



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Staff Paper

A Market Opportunity Study for the Development of a New Sport Horse Service at the MSU Veterinary Teaching Hospital

Eric R. Larsen and James W. Lloyd

Staff Paper 2002-01

January, 2002



Department of Agricultural Economics
MICHIGAN STATE UNIVERSITY
East Lansing, Michigan 48824

MSU is an Affirmative Action/Equal Opportunity Institution

A Market Opportunity Study for the Development of a New Sport Horse Service at the MSU Veterinary Teaching Hospital

Submitted by:

Eric R. Larsen, MBA
James W. Lloyd, DVM, PhD
lloydj@cvm.msu.edu

January 9, 2002

27 pages

College of Veterinary Medicine
Michigan State University

Copyright ©2002 by Eric R. Larsen and James W. Lloyd. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Introduction:

The potential need for several new services within the Veterinary Teaching Hospital (VTH) is unknown. However, based on focus groups and practitioner surveys conducted over the last several years, potential new services were identified: overnight emergency, behavior medicine, equine sports medicine, dentistry, oncology and exotic animal medicine.

Michigan State University's College of Veterinary Medicine (MSU-CVM) has recently expanded its equine research, diagnostic and therapy capabilities with the addition of the new Mary Anne McPhail Equine Performance Center. As a result of this expansion, a study was conducted to determine whether the VTH should also broaden its clinical offerings with a new complement of services targeted specifically toward sport horse care.

This study investigated the source of revenue and attempted to identify it from both a geographic and absolute caseload basis. Assumptions were made on referral base participation and client acceptance. The objective of the study was to evaluate the market opportunity and service structure for expanding the Veterinary Teaching Hospital services to include an equine sports medicine service. The aim of this work was to provide an aid in determining professional staffing in equine sports medicine as well as to develop a guide for any subsequent course offerings in the CVM.

Materials and Methods:

Overview

This study was predicated upon developing realistic expectations on which to base our assumptions. To do this, we set geographic market parameters, projected service demand, generated revenue estimates and calculated costs and breakeven requirements.

Six primary sources of data were used to develop the service needs information presented in this report. ① Focus group meetings held in 1998 and 1999 involved Michigan equine practitioners, MVMA board of directors and the CVM alumni council. These meetings were used to develop the initial needs analysis of a new sport horse medicine service. ② Follow up mail surveys were conducted with equine referring veterinarians and VTH equine clients in July 2000, to gauge the satisfaction level of practitioners using the referral services at the VTH and to explore potential new service needs. ③ Specific sport medicine modalities were identified in conjunction with VTH clinicians. These included:

- | | |
|--------------------------|----------------------------|
| ♦ Wellness Programs | ♦ Prepurchase Exams |
| ♦ Lameness Diagnosis | ♦ Rehabilitation Services |
| ♦ Chiropractic Services | ♦ Acupuncture Services |
| ♦ Nutraceutical Programs | ♦ Holistic/Herbal Services |

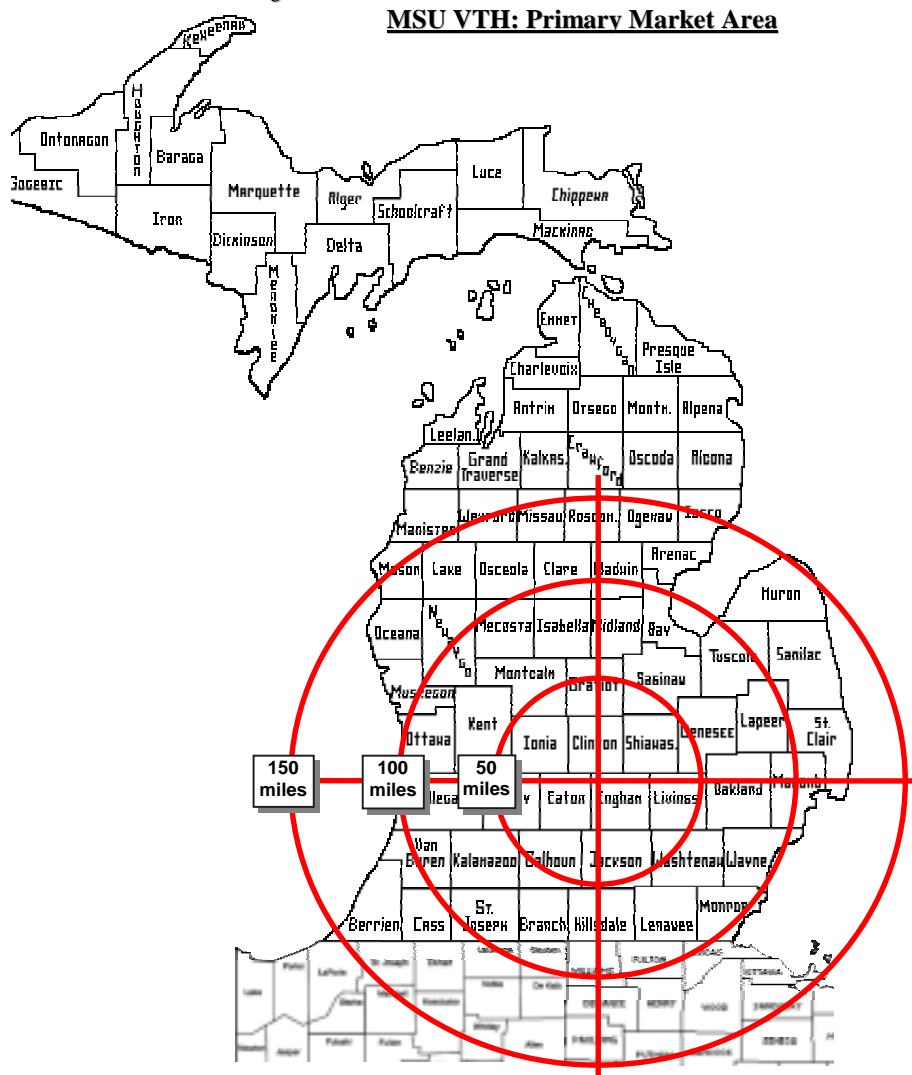
The other three areas of data were ④ geographic market identification, ⑤ the potential patient population numbers, and ⑥ historical VTH revenue and expense information.

Geographic Market Determination

Based on historical referral data, we determined Michigan State University's primary market area to be within 150 miles of East Lansing, MI. (see Figure 1) Within the primary market area, we identified smaller geographic markets defined by population densities and metro area groupings.

These market areas were then separated into zip code market groups to allow more detailed analysis of population data.¹ We then recombined market groups into key marketing areas based

Fig. 1



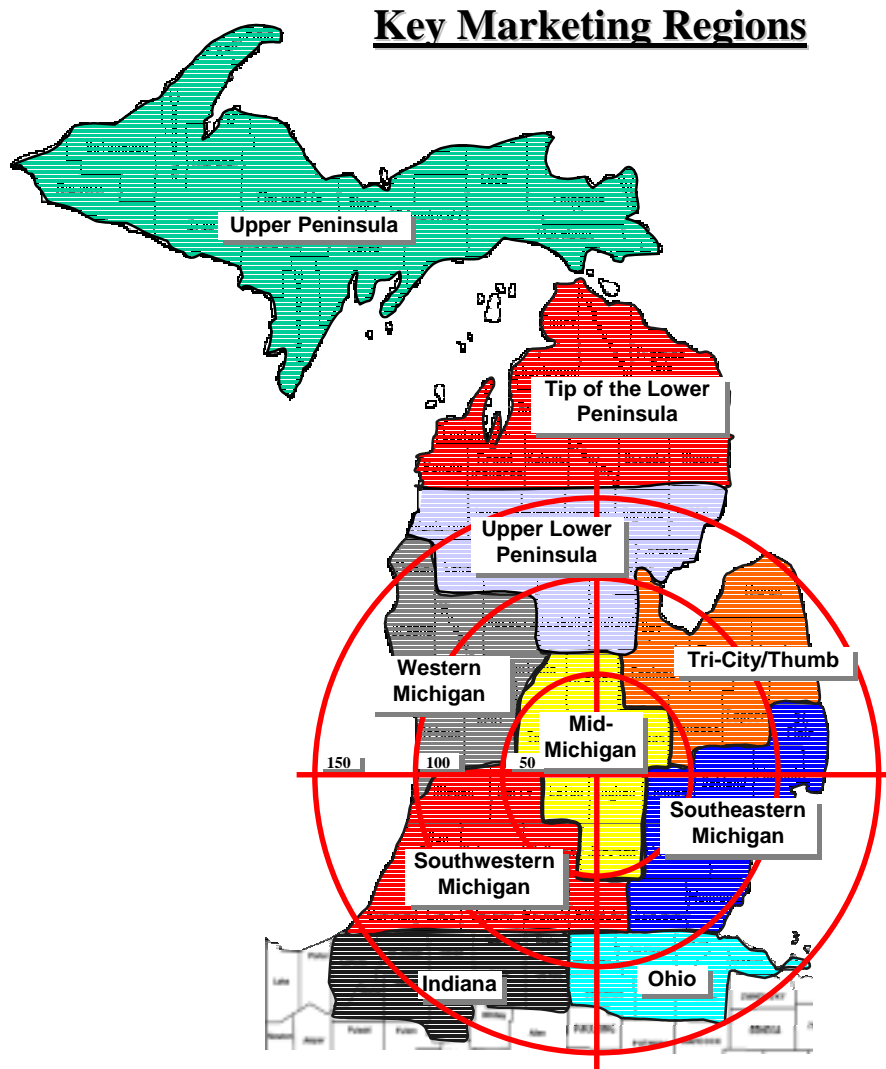
on definitive population centers. (Figure 2) The purpose of determining key market areas was to enable the development of focused marketing efforts based upon specific needs and opportunities.

Determining Demand Factors

Demand estimates for equine sports medicine services in this study were based primarily on the populations of potential patients (horses). Initial equine population estimates were developed through identification of a total number of households within the general marketing area encompassed by a 150-mile radius of Michigan State University. Household data were obtained

from U.S. Census results for year 2000². Total equine population based on Census information was crosschecked with data from the Michigan Equine Survey³.

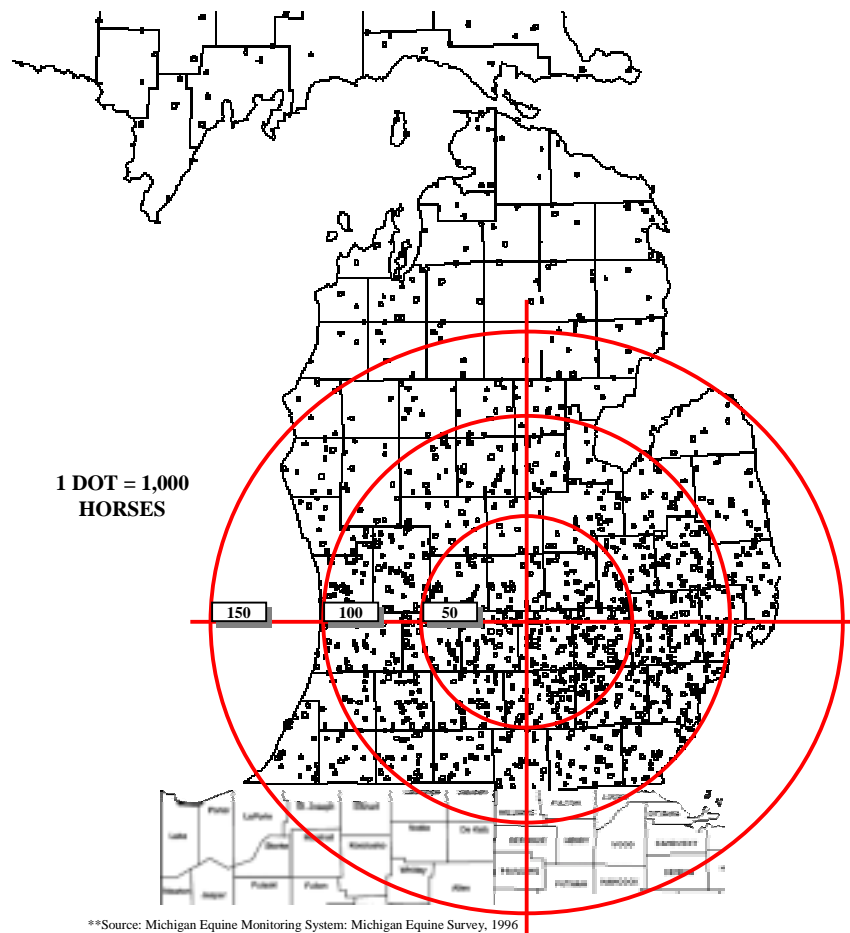
Fig. 2



In addition to determining the total number of horses in our market area, we needed to determine the geographic dispersion as it applies to the VTH market areas. **Figure 3** provides a general overview of the equine population distribution in Michigan as reported by the Michigan Equine Monitoring System (MEMS³).

Fig. 3

Equine Population Distribution: 1996



Another key factor in determining demand was the interest levels for the service among the key users, in this case, referring veterinarians. To determine the overall interest of referring veterinarians in the idea of an equine sports medicine service at MSU-CVM, we conducted a combination of focus groups, mail questionnaires, and direct surveys with many of MSU-CVM's top referral hospitals and key clients. Due to the need for developing a comparable database from across all information sources, questions were limited to 3-4 key areas of interest. These included:

- 1.) What type of services directed toward sport horse care do you currently offer?

- 2.) Are there any equine services your clients require for which you have difficulty finding referral practices?
- 3.) What type of additional services should MSU add to its equine service to more fully support your practice?
- 4.) Where do you refer sports medicine cases now?

Revenue Projections

To estimate potential revenues for a new sport horse service we looked at the three primary determinants; average revenue per case, veterinary referral pool and patient pool. Average revenue per case for the services that would make up a sport horse service were determined through interviews with MSU VTH business office and current equine medicine faculty and staff. Appendix 1 details the calculations that went into the determination of our averages. Two averages were calculated, the first with all potential sport horse services included and the second without the chiropractic and acupuncture services included. With this, average per case revenues for an all inclusive or full sport horse service was estimated at \$358 per case. The average without chiropractic or acupuncture dropped to \$337 per case.

Our referral case estimates were developed by determining the total potential equine referral veterinarians in the MSU VTH market area and then applying the likelihood of referral factors originally identified for each subset of the service. From previous survey data, we estimated there were 153 equine veterinarians who made up the Michigan referral pool⁴. We then estimated that another 25 veterinarians in the northernmost counties of Ohio and Indiana refer to MSU at least one time per year. This gave us a total referral pool of 178 veterinarians.

Cost Estimates & Breakeven Requirements

We decided to look at a new service in two ways, as a year-round service and as a seasonal, five-month service. Caseload projections were not changed depending upon which length of

operation we used. The only projected differences were in the areas of costs associated with running the service for 5 months versus a full year.

The cost of doing business for any service may be calculated based on three general scenarios.

We looked at necessary breakeven revenues in three ways:

- 1) Standard expenses without overhead allocation
- 2) Standard expenses with overhead allocated based on total expenses
- 3) Standard expenses with overhead based on total revenues

Appendix 2 summarizes the expense and cost calculations that go into each of the scenarios on both a year-round basis and a seasonal, five-month service. Once we had determined the necessary breakeven revenue levels, we compared them to our projected revenue.

Results:

Population Estimates

Working within the 150-mile radius established earlier, we were able to estimate the total equine populations. Total equine population based on Michigan Equine Survey data for each of the identified key VTH Marketing Regions from Figure 2 is outlined in **Table 1**.

Table 1 **Michigan equine population by VTH Market Area**

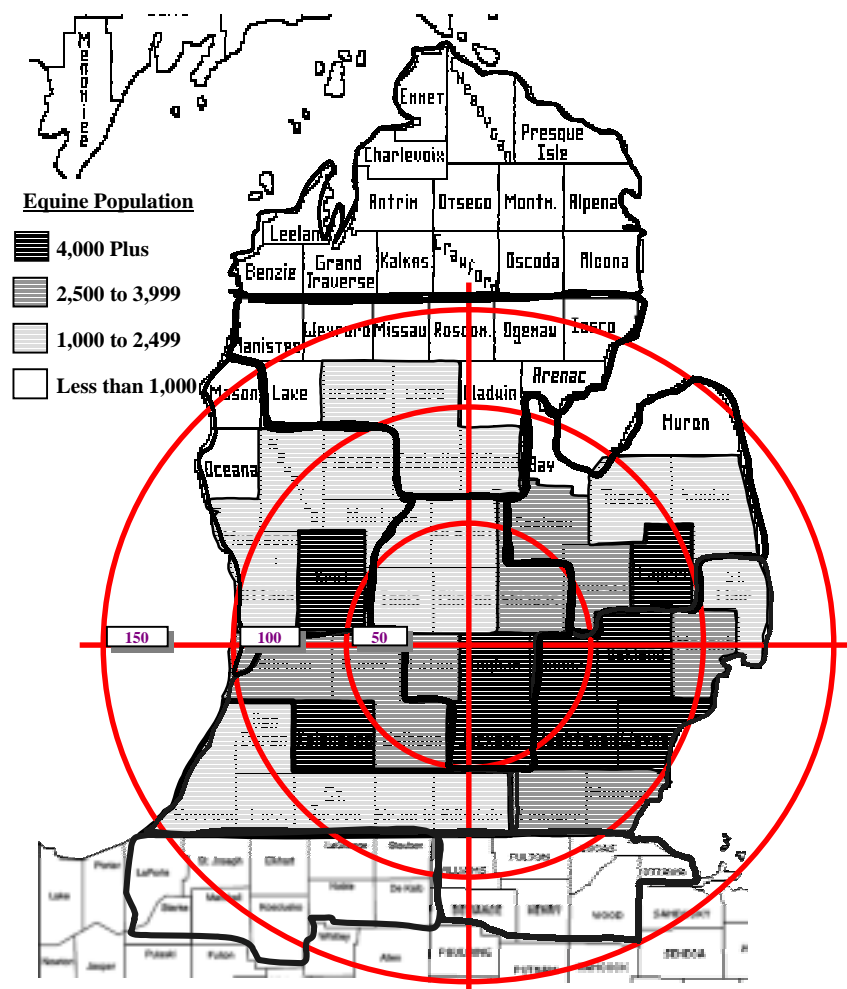
Market Area	Equine Population
S.E. Michigan	32,500
Tri City/Thumb	16,200
W. Michigan	9,800
S.W. Michigan	26,000
Mid Michigan	22,200
Upper-Lower Michigan	10,700
Tip of the Lower Peninsula	7,000
Upper Peninsula	5,400
Indiana	10,411
Ohio	10,240

Source: Michigan Equine Monitoring System: Michigan Equine Survey 6/1/96
AVMA population-based calculations used for OH & IN.

We also used U.S. Census⁵ data for year 2000 in the three states multiplied by the percent of horse owning households and then applied a factor supplied by the AVMA⁶ to estimate the average number of horses per household. We compared these calculations to the MES numbers from **Table 1** as a means of checks and balances. The MES total for Michigan was 116,500 horses and our estimates based on population calculations came to 115,642 horses. Therefore, we are confident in these calculations based on population and with that, used our calculations for Ohio and Indiana which were also included in **Table 1**. Blending this information with the earlier key market area breakouts, we were able to estimate the general distribution of horses in the total MSU-VTH market area. (see **Figure 4**) With the overlay established, we were able to

Fig. 4

Equine Population Overlay



begin the process of identifying initial sources of caseload and revenue. Accordingly, the Southeast Michigan region edges out the others as the population center of the region accounting for 20.3% of the total area equine population. The next key target markets would be Southwest Michigan (19%), Mid-Michigan (16%) and the Tri-City/Thumb area (12%), respectively.

Service Needs

The area of equine sports medicine encompasses many varied services. With that, our study was tasked with the objective of determining which services should be offered by the VTH to augment and support the area's primary veterinary providers. The first step in this process was to determine what modalities were currently being used by referring practitioners. After surveying the top referring practitioners, we were able to identify several key areas being addressed today.

(Table 2)

Table 2 **Current services offered to sport horse clients by referring primary care veterinarians**

Service	Percent of veterinarians offering
Pre-purchase Exam	76.8
Lameness Diagnosis	68.4
Wellness Program	66.3
Nutriceutical Programs	28.4
Rehabilitation Services	18.9
Acupuncture Services	11.6
Holistic/Herbal Services	6.3
Chiropractic Services	4.2

Source: MSU Equine Referral Survey, Oct 2001 N = 95

As expected, of those practitioners offering sports medicine services, the primary areas include pre-purchase exams (76.8%) and lameness diagnosis (68.4%). The results of the survey also indicated that it is highly likely that a practitioner who offers one sports medicine service will also offer others. (Table 3) In fact, the majority (58.8%) of the practitioners polled offered as

many as three and four different services, with some offering even more. In order of popularity the top four services offered, often as a group, included wellness programs, pre-purchase exams, lameness diagnosis and nutraceutical programs.

Table 3 **Primary care providers offering multiple services**

# of Services offered out of 8 surveyed	Percent offering more than one service
1/8	2.5
2/8	21.3
3/8	28.8
4/8	30.0
5/8	7.5
6/8	7.5
7/8	2.5
8/8	0

Source: MSU Equine Referral Survey, Oct 2001

The likelihood that a practitioner will refer sports medicine cases to the VTH is a key driving force in the decision of which services to offer at MSU. Table 4 outlines the responses of practitioners when asked for which services they would most likely (on a scale of 1 not likely to 5 very likely) refer clients to the VTH.

Table 4 **Likelihood of referral to VTH (1=not likely , 5=very likely)**

Service	%* likely to refer to VTH (Score 4-5 out of 5)	%* likely to refer to VTH (Score 3-5 out of 5)	Mean value
Lameness Diagnosis	61.0	85.7	3.7
Rehabilitation Services	51.4	72.2	3.3
Chiropractic Services	41.9	55.4	2.7
Acupuncture Services	36.6	54.9	2.7
Holistic/Herbal Services	21.7	39.1	2.2
Pre-purchase Exam	18.1	38.8	2.1
Nutraceutical Programs	18.6	37.1	2.1
Wellness Program	13.2	20.5	1.8

Source: MSU Equine Referral Survey, Oct. 2001 * N= 95, percent is based on total respondents to each service

If we look at the mean value responses for a service referral and compare that to the services currently being performed by private practitioners, we find that many practitioners would refer their lameness diagnosis and rehabilitation cases over pre-purchase exams. We also see, based on referral intent, that there may be some opportunities for the VTH to provide acupuncture and chiropractic services.

Revenue Determination

Using the percentages of likely referrals outlined in **Table 4** as our guide, we calculated potential cases generated per year if a veterinarian who was likely (4 or 5) to refer a particular type of case referred one or two cases per service per year. **Table 5** shows the results of this analysis. For example, 61% of surveyed veterinarians indicated they were likely or very likely to refer a lameness diagnosis case to MSU. Therefore, if 61% of the estimated 178 equine veterinarians referred 1 or 2 cases per year it would amount to 109 or 217 additional cases, respectively, for the VTH.

Table 5 Caseload estimates based on referral rates

Service	% likely to refer (Score 4-5 out of 5)	Total cases* if referred 1x/yr.	Total cases* if referred 2x/yr.
Lameness diagnosis	61.0%	109	217
Rehabilitation services	51.4%	91	183
Chiropractic services	41.9%	75	149
Acupuncture services	36.6%	65	130
Pre-purchase services	18.1%	32	64
Wellness exams	13.2%	23	47
Total Cases: Full service		396	791
Total Cases: Basic service (w/o Chiropractic & Acupuncture)		256	512

*Based on an estimate of 178 total potential referring DVMs

Using these caseload estimates and the revenue projections, we were able to determine projected annual revenue based on service makeup. Full service refers to all estimated services with expected revenues of \$358 per case. Basic service indicates the omission of the chiropractic and acupuncture services and a reduction to \$337 per case. **Table 6** summarizes these data.

Table 6 Revenue projections based on referral likelihood

Service	Total revenue if referred 1x/yr.	Total revenue if referred 2x/yr.
Full	\$141,768	\$283,178
Basic	\$ 86,272	\$172,544

As a comparison to estimating the caseload based on total referring veterinary pool, we looked at the current sport horse population in the MSU VTH market area to get another perspective on the opportunity. Using data provided from the Michigan Equine Monitoring System in the form of the 1996 Michigan Equine Survey: (Equine Population by Breed) we were able to determine that approximately 2,000 horses would be considered sport horses in the MSU VTH market area.³ These breeds included: Hanoverians, Holstein (Hessian), Trakehner and other warmbloods as outlined in the Michigan Equine Survey. Because there are other sport horse breeds not identified here, including cross breeds, this would be considered the minimum patient pool for any sport horse service at MSU. In addition, recent trends in the Michigan equine industry would indicate that these breeds are almost certainly increasing in frequency. If we assume that the caseloads calculated in **Table 6** are acceptable estimates, the percentage of the sport horse patient pool seen would be as indicated in **Table 7**.

Table 7 Percent of sport horse population referred based on total case assumptions

Service	% of total potential patient pool* if referred 1x per year	% of total potential patient pool* if referred 2x per year
Full	19.8%	39.6%
Basic	12.8%	25.6%

*Total patient pool estimated at 2,000 sport horses in VTH market area, Only 1 referral/horse

Breakeven Requirements

To determine the potential feasibility of the service, we compared potential revenues to breakeven requirements for each scenario. **Table 8** summarizes the breakeven revenue versus projected revenues and provides insights into potential profits or losses based on each.

The year-round, Full Service exceeds breakeven requirements only if we assume two referrals per veterinarian per year and only for cost calculations number 1 and 2. The seasonal, Full Service exceeds all breakeven requirements except for scenario #3 under one referral per veterinarian per year.

Table 8 Breakeven comparisons for various sport horse scenarios

Cost /Case Calculation	YEAR-ROUND: Full Service	Breakeven Revenue Requirement	Comparison to Breakeven Revenue Estimates based on Referral Likelihood*	
			Shortfall or excess to breakeven if referred 1x/yr.	Shortfall or excess to breakeven if referred 2x/yr.
1	Standard expenses without overhead allocation	\$252,574	(\$110,806)	\$30,604
2	Standard expenses + ovhd allocated based on total expenses	\$269,136	(\$127,368)	\$14,042
3	Standard expenses + ovhd based on total revenues	\$432,034	(\$290,266)	(\$148,856)
Cost /Case Calculation	SEASONAL: Full Service	Breakeven Revenue Requirement	Comparison to Breakeven Revenue Estimates based on Referral Likelihood*	
			Shortfall or excess to breakeven if referred 1x/yr.	Shortfall or excess to breakeven if referred 2x/yr.
1	Standard expenses without overhead allocation	\$130,516	\$11,252	\$152,662
2	Standard expenses + ovhd allocated based on total expenses	\$139,074	\$2,694	\$144,104
3	Standard expenses + ovhd based on total revenues	\$223,249	(\$81,481)	\$59,929

*Shaded boxes indicate scenarios that exceed minimum breakeven calculations

Additional calculations, not displayed here, for the Basic Service excluding the acupuncture and chiropractic offerings showed a reduction in revenue to a point where the revenue estimates did not exceed breakeven for any cost scenario on a year-round basis. Breakeven requirements were exceeded, by \$42,028 and \$33,470 respectively, under the Basic Service during a seasonal year for cost scenarios 1 and 2 assuming two referrals per veterinarian per year.

Market Opportunity

To further explore the plausibility of our caseload projections, we looked to the current VTH equine caseload and revenue for an impact estimate. The most recent caseload numbers for equine services at the MSU VTH indicate that 2,402 equine cases were seen during fiscal year 2000-2001. A twelve-year regression analysis indicates an average increase in equine caseload of just under 80 cases per year during that time frame.

If we assume that a new equine service was operated on a five month seasonal basis we could measure the growth impact on our current business. **Table 9** explores several scenarios based on different case projections.

Table 9 Percentage impact of a new sport horse service on total VTH equine caseload

Caseload Impact: Full Service		
	Estimated Sport Horse Service Caseload	% increase* in VTH cases from new service
Referrals @ 1x per Service	396	16.5%
Referrals @ 2x per Service	791	32.9%
Caseload Impact: Basic Service		
	Estimated Sport Horse Service Caseload	% increase* in # of cases from a new service
Referrals @ 1x per Service	256	10.7%
Referrals @ 2x per Service	512	21.3%

Source: MSU VTH Business Office, June 2001 * based on total caseload of 2,402.

Based on this analysis, we see that our referral and caseload assumptions equate to between a 16 and 33% increase in total VTH equine caseload for full equine sport horse service and between 11 and 21% for a basic service.

The MSU VTH ran a pilot test of a Sport Horse Service from July through October, 2001. This service was not advertised and the caseload was generated primarily by word-of-mouth in the horse-owning community as well as through internal referrals from general VTH cases. During the three months of service, 65 cases were seen with an average per case revenue of \$306.55. For all equine cases at the VTH, actual per case revenue figures from the most recent year, 2000-2001, averaged \$824.31.

Discussion:

Population Estimates

The population estimates will be helpful in planning our marketing efforts, but they are not too surprising given our current knowledge of where equine cases originate within the region. The importance of knowing where the largest pockets of potential clients are located will enable the VTH to focus any promotional efforts with optimum efficiency once the service is up and running. Further investigation should include confirmation of true sport horse populations if possible.

Service Needs

The question arises of what service types should the sport horse service entail. As indicated earlier, lameness and rehabilitation services are high on the list of potential referral services as indicated by veterinarian surveys. Should chiropractic and acupuncture services be offered as well? The inclusion of these additional services could account for an average increase in revenue per case of \$21. It would also likely increase the number of referrals. What hasn't been

quantified is the opportunity to students if, through this service, they have access to a formal clinical rotation or perhaps a special problems clerkship in chiropractic or acupuncture medicine. This may hinge on the available expertise of the service coordinator.

On another note, it should be recognized that perhaps survey respondents were not fully familiar with the true nature of wellness programs from the sport horse perspective. Such programs involve extensive evaluations of health and locomotion, in addition to the more routine parasite control and vaccination programs. Based on anecdotal information, these programs are generally not conducted in such a comprehensive manner by practicing veterinarians in Michigan. As such, this study may underestimate the actual referral potential in this regard.

Breakeven Analysis

If we compare the revenue from the basic pilot service (\$306.55 per case) to our estimates for full and basic services (\$358 and \$337 per case, respectively) we find that we are within acceptable levels for our breakeven calculations. We can also conclude that our revenue projections are highly conservative when compared to the actual revenue per case currently being generated by the VTH (\$824.31).

Additionally, breakeven analysis points us clearly down the road of a seasonal 5-month service over a year-round offering. The year-round service was found to exceed breakeven in only two cost/case scenarios for either full or basic service. The seasonal service, however, was far more effective in attaining breakeven revenue levels. As indicated in the results, a full service that included both chiropractic and acupuncture was found to meet and exceed breakeven requirements for a seasonal 5-month service in all but one cost/case scenario. The basic service, however, only exceeded breakeven requirements in two cost/case scenarios for a seasonal year.

A final option to explore involves hiring a full-time clinician and splitting his/her appointment between a seasonal sport horse service and equine “regular” service. The benefit here would be a continuity of exposure to clientele as well as much needed relief for the rapidly increasing equine caseload within the VTH. In this option, sport horse services would be available from a familiar clinician year-around, even though that individual would primarily be working “regular” VTH cases for the off months. **Table 10** outlines the impact to the breakeven requirements of such an arrangement. This table assumes either a referral of once (1x) or twice (2x) per year of available sport horse patients as originally derived in table 5. Calculations are then made to determine the minimum overflow cases per week from the VTH necessary to make up any shortfall in breakeven calculations.

Table 10 Financial Impact of a Full-time Employee with Split Appointments Between Sport Horse and Equine General Medicine Services

1x Referral per year		Breakeven Revenue Requirement*	Shortfall or excess to breakeven if referred 1x/yr for Sport Horse	Total number of overflow VTH cases necessary to achieve breakeven**	Average number of overflow cases <u>per week</u> needed for breakeven***
Cost/Case Calculation					
1	Standard expenses without overhead allocation	\$252,574	(\$131,151)	159	5
2	Standard expenses + ovhd allocated based on total expenses	\$269,136	(\$147,713)	179	6
3	Standard expenses + ovhd based on total revenues	\$432,034	(\$310,611)	377	13
2x Referral per year		Breakeven Revenue Requirement*	Shortfall or excess to breakeven if referred 2x/yr for Sport Horse	Total number of overflow VTH cases necessary to achieve breakeven**	Average number of overflow cases <u>per week</u> needed for breakeven***
Cost/Case Calculation					
1	Standard expenses without overhead allocation	\$252,574	(\$9,727)	12	0.4
2	Standard expenses + ovhd allocated based on total expenses	\$269,136	(\$26,289)	32	1
3	Standard expenses + ovhd based on total revenues	\$432,034	(\$189,187)	230	8

NOTE: Full-time Employee with Split Duties as Follows: ① Full Sport Horse Service – 5 months per year (May-Sept), ② VTH Overflow Clinician – 7 months per year (Oct-Apr)

* Breakeven revenue calculated for Sport Horse Service alone using a \$307/case revenue estimate

** Case quantity calculation based on 7 months of VTH service with an average revenue of \$824/case

*** Calculated using 30 weeks

The worst-case scenario, 1x referral per year and standard expenses + overhead based on total revenues, would require the new clinician to manage an average overflow from the VTH of 13 cases per week for the seven months he/she is not on Sport Horse Service. The best case scenario, 2x referrals per year and standard expenses without overhead allocation, would nearly breakeven without VTH overflow relief. This scenario would require less than one (0.4) overflow case per week during the 7 months to breakeven.

Caseload Analysis

It is, in our opinion, difficult to envision any one service increasing total VTH equine caseload by more than 10-15% per year in the short run. Given that, the most conservative caseload estimates (1x referral/yr/DVM) indicate a 16.4% increase for a full service operation and a 10.6% increase for basic service. We felt it is reasonable, therefore, to assume that a new equine seasonal service could expect to see a minimum of 256 cases per five-month season. Once fully operational, if we attribute 20 weeks to the five-month season, this would amount to an average of 13 cases per week. This could be considered a minimum acceptable caseload projection for any new service. Using the year 2001 basic pilot service as a benchmark we can speculate how long it will take a new seasonal service to grow to the projected 256 cases. The 2001 service saw 65 cases from late June '01 until early September '01. During this time there were no direct communication efforts with referral hospitals or horse owners. Assuming we do implement a communications program targeted at key equine population centers within the MSU market area, we could expect caseloads to grow from the 65 case level to reach the 256 case level within a couple of years. In the mean time, any uncommitted and available sport horse service time could then be applied toward covering case spillover from the current equine service. This would be especially attractive given the stated average annual increase in general VTH caseload of 80 cases per year.

Additional Considerations

With regard to overhead allocation scenarios, we should further explore the methods used in allocating overhead to a service such as this. In the truest sense, this new service will have a minimal impact on current VTH overhead costs. Areas such as ITC, word processing, the business office, purchasing and even medical records would be minimally affected. There will be expected increases in supply costs and some other ancillary support areas. In this regard, it seems reasonable to use a somewhat conservative method of overhead allocation.

The caseload and revenue assumptions in this study are based on a service with projected minimal public relations and communication efforts. The effects of focused and sustained direct communications to equine referral hospitals and sport horse owners must be explored. It is our opinion that any efforts along these lines should measurably increase the potential success of this service.

Another feature that would impact the potential success of such a service is the likelihood of repeat visits. By virtue of the types of services being considered in at least some of these areas (ie. rehabilitation), a reasonable degree of repeat visits becomes highly probable. In that regard, this study may underestimate the potential caseload and revenues that may materialize.

Success of the service as a strictly seasonal entity would hinge on the ability of the CVM to attract and hire a quality clinician who was willing to work for only 5 months of the year.

Options may include identifying an individual who follows the sport horse circuit south in the winter or perhaps sharing their services with a southern veterinary college that has a similar need during our “off season.” A candidate’s ability to move with the horses in either seasonal scenario may also be further complicated by their family status.

Even though inclusion of those services might substantially enhance caseloads and revenues, difficulties may arise in identifying candidates with the necessary science-based alternative medicine expertise required to include acupuncture and chiropractic medicine. To maintain the VTH reputation, any additional services must be based on scientific support rather than simply popular demand. A search committee must enter into their task with the knowledge that finding a qualified candidate with both lameness and alternative medicine expertise may necessitate a long and exhaustive search.

The candidate must also be the quality of clinician the public has come to expect from the VTH. They must be experienced in working with horse owning clientele and will be largely responsible for developing their own client base. This would require the new specialist to be a self-starter with the ability to build a reputation when working only part-time in the sport horse field.

Summary:

In this study we set out to identify the market opportunity for a new sport horse service at Michigan State University. We identified our primary marketing areas and located key clusters of equine population centers. Then, using previous referral studies, we identified the service parameters based on referral hospital expectations. With a service program identified, we set about estimating operation costs and projected revenues. We explored three service offering scenarios and their breakeven opportunities.

The study indicates that a sport horse service should be a viable opportunity based on the outlined assumptions. Considerations must be made toward the methods of service cost allocation and the

potential to attract and hire a qualified individual. The study also shows that there are other opportunities within this proposal to support growth in other areas of the VTH equine service.

It is our recommendation that the MSU VTH implement a seasonal sport horse service to run from May through September of each year. We further recommend that an individual be hired full-time and be assigned to the VTH equine service during the seven months when the sport horse service is not operating. If the expertise is available, we would also recommend including both acupuncture and chiropractic services to maximize potential caseloads and revenue streams.

We further recommend that overhead be allocated based on expenses rather than revenues when analyzing this service. Therefore, the accounting protocol applied to this service should more closely resemble the second cost/case scenario as outlined in Appendix 3 and Tables 8 and 10. This scenario uses standard expenses + overhead allocated based on expenses. While this is still not the most accurate method, it does move us toward a more reasonable accounting of the service's financial impact.

Finally, with focused communication and public relations efforts directed at referral hospitals and key equine population clusters, this service may grow beyond the scope of a seasonal offering. Given that, we recommend annual reviews of the service to re-assess the opportunity and consider expansion to a year-round service or, if expectations are not being met, to re-visit the program and perhaps re-assess the market opportunity.

References:

1. U.S. Postal Service Website: <http://www.usps.gov/ncsc/lookups/lookups.htm>, May 18, 2000.
2. United States Census Bureau Website: <http://factfinder.census.gov/servlet/BasicFactsServlet>, September 9, 2001.
3. Michigan Equine Study, Michigan Equine Monitoring System, Michigan Agricultural Statistics Service, June 1996.
4. Equine Referring Veterinarian Satisfaction with the Veterinary Teaching Hospital, Michigan State University, July 1, 1999 through June 30, 2000, Lloyd, James, et al, October 2001.
5. United States Census Bureau Websites: <http://www.census.gov/cgi-bin/datamap/state?08> and <http://www.census.gov/cgi-bin/datamap/state?26>, May 29, 2000.
6. *US pet ownership and demographics sourcebook*. Schaumburg, Ill: American Veterinary Medical Association, 1997.

APPENDIX 1

Equine Sport Horse Service

Expected Revenues

<u>Type of Case</u>	<u>Expected % of Caseload*</u>	<u>Expected Revenue per Case**</u>
Hock lameness	35%	\$234
Poor Performance	15%	\$325
Chronic lameness (e.g. Navicular)	20%	\$240
Chronic lameness (multiple sites)	5%	\$185
Pre-purchase exam	10%	\$792
Wellness exam I	5%	\$842
Wellness exam II	5%	\$225
Chiropractic series	2.5%	\$850
Acupuncture series	2.5%	\$650

Wtd. average per case revenue: \$358 including chiropractic and acupuncture

Wtd. average per case revenue: \$337 without chiropractic and acupuncture

* Case descriptions and expected percentages of caseload were derived in consultation with Drs. Clayton, Derksen, Nickels and Stick.

** Expected revenues per case were derived in consultation with Ann Lamar based on 2000 prices.

APPENDIX 2

Equine Sport Horse Position

Expected Expenses

	<u>Annually</u>	<u>Prorated for 5 months</u>
Veterinarian's salary	\$70,000	\$29,167
Fringe benefits (@ 33%)	23,100	9,625
LVT's salary (@ \$13.63/hr – grade level 10)	\$28,350	\$11,813
Fringe benefits (@ 33%)	9,356	3,898
Student (\$10.00/hr, 2 hrs/day, 5 days/wk)	\$5,200	\$2,167
Total Added Personnel Expense	\$136,006	\$56,669

Anticipated New Equipment Needs

<u>Item</u>	<u>Expected Cost</u>
Ultrasound	\$30,000
Portable radiograph	10,000
Thermography	40,000
Storage carts, etc.	<u>4,500</u>
Total Equipment	\$84,500

Assuming a 3-year life, the total annualized added equipment expense would be **\$28,167**

APPENDIX 3

Breakeven Scenario Analysis

We look at breakeven revenues three ways:

- 1) Standard expenses without overhead allocation
- 2) Standard expenses with overhead allocated based on expenses
- 3) Standard expenses with overhead based on revenues

Annual and seasonal breakeven analyses yield:

- 1) Standard expenses without overhead allocation

Needed Revenue = Personnel + Equipment + Consumables (@ rev * 35%)

Annual	\$252,574
Seasonal	\$130,516

- 2) Standard expenses with overhead allocated based on expenses

Needed Revenue = Personnel + Equipment + Consumables (@ rev * 35%) + Overhead (@ rev *4%)

Annual	\$269,136
Seasonal	\$139,074

- 3) Standard expenses with overhead based on revenues

Needed Revenue = Personnel + Equipment + Consumables (@ rev * 35%) + Overhead (@ rev * 27%)

Annual	\$432,034
Seasonal	\$223,249

From earlier projections, we know the estimated revenue generated from 1X and 2X referrals would be:

	<u>1X referrals</u>	<u>2X referrals</u>
Projected revenue (@ \$358/case)	\$158,236	\$316,472

Based on 1X and 2X referrals, projected revenues would meet breakeven requirements for a 5 month seasonal service as follows:

	<u>1X referrals</u>	<u>2X referrals</u>
Std exp. without ohd allocation	exceed (+27,720)	exceed (+185,956)
Std exp. with ohd allocated based on expenses	exceed (+19,162)	exceed (+177,398)
Std exp. with ohd based on revenues	short (-64,923)	exceed (+93,223)

Variable expenses were determined to constitute about 35% of revenues in the equine surgery service [87% of non-overhead expenses are consumable (non-labor) in the equine surgery service, and 40% of revenues are non-overhead expenses]***

It was determined that 4% of revenues in the equine surgery service should be considered as fixed expense when allocating overhead on the basis of non-overhead expenses (9% of all non-overhead expenses in Large Animal belong to the equine surgery service, and 40% of revenue are non-overhead expenses) If overhead is allocated on the basis of revenue, then 27% of revenues in the equine surgery service should be considered as fixed expense (27% of all Large Animal revenues are generated by the equine surgery service.)***

*** Consumable and overhead expenses were derived in consultation with Laurie Worgul based on fiscal year 98-99

APPENDIX 4

Based on current research among MSU's referring veterinarian population* we know the likelihood of referral for key equine services and, using our referral population, can extrapolate caseload assuming 1X and 2X referrals per year per service.

<u>Service</u>	<u>% likely to refer (Score 4-5 out of 5)</u>	<u>Total Cases Referred 1X/yr</u>	<u>Total Cases Referred 2X/yr</u>
Lameness diagnosis	61.0%	121	243
Rehabilitation services	51.4	102	205
Chiropractic services	41.9	83	167
Acupuncture services	36.6	73	146
Pre-purchase services	18.1	36	72
Wellness exams	13.2	26	53
		===	===
Total caseload per year		442	884
Projected revenue (@ \$358/case)		\$158,236	\$316,472

Impact on VTH caseload and revenues

		<u>% inc. at 442 cs/yr</u>	<u>% inc. at 884 cs/yr</u>
Current caseload per year	2,420	18.3%	36.5%
Current revenue per year	\$1,918,184	8.2%	16.5%

* Equine Referring Veterinarian Satisfaction with the Veterinary Teaching Hospital, Michigan State University, July 1, 1999 through June 30, 2000, Lloyd, James, et al, October 2001