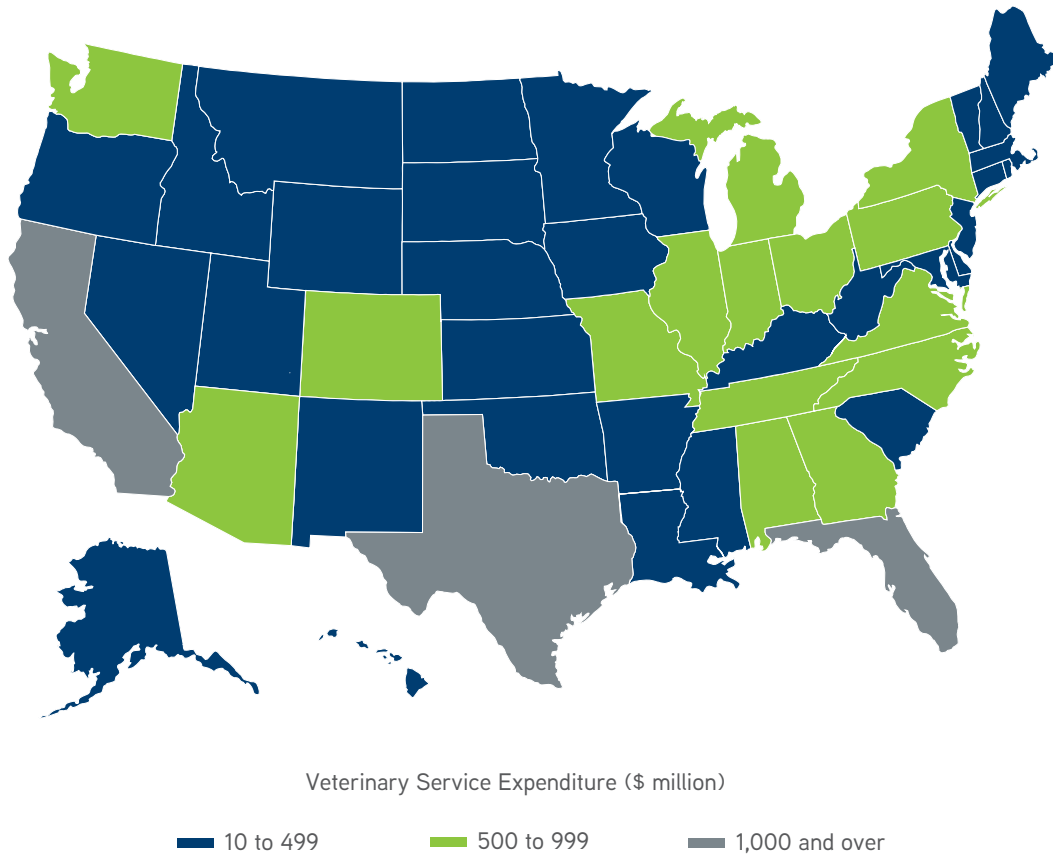


Figure 19

### ESTIMATED TOTAL EXPENDITURES FOR CAT VETERINARY SERVICES

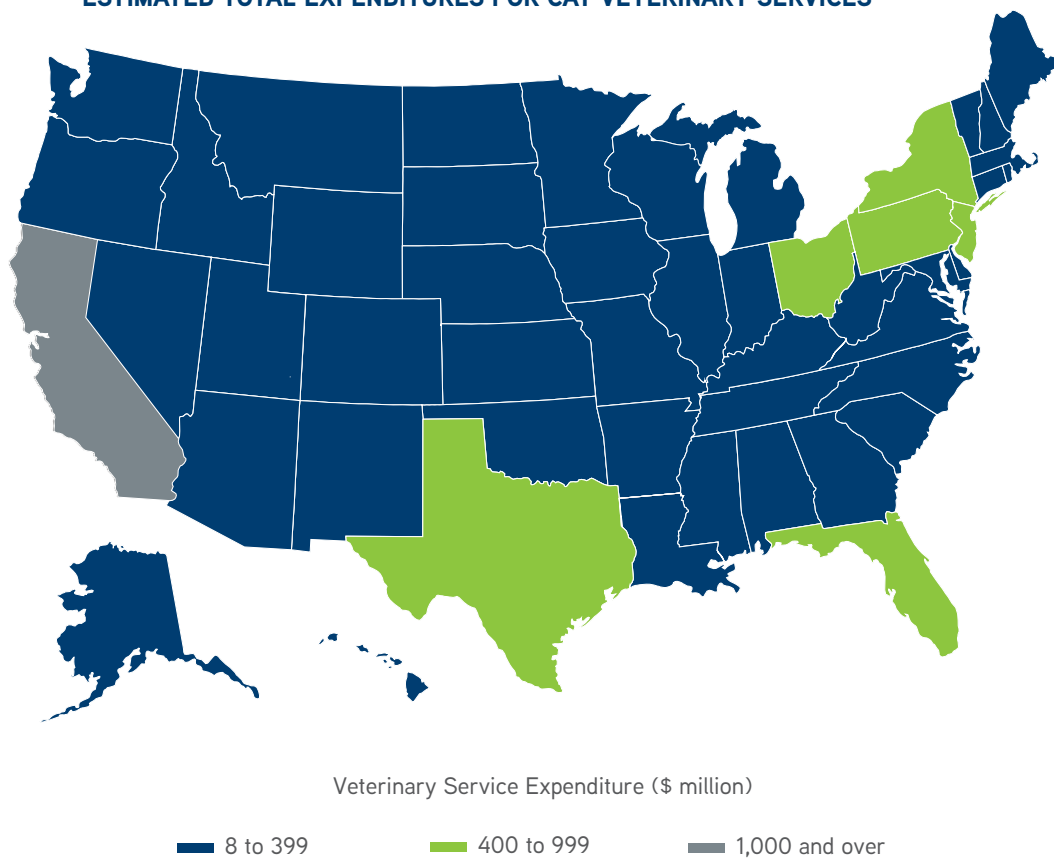


Figure 20

### ESTIMATED TOTAL EXPENDITURES FOR BIRD VETERINARY SERVICES

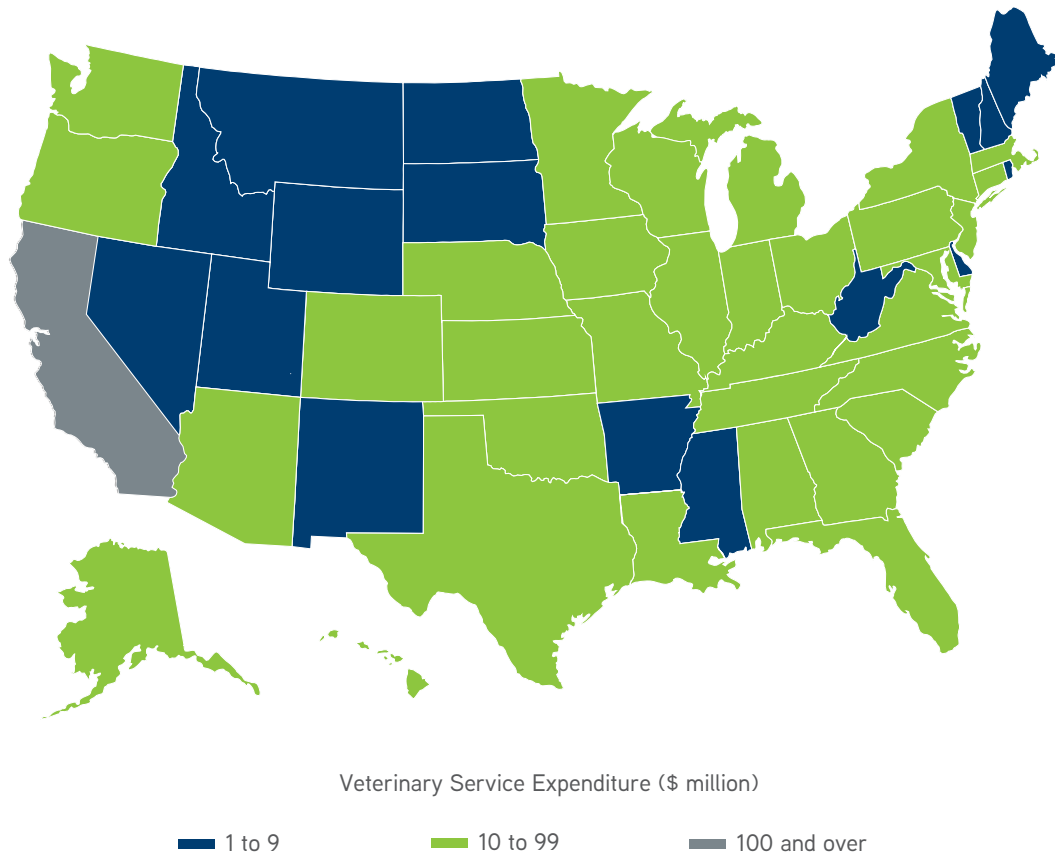


Figure 21



### ESTIMATED TOTAL EXPENDITURES FOR HORSE VETERINARY SERVICES

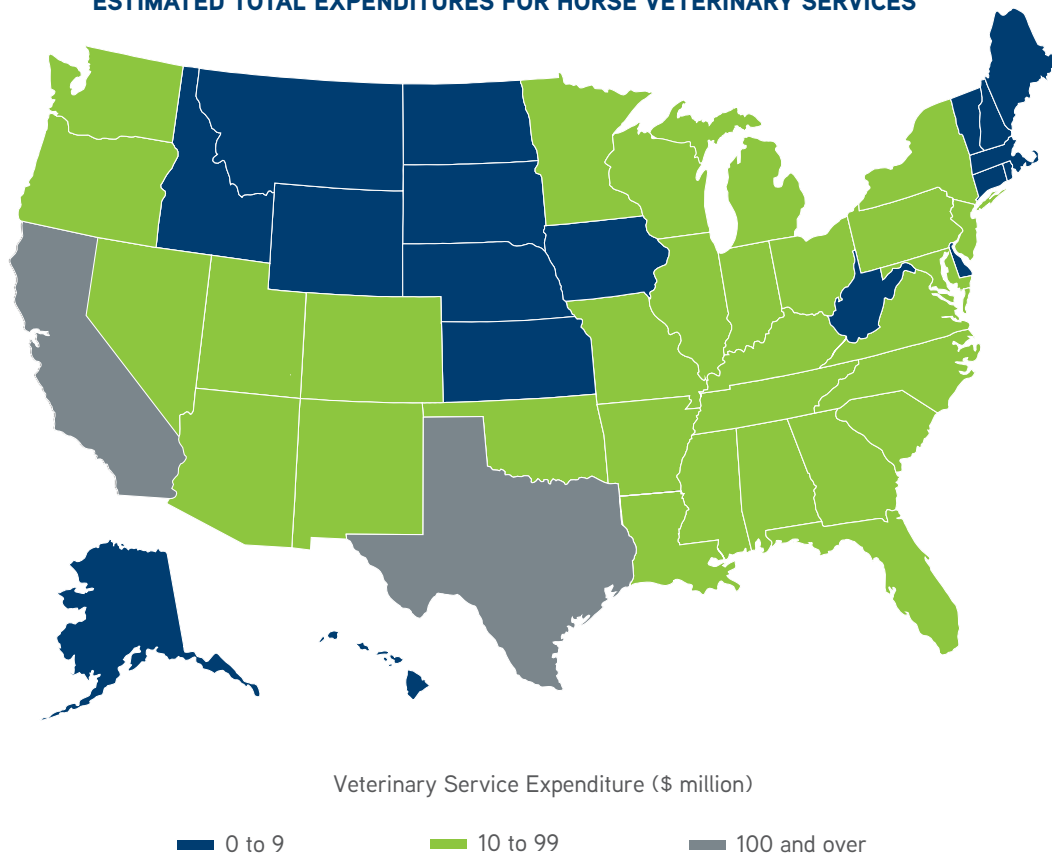


Figure 22



## STRUCTURE OF AND COMPETITION IN THE U.S. MARKET FOR VETERINARY SERVICES

**Among the small animal practice owners surveyed, about half believe that the number of veterinarians in their business area is just right.**

The performance of the veterinary industry depends in large part on economic conditions, but also on the business environment in the market for veterinary services. The level of competition in the market has significant impact on the quality of services delivered, as well as the quantity and thus the price of the services. To determine the level of the competition, data from the AVMA 2017 Capacity Survey were used.

The competition in the market refers to the interactions between businesses in their local environment. Typically, it expresses the market power that some big firms apply to small firms in order to increase their share of the pie. In this analysis, rather than assessing the indices of market influence, the ability of veterinary businesses to supply more services is examined.

### **Competition in the Market for Veterinary Services**

Practices owners were asked to categorize on a five-level scale (1 = far too few, 2 = too few, 3 = just right, 4 = too many, and 5 = far too many) their estimate of the number of veterinarians and the number of veterinary practices serving the same animal population in their business area. The responses were summarized by business type and are presented in Figures 23-25.

The majority of the large animal practice owners (58.8 percent) believe that the number of veterinarians serving the same animal population in their business areas is just right. More than 60 percent of them believe that the number of competing practices in their business area is just right.

### PERCEIVED COMPETITION ON THE MARKET FOR LARGE ANIMAL VETERINARY SERVICES

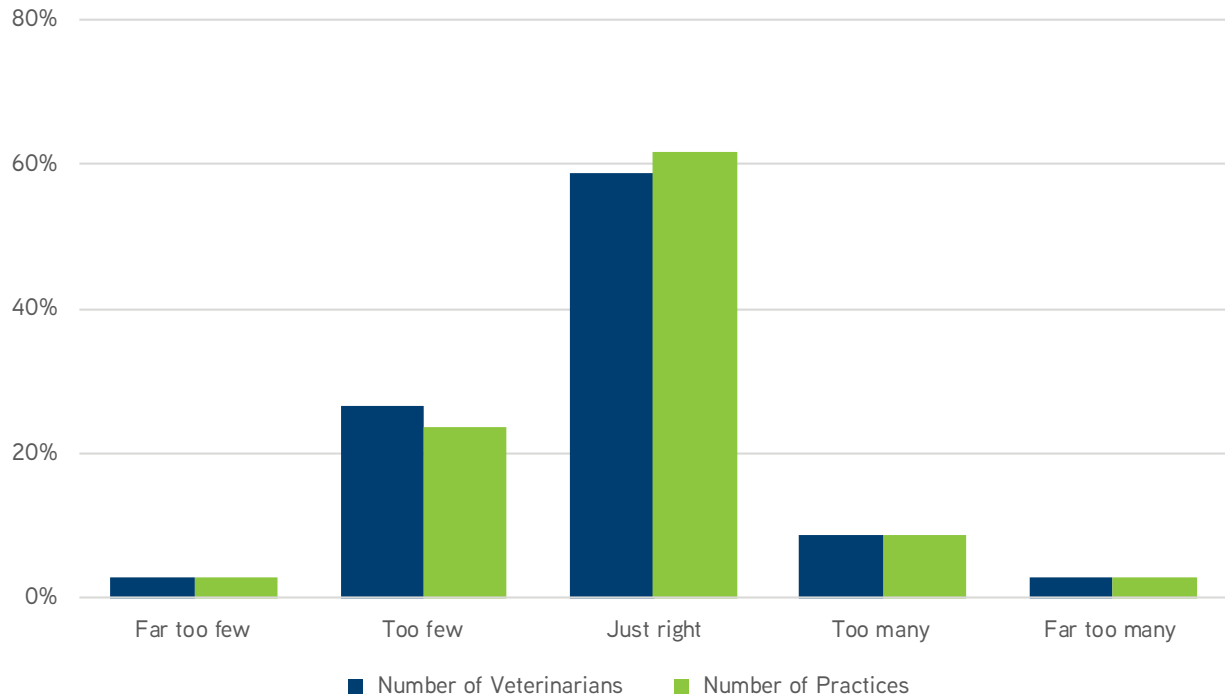


Figure 23

Among the small animal practice owners surveyed, about half believe that the number of veterinarians in their business area is just right. Approximately 37 percent believe there are too many or far too many veterinarians in their area and nearly 45 percent believe that the number of practices in the local market is exceeding the market capacity.

### PERCEIVED COMPETITION ON THE MARKET FOR SMALL ANIMAL VETERINARY SERVICES

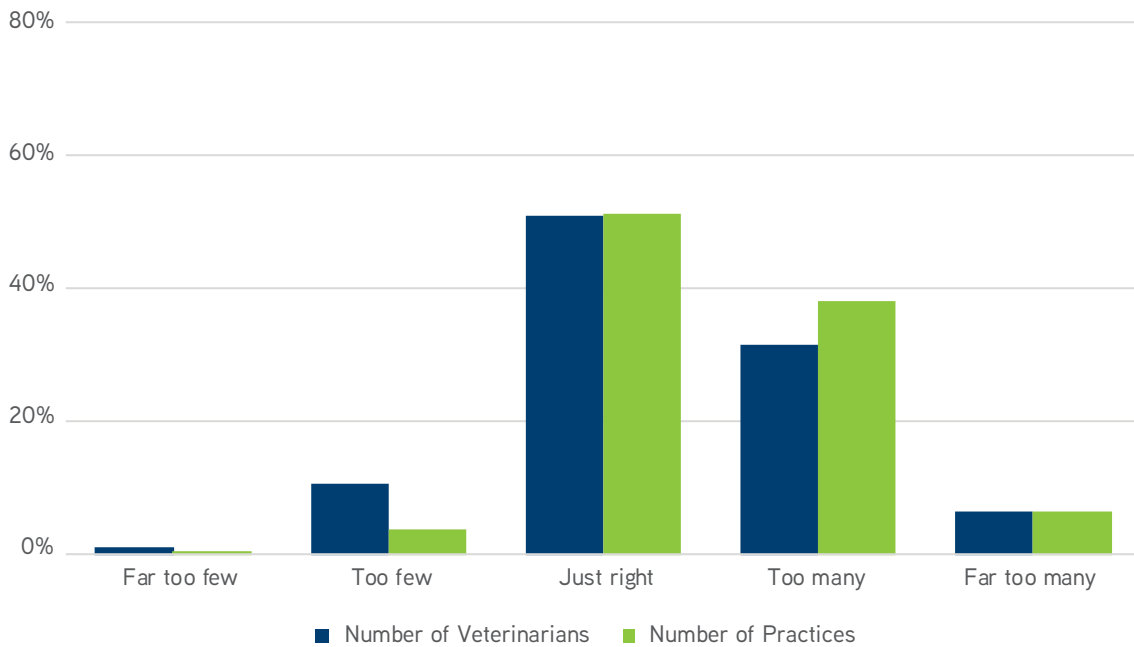


Figure 24

In the market for equine veterinary services, 44% of respondents believe that the number of service providers in the market is just right while 46% believe they are facing too many competitor veterinarians. Nearly 55 percent of the respondents indicated there are more practices than is acceptable. Only 6 percent believe there are too few practices in their business areas.

### PERCEIVED COMPETITION ON THE MARKET FOR EQUINE VETERINARY SERVICES

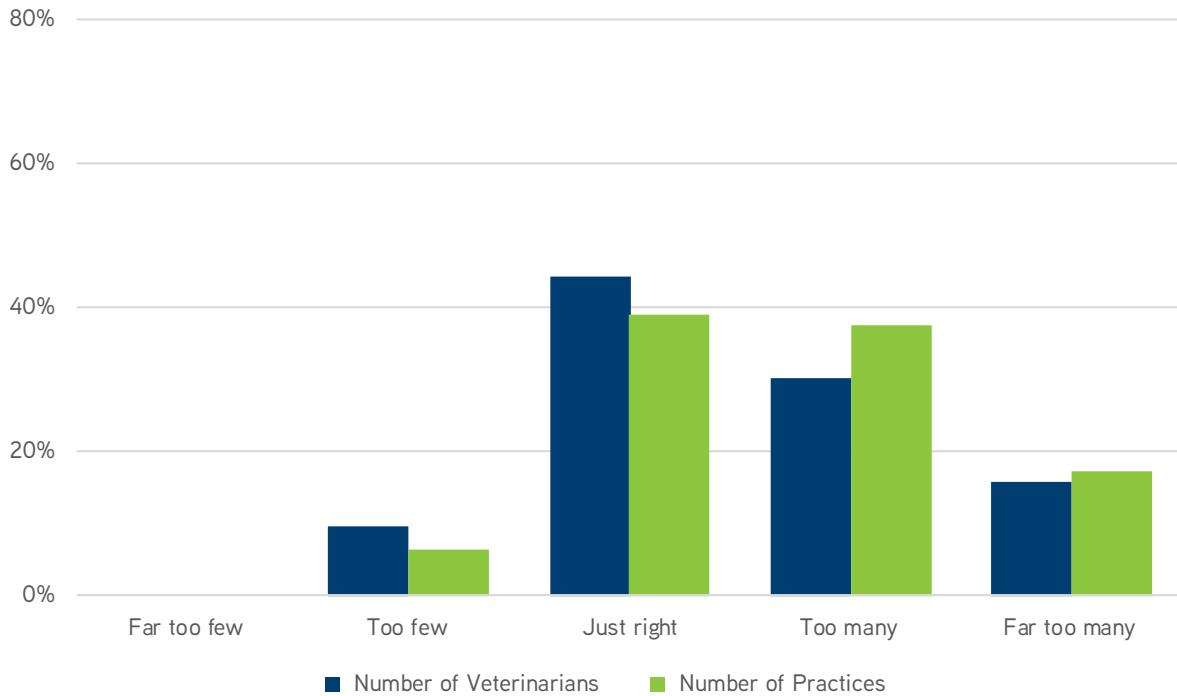


Figure 25

### Competition in the Bovine Veterinary Services Market

To determine the potential sources of competition and the extent to which each of them affect the bovine veterinary sector, a set of questions was asked to bovine practice owners who took part in the AVMA 2017 Census of Veterinarians. Statistics from the survey are summarized below. In total, 3.8 percent (104 observations) of the respondents said they are practice owners

and their practices treat bovines. Of those included who met the criteria, 70.2 percent acknowledged that they are experiencing competition from non-veterinary service providers (Figure 26). Compared to 2015, it is easy to see that the percentage of practitioners affected by non-veterinary service providers has increased.

### COMPETITION WITH NON-PRACTITIONERS IN THE MARKET FOR BOVINE VETERINARY SERVICES

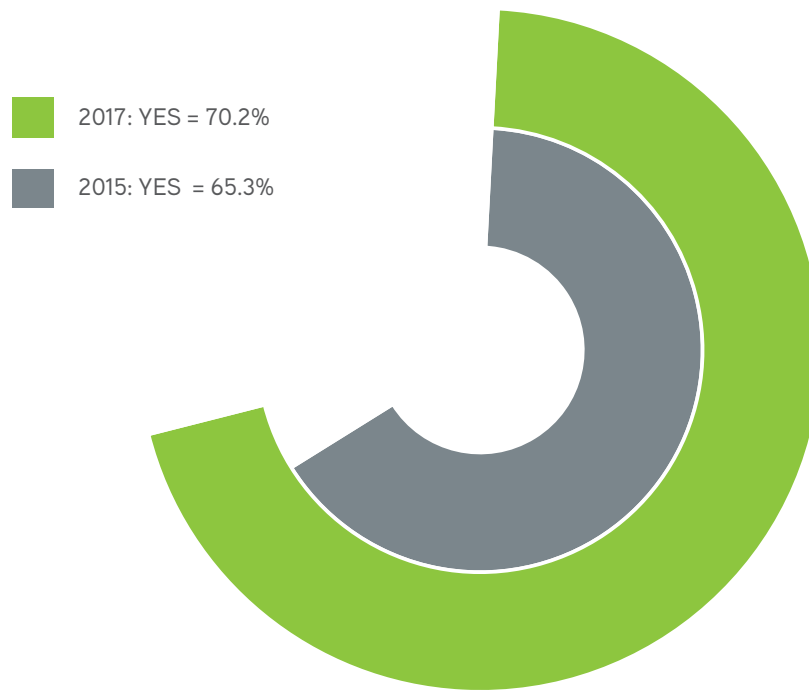


Figure 26

Of those affected by parallel service providers, approximately 54 percent point to non-licensed practitioners as their main competitors. The second major group of competitors is the route trucks operators who deliver supplies to farms. More than 44 percent of practice owners who indicate they are confronted with parallel competition believe that this category of competition represents the main challenge they face. Consultant veterinarians are cited by more than 36 percent of practice owners, technical service veterinarians account for 18.3 percent and university staff represent 13.5 percent.

### POTENTIAL COMPETITORS OF BOVINE PRACTITIONERS

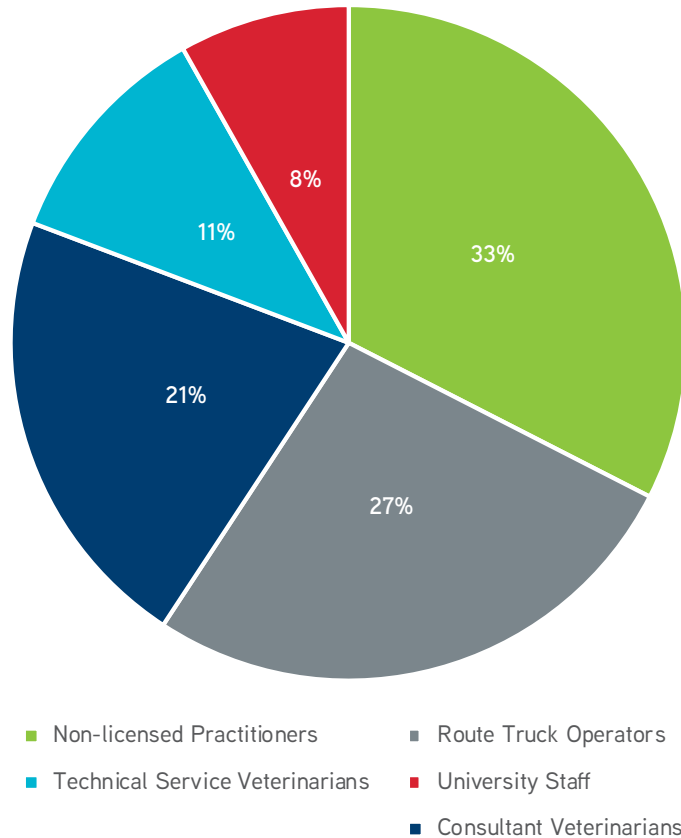


Figure 27

## Competition in the Equine Veterinary Services Market

In total, 420 equine practitioners were surveyed. A large majority (78.5 percent) of them said they are losing revenue due to competition.

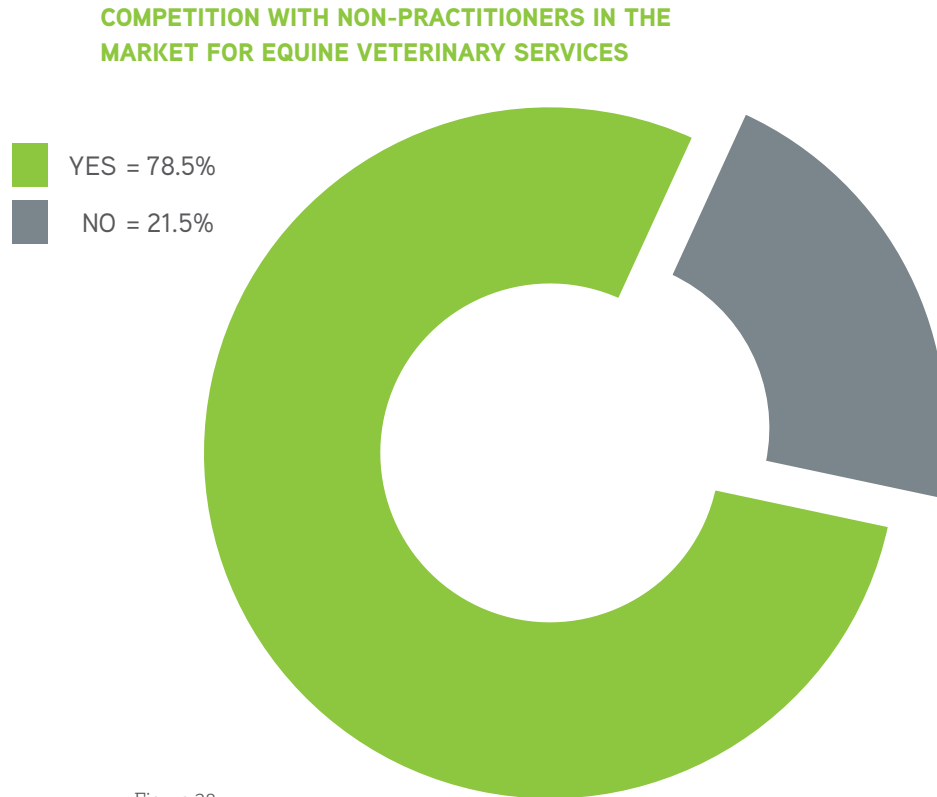


Figure 28

The biggest challenge for equine veterinarians comes from online pharmacies. About 55 percent of respondents who said they are losing revenue report internet pharmacies as the main cause. Lay practitioners are also frequently cited as competitors in the equine veterinary sector. Show veterinarians, traveling pharmacies and university staff who practice at university hospitals or at satellite locations are also included.

## POTENTIAL COMPETITORS OF EQUINE PRACTITIONERS

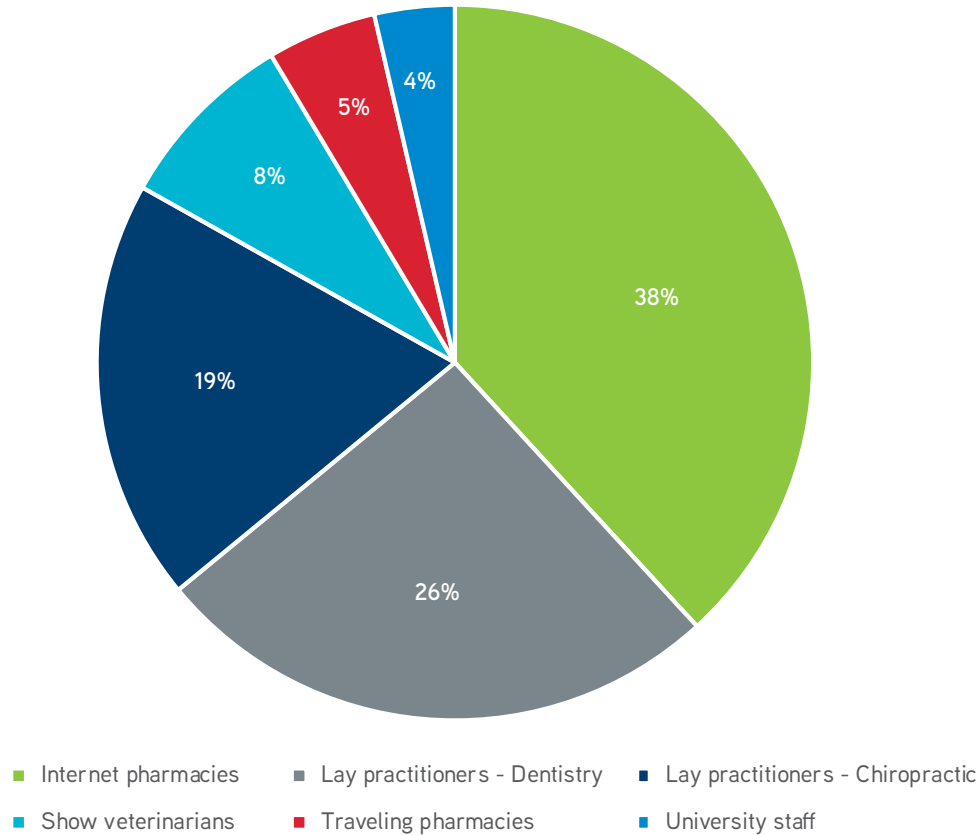


Figure 29

### Ability to Increase Supply of Veterinary Services

To determine the capability of practices to expand, two scenarios were considered. For the first scenario, it is assumed that (1) there are no changes in the way the practice is organized, (2) there are no changes in the number of veterinarians or support staff, and (3) there are no changes to the physical structure of the practice. The second scenario assumed that (1) the practice manager is able to hire additional well-trained veterinarians, technicians and support staff, but (2) the physical structure of the facility remains unchanged. The question being asked now is, "If there were an unlimited supply of clients and patients, by what percent could your practice increase the number of patients

per week relative to the current number of patients your practice typically receives per week?" The responses by type of practice are summarized below.

Under the first scenario, 48.5 percent of the large animal practitioners believe they are already working at nearly full capacity and can only expand their production by up to 10 percent. Under the second scenario, 41.4 percent said they cannot expand their production at all or they can do so up to 10 percent but no more than that. Fewer than 10 percent of practices are able to expand their production by more than 75 percent.

### ABILITY TO EXPAND PRODUCTION IN LARGE ANIMAL PRACTICES

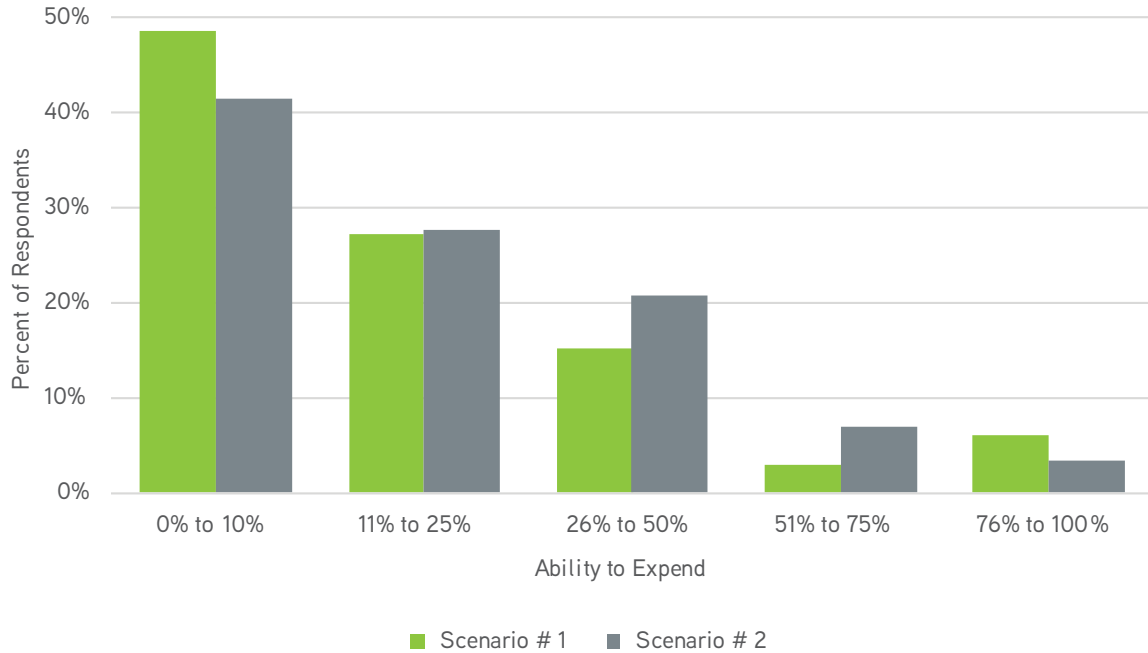


Figure 30

Under the first scenario, 83.4 percent of the small animal practitioners believe they cannot increase their current production beyond 25 percent. This indicates that the large majority of small animal practices perform at 75 percent of their

full capacity and that an increase in the demand for small animal veterinary services will result in shortages of veterinary services in some areas. Under the second scenario, 86.4 percent said they can expand their production by 10 percent to 50 percent.

### ABILITY TO EXPAND PRODUCTION IN SMALL ANIMAL PRACTICES

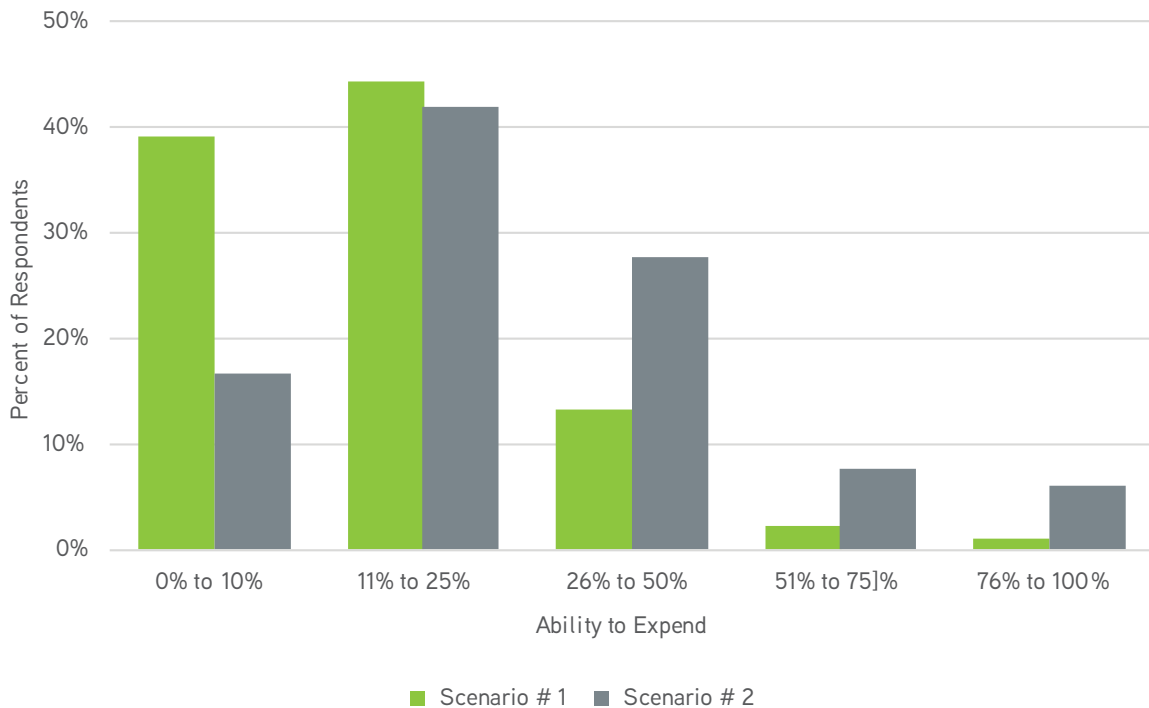


Figure 31



For equine practices, 82 percent believe they could increase their production up to 25 percent under the first scenario. About 22 percent said that under the second scenario, they could expand their production by 76 percent to 100 percent.

### ABILITY TO EXPAND PRODUCTION IN EQUINE PRACTICES

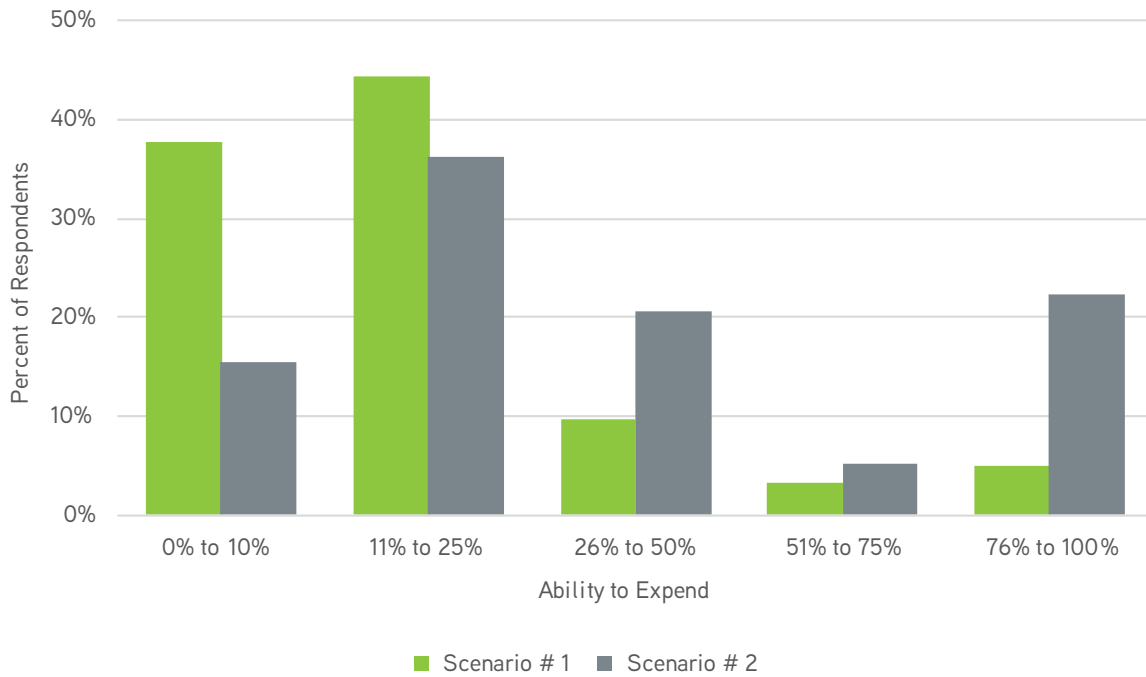


Figure 32

Mixed animal practices are also working at nearly full capacity. More than 84 percent said they are working at 75 percent capacity or above and could only expand under the first scenario by no more than 25 percent. Under the second scenario, 59.4 percent believe they could increase their production up to 25 percent.

### ABILITY TO EXPAND PRODUCTION IN MIXED ANIMAL PRACTICES

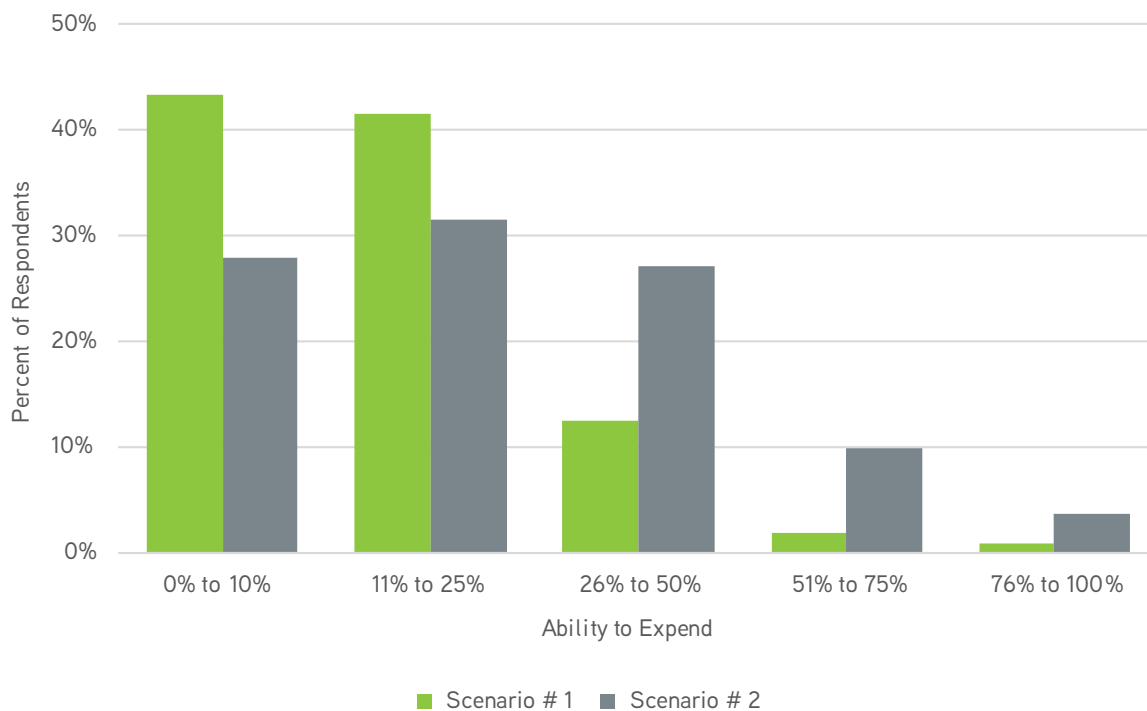


Figure 33

## Estimating Need for Veterinarians

Excess capacity is by definition a situation in which the demand for the good or service is below the amount that the business could potentially supply to the market. In this section of this report, the total number of veterinarians required to meet the demand for veterinary services is estimated by state and compared to the actual number of veterinarians currently practicing in the state. A negative difference (Require–Actual) implies that there are more veterinarians than needed, and a positive difference indicates that more veterinarians are needed to meet the state demand. In the case of negative difference, because the demand for veterinarians is below the supply for

veterinarians, there exist an excess capacity. The objective of this section is to identify these states that do not have enough veterinarians to meet the local demand. The analysis was conducted for the companion animal sector, the food animal sector, and the equine sector.

For the equine sector, the analysis shows 22 out of 50 states need equine veterinarians. These states are mainly located in the central regions of the country. Texas, for example, needs at least 113 equine veterinarians to meet the state’s demand. But overall, the United States has enough equine veterinarians to cover the demand for equine veterinary services.

### ESTIMATED NUMBER OF EQUINE VETERINARIANS NEEDED TO MEET THE LOCAL DEMAND

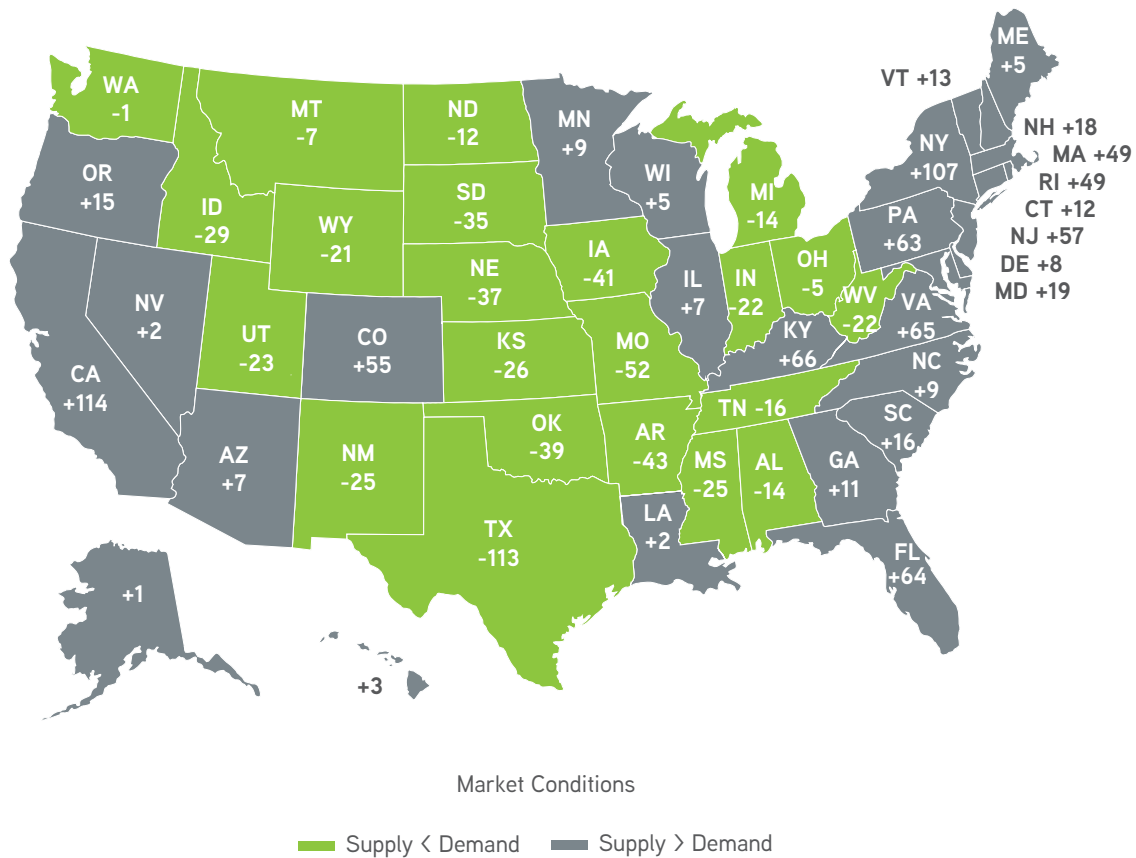


Figure 34

The states bearing positive numbers are those in which there are more veterinarians than needed, given the demand for food animal veterinary services. The values represent the total number of veterinarians needed or in excess in each state. In California, for example, the results indicate that approximately 314 more food animal veterinarians than needed to meet the state demand. The states in potential shortage situation are the largest cattle producing states.

**ESTIMATED NUMBER OF FOOD ANIMAL VETERINARIANS NEEDED TO MEET THE LOCAL DEMAND**

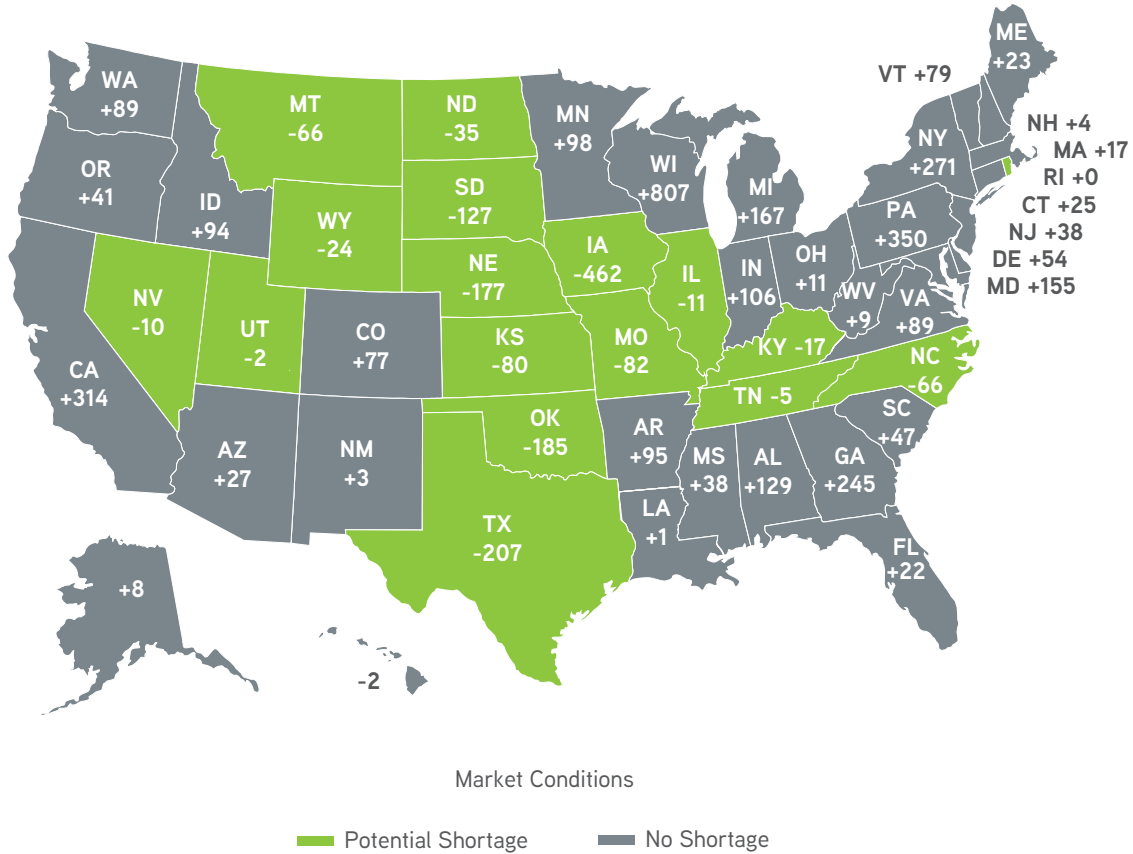


Figure 35

For the companion animal veterinary sector, only a few states need more veterinarians to satisfy the state demand. The states that need the most veterinarians are Mississippi (139 veterinarians), Kentucky (126 veterinarians), and Arkansas (122 veterinarians).

## ESTIMATED NUMBER OF COMPANION VETERINARIANS NEEDED OR IN EXCESS

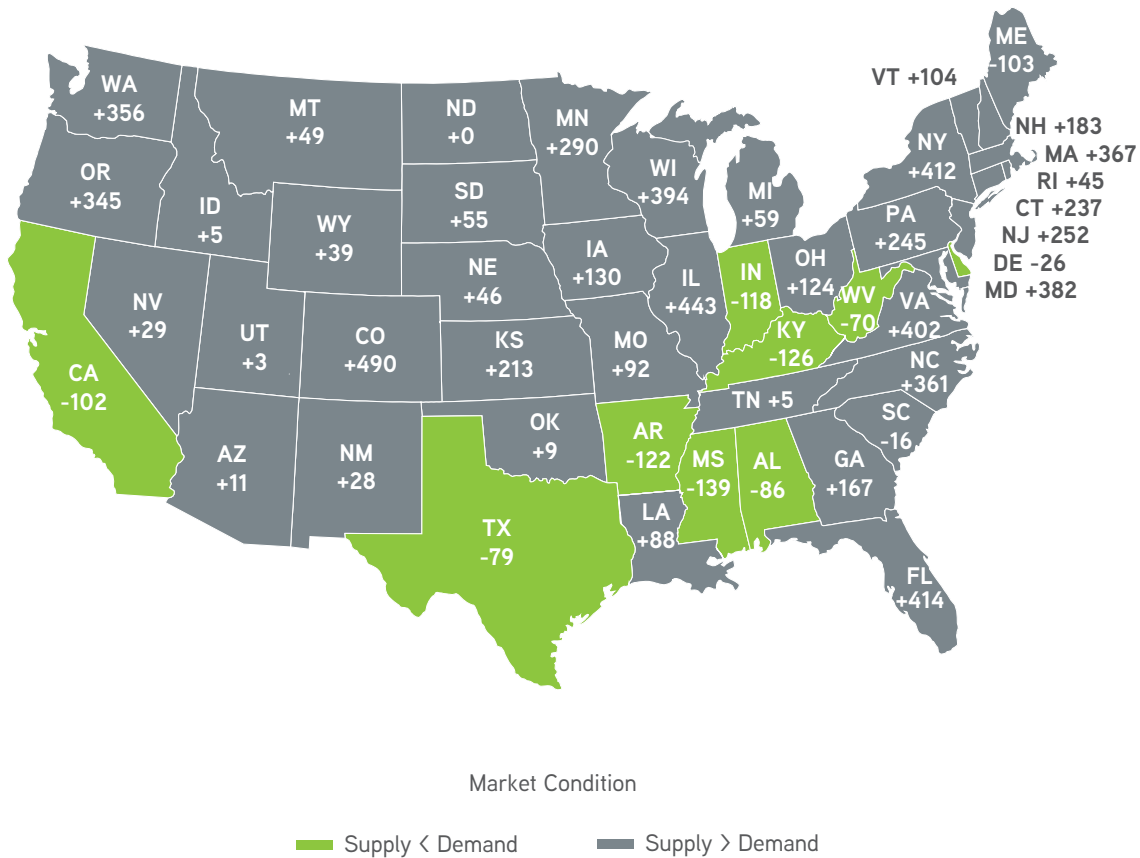


Figure 36

## BENCHMARK ANALYSIS OF VETERINARY PRACTICES

For this analysis, a Data Envelopment Analysis (DEA) method was used. DEA methodology was originally developed to benchmark the performance of not-for-profit and public organizations (Charnes, Cooper and Rhodes. 1978). With the development of statistical software applications capable of handling more complex computations, DEA compares veterinary practices and identifies the most efficient, and the inefficient practices in which efficiency improvements are possible.

Once the efficiency coefficients are determined, the analysis consists of determining the major differences between the most efficient practices, and the other practices with respect to the amount of inputs used. If the number of DVM FTEs was the only input that determined production, it would be easy to conclude that the most efficient practices are those practices with no more than two DVM FTEs.

The results from the DEA analysis show that only 16 percent of companion exclusive practices are 100 percent efficient (efficiency index = 1). In addition, the results indicate that 22 percent of companion animal practices are efficient at a rate of 90 percent or more, and 8 percent of practices are operating at an inefficiency rate of 80 percent or more.

An analysis of efficiency with respect to the veterinarian-to-non-veterinarian ratio shows that efficiency of practices improves with an increase in the number of non-veterinarians per unit of DVM (Figure 37). More than 80 percent of practices with a veterinarian-to-non-veterinarian ratio greater than 1:6 have an efficiency index of 0.5 or more.

### EFFICIENCY WITH RESPECT TO THE RATIO OF VETERINARIAN TO NON-VETERINARIAN

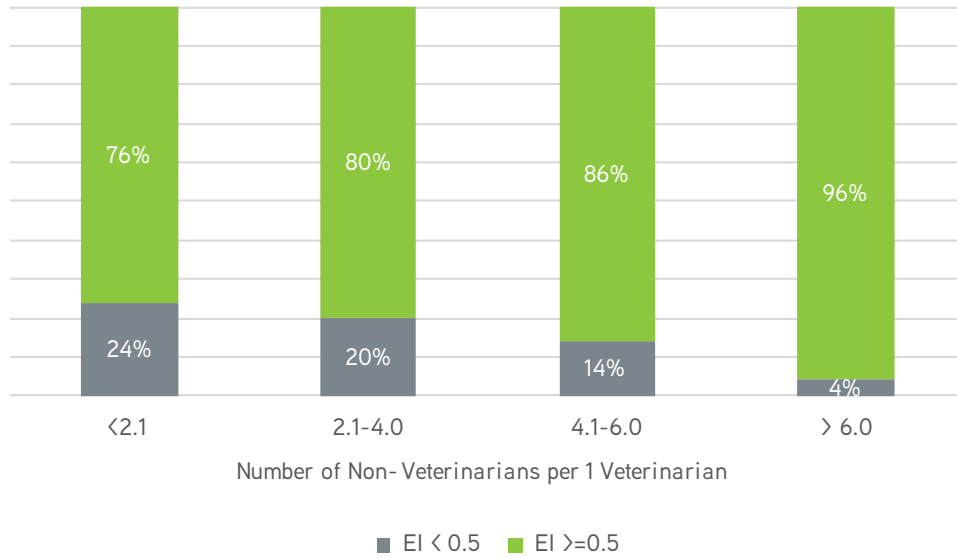


Figure 37





The DEA results did not find any a clear relationship between efficiency and number of exam rooms. Hence, no clear pattern is depicted in Figure 38. When looking at the characteristics of

the most efficient practices (practices with EI = 1), however, the statistics indicate that 70 percent of these practices have fewer than three exam rooms.

### EFFICIENCY WITH RESPECT TO THE NUMBER OF EXAM ROOMS

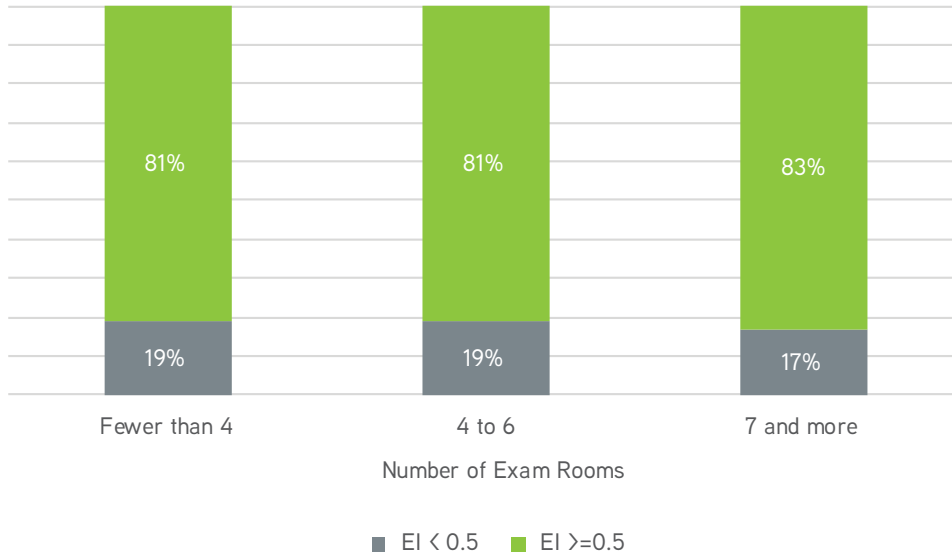


Figure 38

The analysis of the relation between efficiency and veterinarian-to-certified vet technician ratio also did not show any clear pattern. The statistics pertaining to the most efficient practices, however, indicate that 85 percent of these practices have a ratio greater than 1.

### EFFICIENCY WITH RESPECT TO THE RATIO OF VETERINARIAN-TO-CERTIFIED VET TECHNICIAN

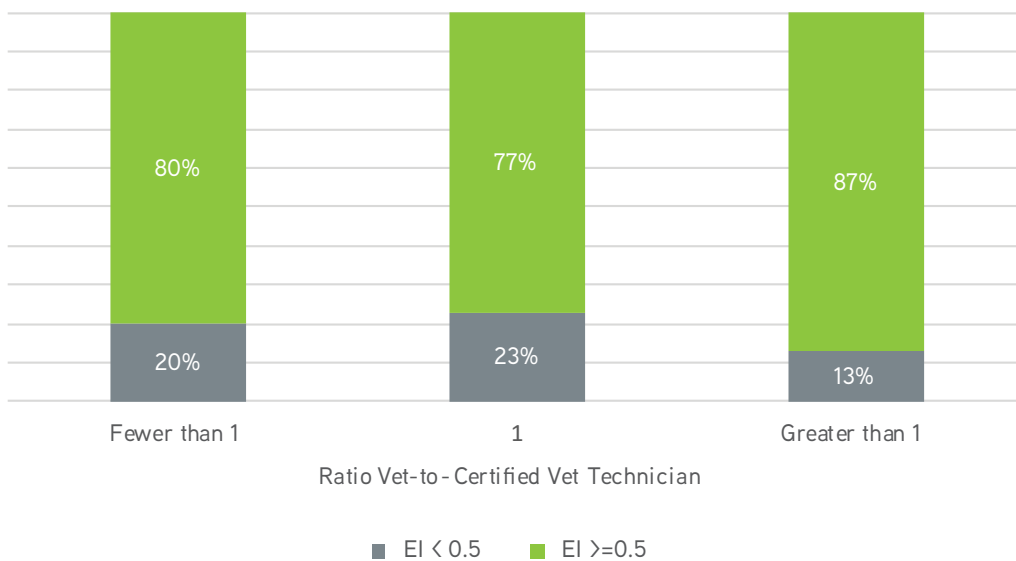


Figure 39



# ECONOMIC IMPACT OF THE VETERINARY INDUSTRY IN THE UNITED STATES



**The estimated impacts that occurred as a result of expenditures by the veterinary services industry exceed \$107 billion.**

## About IMPLAN

IMPLAN software is an economic tool developed by the Minnesota IMPLAN Group in 1993 and which has since become one of the most widely used tools for economic analysis. The IMPLAN system combines data from different sources including the U. S. Department of Commerce, the U.S. Bureau of Labor Statistics, and other federal and state government agencies to compute multipliers that are used to estimate the impacts of exogenous factors on the local economy. Data in IMPLAN are collected for every geographic region in the United States – from small cities to the entire nation. The IMPLAN application also facilitates regional analyses where multiple counties or states are grouped into one entity. The economic impact analysis captures the economic implications of a new or existing activity, policy or project. The entry of a new veterinary practice in a community, for example, sparks change in the local economy: Construction of a facility requires workers; and staff needed to operate the facility will be spending part of their income in local markets.

The IMPLAN system estimates the multiplier effects of changes in final demand for one sector on all other industries within a local area and provides the results in terms of total changes in employment, income, output and value added.

In an economic impact analysis, the results are presented in the context of three different impacts: direct effects, indirect effects and induced effects. Putting the results in the context of a veterinary practice, the direct effect refers to the impacts created directly by the practice's activity. A new



veterinary practice that opens in Des Plaines, Ill., for example, employs 10 workers and records sales of \$500,000. The direct impact of this practice on Des Plaines' economy is \$500,000, indicating that the total gross output of business in the community has increased by \$500,000. In terms of impact on employment, the direct effect of the veterinary facility on local employment will be the creation of the 10 new jobs.

The indirect effect refers to those effects generated by the producers of intermediate goods and services purchased by the practice. Suppose that Des Plaines already has one veterinary practice that purchases medical supplies from a local medical supplies manufacturer. The entry of the new practice increases the demand for medical supplies and requires the local manufacturer to increase its production in order to meet the new demand. The increase in the number of employees due to the increased demand is recorded as the indirect effect of the new veterinary practice. Similarly, the increase in the total gross output of the medical supplies producer will be recorded as the indirect effect of the new veterinary practice on gross output. Other industries affected by the new veterinary practice and subject to the indirect effect are utilities, construction and landscaping, delivery services and other businesses that provide inputs to the new practice. Induced effect refers to the subsequent round of spending in the local economy made by the employees of veterinary practices and those of intermediate input suppliers.

## IMPLAN Results

The results indicate that the veterinary services industry has generated 458,827 jobs in 2018, supported more than 135,000 jobs, and induced 231,507 jobs throughout the United States for estimated total of 825,353 employees. It is important here to make the distinction between direct and total effect. The 458,827 jobs are people who are employed by veterinary businesses (direct effect). The 135,019 jobs (indirect effect) correspond to employees who sector of activities is somehow related to the veterinary industry. These indirectly affected industries are those that supply intermediate inputs to the veterinary industry. The 231,507 induced jobs come from all industries that sell goods and services to veterinary employees.

The employment in the veterinary industry will result in an increase in the total labor income of more than \$39 billion, from which approximately \$18.5 billion are from the direct employees' payroll. The total value added of such practices is estimated at more than \$56.2 billion. The estimated impacts that occurred as a result of expenditures by the veterinary services industry exceed \$107 billion. State government revenues from these practices are estimated at around \$4.4 billion while the federal government receives more than \$4.6 billion.

### ECONOMY-WIDE IMPACT OF VETERINARY PRACTICES IN THE UNITED STATES

Effect	Employment (Jobs)	Labor Income	Total Value Added (\$ Millions)	Output
Direct	458,827	18,505	18,804	38,433
Indirect	135,019	8,623	15,807	29,741
Induced	231,507	12,299	21,644	39,294
<b>Total</b>	<b>825,353</b>	<b>39,427</b>	<b>56,255</b>	<b>107,468</b>

Table 16

### PET HEALTH INSURANCE AND VETERINARY EXPENDITURES

The main objective of a study that was a joint effort of the American Veterinary Medical Association and the Mississippi State University Department of Agricultural Economics was to determine whether having a pet health care insurance lowers pet owners burden of health care bills. More specifically, the research provides an answer to the following questions:

- What impact does insurance have on the frequency of veterinary visits and on total veterinary expenditures?
- Does the presence of insurance provide incentive for pet owners to rush their pets to the veterinarian's office at the first sign of illness rather than wait and see if the condition resolves on its own?
- Does the presence of pet health insurance drive pet owners toward more expensive treatment options?

The results indicate that people with pet health care insurance spend a significantly higher amount on their pet care than owners without pet health insurance. Insurance does not have significant impact on the frequency of visits to veterinary clinics. The study found that frequency of visits is more influenced by health history of the pet, perceived risk of future illness, wellness plan, and expenditures on non-health-related areas. Level of education has a significantly negative impact on frequency of visits. In addition, age and frequency of visits have a negative relationship. Pets with a wellness plan visit a clinic 1.2 times more than pets without a wellness plan. The human-animal bond is also a significant determination of demand for animal health care plan. Pets who sleep in the owner's bedroom visit clinics 20 percent more times than those that sleep outside the room.



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### **THE AVMA 2018 ECONOMIC REPORTS INCLUDE:**

#### **The AVMA & AAVMC Report on the Market for Veterinary Education:**

The market for veterinary education is the beginning of the pipeline to the market for veterinary services. This report examines the characteristics of veterinary college applicants, the supply of and demand for veterinary education, and the performance of the market in providing new veterinarians.

#### **The AVMA Report on the Market for Veterinarians:**

This report explores the demographics and employment of the veterinary profession: where they are located, what type of work they do, how much they are compensated, and how they are managing their educational debt. The report also measures unemployment and underemployment and identifies the contributing factors, and explores the performance of the market based on the value of the DVM degree.

#### **The AVMA Report on the Market for Veterinary Services:**

The demand for veterinarians and veterinary education begins with the demand for veterinary services. This report provides an overview of the veterinary workforce and projections for the supply and demand for veterinary services using recent AVMA Pet Demographics and Ownership study data. The report also presents the results of an efficiency analysis of the veterinary practices. In addition, the economic impact of veterinary businesses on a national scale is discussed.