Academic Quality and Workforce



Texas Higher Education Coordinating Board

Veterinary Medical Education in Texas: An Update

July 2016

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Texas Higher Education Coordinating Board



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Agency Mission

The mission of the Texas Higher Education Coordinating Board (THECB) is to provide leadership and coordination for the Texas higher education system and to promote access, affordability, quality, success, and cost efficiency through *60x30TX*, resulting in a globally competitive workforce that positions Texas as an international leader.

Agency Vision

The THECB will be recognized as an international leader in developing and implementing innovative higher education policy to accomplish our mission.

Agency Philosophy

The THECB will promote access to and success in quality higher education across the state with the conviction that access and success without quality is mediocrity and that quality without access and success is unacceptable.

The Coordinating Board's core values are:

Accountability: We hold ourselves responsible for our actions and welcome every opportunity to educate stakeholders about our policies, decisions, and aspirations.

Efficiency: We accomplish our work using resources in the most effective manner.

Collaboration: We develop partnerships that result in student success and a highly qualified, globally competent workforce.

Excellence: We strive for excellence in all our endeavors.

The Texas Higher Education Coordinating Board does not discriminate on the basis of race, color, national origin, gender, religion, age or disability in employment or the provision of services.

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Executive Summary

Introduction

It has been several years since the Texas Higher Education Coordinating Board (Coordinating Board or THECB) has taken a close look at opening a new college of veterinary medicine in the state. The question of whether Texas is educating and training enough veterinarians to support the state's needs is not new. In 2002, and again in 2009, the Coordinating Board examined veterinary medicine education to explore whether Texas needed a new veterinary school or if it would be beneficial for Texas A&M University's College of Veterinary Medicine (TAMU CVM) to increase its enrollment capacity. In the two previous reports, the Coordinating Board also looked at the opportunity available to Texas' recent graduates to pursue a degree in veterinary medicine in Texas.

Prompted by the questions of whether Texas needs a new veterinary school and whether workforce needs can support the production of more large animal veterinarians, the Coordinating Board again researched the issues surrounding veterinary medical education. This report provides information about the historical production of veterinarians in Texas, and the nation, to explore whether workforce needs are being met. This also provides an assessment of the current state of veterinary medicine education in Texas and includes recent data and information about the workforce need in this field.

In summary, no new college of veterinary medical education is recommended at this time. However, the need to address the pending shortage of large animal veterinarians could be addressed in a variety of ways:

- Fund the Rural Veterinarian Incentive Program authorized under Texas Education Code, Sections 88.621-88.627.
- Create baccalaureate degree programs in Veterinary Science that allow a greater scope of practice.
- Consider a proposal designed to specifically produce large animal veterinarians in an innovative, cost efficient manner that does not duplicate existing efforts.

Findings

Institutions and Students. Enrollments and graduates of veterinary programs increased nationally during the past decade, but remained static for the TAMU CVM's Doctor of Veterinary Medicine (DVM) program. Most U.S. veterinary schools did not experience similar increases in applications.

Most veterinary school graduates are female: in 1999, women comprised 67 percent of U.S. graduates and 64 percent of TAMU graduates. In 2014, women were 79 percent of U.S. graduates and 73 percent of TAMU graduates.

The vast majority of veterinary graduates are white. In 1999, whites were 91 percent of U.S. graduates, and in 2014, they were 79 percent of U.S. graduates. At TAMU, 91 percent of graduates in 2001 were white, and in 2015, 84 percent were white.

Average yearly tuition and fees for in-state residents at U.S. colleges of veterinary medicine increased 63 percent, from \$17,755 to \$28,977, between 2007 and 2015. TAMU CVM's tuition and fees are below the national average and in the bottom third of all U.S. veterinary schools.

Rising levels of student debt is a serious concern for the profession: In 2014, the median debt of those veterinary graduates who had incurred debt was estimated at \$148,000, while the mean starting salary for those new veterinarians was roughly \$70,000, an average debt to first-year income ratio of about 2 to 1.

Workforce. Texas has approximately 6,660 licensed practicing veterinarians: 60 percent are graduates of the TAMU veterinary school, and 40 percent graduated from veterinary schools outside the state and moved to Texas to practice.

Workforce demand for veterinarians is moderate and closely aligned with supply. The Bureau of Labor Statistics (BLS) projects a 9 percent increase with about 1,900 openings per year, and national production of graduates is about 2,700 per year. The Texas Workforce Commission (TWC) projects an 11 percent increase in Texas with 195 annual openings, and TAMU produces about 130 graduates per year.

The majority of veterinarians in Texas (3,918 or 58%) focus their practices on the treatment of pets, also called companion animals, and their practices are most often located in urban and suburban geographical areas of the state. There are relatively few livestock veterinarians (180) working in Texas rural areas.

Issues in the Profession. The treatment and care of food animals once represented the majority of work for most veterinarians; however, the profession has evolved to meet the demands of suburban and urban pet owners. Currently, the majority of veterinarians practice mostly, or exclusively, on companion animals. The veterinary profession faces several challenges, including potential excess capacity, lack of new jobs, and relatively low wages.

There are several indicators in the profession that point to excess capacity:

- Increase in the national production of graduates during the past decade
- Stagnant average earnings for veterinarians engaged in clinical practice
- Increasing proportion of seniors in DVM programs report not having an offer for either a job or an advanced training opportunity.

Internships and residencies provide advanced training opportunities for graduates, but only about half of graduates participate because the low wages make such positions less attractive than immediate entry into the profession.

Licensed Veterinary Technicians (LVTs) could be utilized to ease the demand for veterinarians in rural areas, but this approach would require statutory changes to allow LVTs to expand their scope of work while under the supervision of a veterinarian.

Conclusions

Rising tuition costs and levels of student debt nationally may diminish student demand in the near future.

Increases in the number of graduates nationally, relatively low wage growth in the profession, the perceptions of newly graduated veterinarians who claim they have difficulty finding employment, and systemic changes in modern agriculture seem to indicate that the job market for veterinarians may be at or near saturation.

The need for veterinary services varies by region and by type of practice. The nation and the state are unlikely to have significant need for additional veterinarians to treat pets in cities and suburbs but are likely to need veterinarians to treat farm animals in rural areas, based on the changes in the relative proportions of these two groups in the total veterinary workforce during recent decades.

Texas appears to be an attractive place for veterinarians educated elsewhere to work. Texas graduates make up about 60 percent of the state's veterinary workforce, while the other 40 percent move from other states.

New veterinary schools are expensive: the traditional model of veterinary education requires several large facilities, costing between \$200 and \$500 million. A "distributed" model, developed by the University of Calgary, avoids costly facilities by using regional veterinary practices to provide clinical experiences. Both models require substantial personnel costs, about \$13 million annually for a school with a typical cohort size of 100 students, plus additional costs that are difficult to estimate.

No new college of veterinary medical education that primarily produces small animal veterinarians is recommended at this time. The high cost of establishing a new veterinary school would outweigh the potential benefits to the state, given the small to moderate workforce demand and the issue that building a new school would not guarantee that any of the graduates would practice on livestock, which is the state's principal area of need, but there are more cost-effective ways of addressing the need for medical care for food animals in Texas.

Recommendations

Recommendation 1. The Texas Legislature should fund the existing veterinary loan repayment program, the Rural Veterinarian Incentive Program (RVIP), because it is the most cost-effective means of persuading additional veterinarians to engage in large or mixed animal practice in rural areas of the state. This statute allows veterinarians graduating from the TAMU CVM to enter into an agreement to practice veterinary medicine in a rural county for one calendar year for each academic year for which the veterinarian receives financial support under the program. Given a yearly tuition and fee cost at TAMU of approximately \$22,000, with a fund of \$1 million per year, this program could fund 45 veterinarians annually in rural practices. See Appendix A for the full text of the RVIP statute.

Recommendation 2. This recommendation was not adopted by the Board.

Recommendation 3. The Coordinating Board would consider a proposal for a new college of veterinary medical education that is designed to specifically produce large animal veterinarians in an innovative, cost efficient manner that does not duplicate existing efforts.

Introduction

It has been several years since the Texas Higher Education Coordinating Board (Coordinating Board or THECB) has taken a close look at opening a new college of veterinary medicine in the state. The question of whether Texas is educating and training enough veterinarians to support the state's needs is not new. In 2002, and again in 2009, the Coordinating Board examined veterinary medicine education to explore whether Texas needed a new veterinary school or if it would be beneficial for Texas A&M University's College of Veterinary Medicine (TAMU CVM) to increase its enrollment capacity. In the two previous reports, the Coordinating Board also looked at the opportunity available to Texas' recent graduates to pursue a degree in veterinary medicine in Texas.

The 2009 report, *Projecting the Need for Veterinary Medicine in Texas*, concluded that Texas did not need a new veterinary medicine school. The report also offered two major recommendations: 1) TAMU CVM should increase its class size with a focus on recruiting underrepresented students, and 2) Texas should establish a loan repayment program for veterinarians who practice in rural communities and on large animals. The recommendation to expand TAMU CVM class size addressed the need for greater opportunity for Texas students to seek a degree in veterinary medicine, while the recommendation to establish a loan repayment program addressed the need for more veterinarians in rural areas of the state. In accordance with the 2009 recommendations, TAMU CVM will increase its enrollment in the Doctor of Veterinary Medicine (DVM) program in fall 2017.

In the past two decades, the Texas Legislature has created two veterinary loan repayment programs. In 1999, House Bill 1684 was passed to create the Rural Veterinarian Incentive Program, which is administered by TAMU and allows veterinarians who agree to practice veterinary medicine in a rural community to receive financial support equivalent to a full year of tuition and fees at the TAMU veterinary program for each year of rural community practice. However, this program was never funded and therefore has had no participants, although it still exists in statute. In 2009, the Texas Legislature passed a Rural Veterinarian Loan Repayment Program to be administered by the office of rural community affairs; however, no funding was appropriated to support the program, and the program later was repealed.

In early June 2016, the Coordinating Board received Texas Tech University's (TTU) official planning notification of its intent to begin planning a proposal for a degree program leading to the doctorate in veterinary medicine. Prior to that submission of the planning notification, the Texas Tech University System (TTU System) had announced plans to develop a veterinary school to be located primarily on the Texas Tech University of Health Sciences Center (TTUHSC) campus in Amarillo. The media reported that the new school would educate and train veterinarians focused on animal health, food animal production, and biosecurity. Media reports also indicated that a TTU veterinary school would combine efforts of the existing TTUHSC with the TTU's College of Agricultural Sciences and Natural Resources to address student demand and regional and statewide need for veterinarians who treat large animals, particularly to address the perceived shortage of veterinarians available to care for livestock.

Prompted by the questions of whether Texas needs a new veterinary school and whether workforce needs can support the production of more large animal veterinarians, the

Coordinating Board has now researched the issues surrounding veterinary medical education. This report provides information about the historical production of veterinarians in Texas, and nationally, to explore whether workforce needs are being met. This report also provides an assessment of the current state of veterinary medicine education in Texas and includes recent data and information about the workforce need in this field.

Some issues identified in previous reports remain, and some issues have increased in importance. College student debt has come to the forefront as an issue of great importance, both nationally and in Texas. Nationally, veterinary debt upon graduation has increased markedly, to \$144,962. Texas graduates of the only veterinary program in the state have debt that is well below the national median for student debt. For those who graduate with debt from Texas A&M University's veterinary program, their average debt load is \$95,001, compared to average first-year earnings in Texas of about \$55,000.

Another issue that was a concern in 2009 persists in veterinary education today. The veterinary education pipeline is overwhelmingly female and white. This demographic trend may contribute to another evolution of the profession – practice specialty and location. Most veterinarians today work in the large metropolitan urban and suburban areas of the state and care for companion animals, such as dogs and cats – not cattle. There remains a need for veterinarians who treat large animals and practice in rural or remote areas of the state. However, the economics of practicing on large animals is a concern.

While employment in the state is expected to increase by 11 percent from 2012 to 2022, the graduation of Texas veterinarians remains static, with almost no increase in the number of graduates since 2009. Access for students to pursue the degree is also limited.

Similar to the education of a physician, the education and training of a DVM is lengthy and expensive, requiring a minimum educational commitment of eight years (four years for a bachelor's degree and four years for the DVM), and total tuition and fees of \$94,000 for the TAMU veterinary program.

Background and Recent Changes

Both the Coordinating Board's 2002 and 2009 reports showed that veterinary medicine is an overwhelmingly white profession. African American, Hispanic, and Asian populations were underrepresented significantly in colleges of veterinary medicine and in the veterinary profession. Both reports also showed that the proportion of women pursuing veterinary medicine was steadily increasing. The previous reports noted that Texas had more head of cattle than any other state and more horses than most other populous states. The reports also stated that Texas ranked 9 out of the 10 most populous states in the number of practicing veterinarians, and there were more small animal veterinarians than food animal, research, and equine veterinarians combined in every region of the state.

The 2009 report concluded that no new veterinary school was needed in Texas, and encouraged the existing program at Texas A&M University to expand enrollment and to increase efforts to recruit students from underrepresented populations. The report noted that the state need for food animal veterinarians was not being met fully but that there were limitations to what higher education could do better to address this need since differences in salary figured prominently in veterinary practice trends. The report recommended a loan repayment program as an option for influencing more veterinarians to practice in rural areas. The status of veterinary medicine in Texas is similar to that of other states. Recently published reports found that the changing needs of the 21st century require new approaches to educating and training professionals who work with animals. In the National Academy of Sciences, *Workforce Needs in Veterinary Medicine* (2013) report, a committee of national experts identified diverse needs related to veterinary medicine, including the need for test animals in the development of new drugs, improving methods to protect the food supply, ensuring that the nation had an adequate supply of companion animal veterinarians, along with the ability to investigate animal disease in the wild. The committee recognized the need for a diverse veterinary workforce but concluded that there was not a shortage in most fields in veterinary medicine (Executive Summary, p. 3).

In 2012, the Texas Legislature's House Committee on Agriculture and Livestock studied the adequacy of access to veterinary care in rural areas of the state and published its <u>Interim</u> <u>Report to the 83rd Texas Legislature</u>. Their report found that there were many reasons the state had declining numbers of large animal, rural veterinarians, including the lack of work opportunities for spouses; the lack of educational opportunities for children; lifestyle issues; physical demands; and a desire to treat individual animals, rather than herds. Their report acknowledged there was no quick remedy to change veterinarians' geographic distribution, but the report offered some encouraging initiatives to address the needs. The report highlighted TAMU CVM's expansion of outreach efforts to undergraduates and high school students interested in practicing rural veterinary medicine. The Interim Report also highlighted discussions about increasing students' access to veterinary technology programs and support for the Veterinary Medicine Loan Repayment Program.

Institutional Data

As of 2016, 30 U.S. higher education institutions offered degree programs leading to the DVM. Programs for DVM are located in 27 states, and only three states (California, Alabama, and Tennessee) offer more than one DVM program. All 30 DVM programs are members of the American Association of Veterinary Medical Colleges (AAVMC), which provides support services for student applications and internship matching.





Source: Association of American Veterinary Medical Colleges (AAVMC), 2016

Two of the 30 DVM programs opened recently and have not graduated their first class. These two new programs, Midwestern University in Glendale, Arizona, and Lincoln Memorial University in Harrogate, Tennessee, are private institutions, with class sizes of approximately 100 students per class. Several colleges of veterinary medicine have recently opened satellite campuses in areas or locations away from their main campuses. Kansas State University opened a Midwest Veterinary Specialty Hospital in Omaha, Nebraska, in 2009 to offset a decline in caseloads, and then sold the hospital to a private firm in 2015.

Texas A&M University founded its DVM program in 1916. Located on TAMU's main campus in College Station, Texas, the program enrolls 130 to 135 students per class, and its total enrollment of about 530 students makes it one of the largest veterinary programs in the nation. Regarded as one of the premier veterinary programs in the U.S, the program was ranked in 2016 as No. 5 in the U.S. by educational services firm Quacquarelli Symonds and No. 7 by *U.S. News and World Report* in its 2015 update on veterinary schools. The TAMU CVM engages in a wide array of animal-related research in areas such as cardiac devices and pharmaceuticals.

Student Data – Applications, Enrollment, and Graduates

National Applications

National data on student applications is accessible through the American Association of Veterinary Medical Colleges. The AAVVMC provides students the ability to apply to all DVM programs, except for TAMU, through the Veterinary Medical College Application Service (VMCAS). TAMU opted out of the service and started using its own application process in 2001 because it admits fewer than 10 out-of-state applicants annually.

VMCAS data indicate that the number of applications to DVM programs remained fairly constant from 2009 through 2012, increasing slightly thereafter, with an overall increase of 7 percent between 2009 and 2016 (see Figure 2). This trend indicates a consistent student demand for veterinary education.



Figure 2. VMCAS Applications to U.S. and International DVM programs.

Source: AAVMC, 2016

Texas Applications

The number of applications to the TAMU DVM program have varied during the past decade, with an overall increase of 28 percent between 2006 and 2015 (see Figure 3). In 2015, there were 580 applications for approximately 130 seats, a ratio of about 4.5 to 1. These data suggest a growing student demand for veterinary education in Texas.



Figure 3. Applications to Texas A&M University, College of Veterinary Medicine, 2006 to 2015.

Source: Texas A&M University, College of Veterinary Medicine

Enrollments

Enrollments in U.S. DVM programs increased by about 24 percent between 2006 and 2015 (see Figure 4). Most of this growth is attributable to existing programs expanding their class sizes, since the two new DVM programs did not accept their first students until 2014.



Figure 4. Enrollment in U.S. Doctor of Veterinary Medicine Programs.

Source: AAVMC, 2015

Enrollments at TAMU's College of Veterinary Medicine have remained level during the most recent decade (see Figure 5). Administrators at TAMU have been constrained from increasing class sizes by the capacity of their existing infrastructure. Data from earlier periods show the size of first-year cohorts consistently averaging between 130 and 135 (see Figure 6).



Figure 5. Declared Majors, Texas A&M University, College of Veterinary Medicine.

Source: Texas A&M University, College of Veterinary Medicine

Data show that the vast majority of students enrolled in the TAMU CVM are native Texans (see Figure 6). During the past decade, TAMU CVM enrolled an average of eight out-ofstate students annually.



Figure 6. Entering Class Size, TAMU CVM by Residency Status, 2006 through 2015.

Source: Texas A&M University, College of Veterinary Medicine

Graduates

Nationally, the number of DVM graduates has increased over the most recent decade (see Figure 7), rising by 14 percent since 2005. This increase reflects increased enrollments in existing veterinary schools.



Figure 7. DVM Degrees Awarded by U.S. Veterinary Schools, 2005 to 2014.

The number of TAMU veterinary graduates has varied little, ranging from 119 to 133 over the past decade (see Figure 8). This is a reflection of its relatively flat enrollment, due to lack of expansion in first-year seats over the past two decades.



Figure 8. Texas A&M University CVM, Degrees Awarded, 2006-2015.

Source: Texas A&M University, College of Veterinary Medicine

Throughout most of the past century, veterinary medicine was practiced primarily by men. In the 1970s, this pattern began to shift, with fewer men and more women enrolling in veterinary programs. In 1999, women comprised 67 percent of U.S. veterinary graduates. During the decade 2005 through 2014, about 77 percent of U.S. veterinary graduates were women (see Figure 9). As veterinarians from the older generation retire, these recent gender patterns mean that women will predominate the profession.





Source: IPEDS

Texas patterns mirror the national trend. At TAMU, 75 percent of the 1,267 graduates in the most recent decade were female (see Figure 10).



Figure 10. DVM Degrees Awarded by Texas A&M University, by Gender, 2006-2015.

Source: Texas A&M University, College of Veterinary Medicine

The ethnic breakdown of veterinary graduates reveals another long-term pattern in veterinary medicine in which underrepresented groups lag far behind whites in veterinary programs. In particular, African American and Hispanic students enroll in, and graduate from, DVM programs in relatively small numbers. In 1999, whites were 91 percent of U.S. graduates, and in 2014, they were 79 percent of the total veterinary graduates (see Figure 11).



Figure 11. DVM Degrees Awarded by U.S. Institutions, by Ethnicity, 2005-2014.

Source: IPEDS

The limited number of students from underrepresented groups pursuing veterinary medicine is the pattern at TAMU. In 2006, 91 percent of TAMU veterinary graduates were white, and in 2015, 84 percent were white (see Figure 12).



Figure 12. DVM Degrees Awarded by Texas A&M University, 2006-2015.

Source: Texas A&M University, College of Veterinary Medicine

Tuition and Fees

Average yearly tuition and fees for in-state residents at U.S. colleges of veterinary medicine increased 63.2 percent, from \$17,755 to \$28,977, between 2007 and 2015 (see Figure 13).



Figure 13. Resident Tuition and Fees at U.S. Colleges of Veterinary Medicine, 2007-2015.

Source: AAVMC, TAMU CVM

Note: In-state resident tuition data does not include data from Lincoln Memorial University, Midwestern University, University of Pennsylvania, Tufts University, Tuskegee University, or Western University of Health Sciences.

Average tuition and fees at TAMU are lower when compared to the national average, averaging \$21,714 in academic year 2014-2015. According to information provided by the institution, this places TAMU CVM's tuition and fees below the national average and in the bottom third of all veterinary schools.

Student Debt

Median debt among U.S. veterinary graduates who hold debt has risen steadily, similar to tuition, during the past decade (see Figure 14). From 2006 to 2015, median debt increased by about 48 percent. Although data for median debt were not available, the mean debt of TAMU students who had incurred debt was \$95,001 in 2015.



Figure 14. Median Debt of Indebted Graduates of U.S. Colleges of Veterinary Medicine, 2006-2015.

Source: AAVMC

In 2014, the median debt of those veterinary graduates who had incurred debt was estimated at \$148,000. The mean starting salary for these new veterinarians was roughly \$70,000, an average debt to first-year income ratio of about 2:1. This debt to income ratio would be about 1.35:1 for TAMU graduates, who on average are incurring lower levels of debt.

These figures suggest that the prospect of paying off educational debt could have an effect on the workforce choices that new veterinarians make when entering the profession, in terms of type and location of practice. To pay off student loans, veterinarians are more likely to gravitate to higher-paying practices dealing with companion animals than they are to lower-paying practices in rural areas of the state, which will continue a recent trend that places pressure on rural practices to attract new graduates.

Workforce Data

In recent years, two reports have addressed the workforce needs of the veterinary profession. The National Research Council of the National Academy of Sciences (NAS) released *Workforce Needs in Veterinary Medicine* in 2013, and the American Veterinary Medical Association (AVMA) issued its own report, *2013 U.S. Veterinary Workforce Study: Modeling Capacity Utilization* in 2013. The AVMA report estimated that, in 2012, there were about 90,705 active veterinarians in the nation, whereas the NAS estimated that, in 2010, there were 92,000. Both estimates relied upon data from the AVMA and were higher than the employment figures provided by the Bureau of Labor Statistics (BLS), which estimated 78,300 veterinary workers in 2014.

The AVMA Study estimated that there were 6,280 active veterinarians in Texas in 2012. Coordinating Board staff, using data obtained from the Texas Board of Veterinary Medical Examiners (TBVME), identified 6,660 active veterinarians in the state. Precisely determining the number of working veterinarians is a challenge. Much of the TBVME data are self-reported, and there is no requirement for veterinarians to report that they have stopped temporarily or permanently practicing. Accordingly, numbers given by any source for the size of the veterinary workforce should be viewed as estimates, not precise figures.

Veterinarians also self-identify their practice specialty, which presents challenges when estimating the total number of veterinarians by specialty. Commonly defined veterinary practice specialties include:

- Small Animal care and treat cats, dogs, and other companion animals
- Large Animal care and treat livestock (cattle, pigs, sheep, and other food animals)
- Equine care and treat horses
- Mixed care and treat a variety of animals, large and small
- Government and Research work in public or private labs and/or for state and federal agencies, such as the U.S. Department of Agriculture
- Specialty work in a specific advanced field, such as toxicology or radiology.

Figure 15 displays the number of veterinarians in the state who reported working in a particular kind of practice. The majority of veterinarians (59%) say they work on small animals, while only about 3 percent focus on livestock. The mixed category has about 24 percent of active veterinarians, and the remainder work in government/research or in an advanced specialty field.





Source: TBVME

Using data from the TBVME, Coordinating Board staff has compared the number of veterinarians who were educated in other states but have come to Texas to practice to those who were educated at Texas A&M College of Veterinary Medicine (see Figure 16). The data indicate that Texas is an attractive place to practice, drawing many veterinarians from out of state.



Figure 16. Licensed Veterinarians Active in Texas, by Educational Institution.

Source: TBVME

Workforce projections for veterinarians at both national and state levels suggest at least moderate demand for the next six to eight years. The BLS projects 6,900 additional jobs in the U.S. for veterinarians over the decade from 2014-2024, an increase of 8.9 percent, which is slightly above the 6.5 percent increase projected for all occupations. The Texas Workforce Commission (TWC) forecasts 10.9 percent job growth in Texas for veterinarians, projecting an increase of 500 additional positions over the decade 2012-2022. According to the TWC, Texas should see an estimated 195 veterinary openings annually due to growth and replacement of those who leave the profession through relocation or retirement.

Issues in the Veterinary Profession

Excess Capacity. Two recent publications, the 2013 NAS veterinary workforce report and the 2013 AVMA workforce report, expressed concern about excess workforce capacity in the profession. The AVMA report clarified that this does not necessarily mean unemployment, because their survey data indicated the unemployment rate for veterinarians was only 3.19 percent in 2013, as compared to the national average of 7.4 percent for all occupations. Excess capacity means that there is not enough demand for veterinary services to keep all veterinarians who want to work fully utilized, so while some may be unemployed, others may work reduced hours.

Several indicators in the profession point to potential excess capacity. One is the increase in the production of veterinary graduates during the past decade, which has grown from 2,354 in 2005 to 2,686 in 2014. This trend will continue to increase as the two most recently created veterinary schools (Lincoln Memorial University and Midwestern University) begin to graduate students in the next two to three years.

Wage patterns reveal a second indicator. The 2013 AVMA workforce report concluded that average earnings for veterinarians engaged in clinical practice are stagnant or declining. Other data from the Bureau of Labor Statistics show that, during the five-year period 2011 to 2015, the national median wage for all occupations increased by 5 percent; while the median wage for veterinarians increased by 6.7 percent. In Texas, data show a median wage increase of 7.6 percent for all occupations and an increase for veterinarians of just 3.7 percent, indicating that wages for Texas veterinarians are not growing as fast as other occupations. These data also show that median annual wages for veterinarians in Texas are not keeping pace with changes in the Consumer Price Index, used to measure inflation, which increased 4.6 percent over the same five-year period.

The 2013 AVMA workforce report showed a third indicator of excess capacity: in 2012, about 39 percent of veterinary program senior students did not have an offer for either a job or an advanced training opportunity. In the years 2003 through 2008, the proportion of students without such offers varied between 8.3 and 10.4 percent. These numbers suggest that newly graduated veterinarians are entering a significantly more competitive and challenging job market upon graduation.

In 2015, the AVMA followed its 2013 report with a report on veterinary capacity. The 2013 AVMA workforce report established a measure to quantify excess capacity in the four major practice areas. Nationally, the AVMA calculated that excess capacity existed in food animal (15%), small animal (18%), equine (23%), and mixed practices (13%). The 2015 study reported that excess capacity had declined since 2012, when survey results indicated 17.2 percent excess capacity in private practices. The 2015 report, using survey data from 2014, found excess capacity of 13.3 percent in private practices, lower than in 2012.

Those indicators suggest that the demand for veterinary services may not be sufficient to employ fully both the existing cadre of working veterinarians and the new veterinarians graduating from veterinary programs, although the degree to which this information holds true may vary by region and type of veterinary practice. **Large Animal and Small Animal Practice.** One of the most significant trends over the last 30 years is the evolution of the veterinary profession from large animal practice to small animal practice. The treatment of food animals once represented the majority of work for most veterinarians and was the original motivation for establishing colleges of veterinary medicine at public universities across the nation. The nation continues to rely upon veterinarians to ensure the safety of our food supply in terms of meat, milk, and eggs.

According to AVMA membership data, food animal practice as a proportion of the total veterinary workforce has been shrinking since the 1980s. In 1986, there were 10,696 full-time equivalents (FTEs) treating food animals (about 23% of the workforce), but by 2007 that number had declined to 6,454 FTEs (about 7% of the workforce). The remaining veterinarians who work on large animals are, on average, older than the rest of the workforce. Additionally, fewer DVM graduates are choosing to work in large animal or mixed practices. The 2013 NAS report and the 2013 AVMA report both suggest that the proportion of veterinarians who treat livestock will continue to shrink. According to the NAS report, "Fewer and fewer graduates have entered food-animal-predominant practice for over two decades. Consequently, this sector of the profession is facing an uncertain future." The AVMA report found that "Demand for food animal veterinarians was projected to grow only 1% between 2012 and 2025..."

In Texas, the disparity in numbers between veterinarians who practice primarily upon small animals (59%) and those who treat large animals (3%) is apparent in the data (see Figure 15). An estimated 3,918 licensed veterinarians in Texas work exclusively upon companion animals, whereas only about 180 veterinarians in the state focus their practice upon livestock. Another 1,577 veterinarians report their practice type as "mixed," indicating they treat both small and large animals.

Several factors have brought about this decline in rural-based large animal veterinarians, most of which are tied to broader social and economic trends. One of the most significant changes has been the decline of small-scale farms and the rise of large, consolidated agribusiness operations. The traditional farm was a family business that would typically have a variety of crops and animals, but following World War II, this model began to shift toward large-scale operations that specialized in producing one animal or crop. This new model could take advantage of economies of scale. For the rural veterinarian, this meant there were relatively fewer potential customers but that each customer was more likely to have a far greater number of animals. This change has led to the rise of the "herd health" veterinarian, who is often highly specialized in the management of large herds of just one type of animal, rather than the treatment of individual animals of various types.

Another important factor in the decline of the rural veterinarian is the transformation of rural areas themselves. As the population of rural America has slowly shifted to urban areas, those urban areas have become larger and larger, and cities tend to expand into land that previously was used for farming and ranching. Veterinarians who work in or near the suburban areas that surround a large metropolis often take advantage of their locations to develop mixed animal practices. They treat the companion animals of their suburban customers and the livestock on farms within a reasonable driving distance.

Differences in working conditions and the salary that a veterinarian can earn also drive the trend away from food animal practice. Veterinarians working in large cities and suburban areas can make good money treating companion animals and are not expected to be available 24/7. Veterinarians who focus exclusively on food animals/livestock can command good salaries, but these practitioners are often "herd health" experts working for large agribusiness companies. Mixed practice, rural veterinarians tend to earn notably less than their companion animal, urban and suburban colleagues. To further complicate the picture, to cut costs, some animal operations do not regularly use a veterinarian at all, relying instead upon staff trained to perform tasks that, in the past, may have been performed by a professional.

The resulting economic picture for veterinarians who might consider going into food animal practice is one of uncertainty. There may be a workforce need for their services in rural areas, but not enough business volume or willingness to pay for their services to the extent that would sustain a practice and allow them to pay their school debt.

To address the relatively low numbers of newly graduated veterinarians going into rural practice, the United States Department of Agriculture (USDA) created the Veterinary Medicine Loan Repayment Program (VMLRP). This program matches veterinarians willing to work in rural areas with regions identified as high-priority veterinary shortage areas. In return for their services for a period of three years, the VMLRP repays up to \$25,000 annually of the veterinarians' DVM program loans. In 2015, the VMLRP enacted loan repayment agreements with 48 veterinarians for a total of \$4,504,340 awarded, and the recipients' average eligible debt was \$112,222. Texas had eight shortage areas designated in 2015, and two veterinarians received an award to work in the state.

Internships and Residencies. The AVMA defines internships and residencies as follows:

<u>Internship</u> – An internship shall be a one-year clinical training program that emphasizes mentorship, direct supervision, and didactic experiences including rounds, seminars, and formal presentations. It provides practical experience in applying knowledge gained during the professional curriculum and an opportunity to obtain additional training in the clinical sciences.

<u>Residency</u> – A residency shall be advanced training in a specialty in veterinary medicine that is intended to lead to specialty certification in an AVMA-recognized veterinary specialty organization.

Veterinary programs are required to provide students with opportunities for advanced training, including postgraduate internships and residencies. About half of the veterinary graduates do not participate in internships or residencies, choosing instead to go directly into the workforce. A 2015 report from the AAVMC indicates that, in 2014, the American Association of Veterinary Clinicians (AAVC) found 1,005 internship positions and 353 residency positions were available in the Veterinary Internship/Residency Match Program (VIRMP). Because there were 2,686 graduates in 2014, this means that there were only enough internship/residency positions for about half of these new veterinarians. Administrators at TAMU indicated that only about 20 to 35 percent of their graduates participated in internships, a considerably lower rate of participation than the national average.

One of the reasons that only half or less of new veterinarians choose to participate in advanced training could be financial. According to the AAVMC, in 2014, the mean first-year salary for a veterinary intern was \$26,572; the mean first-year salary for a veterinary resident was \$32,706; and the mean first-year salary for a veterinarian was between \$67,000 and \$70,000. Especially for those graduates with student debt, the low wages of an internship or residency make such positions less attractive than immediate entry into the profession.

About three-quarters of internships focus on companion animals. Equine internships form about a quarter of the total, and exotic and food animal internships each offer 1 percent

or less of the total. Because only half or less of new veterinarians participate in advanced training and the vast majority of those advanced training opportunities are for either companion animal or equine practice, it is unlikely that these training opportunities could be leveraged to produce more veterinarians who treat food animals.

Veterinary Technicians and Assistants. One recommendation made in the 2013 NAS Report suggested that the veterinary profession should formulate new ways of delivering cost-effective services to rural America. The report suggested using veterinary technicians to extend animal-health services to underserved areas. It was suggested that the AVMA and professional organizations open up dialogues with state officials to modify state practice acts to permit credentialed veterinary technicians to administer livestock health services, provided that veterinary technicians are subject to oversight by licensed practitioners (who may be in distant locations).

A licensed veterinary technician (LVT) has received two to four years of education in the care and handling of animals, in the basics of animal science, and in laboratory and clinical procedures. By state law, LVTs must work under the supervision of a licensed veterinarian. Generally speaking, an LVT performs services equivalent to those performed by a nurse. LVTs can assist the veterinarian in a wide variety of tasks but cannot diagnose conditions, prescribe medications, or perform surgery. A license from the Texas Board of Veterinary Medical Examiners (TBVME) is not required to work as an LVT, but unlicensed individuals may not use that term in reference to themselves. LVTs must obtain 10 hours of continuing education courses each year to maintain their license.

Graduates of the four-year programs sometimes use the term "veterinary technologist" to distinguish themselves from graduates of certificate or associate degree programs, and may have additional job opportunities beyond those available to certificate or associate degree holders, although there is no difference in the state certification received from the TBVME.

Beginning on September 1, 2014, veterinary technicians were able to apply for a license through the TBVME. To qualify, applicants must be graduates of an AVMA-accredited program and pass both national and state licensure exams. There are 15 veterinary technology/technician programs at Texas institutions of higher education, distributed among 10 public community colleges, 2 public universities, and 3 private colleges. Of these, there are 10 AVMA-accredited LVT programs in this state: one at a public university, six at public community colleges, and three at private colleges.

The Texas Veterinary Medical Association offers Certified Veterinary Assistant (CVA) training and certification for employees who work for veterinarians. This credential is not recognized by the TBVME, so there is no state licensure involved when earning it. CVAs are trained in the basic skills, and competencies required for animal care and their work involves assisting veterinarians and LVTs.

Need for a New Veterinary School

The following points concerning veterinarians and veterinary education should be considered to determine if Texas should create a new veterinary school or take other actions to expand opportunities for veterinary education and services:

 Application rates have been steady nationally, indicating a consistent but not increasing student demand for DVM programs. Application rates at TAMU have grown moderately in the past decade even as the state experienced significant population growth (see Figures 2 and 3).

- Because of facilities constraints, TAMU veterinary program kept its first-year class size around 132. With the construction of a new Veterinary and Biomedical Education Complex (VBEC), TAMU now has plans to expand its first-year enrollment by 20 to 30 students beginning in fall 2017.
- Rising tuition costs and levels of student debt nationally influence graduates' choices of location and practice type and may diminish student demand in the near future.
- Increases in the number of DVM graduates nationally, relatively low wage growth in the profession, the perceptions of newly graduated veterinarians who claim that they have difficulty finding employment, and systemic changes in modern agriculture indicate that the job market for veterinarians may be at or near saturation nationally.
- The need for veterinary services varies significantly by region and by type of practice. The nation and the state are unlikely to have significant need of additional veterinarians to treat pets in cities and suburbs, but are likely to have need in rural areas for veterinarians to treat farm animals, based on the changes in the relative proportions of those two groups in the total veterinary workforce in recent decades.
- Texas appears to be an attractive place for veterinarians to work. Most of the state's graduates stay here and make up about 60 percent of the state's veterinary workforce. The other 40 percent moved here from other states.

Estimating Costs of a New Veterinary School

The cost of a new veterinary school for the state of Texas depends upon many factors. If a school were opened by a private institution, then the cost to the state would be negligible. It is much more likely, however, that a new veterinary school proposal would come from a public university. On June 6, 2016, Texas Tech University submitted notification that it was engaged in planning for a new Doctor of Veterinary Medicine degree program. This means that public funds would be expended to build and operate the school.

There are no examples of recently opened veterinary schools at public institutions of higher education in the nation, but two new schools were opened just two years ago by private institutions, Midwestern University (MU) in Glendale, Arizona, and Lincoln Memorial University (LMU) in Harrogate, Tennessee. Coordinating Board staff conducted phone interviews with Dr. Kathleen Goeppinger, President of MU, and Dr. Glen Hoffsis, Dean of LMU's College of Veterinary Medicine, about the timeline and resources required to open their new schools. Staff also interviewed Dr. Alastair Cribb, Dean of the veterinary school at the University of Calgary, because this program was used as a model by LMU.

Dr. Goeppinger described a five-year planning and preparation process prior to the admission of the first class in 2014. The Arizona-based MU first hired a dean to oversee the hiring of other administrators, faculty, and staff; provide input on facilities and equipment; and interact with the accrediting body (the AVMA's Council on Education). She estimated that the institution spent about \$180 million on facilities that include an 112,000-square-foot animal clinic, a barn to house animals, and a necropsy building. In addition to the dean, the school employs four associate deans, 55 faculty members, and 40 support staff.

Dr. Hoffsis said that founding a new veterinary school for LMU was "a major undertaking," which required three years of planning, preparation, and working with the accrediting body. Unlike most public veterinary schools, LMU does not have its own animal hospital or clinic to provide its students with the clinical training and skills required by the AVMA. Instead, LMU was established on a distributed model patterned after the University of Calgary program, where the students are placed in veterinary practices and other appropriate locations in the region around the university to build their clinical skills and experience. This model relies upon finding enough veterinarians within a reasonable commuting distance of the university who are willing to train and mentor students. This model saves the institution money because it does not need to build the usual clinical facilities expected of a veterinary school.

LMU employs about 35 full-time faculty members, 35 part-time faculty, five associate deans, and about 40 staff. Dr. Hoffsis attributed the relatively low costs of developing LMU, as compared to other veterinary schools, to the distributed educational model; his relatively flat administrative structure (he does not use department chairs); and to LMU's policy of not offering tenure to faculty, which provides him with flexibility in staffing the school. Dr. Hoffsis acknowledged that this model was rather unusual and might not work in other places, saying, "Starting a veterinary school anywhere is a pretty risky venture."

Using the description of Arizona's MU program as a basis for estimating the cost of a new veterinary school, Coordinating Board staff assumed a similar program – \$180 million in facilities, \$10 million in equipment and supplies, and staffing that includes a dean, four associate deans, 55 faculty, and 40 staff. Staff used the *Texas Tribune's* Government Salaries Explorer to determine the levels of pay for staffing, using averages in situations where there are significant variations in salary, and then multiplied those salary averages by 35 percent – a report from the State Auditor's Office indicated that state employee benefits average 35 percent of salary – to determine total employee costs. Based on that methodology, staff estimates that personnel costs for a similarly sized veterinary school would be about \$13,126,050 annually.

Based upon the descriptions provided by the new veterinary schools, the infrastructure costs to open a new traditionally-structured veterinary school are likely to be at least \$200 million and could be as high as \$500 million, depending upon the location and the size of the facilities.

If a new veterinary school followed the "distributed" model initiated by the University of Calgary and adopted by LMU, then the cost of facilities would be significantly lower, because rural rotations at regional veterinary practices would be used, instead of the school having its own hospital or clinic. Following this model, facilities might be \$100 million or less. However, yearly operating costs would be the same at approximately \$13 million annually.

To have a new veterinary school with a class size of around 100 students per cohort, Texas would need to spend approximately 100 to 500 million dollars on facilities and about 13 million dollars per year in personnel costs, in addition to other costs that are difficult to estimate, such as equipment, supplies, student services, and other annual operating costs.

Conclusions

No new veterinary school is recommended at this time that primarily produces companion animal veterinarians. Current workforce demand projections indicate that the planned expansion at Texas A&M University (TAMU) would likely meet this future need. Following the 2009 report from the Coordinating Board, TAMU CVM began exploring the recommendation to expand its class size. Its accreditor, the AVMA COE, informed TAMU CVM that it could not do so without endangering its accreditation status, due to the age and condition of its current facilities. Accordingly, TAMU looked for ways to construct new and larger facilities for its CVM, beginning with a request for a Tuition Revenue Bond (TRB) in 2011. When this effort failed, TAMU's Board of Regents agreed to commit \$120 million from the Permanent University Fund (PUF) to build the Veterinary & Biomedical Education Complex (VBEC). Construction of the VBEC is nearly finished, and the facility is scheduled to open in fall 2016. This new building will accommodate a first-year, class-size increase of 20 to 30 students easily, with more room to grow, should there be a future need.

The high cost of establishing a new institution would outweigh the potential benefits to the state, given the small to moderate workforce demand and the issue that building a new school would not guarantee that any of the graduates would practice upon livestock, which is the state's principal area of need. However, to address the projected need for large animal veterinarians, the following recommendations are cost-effective ways of addressing this need.

Recommendations

Recommendation 1

The Texas Legislature should fund the existing veterinary loan repayment program, the Rural Veterinarian Incentive Program (RVIP), because it is the most cost-effective means of persuading additional veterinarians to engage in large or mixed animal practice in rural areas of the state. This statute allows veterinarians graduating from the TAMU CVM to enter into an agreement to practice veterinary medicine in a rural county for one calendar year for each academic year for which the veterinarian receives financial support under the program. Given a yearly tuition and fee cost at TAMU of approximately \$22,000, with a fund of \$1 million per year, this program could support 45 veterinarians annually in rural practices. See Appendix A for the full text of the RVIP statute.

Recommendation 2

This recommendation was not adopted by the Board.

Recommendation 3

The Coordinating Board would consider a proposal for a new college of veterinary medical education that is designed to specifically produce large animal veterinarians in an innovative, cost efficient manner that does not duplicate existing efforts.

Appendix A

EDUCATION CODE

TITLE 3. HIGHER EDUCATION, SUBTITLE D. THE TEXAS A&M UNIVERSITY SYSTEM CHAPTER 88. AGENCIES AND SERVICES OF THE TEXAS A&M UNIVERSITY SYSTEM

SUBCHAPTER I. RURAL VETERINARIAN INCENTIVE PROGRAM

Sec. 88.621. DEFINITIONS. In this subchapter:

(1) "College" means The Texas A&M University College of Veterinary Medicine.

(2) "Committee" means the rural veterinarian incentive program committee.

(3) "Eligible participant" means a person eligible to participate in the program under Section <u>88.624</u>.

(4) "Fund" means the rural veterinarian incentive fund.

(5) "Program" means the rural veterinarian incentive program established by this subchapter.

(6) "Rural county" means a county with a population of less than 50,000.

(7) "University" means Texas A&M University.

Added by Acts 1999, 76th Leg., ch. 435, Sec. 1, eff. Aug. 30, 1999.

Sec. 88.622. ADMINISTRATION OF PROGRAM. The university shall administer the program in accordance with the rules adopted by the committee.

Added by Acts 1999, 76th Leg., ch. 435, Sec. 1, eff. Aug. 30, 1999.

Sec. 88.623. RURAL VETERINARIAN INCENTIVE PROGRAM

COMMITTEE; RULES. (a) The rural veterinarian incentive program committee consists of:

(1) the executive director of the Texas Animal Health Commission, or the executive director's designee;

(2) the executive director of the State Board of Veterinary Medical Examiners, or the executive director's designee;

(3) the dean of the college;

(4) a veterinarian with a mixed animal practice appointed by the board of regents of The Texas A&M University System; and

(5) a veterinarian with a large animal practice appointed by the board of regents of The Texas A&M University System.

(b) The dean of the college serves as the presiding officer of the committee.

(c) An appointed member of the committee serves a term of two years.

(d) The committee shall adopt rules:

(1) establishing criteria to determine whether a person is an eligible participant as the committee considers reasonable, including the person's:

(A) minimum grade point average; and

(B) financial need;

(2) providing for the distribution of money from the fund for the program;

(3) establishing the criteria necessary for a community or political subdivision in a rural county to qualify as a student sponsor under Section <u>88.625</u>;

(4) governing agreements of financial support between a rural sponsor and an eligible student; and

(5) establishing other procedures necessary to administer the program.

Added by Acts 1999, 76th Leg., ch. 435, Sec. 1, eff. Aug. 30, 1999.

Sec. 88.624. ELIGIBLE VETERINARY STUDENT OR GRADUATE. A person is eligible to participate in the program only if the person:

(1) is enrolled as a student of the college or applies to participate in the program on or before the first anniversary of the date the person graduates from the college;

(2) will receive or has received from a student loan at least 50 percent of the funds for tuition and fees for one or more academic years while enrolled in the college; and

(3) meets any additional qualifications adopted by the committee.

Added by Acts 1999, 76th Leg., ch. 435, Sec. 1, eff. Aug. 30, 1999.

Sec. 88.625. RURAL SPONSORS; AGREEMENT TO PROVIDE FINANCIAL SUPPORT. (a) A community or political subdivision located in a rural county that qualifies under the rules of the committee may become a sponsor of an eligible participant and may provide financial support to the eligible participant under the program.

(b) To participate as a sponsor in the program, the community or political subdivision must enter into an agreement with the eligible participant to provide financial support to the eligible participant in an amount not less than the tuition and fees required for a full academic

year for a student enrolled in the college in exchange for the eligible participant's agreement to practice veterinary medicine in the sponsoring community or political subdivision.

(c) Financial support under this section:

(1) may be provided in whole or part by a grant, scholarship, or funds provided by a private foundation; and

(2) shall be deposited in the fund for distribution to the eligible participant by the university.

Added by Acts 1999, 76th Leg., ch. 435, Sec. 1, eff. Aug. 30, 1999.

Sec. 88.626. FINANCIAL SUPPORT; COMMITMENT TO PRACTICE IN RURAL COUNTY. (a) To participate in the program, an eligible participant must enter into an agreement with the university to practice veterinary medicine in a rural county for one calendar year for each academic year for which the student receives financial support under the program.

(b) The financial support received by an eligible participant under this subchapter must be used to retire student loan debt or to pay tuition and fees to the university while the eligible participant is enrolled in the college.

(c) Financial support from the fund shall be awarded in the form of grants.

Added by Acts 1999, 76th Leg., ch. 435, Sec. 1, eff. Aug. 30, 1999.

Sec. 88.627. RURAL VETERINARIAN INCENTIVE FUND. (a) The rural veterinarian incentive fund is a special fund in the state treasury outside the general revenue fund.

(b) The fund consists of legislative appropriations for purposes of the program, gifts, grants, donations, the market value of in-kind contributions, and other sources of revenue deposited to the credit of the fund by the university.

(c) The fund shall be administered by the university in accordance with rules adopted by the committee. The university may use a portion of the money deposited to the credit of the fund, not to exceed 10 percent of that amount, for the administration of the program.

Added by Acts 1999, 76th Leg., ch. 435, Sec. 1, eff. Aug. 30, 1999.



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