

Current and future trends in demographics of veterinary medicine in California

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Objective—To evaluate the present and future supply of veterinarians in California, in light of changing trends in animal ownership.

Design—Database analysis.

Sample Population—Human and animal populations, including populations of veterinarians, throughout the United States.

Procedures—Data on animal and human populations were compiled from a number of sources, including the US Census Bureau, American Veterinary Medical Association, State of California Department of Finance, and State of California Veterinary Medical Board. The distribution of veterinarians in California was contrasted with other health professionals in California and with that of veterinarians in other states. Recent changes in veterinary medical demographics in California were quantified and used to develop in-state projections about the supply of veterinarians for the next 20 years.

Results—Although California is the most populous of the 50 states, only 7 states had fewer veterinarians per capita. Furthermore, California ranked next to last among states in increase of number of veterinarians between 1990 and 1995. Los Angeles County had the smallest per-capita number of veterinarians among 9 populous California counties. During that period, California had a net gain of only 6 veterinarians who were exclusively or predominantly large-animal or mixed-animal practitioners.

Conclusions and Clinical Relevance—If current trends continue, the per-capita number of veterinarians will continue to decrease in California. To maintain the current ratio of 17.8 veterinarians/100,000 people in California in the future, we estimate that an additional 50 veterinarians above the currently predicted increase will be required annually. (*J Am Vet Med Assoc* 2000;216:1753–1757)

Animals have been and continue to be important components of our society. Whether their contributions are in the form of work, food, companionship, research, or education, most states recognize the importance of contributing to their well-being by establishing veterinary medical colleges or promoting educational partnerships with colleges in other states

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(eg, Western Interstate Commission for Higher Education). A state's commitment to veterinary medical education and their taxpayers (or their taxpayer's children) who wish to embark on careers in veterinary medicine, which leads, in turn, to a state's commitment to providing society with qualified veterinarians, has historically trailed that of the other health sciences (eg, medicine and dentistry). There currently are 27 public or private accredited colleges of veterinary medicine in the United States, none of which were established during the last 15 years. In contrast, 41 colleges of dentistry and 121 colleges of medicine exist to serve the same populace.

Because it is the most populous state in the country, with > 12% of the US citizens, California deserves special scrutiny. It ranks second in the country in the number of colleges of medicine (9; 5 of which are public schools) and first in the country in the number of colleges of dentistry (4; 2 of which are public schools). Yet its sole college of veterinary medicine serves a constituency of > 32 million people, whereas some states with < 3 million people (eg, Iowa, Kansas, and Mississippi) also have veterinary medical colleges, despite their lower population.

The study reported here constitutes an examination of veterinary medical demographics in California. It compares certain benchmarks of supply and demand with those of other states in regard to educational opportunity as well as for provision of qualified graduates for the state's pet-owning population. We do not make recommendations for future action. Instead, we attempt to present and synthesize as fairly and factually as possible data that are available in the public domain.

Comparison Among Health Sciences

In 1995, the per-capita number of veterinarians in the United States (21/100,000 people) was, as expected, substantially less than that of physicians (234/100,000 people) and dentists (60/100,000 people) in the United States. Growth rates in these professions varied considerably during the preceding 5 years. Nationally, the number of veterinarians/100,000 people increased by 7.1% for this 5-year period, compared with increases of 1.7% for dentists and 8.3% for physicians.

The situation for veterinary medicine in California, however, represents a considerable departure from the national figures. In 1995, it was estimat-

ed that there were between 4,810 and 5,259 veterinarians (15.3 to 16.7 veterinarians/100,000 people) in California, considerably less than the national per-capita average of 21.0 veterinarians/100,000 people. Variability in these figures is expected, because groups may differ in regard to the criteria they use to count veterinarians.^{1,a} In contrast, the per-capita average for physicians in California was above the national per-capita average for the profession, ranking 10th out of 50 states.²

Comparison of Veterinary Medicine Demographics Among States

In 1995, there were more veterinarians in California than in any other state in the United States. To make reasonable comparisons among states on a per-capita basis, a rate was calculated on the basis of the number of veterinarians per state and state population figures.^{1,3} Only 7 states had fewer than 16.0 veterinarians/100,000 people in the civilian population (California, Hawaii, New York, Rhode Island, South Carolina, Utah, and West Virginia). Of these states, only California and New York have a college of veterinary medicine. The rate of change in the number of veterinarians added to each state between 1990 and 1995 is also remarkable. Although the national average for the 5-year period was an increase of 13.5%, California's 5-year rate of change (increase of 4.8%) ranked them 49th out of 50 states; only Iowa, a state that in 1990 had > 40 veterinarians/100,000 people, had a smaller increase (1.7%) during the 5-year period. The other 6 states with low per-capita rates of veterinarians had considerably larger increases for rate of change between 1990 and 1995 than California (Hawaii, 10.3%; New York, 8.7%; Rhode Island, 22.7%; South Carolina, 20.4%; Utah, 23.7%; and West Virginia, 19.4%). Rate of change for states with large populations was substantially higher than the rates in California and Iowa (Fig 1).

Increase in Number of Veterinarians in California

For consistency, we compared the number of veterinarians in selected counties in California on the basis of the most current (1997) data available on the number of licensed veterinarians, as provided by the State of California Veterinary Medical Board and the Jul

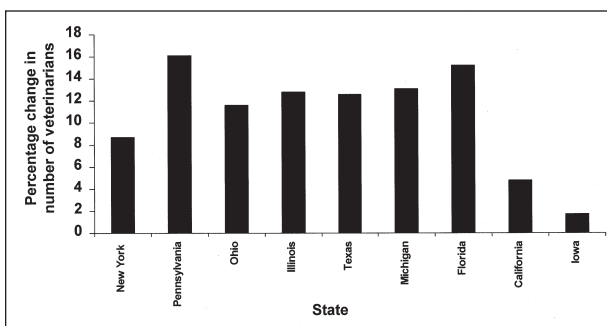


Figure 1—Percentage change in number of veterinarians in selected states between 1990 and 1995. Notice that California had the 2nd lowest rate of increase in the United States.

1, 1996 California Department of Finance population projections for counties.⁴ Using an average statewide estimate of 17.8 veterinarians/100,000 people in 1996 as a benchmark, we compared values for 9 populous counties across the state (Fig 2). Although 2 of these 9 counties had a higher per-capita number of veterinarians than the state average, the other 7 did not. Although there did not appear to be disparity between counties in the northern and southern parts of the state, at least among the 9 counties examined, Los Angeles County stood out because of its substantially lower per-capita rate. With approximately 30% of the state's citizens residing in that county (9.4 million people), Los Angeles County strongly influenced the overall per-capita figures for the state. A single explanation for that county's disproportionately small per-capita rate probably does not exist; however, we postulated that the sheer number of people, size of the metropolitan area, economic and lifestyle factors, ethnic diversity, and environmental considerations may all have played a role in the small per-capita number of veterinarians located there.

A lack of large-animal practitioners (exclusively or predominantly large-animal practice or mixed-animal practice) was even more striking. Between 1990 and 1995, 200 veterinarians who described themselves as exclusively large-animal practitioners and 4 veterinarians who described themselves as mixed-animal practitioners were added to the US workforce. During the same period, 193 veterinarians who described themselves as predominantly large-animal practitioners were lost from the US workforce.⁵ This national trend remained basically unchanged in California.⁶ During the same period, California gained only 6 veterinarians who were exclusively or predominantly large-animal practitioners or mixed-animal practitioners. California's largest increase came in the practice areas of exclusively small-animal practice (58 veterinarians), non-traditional private practice (53), industry employment (26), and other public or corporate employment (33). Employment categories of recent graduates (1987 to 1996) of the University of California, Davis, were recorded (Fig 3). We also compiled information for employment categories of all veterinarians in California (Fig 4).

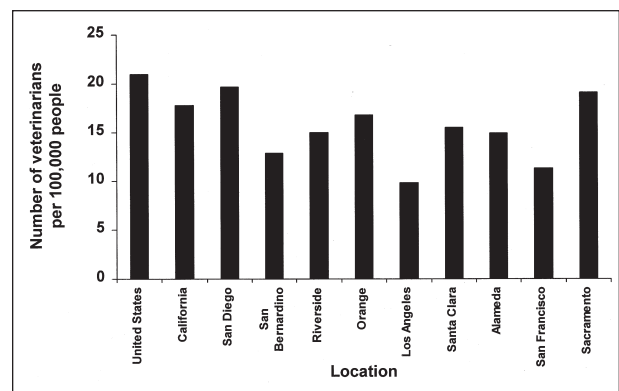


Figure 2—Number of veterinarians/100,000 people in the United States, California, and selected populous counties in California in 1996.

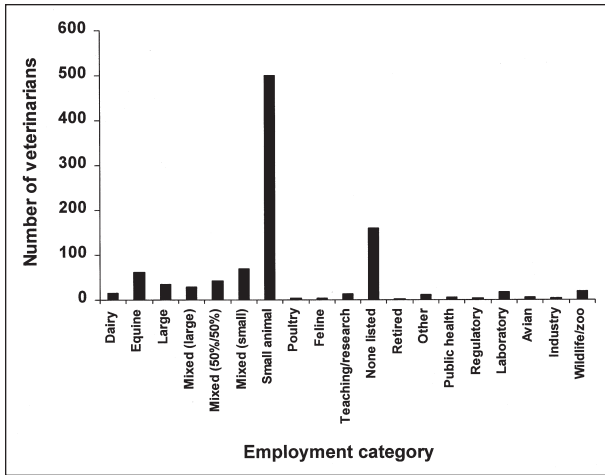


Figure 3—Number of veterinarians in California who graduated from the University of California, Davis, between 1986 and 1996 by employment category.

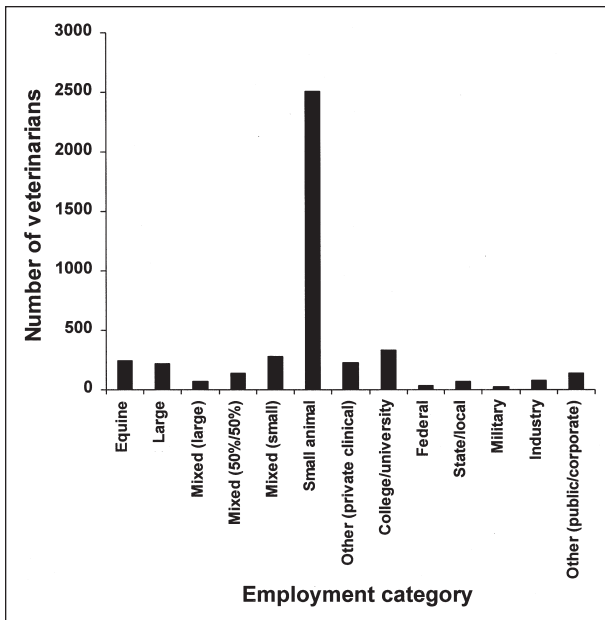


Figure 4—Number of all veterinarians in California in 1995, by employment category.

Projected Supply of Veterinarians in California

The number of newly licensed veterinarians who remain in California for the 2 years necessary to receive a renewal form for their veterinary medical licenses has remained relatively constant each year from 1987 to 1997 (mean \pm SD, 184 ± 20 ; Fig 5). During that period, approximately 120 of the 184 veterinarians annually remaining in California graduated from the University of California, Davis, indicating that there was a continuous influx of veterinarians from other states, and that the number of veterinarians trained in California has not kept up with demands. Notice that the mean number of new licenses per year (184) is not equivalent to the number of additional veterinarians added to the state each year, because it does not reflect emigration, retirement, change of careers, and death among veterinarians in the state.

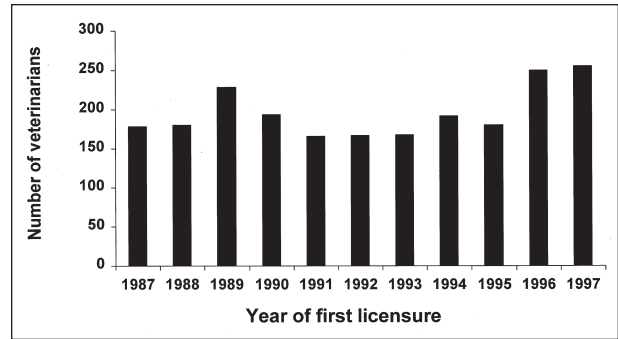


Figure 5—Number of licensed veterinarians in California, by year of first licensure.

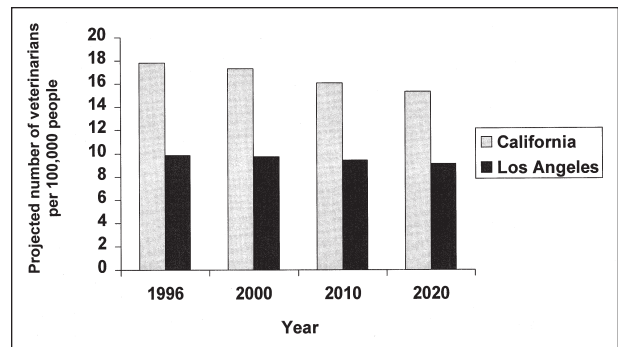


Figure 6—Projected number of veterinarians/100,000 people in California and Los Angeles County. Calculations assumed that rate of increase of veterinarians in California from 1990 to 1995 would remain constant through 2020.

To project the state's future population of veterinarians under current conditions (including, up until 1999, the graduation of 108 students each year from the University of California, Davis, School of Veterinary Medicine), the 5-year rate of 4.8% (0.97%/y) for veterinarians in California from 1990 to 1995 was used. California's population of veterinarians was projected for the next 25 years (Fig 6).

Analysis of these findings suggests that if current trends continue, including retaining the current number of veterinarians who graduate annually from the University of California, Davis, School of Veterinary Medicine, the per-capita number of veterinarians will continue to decrease statewide. This would include Los Angeles County, where the per-capita number of veterinarians is already the lowest of any of the 9 most populous counties in the state.

To maintain the current ratio of 17.8 veterinarians/100,000 people in California, approximately 50 additional veterinarians beyond the increase predicted by the 0.97% annual growth rate will be required each year (Fig 7). This additional need could be met in 2 ways. First, the state could import more veterinarians. Second, the state could have a greater number of veterinarians trained and graduating from institutions in the state.

It should be mentioned that the 1997 figures cited, as well as those that are projected, are dependent on the accuracy of the number of licensed veterinarians in California in 1997. The number of veterinarians (5,763) was provided by the State of California Veterinary Medical Board.

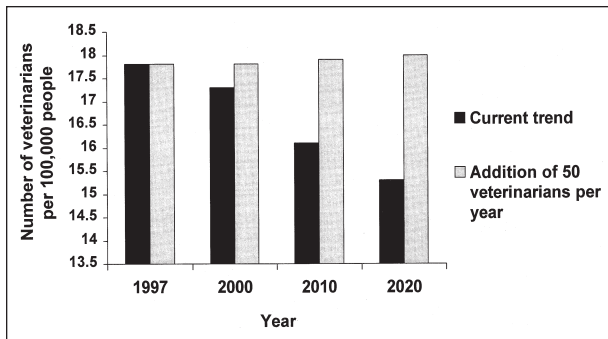


Figure 7—Impact of an additional 50 veterinarians/y in California. Calculations assumed that the trend in the increase in veterinary medicine from 1990 to 1995 would remain constant through 2020.

Projected Population of Animals in California

Livestock—Analysis of information from the American Veterinary Medical Association, determined on the basis of projections in the Food and Agricultural Policy Research Institute 1994 US Agricultural Outlook, suggests that the numbers of dairy cows, beef cows, all cattle, and cattle slaughtered will decrease between 1998 and 2002.⁷ In contrast, although the number of breeding hogs is expected to decrease only slightly between 1998 and 2002, the number of market and slaughter hogs and pigs is expected to increase during that period. However, it should be mentioned that such projections are subject to perturbation by changes in federal agricultural policy.⁷

Although it is difficult to predict geographic trends for livestock, information about changes between 1987 and 1992 are available by region of the United States. The Pacific region, comprising California, Oregon, Washington, Hawaii, and Alaska, maintained approximately the same number of beef cows, fed cattle, hogs, pigs, sheep, and lambs during this time period. For dairy cattle, the absolute number in the Pacific region increased only slightly (from 1.4 to 1.6 million), but they represented an increase of 21.6% (from 13.88 to 16.88%) in the percentage of all dairy cattle in the United States during that 5-year period, presumably because the Pacific coast's climactic conditions favor high productivity.⁷

The median per-animal expenditure by producers for veterinarians and their services increased for all 4 major categories of livestock between 1985 and 1993.⁷ For this 8-year period, the per-animal expenditure increased 85% for beef cattle, 71% for dairy cattle, 52% for sheep, and 82% for swine.

Dogs—The percentage of households in California that owned a dog declined between 1991 and 1996 from 35.7 to 32.0%.⁸ This decrease was offset, however, by an increase in the average number of dogs per household. The absolute population of dogs in California actually increased for that 5-year period. The number of dogs increased from 5.7 to 6.1 million, an increase of 6.6%, which exceeded the national average of 0.7%. There are more dogs in California than any other state, and analysis of these figures indicates an annual increase in the dog population of approximately 1.4%.

Cats—The percentage of households in California that owned a cat declined between 1991 and 1996 from 35.1 to 30.6%.⁸ Similar to the situation for dogs, this decrease was offset by an increase in the average number of cats per household. The absolute population of cats in California actually increased for the 5-year period. The number of cats increased from 7.2 to 7.6 million, an increase of 5.1%, which exceeded the national average of 3.7%. There are more cats in California than any other state, and analysis of these figures suggests an annual increase in the cat population of approximately 1.0%.

Birds—Ownership information was not available solely for California. However, information was available for the 5 states in the Pacific region. In some regions of the United States, the pet bird population decreased. In the Pacific region, however, the bird population increased between 1991 and 1996 from an estimated 2.52 to 2.95 million birds (17%).⁸

Horses—Information on ownership of horses was not available solely for California. However, information was available for the 5 states in the Pacific region. In most regions of the United States, the population of horses decreased. In the Pacific region, the population of horses decreased between 1991 and 1996 from an estimated 815,000 to 676,000 horses, a decrease of 17%.⁸

Conclusions

Although it is a growing profession in California, veterinary medicine has one of the lowest per-capita number of veterinarians of the 50 states, and its rate of change between 1990 and 1995 was the second lowest among all states. Much of the state's low per-capita number is attributable to Los Angeles County whose per-capita number of veterinarians is < 10/100,000 people, yet the county contains > 9.4 million people. A particularly noteworthy state trend is observable when data are analyzed on the basis of employment category, because the number of new large-animal practitioners barely increased between 1990 and 1995. To keep pace with California's burgeoning population, an additional supply of veterinarians must be found to address the state's unmet need for additional veterinarians. Although the University of California, Davis, has responded to this need by recently increasing its class size from 108 to 122 students, this limited increase alone will probably be insufficient to meet California's demand for veterinarians while its human and animal populations continue to increase during the next century.

⁸State of California Veterinary Medical Board, Sacramento, Calif, 1995.

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