



Veterinary Services and Tennessee's Animal Enterprises

**Report Prepared by
Kim Jensen, Burton, English, and Jamey Menard***

March 2007

***Agri-Industry Modeling and Analysis Group, Department of
Agricultural Economics, 302 Morgan Hall, 2621 Morgan Circle, The
University of Tennessee, Knoxville, TN 37996-4518**

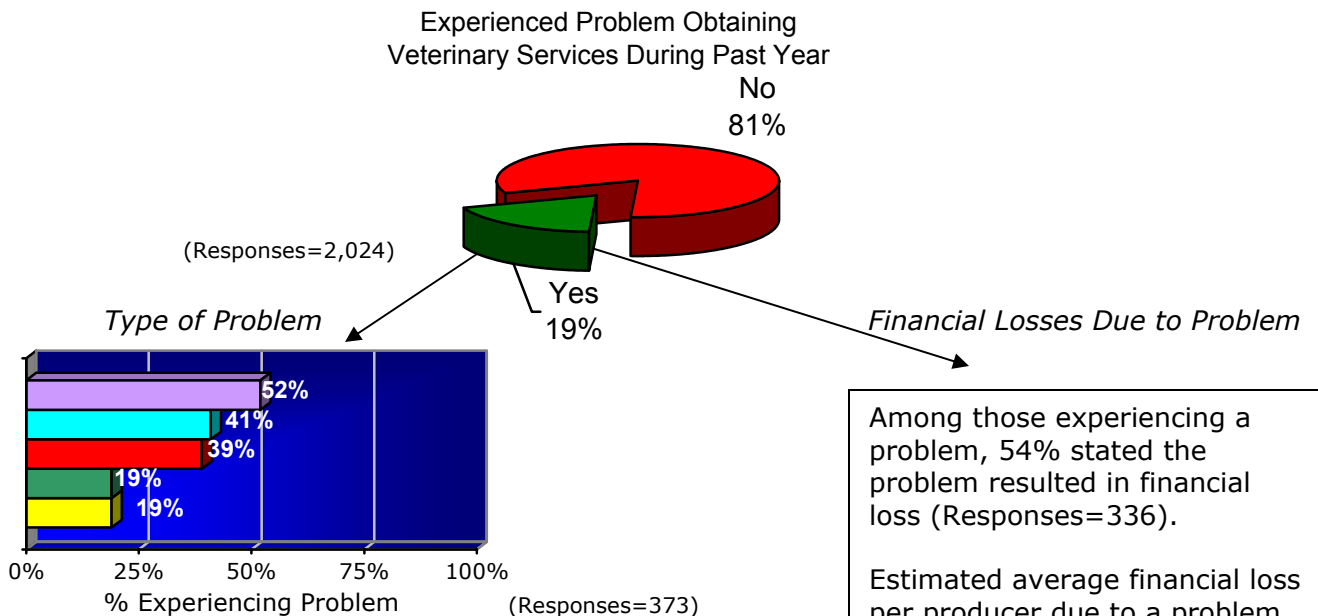
UT Study of Tennessee Livestock Producers' Perceptions Regarding Veterinary Services Executive Summary

Study Background

In November and December 2006, a survey was mailed to 10,000 farms with livestock enterprises in Tennessee. The subjects were randomly selected from the 51,000 livestock producers in Tennessee by the Tennessee Agricultural Statistics Service (TASS). The purpose of the study was to ascertain producers' perceptions about availability of veterinary services and the impact of these services on animal enterprises in Tennessee. A total of 2,191 usable responses were received.

- Most responding producers, over **81 percent**, had not experienced a problem obtaining veterinary services in the past year.
- The most commonly experienced problem was a delay in getting a veterinarian to visit their farm.
- Among those reporting a dollar financial loss due to the problem, the estimated average value of losses was \$1,863 per producer. If those who did not report any losses are included, the average amount per producer is just over \$186. **For the state's 51,000 livestock producers, a projected financial impact is \$9.5 million.**
- In 2005, the cash receipts from livestock and products marketings were \$1.27 billion. **The estimate of financial impact as a percent of sales is under one percent.**

Problems Obtaining Veterinary Services for Animal Enterprises



- Experienced a delay in getting a veterinarian to come for a farm visit
- The veterinarian would only treat animal if I transported to their facility
- Veterinary service was too expensive relative to the value of the animal
- Could not obtain services of a veterinarian with specialization needed to treat problem
- Veterinary service was too expensive for me to afford

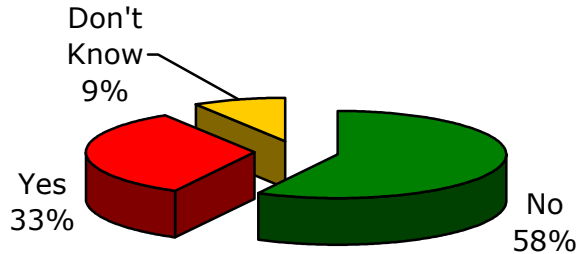
Among those experiencing a problem, 54% stated the problem resulted in financial loss (Responses=336).

Estimated average financial loss per producer due to a problem obtaining services:

- Among producers reporting a financial loss=\$1,863/producer (Responses=149)
- Over all responding producers=\$186/producer

Perceptions About Availability of Veterinarian Services in Producers' Area of the State

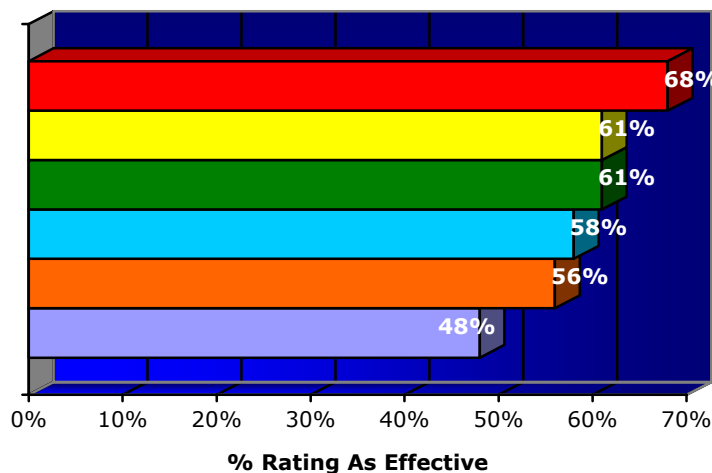
Believe Lack of Access is a Significant Problem in Their Area of State



Most producers either did not believe that lack of access to veterinarians in their part of the state was a significant problem or did not know whether it was a problem (67 percent total). About 33 percent believed it was a problem in their part of the state.

(Responses=2,031)

Perceived Effectiveness of Potential Methods for Alleviating Access to Services Problem



(Responses=559)

- Scholarship programs for veterinary students to specialize in large animal care
- Financial incentives for veterinarians to locate in rural areas and establish large animal practices
- Increase the availability of veterinary technicians to perform animal health care services
- Greater availability of over the counter medications to producers rather than by veterinarian prescription
- Improved ability to perform more animal health care services myself
- Increased availability of workshops for producers on animal husbandry and animal ...

Study Contacts: Dr. Burt English or Dr. Kim Jensen, Agri-Industry Modeling and Analysis Group, Department of Agricultural Economics, 301 Morgan Hall, The University of Tennessee, Knoxville, TN 37996-4518, Ph: 865-974-3716, Email: benglish@utk.edu or kjensen@utk.edu.

Copies of this study are available at: <http://aimag.ag.utk.edu/pubs/vetstudy.pdf>.

Veterinary Services and Tennessee's Animal Enterprises*

Background

According to a recent study, the projected demand for food supply veterinarians at the national level will increase 12 to 13 percent between now and 2016. However, the supply will not keep up, with a forecasted shortfall of 4 to 5 percent per year (Andrus, Gwinner, and Prince, 2006). Future shortages for veterinarians to serve the beef cattle industry are projected to be over 5 percent, for the hog industry between 4 and 5 percent, and for the dairy industry just under 4 percent.

As at the national level, the issue of current and future availability of veterinary services for food and large animals has become of concern in the state of Tennessee. In the summer of 2006, Tennessee Farm Bureau posed several questions regarding veterinary services in the state. These questions included whether there is a shortage of veterinarians performing large animal (livestock) services in Tennessee, and if so, what can be done by producers to support the veterinary community. Furthermore, in 2007 a Tennessee Senate Bill was introduced that states:

The college of veterinary medicine shall require applicants for its doctor of veterinary medicine program to have successfully completed a minimum of three (3) undergraduate courses in animal sciences that require practical application of such sciences by the student.

* The authors would like to thank Dr. Emmitt Rawls, Dr. Dan McLemore, and Dr. Rob Holland for their helpful comments on the survey instrument. The authors would also like to thank the many livestock producers who completed the survey.

The Bill also states:

The college of veterinary medicine shall grant preference in admission to its doctor of veterinary medicine program to applicants:

- (1) Who have an agricultural background; or
- (2) Who have demonstrated interest in practicing food animal medicine.

According to the American Veterinary Medical Association, at the national level, about 9.8 percent of veterinarians are categorized as private clinical practice large animal exclusive or predominant. Another 4.9 percent are considered as equine veterinarians (AVMA, 2006). Using Tennessee membership statistics, about 5.2 percent are large animal exclusive or predominant. Another 0.4 percent and 0.1 percent classify themselves as bovine and porcine practices, respectively. About 2.7 percent are equine exclusive and 1.1 percent are equine and small animal mix. These numbers suggest a slightly lower share of veterinarians with a large animal focus or equine focus than at the national level. However, in order to measure the extent of problems with access to large or food animal veterinary services, information should be should be obtained from livestock producers in the state.

In 2006, several methods were undertaken by the University of Tennessee to investigate issues related to supply of food or large animal veterinarians in the state. First, a series of listening sessions were held across the state. Second, veterinarians practicing in the state were

surveyed. Third, a survey of livestock producers in the state was conducted in late 2006. The results from the survey of Tennessee livestock producers are the subject of this report.

Study Objective

The primary purpose of this study is to measure perceptions by Tennessee livestock producers regarding the availability of food or large animal veterinary services. As part of this study, veterinary services Tennessee livestock producers use on their farming operations, associated costs, impacts of these services on farming operations, and farmers' perceptions about availability of veterinary services are measured. In addition, if producers perceive they have experienced a problem obtaining veterinary services, the nature of the problem, its potential impacts on their business, and possible solutions are identified.

Previous Studies

Prince, Andrus, and Gwinner (2006) note that recent trends in agriculture – food system consolidation, larger size farming/ranching operations, herd health systems focus versus individual animal intervention – requires that veterinarians adopt new “skill sets”. For example, in 1975 the average number of cattle and calves per farm was about 70 head per farm, while in 2005 it was just under 100 head per farm. Other changes affecting the food supply veterinarian include food supply system globalization, changing societal trends (urbanization and change in gender

composition of veterinarians), countering emerging human and domestic animal diseases, biodiversity, and environmental issues associated with concentrated food animal operations (Prince, Andrus, and Gwinner, 2006). The effect of animal health concerns on export markets can be seen in the precipitous drop in beef exports from 9.6 percent of production in 2003 to 2.8 percent of production in 2005 after the first discovery of a BSE case in the United States in late 2003. Herd health concerns may also be magnified by the ever growing interface between animal production systems and urbanized areas.

A study by Gwinner, Prince, and Andrus (2006) found that new students entering a veterinary curriculum have little knowledge of food supply veterinary medicine career opportunities. Students who choose a career in food supply veterinary medicine were more likely to have rural backgrounds, had prior experience in working for a food animal veterinarian, involved with 4-H, had a good role model involved in the discipline, and had a more production mindset. Compared with students in companion animal veterinary, food animal students were not as concerned about the working lifestyle; hours worked, on-call, or whether it was night or weekend work; and frequent vacation time.

Potential methods for deterring future potential shortages have been discussed in prior studies. Elmore (2003) suggests mentoring of veterinary students by faculty, advertising employment opportunities, and offering

attractive compensation packages for graduates. According to Gwinner, Prince, and Andrus (2006), highly-rated strategies to attract students into food supply veterinary medicine should focus on financial considerations and food animal medicine exposure. Financial strategies mentioned were student loan pay-offs, purchasing veterinary equipment, assistance in establishing a practice, and student scholarships. Exposure strategies include summer internships, mentoring with food animal veterinarians and/or food animal faculty, programs for first year veterinary students to work with food animals, and orientation sessions that highlight diverse career options.

Sterner (2006) states that some veterinarians believe that veterinary schools do not need to overhaul their curricula to solve the food supply veterinary medicine shortage and that adding a few individuals interested each year to the food supply veterinary medicine discipline will solve the shortage. Further, the author believes that all veterinarian students should have a good working knowledge and understanding of food production practices and systems.

A national Act was passed to assist veterinarians who might relocate into underserved areas. The National Veterinary Medical Service Act (H.R. 1367), if fully funded, will provide loan forgiveness for veterinary students and new graduates who agree to work in underserved areas, in underserved population groups, and in underserved disciplines of veterinary practice.

This Act was put in place to offer government incentives to veterinarians to relocate to underserved areas.

Findings from surveys of farmers have shown mixed results regarding perceived availability and use of veterinary services by animal operations. For example, a 2005 survey of Iowa beef producers found that both cow calf and feedlot respondents believed the availability of qualified veterinarians in their area was excellent (Lawrence and Schuknecht, 2005). A recent study by *Beef* magazine including 548 beef cattle producers found that 61.9 percent rated the availability of large animal veterinarians in their community as adequate (*Beef*, 2006). Yet, when asked about concerns regarding future potential shortages, over 65 percent of those with an opinion were concerned about future shortages. Another study examining opinions and practices of Wisconsin dairy producers suggested that the larger producers (>200 lactating cows) studied had more access to veterinary services than other sized farms studied. This study found that use of a veterinarian to examine purchased cattle before they entered the herd was highly associated with herd size (Hoe and Ruegg, 2006).

Data and Methods

In November and December 2006, a survey was mailed to farms with livestock enterprises in Tennessee. A random sample of 10,000 farms from the 51,000 total farms across the state with cattle, horses, and other livestock across Tennessee were mailed a survey by the Tennessee

Agricultural Statistics Service (TASS). A week after the first mailing, a reminder postcard was mailed to all subjects. About four weeks later, a second mailing was sent to all non-respondents. The survey contained questions regarding the use of veterinary services, perceptions about availability of veterinary services, costs associated with services, and farm and farmer characteristics. The data were summarized using means and percents. A total of 2,191 usable responses were received as of March 15, 2007.

Results

Use of Veterinary Services

Of the responding livestock producers, 68.7 percent indicated they had used some type of veterinary service in the past year (N=2,190).

Respondents were asked to indicate the type of veterinary services they had performed by a veterinarian during the past year, frequency of this service, and number of animals treated. These results are shown in Table 1. Two of the most common purposes for visits in terms of frequency of visits and number of animals treated were vaccinations and pregnancy diagnosis.

Table 1. Type of Veterinary Services Performed by a Veterinarian and Frequency of Service on Responding Tennessee Animal Operations.

Type of Service	Number of Visits Last Year			Total Number of Animals Treated		
	N	Average/ Farm	Total Across Respon— dents	N	Average/ Farm	Total Across Respon— dents
a. Vaccinations	463	3.1	1,435.3	492	40.9	20,122.8
b. Dehorning	117	2.2	257.4	125	13.1	1,637.5
c. Breeding soundness	236	3.3	778.8	234	19.0	4,446.0
d. Birthing/calving	467	1.9	887.3	438	2.3	1,007.4
e. Artificial insemination	48	9.9	475.2	50	45.9	2,295.0
f. Writing health certificates	210	6.0	1,260.0	205	30.6	6,273.0
g. Pregnancy diagnosis	357	4.9	1,749.3	344	41.7	14,344.8
h. Embryo transfer	36	5.4	194.4	39	11.4	444.6
i. Diagnoses of illnesses	457	2.9	1,325.3	418	5.4	2,257.2
j. Prescribed medications	383	4.3	1,646.9	364	12.5	4,550.0
k. Treatment of illnesses	506	2.8	1,416.8	490	5.9	2,891.0
l. Other	103	2.0	206.0	116	14.0	1,624.0

Livestock producers were asked what animal health care practices they have begun performing in the past five years instead of obtaining assistance from a veterinarian. Of the responding producers, 42.8 percent indicated they had begun performing health care practices themselves (N=2,191). The most commonly performed health care practices were vaccinating, worming, calving, dehorning, castrating, and tagging.

Costs and Benefits of Veterinary Services

The respondents were asked about how much, in total, they spent last year on veterinary services for their animal enterprise. On average among those who had one or more veterinary visits, the respondents spent an annual total of \$1,185.00 (N=1,371).

The respondents were then asked to indicate their expenditures on various types of services. The averages among those who had a positive expenditure on each type of service is displayed in Table 2.

Table 2. Total Amount Spent Last Year by Type of Service.

Type of Service	Number of Responses	Mean per Farm Amount Spent on Service During the Past Year (Dollars)
a. Vaccinations	712	511.14
b. Dehorning	111	136.88
c. Breeding soundness	198	267.86
d. Birthing/calving	422	216.82
e. Artificial insemination	59	900.29
f. Writing health certificates	170	228.05
g. Pregnancy diagnosis	274	526.74
h. Embryo transfer	37	3,113.00
i. Diagnoses of illnesses	345	315.44
j. Prescribed medications	410	520.84
k. Treatment of illnesses	478	392.31
l. Other	207	433.08

The livestock farmers were asked what percent of the total operating costs associated with their animal enterprise(s) (for example: feed, supplies,

labor) was spent on veterinary services. Among all those responding to the share question, including those who said zero, the average share was 6.4 percent (N=1,696). Among those indicating a positive share, the share was 8.8 percent (N= 1,244).

Several questions were asked related to trip fees or charges by veterinarians to provide treatment on their farm. Among those who had a veterinary visit and paid trip fees, the average trip fee or charge was \$53.50 (N=929). For trips by the veterinarian to the farm, the average distance traveled was 16.6 miles (N=996). When the producer transported the animal to the veterinary facility, the average distance traveled was 17.0 miles (N=935). About 44.2 percent stated they had visits where the veterinarian traveled to the farm were for emergency reasons (N=959), while 26.0 percent stated they had visits where the animal was transported to the veterinary facility when it was considered an emergency (N=860).

In order to obtain an estimate of the value of veterinary services to their operations, the farmers were asked if they did not have access to veterinary services, by how much their annual net farm income would likely decline. The average estimated amount was \$2,478.50 (N=795). If this average amount is multiplied by the approximately 51,000 producers in Tennessee, the projected impact of veterinary services on net farm income at the state level would be \$126.4 million.

Problems Obtaining Veterinary Services

When asked whether they had experienced problems obtaining veterinary services for their animal enterprise, about 81.4 percent stated they had not had a problem (N=2,024). A county level map of Tennessee in Figure 1 shows the numbers of producers stating they had experienced a problem obtaining veterinary services during the past year. As can be seen in Figure 1, clusters of greater than ten producers experiencing problems can be found in Greene County in east Tennessee, White, Warren, and Robertson Counties in middle Tennessee, and Henderson County toward the western region of the state.

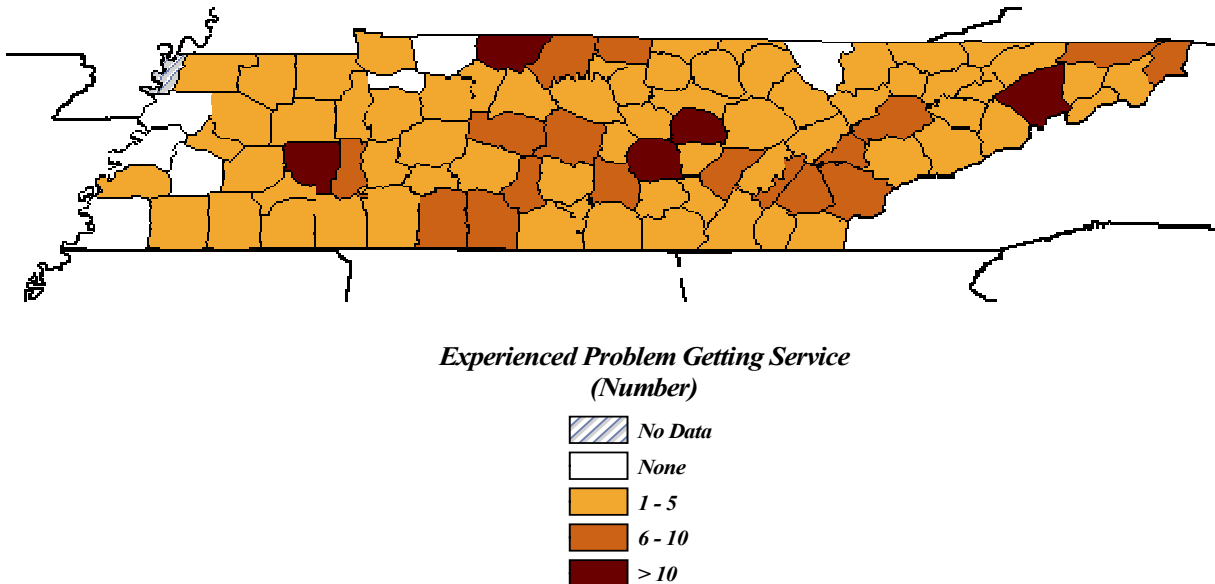


Figure 1. Number of Tennessee Producers Who Experienced a Problem Obtaining Veterinary Services in the Past Year, by County.

Among those stating they had experienced a problem, responses were solicited regarding the nature of the problem. The results are shown in Table 3. The most commonly cited problem was that the producer

experienced a delay in getting a veterinarian to come for a farm visit. This was followed by the veterinarian would only treat animal if the producer transported the animal to their facility and the veterinary service was too expensive relative to the value of the animal. Less than 20 percent of those citing problems believed they could not obtain services of a veterinarian with specialization needed to treat the problem. If this percent is taken of all respondents to question regarding whether they experienced a problem (N=2,024), then, overall, less than 4 percent cited lack of access to a veterinarian of the needed specialization as a problem.

Table 3. Types of Problems Obtaining Veterinary Services.

Possible Problems	Percent Citing as A Problem (N=373)
a. Veterinary service was too expensive relative to the value of the animal	38.6
b. Veterinary service was too expensive for me to afford	18.8
c. Experienced a delay in getting a veterinarian to come for a farm visit	51.7
d. Could not obtain services of a veterinarian with specialization needed to treat problem	18.8
e. The veterinarian would only treat animal if I transported to their facility	40.5
f. Other	27.4

Those livestock farmers who had experienced a problem obtaining services were asked whether the problem obtaining veterinary services impacted their farm financially. Of those responding (N=336), 53.6 percent

stated that the problem had impacted their farm financially. Among those reporting a financial loss, the average estimated financial loss was \$1,862.92 (Responses=149).

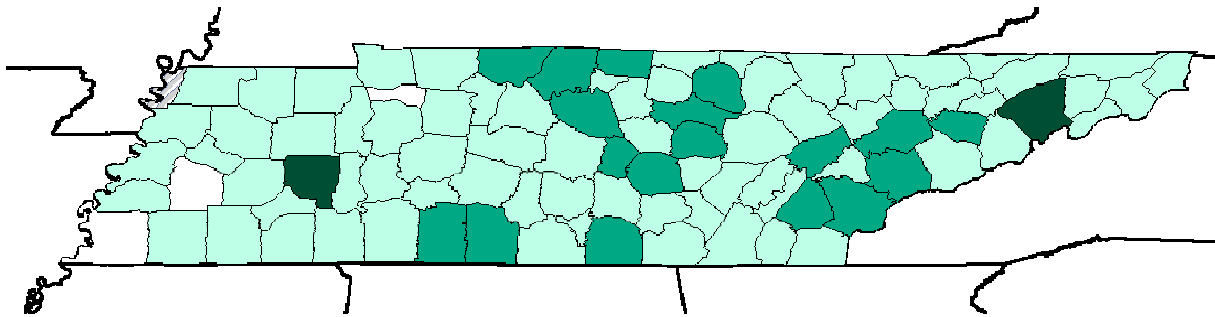
Calculations of a projected value of losses in farm income associated with problems obtaining veterinary services across the state's livestock producers are shown in Table 4. These calculations use survey results regarding the percent of producers experiencing a problem, the percent of those experiencing the problem who believe they had financial losses as a result, and the average estimated amount of the loss, along with the number of livestock producers in the state, to project the overall financial impact at the state level. The total projected losses at the state level are just under \$9.5 million, while the average per producer loss is projected at about \$186 (including producers reporting no loss or no problem). The projected financial losses represent less than 1 percent of livestock marketings.

The farmers were also asked whether they believed that lack of access to veterinarians for large animal care was a significant problem in their part of the state. About 33.1 percent believed it was, about 57.8 percent did not, and 9.1 percent did not know (N=2,031). A county level map representing the numbers of producers stating they believed there was a problem with access to large animal veterinary services in their area of the state is shown in Figure 2. As can be seen in Figure 2, clusters of greater than twenty

producers who believed there was a problem with access can be found in Greene County in east Tennessee and Henderson County further to the west.

Table 4. Projected Financial Impacts of Problems Obtaining Veterinary Services on Tennessee Livestock Producers.

Number of livestock producers	51,000
Percent of producers expected to have a problem obtaining services	18.6%
Number of producers expected to have a problem obtaining services	9,486
Percent of those having a problem that are expected experience a financial loss as a result	53.6%
Number of producers expected to experience a financial loss	5,084
Average amount of financial loss among those reporting a loss	\$1,862.92
Total projected financial loss	\$9,472,009
Average projected financial impact across all producers	\$185.73
2005 statewide value of livestock marketings	\$1,266,805,000
Financial losses as a percent of farm marketings	0.7%



*Perceived Problem in the State
(Number)*

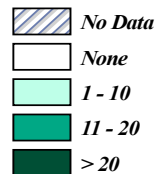


Figure 2. Number of Tennessee Livestock Producers Who Believed Access to Veterinary Services Was a Problem in their Area, by County.

Those who believed there was an access problem were asked about the potential effectiveness of various methods for alleviating the problem. A rating of '1' was assigned to effective, '2' to somewhat effective, and '3' to not effective. The ratings are shown in Table 5. Scholarship programs, increasing availability of veterinary technicians, and financial incentives received the highest percent ratings as effective.

Table 5. Ratings of Effectiveness of Methods for Alleviating Lack of Access to Large Animal Care.

Method for alleviating access problem	Percent Rating As (N=559):		
	Effective	Some— what Effective	Not Effective
a. Financial incentives for veterinarians to locate in rural areas and establish large animal practices	60.8	33.3	5.9
b. Scholarship programs for veterinary students to specialize in large animal care	68.0	25.4	6.6
c. Increased availability of workshops for producers on animal husbandry and animal health	47.6	40.2	12.2
d. Increase the availability of veterinary technicians to perform animal health care services	60.8	33.1	6.1
e. Improved ability to perform more animal health care services myself	56.2	32.9	10.9
f. Greater availability of over the counter medications to producers rather than by veterinarian prescription	58.3	29.2	12.5

Characteristics of Animal Operations

The results in Table 6 show that the average number of beef cattle per farm was 66.5 head, while the average number of dairy cattle was 111.2 head. The average number of horses per farm was 6.9 head, average number of hogs was 549.0 head, average number of poultry was 10,620.4, and average number of goats or sheep was 32.9 head. Over 93 percent of the responding livestock producers had one or more beef cattle and over 27 percent had one or more horses on the farm.

Table 6. Number of Head Currently on Responding Tennessee Animal Operations.

Type of Animal	% of Farms with Animal (N=2,181)	Type of	Mean Number of Animals
a. Beef cattle	93.3		66.4
b. Dairy cattle	3.6		111.2
c. Horses	27.3		6.9
d. Hogs	2.8		549.0
e. Poultry	7.5		10,620.4
f. Goats or sheep	8.9		32.9

These average head per farm can be compared with recent state averages for selected types of livestock shown in Table 7. The average herd size is larger than the state average for cattle and calves, dairy, hogs, and goats or sheep. The average poultry flock size is smaller than the state average. The average number of horses per farm among the respondents is similar to that for the state average.

Table 7. Number of Animals on Tennessee Farms, 2005.^a

	Total Number of Head	Number of Farms with Head	Average Number of Head/Farm
Cattle and Calves	2,170,000	48,000	45.2
Dairy	72,000	1,100	65.5
Horses (2004) ^b	210,000	41,000	5.1
Hogs	215,000	1,300	165.4
Broilers (2002) ^c	181,420,343	792	229,066.1
Goats (2002) ^c	114,664	5,268	21.8
Sheep/Lambs	23,000	1,100	20.9

^a Source: Tennessee Agriculture available at <http://www.tennessee.gov/agriculture/annualreport/ar05.pdf>.

^b Source: Horse numbers are for 2004 and are from the 2004 Tennessee Equine Survey Results available at <http://www.tennessee.gov/agriculture/annualreport/ar05.pdf>.

^c Source: USDA/NASS 2002 Census of Agriculture.

The responding livestock producers who had beef cattle were asked about their type of cattle operation (N=2,018). Among these farmers, 96.7 percent had cow—calf operations, 1.3 percent had stockering/backgrounding operations, and 5.8 percent had finishing operations.

In addition to size and type of animal operations, the farmers were asked several other farm characteristics and demographic questions. The average age of the responding farmers was 60.1 years (N=2,154). The farmers had, on average, been farming 36.1 years (N=2,080). The education level of the responding farmers was as follows: 9.8 percent less than high school graduates, 34.2 high school graduates, 23.9 percent with some college or technical school, 18.4 percent college graduates, and 13.7 percent post graduate or professional school (N=2,146).

The levels of net farm income (after subtracting expenses and taxes) in 2005 are shown in Table 8. Over 48 percent of the responding producers had net farm income of less than \$5,000 in 2005. From the 2002 Census of Agriculture, the average net cash farm income was \$4,185. The producers indicated that about 73.5 percent of their farm income came from their livestock or animal enterprises (N=1,972).

Table 8. Net Farm Income of Responding Tennessee Animal Operations in 2005.

Net Farm Income in 2005	Percent with Net Farm Income Level (N=1,919)
a. Less than \$0	15.5
b. \$0 to \$999	8.8
c. \$1,000 to \$2,499	10.8
d. \$2,500 to \$4,999	13.8
e. \$5,000 to \$9,999	17.9
f. \$10,000 to \$24,999	20.2
g. \$25,000 to \$49,999	8.4
h. \$50,000 or greater	4.6

Sources of Herd Health Management Information and Health Care Products

The farmers were asked where they obtain animal/herd health management information. The percents of respondents who had used various sources are shown in Table 9. It should be noted in Table 9 that respondents could select more than one source of animal/herd health management information. The most commonly reported source of animal/herd health management information was the local veterinarian, followed by livestock magazines and other media, and the UT Extension Service. Farmers also reported they received information from other farmers, their cooperative, and other sources.

Table 9. Sources of Animal/Herd Health Management Information Used by Tennessee Farmers.

Source of Information	Percent Using Source of Information (N=2,100)
a. My local veterinarian	61.3
b. Livestock magazines or other media	53.3
c. UT Extension Service	39.7
d. Animal health company representatives or materials	24.3
e. The Internet	18.5
f. UT College of Veterinary Medicine	6.9

The farmers were asked where they purchased their animal health care products. The results are shown in Table 10. The respondents could select more than one source of animal health care products. The most commonly reported suppliers of animal health care products were over the counter outlets and veterinarians. Many, 488 respondents, also listed their cooperative under the "other" category.

Table 10. Sources of Animal Health Care Products Used by Tennessee Farmers.

Source of Animal Health Care Products	Percent Using Source of Products (N=2,151)
a. Over the counter outlet	65.9
b. Veterinarian	56.3
c. Catalog	15.3
d. Internet	5.4
e. From manufacturer	3.9

Conclusions

The results from this study suggest that most livestock producers do not perceive a problem in obtaining veterinary services. Among those who do, a relatively low percent believe the nature of the problem is obtaining services of a veterinarian with the appropriate specialization. The estimated financial losses from problems associated with obtaining veterinary services are less than one percent of the value of livestock marketings. The majority of producers also did not believe or did not know whether there was a shortage of large or food animal veterinarians in their part of the state. In general, among those who felt there was problem, scholarship programs to encourage veterinary students to specialize in large animal care and greater availability of veterinary technicians to perform health care services were viewed as effective ways to alleviate the access problem. Also, financial incentives for veterinarians to locate in rural areas and establish large animal practices were viewed as effective.

References to Study

- American Veterinary Medical Association (AVMA), *AVMA Membership Directory & Resource Manual*. 55th Edition AVMA Directory. Tennessee Membership Listing, 2005.
- American Veterinary Medical Association Web site. Veterinary Market Statistics. Available at: <http://www.avma.org/membshp/marketstats/usvets.asp>. Accessed January 2007.
- Andrus, D.M., K.P. Gwinner, and J.B. Prince. "Food Supply Veterinary Medicine Coalition Report: Estimating FSVM Demand and Maintaining the Availability of Veterinarians for Careers in Food Supply Related Disciplines in the United States and Canada." May 2006. Available at http://www.avma.org/public_health/fsvmc/fsvmc_toc.asp. Accessed January 2007.
- Beef Magazine. Beef Veterinarian Services 2006. Available at <http://beef-mag.com/mag/BEEFVetSurvey06.doc>. Accessed January 2007.
- Elmore, R.G. "Recruitment and Retention of Veterinary Students for Food Animal Practices." *J Am Vet Med Assoc* 2003;222:1697-1699.
- Gwinner, K.P., J.B. Prince, and D.M. Andrus. "Attracting Students into Careers in Food Supply Veterinary Medicine." *J Am Vet Med Assoc* 2006;228:1693-1704.
- Hoe, F.G. and P. L. Ruegg. "Opinions and Practices of Wisconsin Dairy Producers About Biosecurity and Animal Well-Being." *J. Dairy Sci* 2006;89:2297-2308.
- Lawrence, J.D. and S. Schuknecht. "Iowa Beef Producer Profile, 2005: A Survey of Iowa Cow-Calf and Feedlot Owners by the Iowa Beef Center. Iowa Beef Center, Iowa State University." Available at <http://www.iowabeefcenter.org/content/2005SurveyReport.pdf>. Accessed January 2007.
- Prince, J.B., D.M. Andrus, and K.P. Gwinner. "Future Demand, Probable Shortages, and Strategies for Creating a Better Future in Food Supply Veterinary Medicine." *J Am Vet Med Assoc* 2006;229:57-69.
- Sterner, K.E. "An Invited Perspective on the Shortage of Veterinarians in Food Supply Veterinary Medicine." *J Am Vet Med Assoc* 2006;229:30-32.

Tennessee Agricultural Statistics Service. "Tennessee Agriculture 2005." Available at <http://www.tennessee.gov/agriculture/annualreport/ar05.pdf>. Accessed January 2007.

Tennessee Farm Bureau Federation. "Confronting the Issues: Veterinary Services vs. Livestock Management Practices TFBF Policy Development." Available at <http://www.tnfarmbureau.org/wcms/Editor/assets/Policy%20Development%20Backgrounders/Veterinary%20Services.pdf>. Accessed January 2007.

Tennessee General Assembly, Tennessee Senate. "SENATE BILL 19 AN ACT to amend Tennessee Code Annotated, Title 49, Chapter 9 and Title 63, Chapter 12, Relative to Veterinary Medicine." Available at <http://www.legislature.state.tn.us/>. Accessed January 2007.

United States Department of Agriculture, National Agricultural Statistics Service (NASS). "Data and Statistics, Quick Stats." Available at <http://www.nass.usda.gov/index.asp>. Accessed January 2007.

United States Department of Agriculture, National Agricultural Statistics Service (NASS). "2002 Census of Agriculture." Available at http://www.nass.usda.gov/Census_of_Agriculture/index.asp. Accessed January 2007.

SURVEY INSTRUMENT

Veterinary Services and Your Animal Enterprises

The purpose of this study is to ascertain the types of veterinary services you use on your farming operation, associated costs, impacts of these services on your farming operation, and your perceptions about availability of veterinary services. *Your views are important.* Responses to this survey will assist the veterinary industry and the UT College of Veterinary medicine in providing services to farmers across the state. Please note, all responses to this survey are *completely voluntary*. Your individual responses will be kept confidential. This survey should take about 10-15 minutes to complete. Please place the completed survey in the postage paid envelope and return by mail. If you have any questions regarding this survey, please contact project researchers Dr. Burt English or Dr. Kim Jensen, Agricultural Economics, The University of Tennessee, at 865-974-3716.

Your Animal Enterprise and Use of Veterinary Services

1. Please indicate the number of head you currently have for each type of animal.

	Number of Animals
a. Beef cattle	
b. Dairy cattle	
c. Horses	
d. Hogs	
e. Poultry	
f. Goats or sheep	
g. Other (please list: _____)	

If you indicated that you have beef cattle above, please select which best characterizes your cattle operation. (Place an 'X' by answer)

a. _____ cow-calf b. _____ stockering/backgrounding c. _____ finishing

2. In the past year, please indicate the type of veterinary services you had performed by a veterinarian and frequency of service

	Number of Visits Last Year	Total Number of Animals Treated During the Year
a. Vaccinations		
b. Dehorning		
c. Breeding soundness		
d. Birthing/calving		
e. Artificial insemination		
f. Writing health certificates		
g. Pregnancy diagnosis		
h. Embryo transfer		
i. Diagnoses of illnesses		
j. Prescribed medications		
k. Treatment of illnesses		
l. Other (please list: _____ _____)		

9. The problem(s) I experienced in obtaining veterinary services for my animal enterprises included: (Circle the answers)
- a. Veterinary service was too expensive relative to the value of the animal
 - b. Veterinary service was too expensive for me to afford
 - c. Experienced a delay in getting a veterinarian to come for a farm visit
 - d. Could not obtain services of a veterinarian with specialization needed to treat problem
 - e. The veterinarian would only treat animal if I transported to their facility
 - f. Other (Please describe the nature of the problem _____)

10. Did the problem in obtaining veterinary services you described in question 9 impact your farm financially (for example, due to loss in productivity of animals or death loss of animals)? (Circle the answer)

a. No b. Yes, and the financial losses from this problem totaled \$ _____

11. Do you believe that lack of access to veterinarians for large animal care is a significant problem in your part of the state? (Circle the answer)

a. No (skip to question 13) b. Yes (go to question 12) c. Don't know (skip to question 13)

12. Rate how effective you believe each of the following would be in alleviating the problem of access to large animal veterinarians. (Circle the answer for each)

Method for alleviating access problem	Effective	Some— what Effective	Not Effective
a. Financial incentives for veterinarians to locate in rural areas and establish large animal practices	1	2	3
b. Scholarship programs for veterinary students to specialize in large animal care	1	2	3
c. Increased availability of workshops for producers on animal husbandry and animal health	1	2	3
d. Increase the availability of veterinary technicians to perform animal health care services	1	2	3
e. Improved ability to perform more animal health care services myself	1	2	3
f. Greater availability of over the counter medications to producers rather than by veterinarian prescription	1	2	3
g. Other (Please describe: _____)			

13. In the past 5 years, what animal health care practices have you begun performing yourself rather than obtaining the assistance of a veterinarian?

14. In the future, what animal health care practices for which you currently use a veterinarian would you like to begin performing yourself?

15. Where do you obtain animal/herd health management information? (Circle the answers)
- a. My local veterinarian
 - b. UT College of Veterinary Medicine
 - c. UT Extension Service
 - d. Livestock magazines or other media
 - e. The Internet
 - f. Animal health company representatives or materials
 - g. Other (Please describe: _____)

16. Where do you purchase your animal health care products? (Circle the answers)
- a. Veterinarian
 - b. Over the counter outlet
 - c. Catalog
 - d. Internet
 - e. From manufacturer
 - f. Other (Please describe: _____)

About You and Your Farming Operation

17. What is your age? _____ years

18. How many years have you been farming? _____ years

19. What is your education level? (Circle the answer)
- a. Less than high school graduate
 - b. High school graduate
 - c. Some college or technical school
 - d. College graduate
 - e. Post graduate or professional school

20. What was your net farm income (after subtracting expenses and taxes) in 2005? (Circle the answer)
- | | |
|-------------------------|---------------------------|
| a. Less than \$0 | g. \$25,000 to \$49,999 |
| b. \$0 to \$999 | h. \$50,000 to \$99,999 |
| c. \$1,000 to \$2,499 | i. \$100,000 to \$249,999 |
| d. \$2,500 to \$4,999 | j. \$250,000 to \$499,999 |
| e. \$5,000 to \$9,999 | k. \$500,000 to \$999,999 |
| f. \$10,000 to \$24,999 | l. \$1,000,000 or more |

21. What percent of your farm income comes from your livestock or animal enterprises?
_____ % of farm income

Other Comments/Ideas: