



Extension Service
West Virginia University®

*An
Evaluation*

WEST VIRGINIA EQUINE ECONOMIC IMPACT STUDY

Authors:

*David W. Hughes, Jean M. Woloshuk, Alison C. Hanham,
David J. Workman, David W. Snively, Paul E. Lewis, Thomas E. Walker*

Sponsors:

West Virginia University Extension Service
West Virginia University Davis College
of Agriculture, Forestry, & Consumer Sciences



Programs and activities offered by the West Virginia University Extension Service are available to all persons without regard to race, color, sex, disability, religion, age, veteran status, political beliefs, sexual orientation, national origin, and marital or family status. Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Director, Cooperative Extension Service, West Virginia University.

West Virginia University is governed by the West Virginia Higher Education Policy Commission and the WVU Board of Governors.



*Research Report
Submitted to the
Joint Committee
on Economic Development,
West Virginia Legislature*

AN EVALUATION OF THE IMPACT OF THE EQUINE INDUSTRY ON THE WEST VIRGINIA ECONOMY

Authors:

*David W. Hughes, Jean M. Woloshuk, Alison C. Hanham,
David J. Workman, David W. Snively, Paul E. Lewis, Thomas E. Walker*

** Dr. Hughes, Dr. Woloshuk, Ms. Hanham, Mr. Workman, and Mr. Snively are with the West Virginia University Extension Service; Dr. Lewis is with the West Virginia University Davis College of Agriculture, Forestry, and Consumer Sciences; Mr. Walker is with Penn State Cooperative Extension and Outreach. The contact author is David W. Hughes, WVU Extension Specialist, Room 2102 Agricultural Science Building, PO Box 6108, Morgantown, WV 26506-6108; 304-293-6131 ext. 4240; (fax) 304-293-6954; dwhughes@mail.wvu.edu.*

Sponsors:

West Virginia University Extension Service

*West Virginia University Davis College
of Agriculture, Forestry, & Consumer Sciences*

ACKNOWLEDGMENTS

Funding for this study was provided by the Joint Committee on Economic Development, West Virginia Legislature. The authors would like to thank the study advisory committee for their guidance and advice on the development of the surveys and the following organizations for their kind help and support: the West Virginia Horse Council Inc., Charles Town Races and Slots, Mountaineer Race Track and Gaming Resort, The Horsemen's Benevolent and Protective Association, and many other equine-related clubs and organizations throughout West Virginia.

Special thanks go to the many operations, owners, businesses, WVU county faculty members, and volunteers who supplied the names and addresses of potential survey recipients, and to the survey respondents who provided the basic data used to estimate the economic impact of the equine industry in West Virginia. Thanks also to Meg Baughman, Ann Berry, Joyce Bower, Chuck Clovis, and Pat Kerns for their technology and production assistance.

Advisory Committee

Debra Burnside	Michele Koury
Kathy Courtemanche	Edwin Linger
Robert Ford	Connie Lupardus
James Henderson, D.V.M.	David Miller
Janice Holland, Ph.D.	Noah Perry
Sam Huff	

Race Industry Officials

Rose Mary Williams and Tamara Pettit,
Mountaineer Race Track and Gaming Resort

Richard Moore,
Charles Town Races and Slots

Lora Bailey and Donald Combs,
Horsemen's Benevolent and Protective Association

CONTENTS

Executive Summary	1
Key Findings	1
1. Introduction	5
2. Previous Studies	6
3. Data and Methods	6
4. Study Results.....	8
<i>Equine-related Activities</i>	8
<i>Equine Inventory in West Virginia</i>	11
<i>Demographics of Horse Owners and Participants</i>	17
<i>Economic Impact Model Results</i>	29
5. Conclusions and Policy Recommendations	39
6. Appendices	43
<i>Equine Owner and Businessperson Survey</i>	43
<i>Comments from Owner/Businessperson Survey</i>	51
<i>Racehorse Trainer Survey</i>	55
<i>Use of Survey and Other Data Sources</i>	
<i>in the IMPLAN Model</i>	61
<i>Limitations and Uses of Input-Output Models</i>	63
7. References	65

EXECUTIVE SUMMARY

Abstract

The West Virginia equine industry has quietly grown into a major economic industry across the state. It encompasses a wide variety of pursuits that include profitable businesses, such as breeding and training facilities, educational programs at colleges and universities, youth development organizations, such as 4-H, and numerous recreational activities. These diverse activities are all catalysts for economic growth. This study provides an examination of the contribution of equine and equine-related activities to the West Virginia economy based on a state input-output model and an extensive survey of the industry.

KEY FINDINGS

Economic Impact

The equine industry has a strong economic impact on the West Virginia economy including:

- \$509.641 million in total industry output
- \$167.291 million in Gross State Product (0.4% of Gross State Product)
- \$102.930 million in labor income
- 12,924 jobs (1.5% of all jobs in the state economy)

Pleasure horse and nonracing segments of the West Virginia equine industry make huge contributions to the economic impact including:

- Direct spending of \$130.2 million
- 3,836 equine-related jobs
- \$6.8 million in direct payroll and owner-operator profits
- \$18.266 million in direct gross state product

This direct activity led to the following impacts:

- \$221.712 million total impact on output in the West Virginia economy
- \$1.70 in output in the West Virginia economy for every dollar of output by these industry segments (\$1 direct plus \$0.70 in multiplier effects in other parts of the West Virginia economy)
- \$30.7 million in direct payroll and owner-operator profits
- \$62.765 million in Gross State Product
- 6,751 total jobs

The West Virginia racehorse segment of the industry also makes a huge contribution to the economic impact including:

- Direct spending of \$203.724 million
- 4,164 equine-related jobs
- \$45.3 million in direct payroll and owner-operator profits
- \$60.3 million in direct gross state product

This direct activity led to the following impacts:

- \$287.9 million total impact on output in the West Virginia economy
- \$1.42 in output in the West Virginia economy for every dollar of output by this industry segment (\$1 direct plus \$0.42 in multiplier effects in other parts of the West Virginia economy)
- \$72.2 million in direct payroll and owner-operator profits
- \$104.5 million in Gross State Product
- 6,173 total jobs

KEY FINDINGS Economic Impact

Demographics of horse owners and participants including income, education, age, family size, length of stay in community, and commitment to equine activities:

- West Virginia equine owners have more formal education (46.2% of respondents have a college degree compared with West Virginia average of 13.1%)
- West Virginia equine owners have higher incomes (39.9% have \$70,000+ in annual household income compared with 9% of West Virginia population)
- West Virginia equine owners have slightly larger families (average family size is 2.87 members compared with West Virginia average of 2.4) and are slightly older (median age is 46 years compared with West Virginia median age of 39).
- West Virginia equine owners tend to be longtime residents of their community, but some are newcomers
 - Respondents resided in their community an average of 25.6 years
 - Most common response was 15 years
 - 9.6% were residents for 5 years or less
- West Virginia equine owners showed a strong commitment to equine-related activities usually as family activities (almost three out of four family members participated in equine-related activities)

Policy recommendations

- Study results point to the lack of adequate facilities for horse showing events. Ongoing and facilities under consideration should be supported through appropriate means.
- Spending patterns and economic impact results suggest that the development of other facilities and sources of local supply may be warranted. A feasibility study should be considered to determine if developing an in-state equine surgery facility is a viable option, and if sources of local supply can be developed for other key inputs.
- Equine businesses could be strengthened through membership in equine, agricultural, or tourism-related business cooperatives or associations. For example, these groups could be used to strengthen marketing efforts to tourists.
- The findings of this study suggest that further development of the West Virginia equine industry could attract affluent retirees and other individuals with high incomes and well-developed skills looking for a place to relocate.
- Investments should be made to enable better data collection concerning the equine inventory in West Virginia.
- State government should consider taking the lead in developing a partnership among members and leaders of the various equine-activity organizations, leaders of equine nonracing and racing-based businesses, state government, and West Virginia University to enhance the contribution of equine industry to the state economy. In this regard, support should be considered to create an equine curriculum at WVU and employ an equine specialist who would be jointly positioned with the WVU Extension Service and the WVU Davis College of Agriculture, Forestry, and Consumer Sciences, to more effectively address the needs of this industry.

1. INTRODUCTION

As has occurred in many states, the West Virginia equine industry has quietly grown into a major economic industry. It encompasses a wide variety of pursuits that include profitable businesses such as breeding, boarding, and training facilities, retail establishments, and racetracks; educational programs and regional or national intercollegiate teams at colleges and universities; youth development organizations such as 4-H and Pony Club; and numerous recreational activities. These diverse activities are all catalysts for economic growth.

Similar to recent studies carried out in several other states (Florida, Maryland, New Jersey, and Virginia) the West Virginia Equine Economic Impact Study was designed to assess the equine population at the state level and to analyze the growth and economic contribution of the equine industry to the West Virginia economy. A variety of methods were used to compile the populations for this study. Two separate surveys were developed – one for use by horse owners and equine-related businesses and the other for use by the horseracing segment of the equine industry in West Virginia. Similar to several recent studies, the IMPLAN economic model building system was utilized to generate economic multipliers and economic impact analysis for the equine industry at the state level.

In the following section, we briefly examine several previous state and national equine studies. Subsequent sections report the data and methods used in the study with discussions centering on (1) the collection and sampling of survey populations, the construction of survey instruments, strategies used to increase survey response rates, and response rates from the two surveys; (2) the study results including a summary of equine activities, breeds, and a demographic profile of equine owners and businesses based on the survey results; (3) the results of the economic impact analysis including a discussion of expenditure and other data used in building the economic impact model and the process of integrating data from the two surveys into the model; and (4) some conclusions. These conclusions include several policy recommendations aimed at enhancing the growth of the industry and its contribution to the West Virginia economy.

*“Whenever man has left his
footprints in the long descent
from barbarism to civilization,
we find the hoofprints of a
horse beside it.”*

John Trotwood Moore (2004)

2. PREVIOUS STUDIES

Several previous studies have examined the composition, nature, and economic impact of the equine industry at both the national and regional levels. In a 1996 study funded by the American Horse Council Foundation, Barents Group LLC examined the impact of the equine industry on the U.S. economy. Their study estimated the total impact of equine-related activity on the U.S. economy to be \$112.1 billion, with direct spending of \$25.3 billion. Study results also indicated that 7.1 million Americans were involved in the industry as owners, equine service providers, and owners of related businesses. Direct employment was estimated at 338,500 jobs, with total employment impacts at 1.4 million full-time equivalent jobs. Their study found that there were 6.9 million horses in the United States in 1996, with more than 70% involved in showing or recreational activities.

The horse industry in 11 states was also examined in greater detail in the American Horse Council study. For example, the horse industry in Florida was estimated at 18,600 direct jobs and 72,200 total jobs. Economic impact studies have also been conducted in other states by other entities. Such studies were often commissioned and supported by the state legislature and usually conducted by the Extension Service and land-grant university college of agriculture. An input-output (I-O) model of the state economy has generally been used to estimate economic impacts.

A recent extensive survey of the Pennsylvania equine industry conducted by Swinker et al. (2003) provides an excellent example. Pleasure horse owners and racehorse owners were surveyed separately in the Pennsylvania study. Their results were then integrated into an input-output model of the state economy. Among their key findings, they found that other studies had underestimated the number of horses in the state and that the horse population had substantially increased in recent years. They estimated the number of equine residing in Pennsylvania in 2003 at 216,000, and that this number had increased by 27% over the last 10 years. They also estimated the total contribution of the equine industry to the state economy to be 20,300 jobs, \$1.12 billion in total industry output, and \$615.1 million in value added.

3. DATA AND METHODS

Various methods were used to develop a mailing list of equine owners, businesses, and affiliated equine-related entities for inclusion in the study. In October 2002, letters were sent to all horse associations and affiliated organizations listed in the 2002 *West Virginia Horse Industry Directory* published by the West Virginia Department of Agriculture (2003). In November, an Extension agent in each of the 55 West Virginia counties received information about the study and a master data collection disk with directions for use. Their charge was to make personal contact and collect the names and addresses of their local horse organizations, businesses, and horse owners. In addition, the study was promoted and advertised through new releases, graphic displays, and individual meetings with interested equine groups. Copies of negative Coggins Tests on file with the West Virginia Department of Agriculture (1998-1999) were another source of horse owner names and addresses. Contact information for any business involved in the equine industry, such as blacksmiths, riding facilities, guided trail rides, were obtained from the American Business Disk (Reference USA, 2002). Results from this phase of the study were reviewed, and duplicate records were removed from the database. A total of 11,431 names and addresses for individuals and businesses were identified as part of the West Virginia horse industry.

A survey instrument was developed for use by horse owners and equine related businesses. It was necessary to survey both groups with the same instrument because many equine business people own horses. In addition, some equine owners also operate equine businesses but were not identified as such before the study. The survey instrument was developed based on surveys used in similar studies in other states and also on questions submitted by our funding organization. In addition, an industry advisory committee was formed to provide guidance and advice on the development of the survey.

Surveys were mailed to one out of every six individuals identified as horse owners and one out of every two identified as equine businesses. Following the Dillman Design Method (Dillman, 2000), follow-up postcards were mailed two weeks after the initial mailing of the survey. A second set of surveys was subsequently mailed to all nonrespondents. Out of the 1,931 individuals who received surveys, 326 surveys were returned, yielding a response rate of 17%. While lower than the response rate for the recent Pennsylvania study, our response rate was higher than had been obtained by several earlier state-level equine impact studies. Examination of returned surveys and comparisons to similar studies conducted in Virginia and Pennsylvania and a national study indicated that our survey data were sufficiently accurate for use in model estimation and for drawing policy conclusions. Pleasure horse owners and nonracing equine businesses who responded to the survey were assumed to be representative of the entire population and were used to estimate the number of equine and the total size of expenditures in both sectors (see Appendix 6.4).

A separate survey was also developed to aid in estimating the impact of the horseracing segment of the equine industry on the West Virginia economy. This survey population included trainers and owners involved in horseracing at Mountaineer Race Track in Chester, West Virginia. Based on names and addresses provided by the racetrack, surveys were mailed to all those living in state and one out of five living out of state. The Dillman Design method was used to obtain the maximum number of responses from this survey population. Among the 293 surveys mailed, 15 usable responses were obtained, for a survey response rate of 5.1%. Industry size estimates for horseracing activities were estimated based on a variety of sources. These sources included the two surveys and information directly obtained from track officials and from published sources.¹

The IMPLAN (Impact Planning) modeling system (Minnesota IMPLAN Group, Inc.) was used to compute the Input-Output (I-O) model for the West Virginia economy used in this study.² As explained in Appendix 6.4, data from a variety of sources were used to confirm and in many cases modify values found in the original West Virginia I-O model.

¹ As explained in Appendix 6.4, because of the low response rate, results from this survey were used in the process of estimating in-state versus out-of-state purchases of inputs by racehorse trainers and owners. Personal interviews with four individuals who train race horses at the track in Charles Town, results from a recent study conducted by Thalheimer Research Associates for the Charles Town track, and racing industry results from our first survey were also used to estimate the economic impact of horseracing activity in West Virginia.

² IMPLAN is a ready-made modeling system, which relies on secondary data (such as employment) and the assumption that the regional economy is similar in structure to the national economy. Because this assumption may be tenuous, ready-made I-O models should be evaluated and altered in light of other data sources and knowledge concerning the local economy. For a more detailed explanation, please refer to Appendix 6.5.

4. STUDY RESULTS

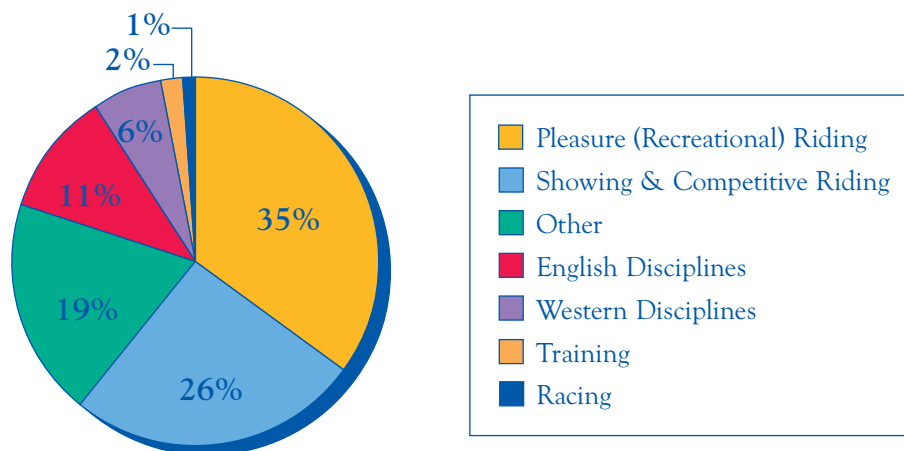
Equine-related Activities

Activities of equine operations can vary considerably. To determine the types of equine activities engaged in by West Virginia residents and whether they were able to pursue those activities within the state of West Virginia, survey respondents were asked to indicate their level of participation during the past year in a variety of equine activities. The survey (see Appendices) asked respondents to identify the specific equine activities they participated in, the number of days spent on the activity, and how much of that activity occurred within West Virginia. Survey respondents indicated a total of 456 activities. Specific activities were grouped into seven major categories: pleasure or recreational riding, showing and competitive riding, various forms of English riding, various forms of Western riding, training, racing, and other miscellaneous equine-related activities.

According to survey respondents, the most common equine activity in West Virginia was pleasure and recreational riding, which included such activities as noncompetitive trail riding, pleasure riding, arena riding, pack and hunting, and wagon trains. The second most common activity category was showing and competitive riding (various types of English and Western horse shows, gymkhana, English/Western Pleasure, mule and donkey shows, driving events, and endurance riding). This was followed by other miscellaneous equine-related activities such as using horses for work on the farm or ranch, driving, sales, 4-H, and Pony Club to name just a few; various forms of English riding disciplines (hunter/jumpers, dressage, 3-day eventing, and fox hunting); various forms of Western riding disciplines (cutting, reining, roping, rodeo, team penning and barrel racing); training (riding lessons and horse or pony training); and racing. Equine activity in West Virginia was concentrated in the pleasure and recreational riding category, with 35% of all responses. Showing and competitive riding accounted for 26% of all responses, followed by other equine-related activities (19%), English disciplines (11%), Western disciplines (6%), training (2%), and racing (1%) (Figure 1).

In terms of specific equine activities within major categories, noncompetitive trail riding had the highest level of participation in the pleasure/recreational category and various forms of horse showing had the highest level of participation in the showing/competitive riding category. Survey results also identified hunter/jumper, dressage, and 3-day eventing as more frequent activities of horse owners in

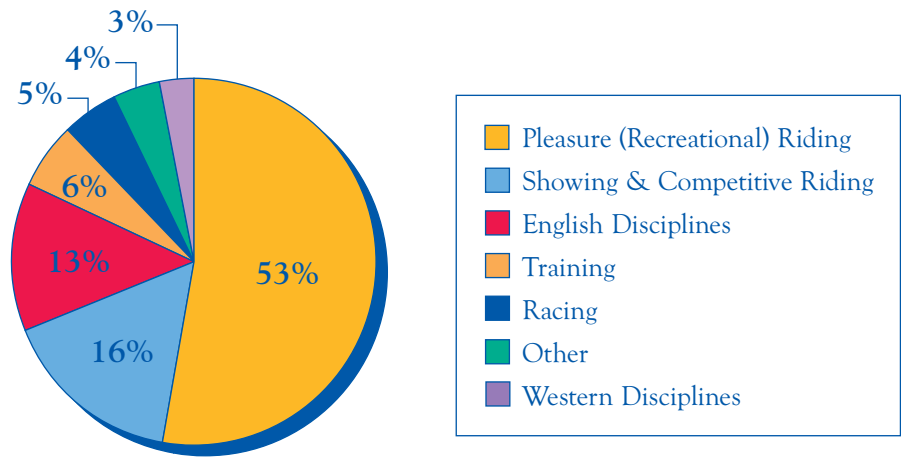
Figure 1. Equine Activity by Major Category



West Virginia in the English disciplines. Rodeos, team penning, and reining were the most popular Western disciplines. In the other equine-related activity category, various forms of driving were the most common activity identified.

Survey respondents said they devoted a total of 20,544 days to equine activities, for an annual average of 45.1 days across all activities. Pleasure and recreational riding accounted for the largest number of equine activity days (53% of total activity days), followed by showing and competitive activities, English disciplines, training, racing, other equine-related activities, and Western disciplines (Figure 2).

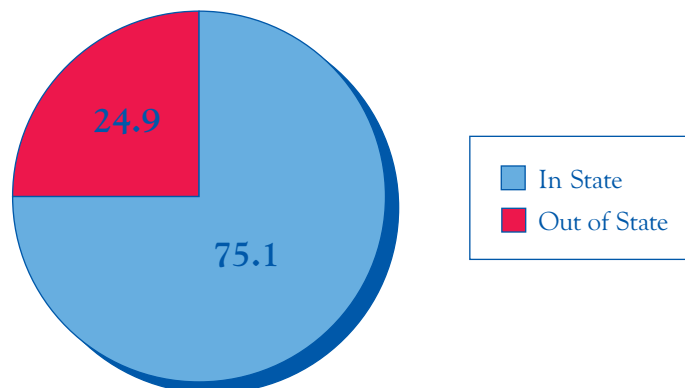
Figure 2. Equine Activity Days by Major Category



In terms of specific activities, noncompetitive trail riding had by far the largest number of days spent (47.6% of total days across all categories) by West Virginia equine enthusiasts. This was followed by horse showing, dressage, racing, hunter/jumper, and training.

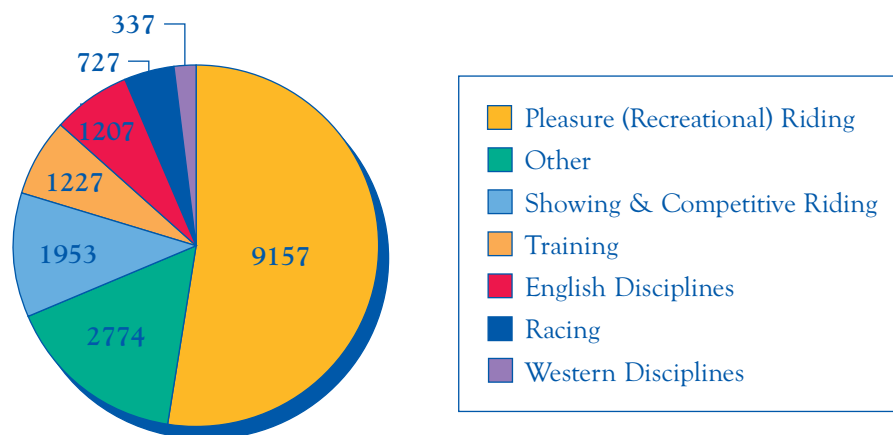
Activities were also evaluated in terms of in-state versus out-of-state levels of occurrence. This is an important issue because activity that occurs out of state can result in the leakage of dollars from the West Virginia economy to the economies of other states. In total, survey respondents indicated that 75.1% of all equine activity days occurred within West Virginia (Figure 3).

Figure 3. Percentage of Equine Activity Days Spent in State and Out of State



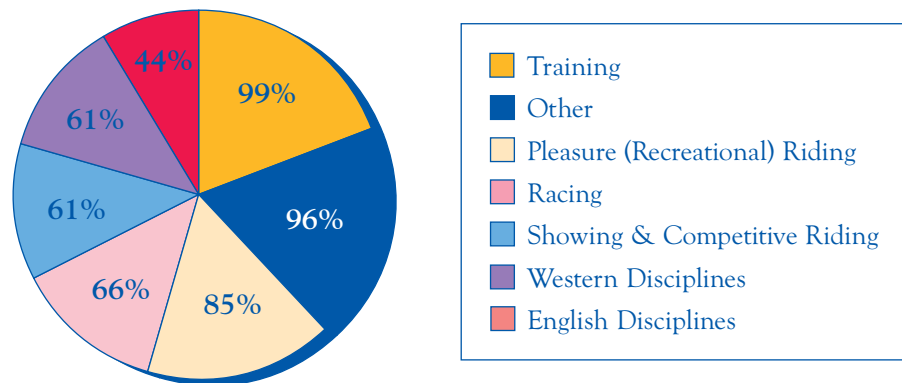
Survey respondents said they devoted a total of 15,425 days to equine activities within West Virginia, for an annual average of 33.8 days across all activities. In terms of the major categories, pleasure and recreational riding had the largest number of in-state equine activity days, followed by other equine-related activities, showing and competitive activities, training, English disciplines, racing, and Western disciplines (Figure 4). However, in-state equine activity days differed slightly in rank as compared to total days of activity because various activity groups had different levels of in-state versus out-of-state use. For example, English Disciplines ranked third in total activity days among the major equine activity categories, but fourth on total in-state days because survey respondents indicated that only 43.8% of these activities occurred within West Virginia. Showing and competition also showed a large level of out-of-state activity.

Figure 4. Equine Activity Days Spent in West Virginia by Major Category



The picture changes considerably when specific activities are examined based on the percentage of days spent in state and out of state. For example, respondents reported participating in horse shows a total of 2,305 days (11.2% of the total number of days devoted to that specific activity) annually. However, the majority of horse show activity days, almost 52%, occurred outside of West Virginia. The same is true for dressage enthusiasts, who spent only 38% of their days pursuing this activity in state. Other activities such as team penning, cutting, 3-day eventing, and fox hunting had in-state participation rates of less than 50%. Several activities reported by survey respondents took place entirely (100%) out of state, such as various driving activities, polo, and Pony Club camps.

Figure 5. Percentage of Equine Activity Days Spent in West Virginia by Major Category



Equine Inventory in West Virginia

Equine Breeds and Boarded Horses

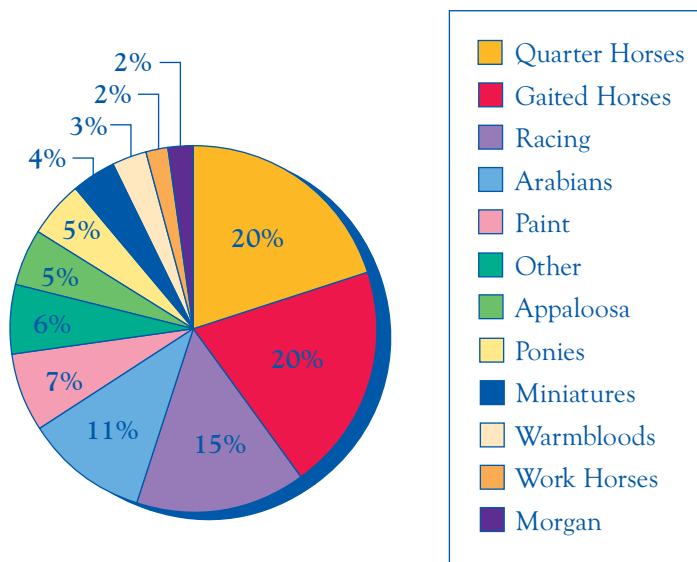
To determine the equine breeds residing in West Virginia, the survey asked respondents to identify the breeds of equine they owned. The equine breeds reported represent 17 breed categories. Respondents were also asked to separately indicate the number of equine they either owned or boarded. Among the 17 breed types, the American Quarter Horse topped the list as the most popular breed in the state. Gaited horses were the second most popular breed, followed by Paints, ponies, and Arabians, which were also very popular with West Virginia horse enthusiasts.

Among survey respondents, 288 indicated that they were equine owners, reporting a total of 2,227 horses or an average of 7.7 equine per owner. Fifty-eight survey respondents said they boarded horses, with most indicating that they also owned at least one horse. A total of 302 boarded horses were reported, or an average of 5.2 boarded horses per survey respondent.

Breeds were aggregated into 12 categories based on similarity of use and nature. These included Quarter Horses, Arabians (Arabian, half-Arabian, and Anglo Arab), gaited breeds (American Saddlebred and unspecified gaited breeds), racehorses (Thoroughbred and Standardbred), draft horses (mules and draft horses), miniatures, Appaloosas, Paints, Morgans, warmblood breeds, ponies, and other (crossbreed/grade and other).

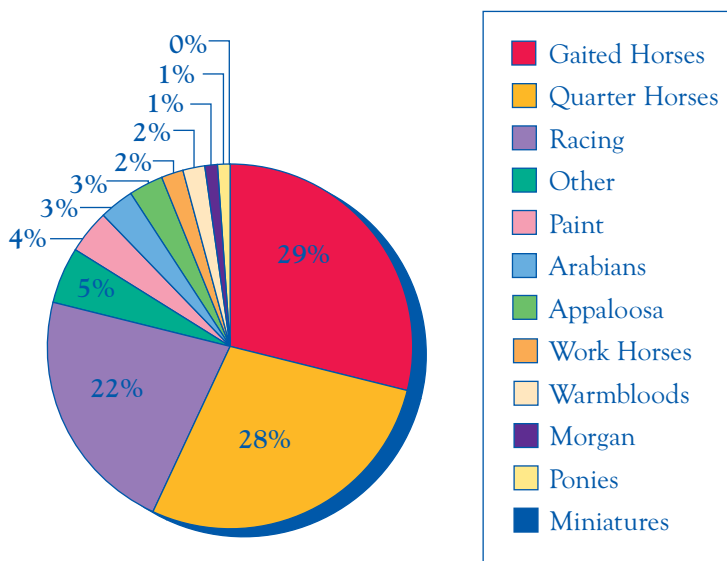
As shown in Figure 6, the Quarter Horse was the largest breed category, making up roughly 20% of all horses owned by survey respondents; they were closely followed by gaited breeds. Racing breeds constituted 15% of equine owned by survey respondents, followed by Arabians, Paints, Appaloosas, ponies, miniatures, Warmblood breeds, draft breeds, and Morgans.

Figure 6. Major Equine Breeds in West Virginia



The number of boarded horses by major breed category was also examined. As shown in Figure 7, survey respondents reported that gaited horses were the breed category most often kept in boarding facilities, being 29% of all horses boarded. That category was followed by Quarter Horses (28%) and racehorse breeds (22%). Paints, Arabians, draft horse breeds, Appaloosas, Morgans, and ponies had markedly smaller levels of boarding, and miniatures were not boarded by any of the survey respondents.

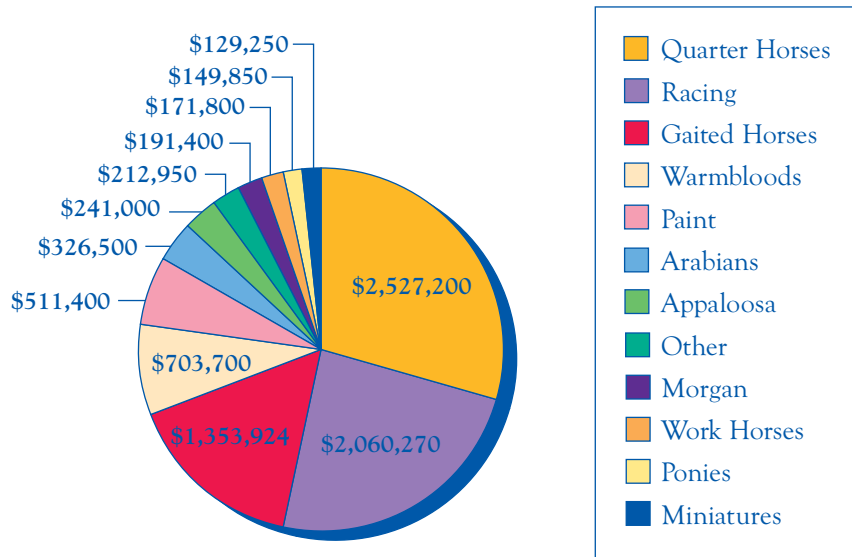
Figure 7. Boarded Horses by Major Equine Breed in West Virginia



Equine Economic Values

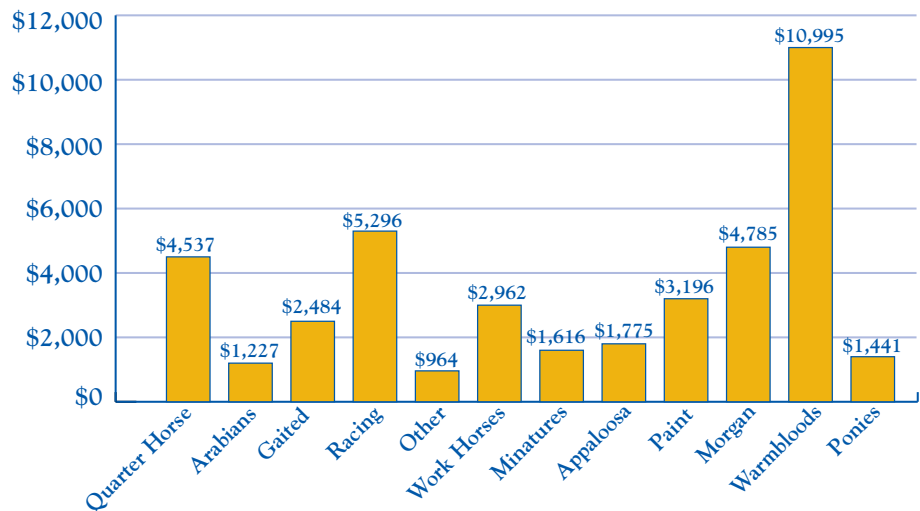
To estimate the value of equine in West Virginia, survey respondents were asked to indicate the value of all the equine they owned and boarded. Respondents reported a total value of \$8.579 million or \$3,392 per equine. Quarter Horses held the highest total value at \$2.527 million, followed by racing breeds, gaited breeds, warmblood breeds, Paints, Arabians, other miscellaneous breeds, Appaloosas, Morgans, draft horse breeds, ponies, and miniatures (Figure 8).

Figure 8. Total Value of Equine by Major Breed in West Virginia



The average value of an equine, based on the major breed categories, was also examined. As shown in Figure 9, warmblood breeds had by far the largest average value at \$10,995 per horse followed by racing breeds, Morgans, Quarter Horses, and Paints. Average values for all other breed categories were less than \$3,000.

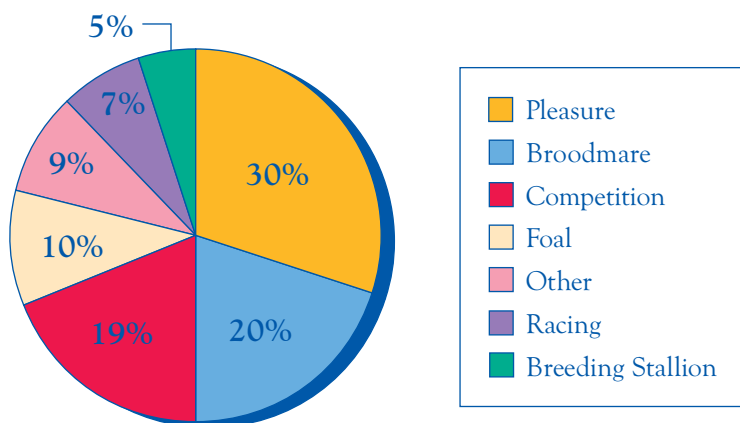
Figure 9. Average Equine Value by Major Breed in West Virginia



Equine Use by Major Breed

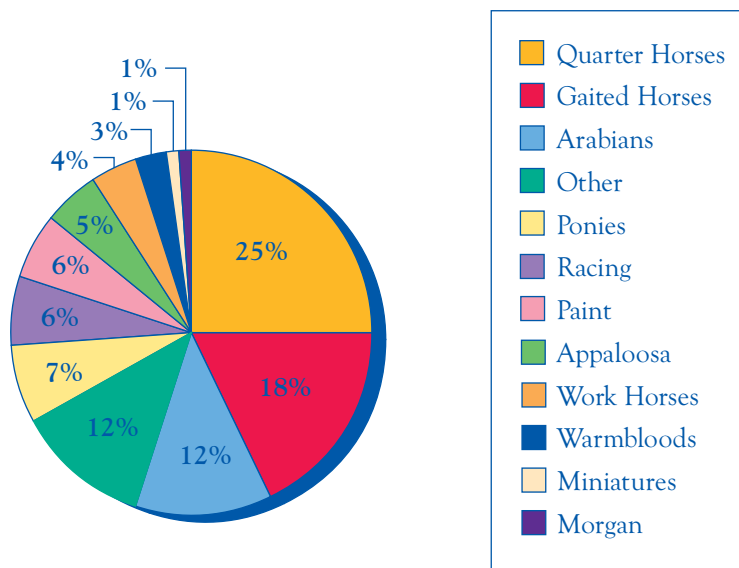
Equine are put to use in a variety of ways in West Virginia. Survey respondents were asked to indicate the level of activity in six equine use categories (Figure 10). These categories included racing, pleasure, competition, breeding (broodmares and stallions separately), foals, and other miscellaneous activities. Roughly 7% of all equine were reported to be used for racing (virtually all horses in the racing breeds category), 30% for pleasure, and 19% for competition purposes. Twenty percent were used as broodmares, 5% as breeding stallions, 10% as foals, and 9% were used in other miscellaneous activities.

Figure 10. Equine Uses in West Virginia



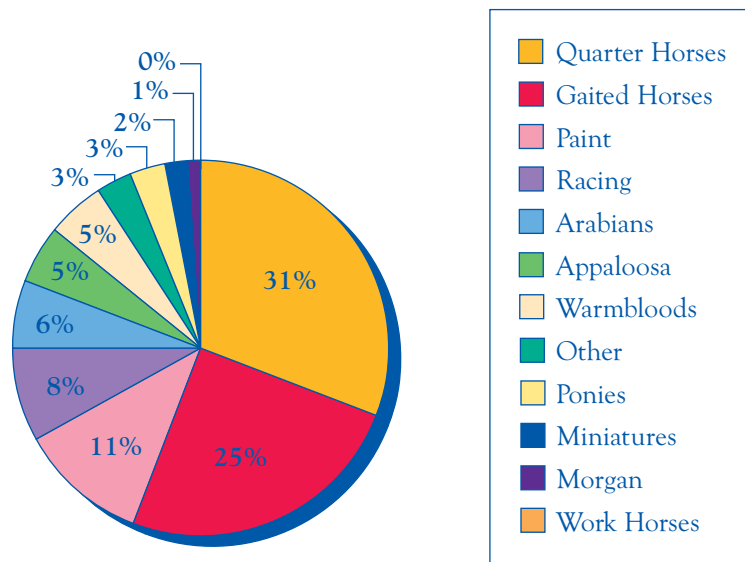
The pleasure category was a major activity for Quarter Horses, accounting for 25% of all equine reported as being used in pleasure activities. Gaited breeds were the next most popular pleasure horse, followed by Arabians, other miscellaneous breeds, racehorse breeds, Paints, Appaloosas, work horse breeds, warmblood breeds, and Morgans (Figure 11). It is interesting to note that racing breeds constituted 15% of the total number of owned and boarded equine, but only 6% of the horses devoted to pleasurable activities.

Figure 11. Pleasure Use by Major Equine Breed in West Virginia



The competition (other than racing) category was also dominated by Quarter Horses, which captured 31% of all competitive activities. Gaited breeds were the next most common breed involved in competitive activities (25%), followed by Paints, racehorse, and warmblood breeds. Draft horse breeds, ponies, and Morgans reported the smallest percentage of horses involved in competitive activities (Figure 12). Since Quarter Horses were reported as the most prevalent breed in West Virginia, it is not surprising that on average, Quarter Horses were devoted more often to both pleasure and competition activities than were other major equine breeds.

Figure 12. Competition Use by Major Equine Breed in West Virginia



Gaited breeds had the largest share of breeding stock for both broodmares (22% of all breeding mares) and stallions (28% of all breeding stallions) (Figure 13). Racing breeds accounted for 20% of all breeding mares and 8% of all breeding stallions; Quarter Horses ranked third in both categories; then followed miniatures, Appaloosas, and Paints, which had similar levels of breeding stock. Miniatures constituted a surprisingly large share of both broodmares and stallions given their relatively small share of the total number of equine in the overall sample population. On average, racehorse mares were devoted more often to breeding than the other major equine breed categories. Jockey Club³ data compiled annually by state show a significant increase in the number of Thoroughbred mares and foals reported in West Virginia between 1998 and 2003 (Figure 14).

³ The Jockey Club is the breed registry for all Thoroughbred horses in North America.

Figure 13. Breeding Stock by Major Breed Category in West Virginia

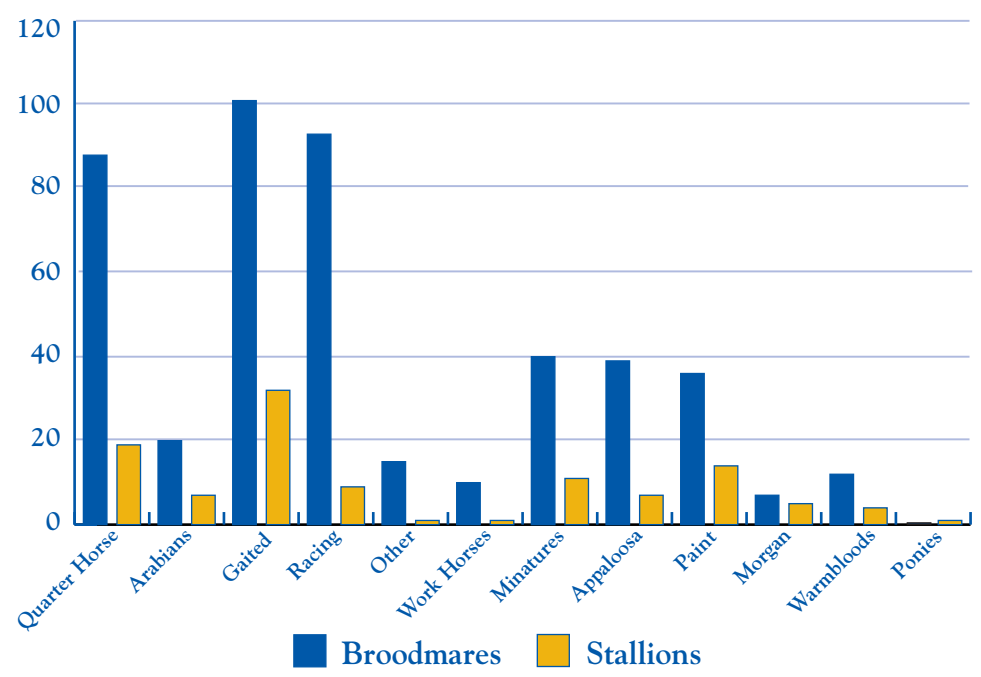
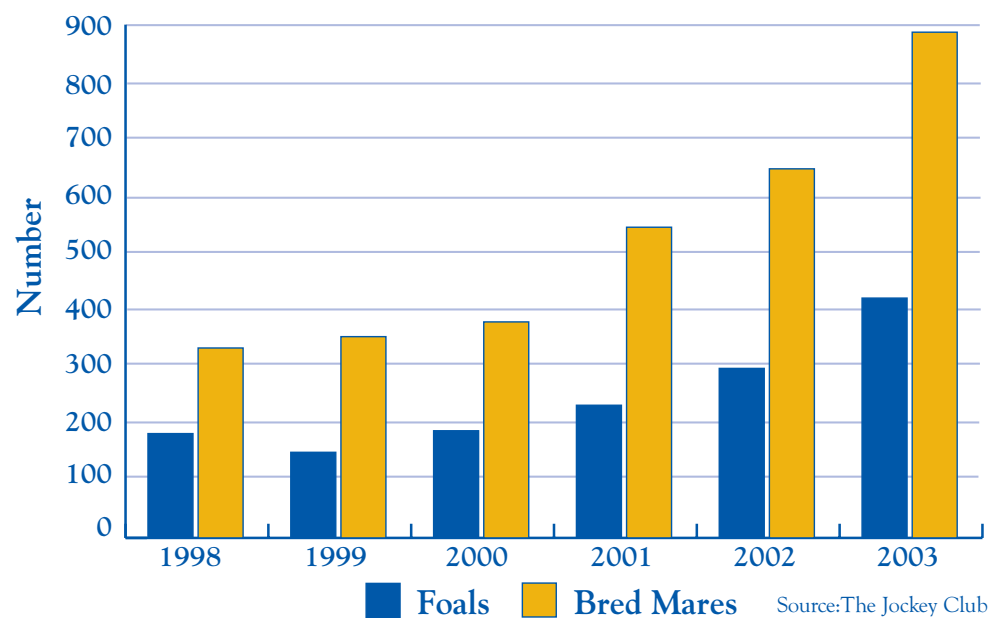
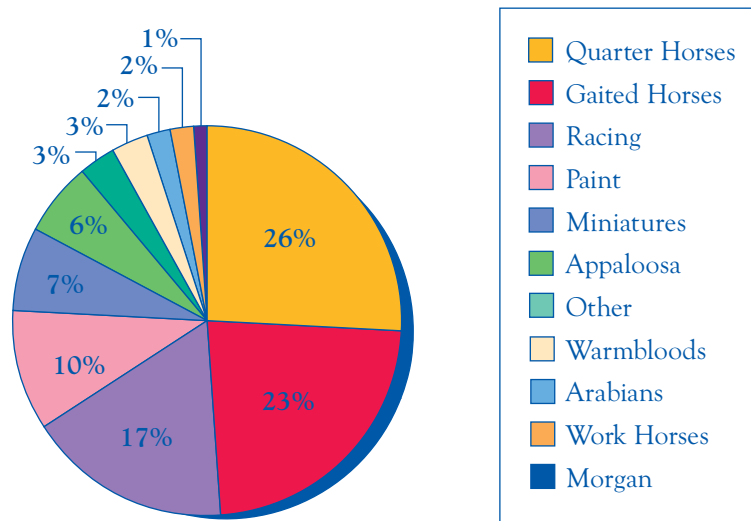


Figure 14. Number of Thoroughbred Foals and Bred Mares Reported in West Virginia: 1998 to 2003



Foals owned by survey respondents fell into similar breed categories. Among the 233 equine identified as foals, 26% were Quarter Horses, followed by gaited breeds (23%) and racing breeds (17%) (Figure 15). Paints, warmblood breeds, other miscellaneous breeds, miniatures, and Appaloosas were also responsible for a significant number of foals. Draft horse breeds and Morgans were reported to have the fewest foals.

Figure 15. Foals by Major Equine Breed in West Virginia



Demographics of Horse Owners and Participants

Socioeconomic Characteristics

Higher levels of formal education and incomes, slightly larger families, slightly older than the West Virginia population at large, and long-time residents of their communities are features that characterize the survey respondents. The findings related to income and education levels were consistent with other studies of horse owners at state and national levels.

Almost 97% of survey respondents indicated they had a high school diploma as compared with 75.7% of the general population in West Virginia (2000 Census). Almost 47% of survey respondents had a college undergraduate degree, compared with only 13.1% of the general population in West Virginia having such a degree. Especially impressive was the large number of survey respondents completing graduate work or a graduate degree (30.7%). Survey results also indicated that 39.9% of respondents had an annual household cash income of \$70,000 or greater compared with 9% of the general population in West Virginia.

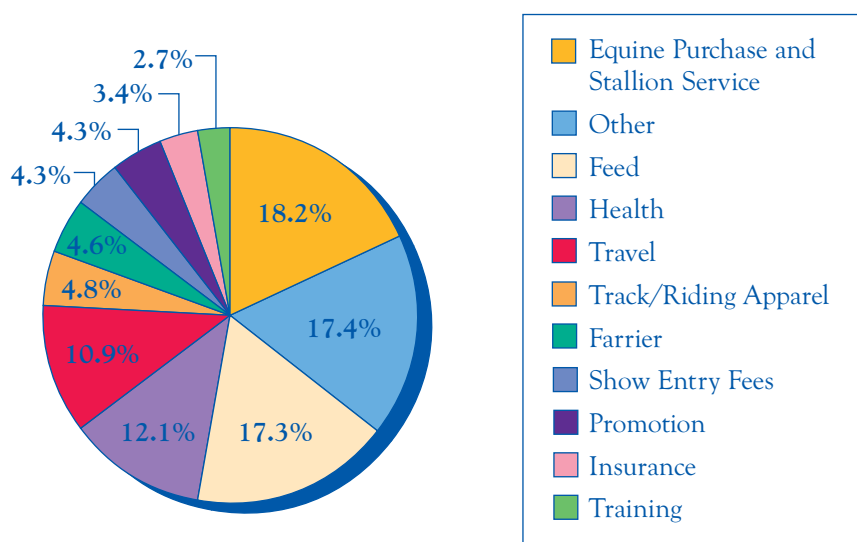
The average age of survey respondents was 46.4 years, and the median age was 46. The median age for the general population in West Virginia is considerably younger at 38.9 years old. The average family size of the survey respondents was 2.87 members; in West Virginia and the United States, the average family size is 2.4 and 2.59, respectively. Survey respondents showed a strong commitment to equine-related activities and said these activities are very much family-oriented, often involving the whole family. On average, almost three out of four family members (73.4%) participated in equine-related activities.

Spending Patterns

Survey respondents tended to be longtime residents of their communities. They reported that they had resided in their community for an average of 25.6 years (the median being 23 years). The most common answer was 15 years in the community. However, a wide range of answers was given for this question, with some respondents (9.6% of the total) having lived in their communities for less than five years.

Spending patterns drive economic impacts. A summary of spending on purchased (generally variable cost) items (not including payments to factors of production) is provided in Figure 16. According to survey respondents, the purchase of equines and stallion service fees was the largest cost item, accounting for 18.2% of such costs, followed by feed and feed supplements at 17.3%. Various types of equine-related travel expenses accounted for 10.9% of expenditures, and health costs (medicines, lab work, veterinary services, surgery, and other) accounted for 12.1%. Significant expenditures were also made on farriers (blacksmiths), promotion and advertising, and other items.

Figure 16. Distribution of Spending by Major Category
 (Percent by Total)



The point of purchase for the above items showed various levels of in-state versus out-of-state patterns. The vast majority of feed was grown by the horse owner or purchased from in-state sources. Slightly more than two-thirds of spending on veterinary services were in-state, but medicines, lab work, and equine surgery were primarily purchased from sources located in other states. Only 15.5% of promotion and advertising were purchased from in-state sources. Most boarding fees went to in-state equine facilities. Overall, these purchasing patterns suggest the potential for substituting goods and services produced in West Virginia for those produced in other states.

Survey respondents were also asked to indicate the percent of equine-related expenses that they purchased either online via the Internet or through mail order catalogs. Survey responses suggest a fairly heavy use of both methods of purchasing equine-related inputs. Almost one-quarter of respondents said they made equine-

Equine-related Labor, Capital, and Assets

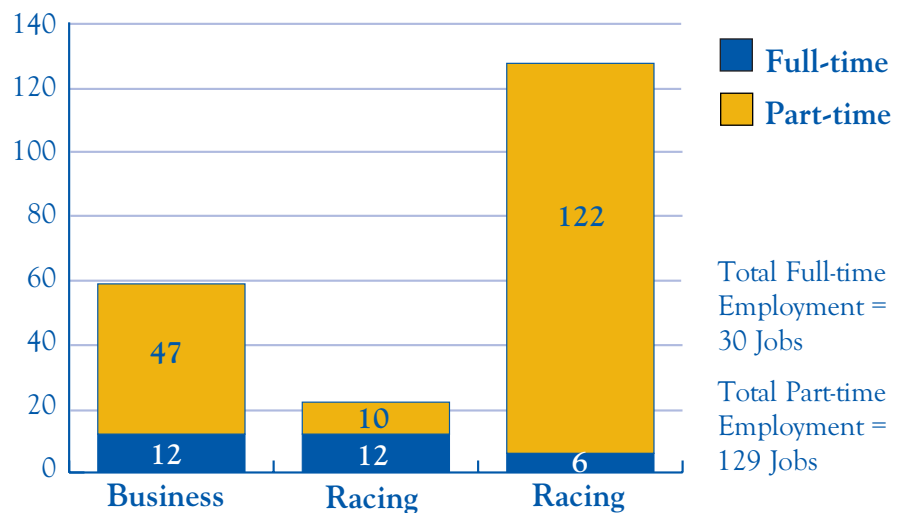
related purchases online. Among these respondents, the average percentage of all equine-related expenditures made online was roughly 23.5%. Almost half of these respondents said they made equine-related purchases through mail order catalogs, accounting for roughly 36.2% of all equine-related expenditures.

Survey respondents were asked several questions about their use of labor in equine-related activities. These questions asked respondents to report the number of full-time and part-time workers they employed and their total equine-related payroll over the last 12 months (including employer cost of providing benefits and Social Security contributions). To facilitate this discussion, survey respondents were separated into nonracing business (24.8%), racing business (7.5%), and pleasure-equine owner (67.7%) categories.

According to survey respondents, far more part-time than full-time workers were employed by the equine industry in West Virginia. The total number of full-time employees across survey respondents who answered these questions was 30, with 12 full-time employees reported for nonracing businesses, 12 full-time employees for racing businesses, and six full-time employees for pleasure equine owners (Figure 17). A total of 16 respondents stated that they had full-time employees, with six nonracing businesses stating that they had at least one full-time employee (or 8.2% of all surveyed nonracing businesses), four racing businesses had full-time employees (18.2% of all racing respondents), and six pleasure horse owners had full-time employees (3.0% of all pleasure horse owner respondents).

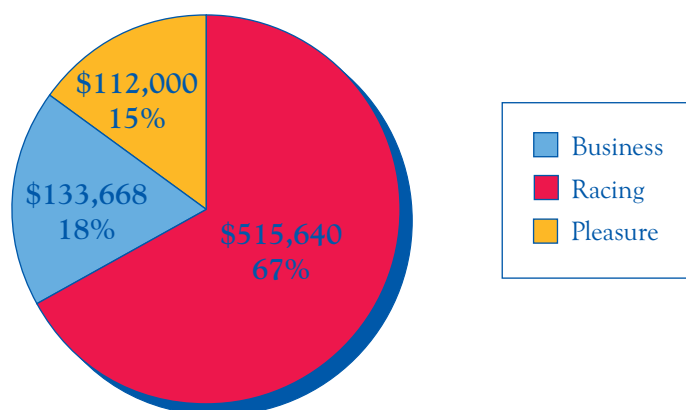
In contrast, the total number of part-time employees reported by survey respondents was 129, with 47 part-time workers employed by nonracing businesses, 10 by racing businesses, and 72 by pleasure equine owners. A total of 47 respondents stated that they had part-time employees, 23 nonracing businesses reported at least one part-time employee (or 31.5% of all surveyed nonracing businesses), eight racing businesses had part-time employees (36.4% of all racing respondents), and 16 pleasure horse owners had part-time employees (8.0% of all pleasure horse owner respondents).

Figure 17. Number of Full-time and Part-time Employees in Equine-related Business, Racing, and Pleasure Categories



Across all three categories of respondents, 50 reported having a payroll. As shown in Figure 18, the total value of the payroll was \$761,308, with nonracing businesses responsible for \$133,668 (17.6% of the total), racing businesses responsible for \$515,540 (67.7%), and pleasure horse owners responsible for \$112,000 (14.7%). Levels of compensation were not particularly high, primarily because of the part-time nature of most employment. For nonracing businesses, annual compensation was \$2,266; for racing businesses, \$23,438; and for pleasure horse owners, \$1,436.

Figure 18. Total Payroll by Major Category

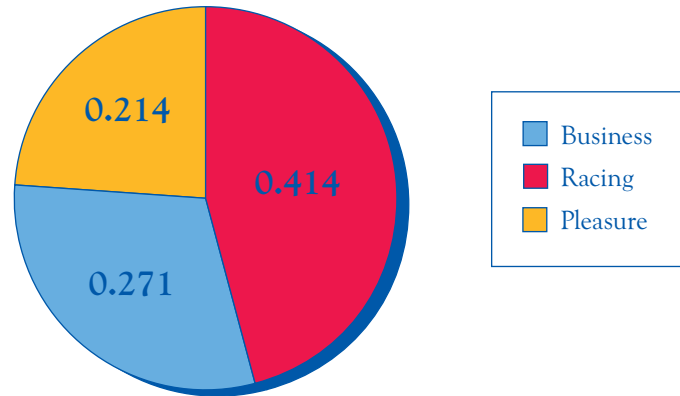


Total Payroll Value = \$0.761 Million

Surveyed individuals were asked about their equine purchases, the value of equine equipment purchases used strictly for equine-related purposes, and the value of equine-related equipment purchases that also served other purposes (such as trailers, pickup trucks, and tractors) obtained during the last 12 months. In addition, respondents were asked to disclose the value of any equine-related real estate purchases during the past 12 months.

A total of 103 survey respondents reported they had made equine purchases in the past 12 months; the total cost of those purchases was \$899,465. Among the three categories, 34 nonracing businesses reported they had purchased equine at a total cost of \$270,665, 15 racing businesses indicated they purchased horses for a total cost of \$414,000, and 54 pleasure-equine owners indicated purchases of at least one equine for a total cost of \$214,800 (Figure 19).

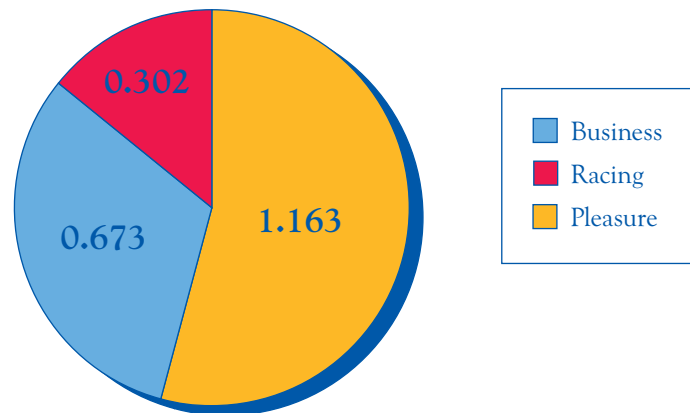
Figure 19. Value of Equine Purchased by Type of Equine-Related Activity (Million \$)



Total Cost of Equine Purchases = \$0.899 Million

A total of 32 respondents reported they had made equine-related real estate purchases in the past 12 months at a total cost of \$2,139,050 (Figure 20). Equine-related real estate was purchased by 10 nonracing businesses at a total cost of \$673,200, two racing businesses at a total cost of \$302,000, and 20 pleasure-equine owners at a total cost of \$1,163,850.

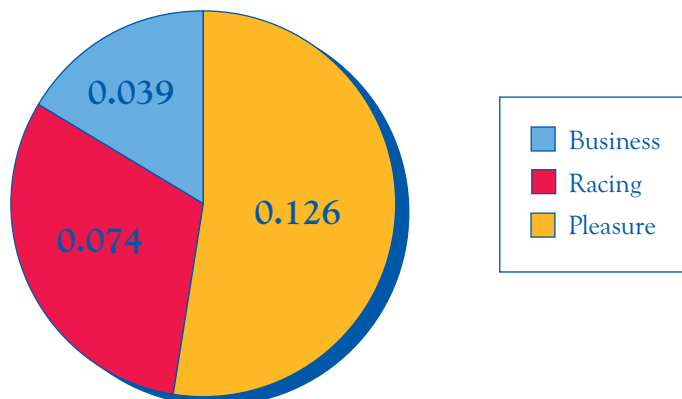
Figure 20. Value of Real Estate Purchased by Type of Equine-Related Activity (Million \$)



Total cost of Real Estate Purchases = \$2.139 Million

Fifty-six respondents reported they had purchased strictly equine equipment in the last 12 months at a total cost of \$240,869 (Figure 21). Equine equipment was purchased by 16 nonracing businesses at a total cost of \$39,259, six racing businesses purchased equine equipment for a total cost of \$74,700, and 34 pleasure equine owners at a total cost of \$126,910.

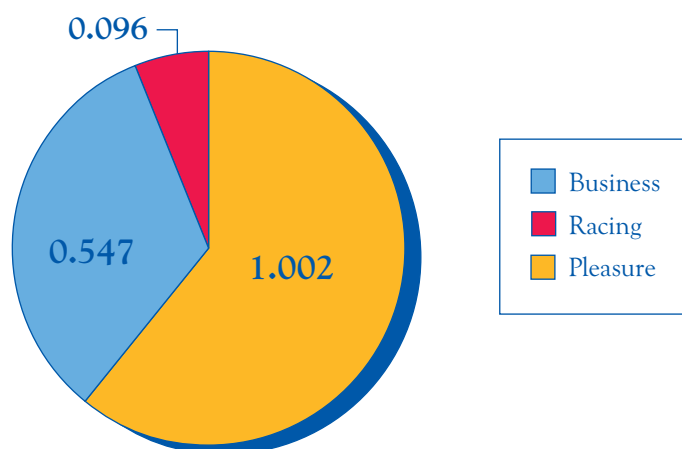
Figure 21. Value of Strictly Equine-related Equipment Purchased by Type of Equine-related Activity (Million \$)



Total Cost of Strictly Equine Equipment = \$0.241 Million

Ninety-four respondents reported they had purchased equine-related equipment that also served other purposes during the last 12 months at a total cost of \$1,646,050 (Figure 22). Such equipment was purchased by 29 nonracing businesses at a total cost of \$547,000, eight racing businesses at a total cost of \$96,900, and 57 pleasure-equine owners at a total cost of \$1,002,150.

Figure 22. Value of Shared Equine-related Equipment Purchased by Type of Equine-related Activity (Million \$)

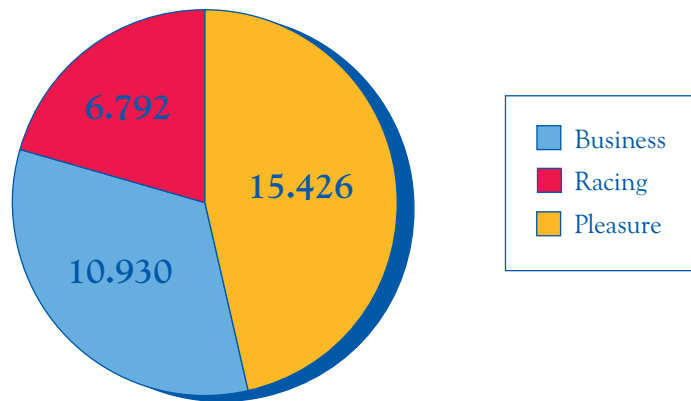


Total Cost of Shared Equine Equipment Purchased = \$1,646 Million

Survey respondents were asked to disclose the current value of any equine-related fixed assets, such as the value of land, fencing, and buildings. They were also asked to reveal the value of other equine-related assets that can be more easily moved or liquidated, such as vehicles, equipment, and tack.

A total of 218 respondents reported they owned equine-related fixed assets (land, buildings, and fencing) for a total estimated value of \$33,148,100. Across the three categories, 64 nonracing businesses had equine-related fixed assets for a total value of \$10,929,650, 20 racing businesses had equine-related fixed assets for a total value of \$6,792,400, and 134 pleasure equine owners had equine-related fixed assets for a total value of \$15,426,050 (Figure 23).

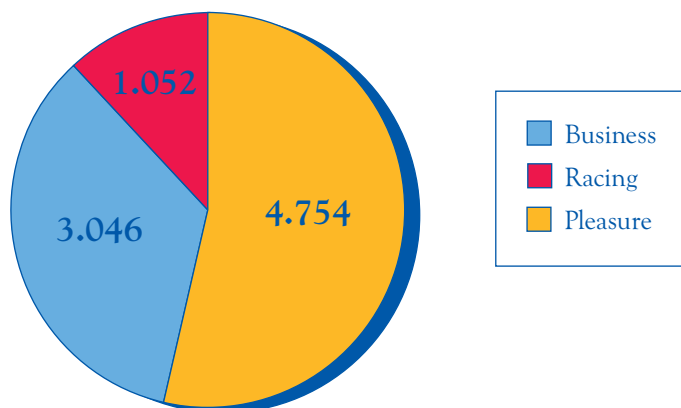
Figure 23. Value of Equine-related Fixed Assets Reported by Survey Respondent Major Category (Million \$)



Total Value of Equine-related Fixed Assets = \$33.148 Million

A total of 243 respondents indicated they possessed other equine-related assets (such as vehicles, equipment, and tack) for a total estimated value of \$8,852,122 (Figure 24). Across the three categories, 71 nonracing businesses had other equine-related assets for a total value of \$3,046,460, 20 racing businesses had such assets for a total value of \$1,051,500, and 152 pleasure-equine owners had other equine-related assets for a total value of \$4,754,162.

Figure 24. Value of Other Equine-related Fixed Assests Reported by Survey Respondent Major Category (Million \$)



Total Value of Other Equine-related Fixed Assets = \$8.852 Million

*Equine-related
 Business Revenue*

Sources of revenue and related activities for equine-based businesses were analyzed through the survey in several ways. Survey respondents were asked to report the months of the year in operation, whether the business was full-time or part-time, the number and value of equine sold by businesses in the last 12 months, and specific sources of revenue. Surveyed businesses were also asked if their revenue-generating activities included other equine-related services such as farrier services, overnight guest accommodations and meals, or overnight boarding for horses. If applicable, surveyed businesses were also asked to provide the average charge per night or meal.

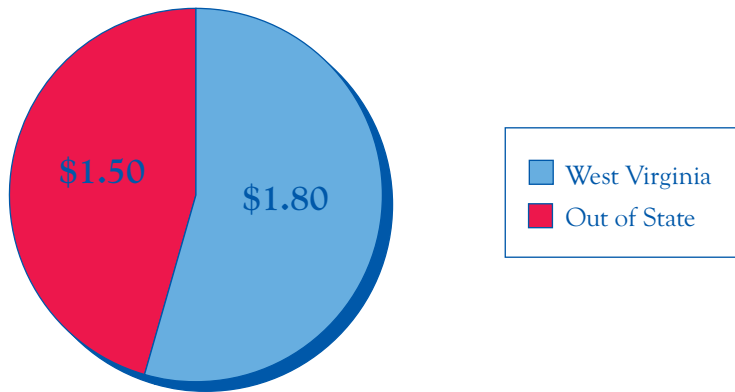
Among the respondents to the question, 41.1% indicated that they had generated revenue from equine-related activity in the last 12 months. These businesses tended to be open on a year-round basis, with 91.5% reporting that their business operated 12 months of the year. However, the majority of businesses were not full-time operations. Roughly 56% stated that their equine-related business was a part-time operation, and only 44% indicated it was full-time.

In terms of the level of equine sales during the last 12 months, 78 respondents indicated they had made at least one such sale. A total of 345 horses, ponies, mules, and so forth were sold, for an average of 4.4 per respondent. The estimated total value of these sales was \$882,584.

Businesses were asked to indicate specific sources of revenue, the percent of revenue from West Virginia customers, the number of in-state and out-of-state customers, and the percent of time they and their employees devoted to a given activity. These activities as sources of revenue included boarding, breeding, training and riding lessons, therapeutic riding, other on-site riding, guided and unguided trail riding, rodeos, racing, other show-event participation, and other miscellaneous activities.

Across all activities, out-of-state customers were identified as a major component of commercial activity associated with the West Virginia equine industry. Among the questions where survey respondents were asked to identify the percent of West Virginia customers in value terms, out-of-state markets accounted for \$1.567 million, or 46.3%, of the total market of \$3.384 million (Figure 25).

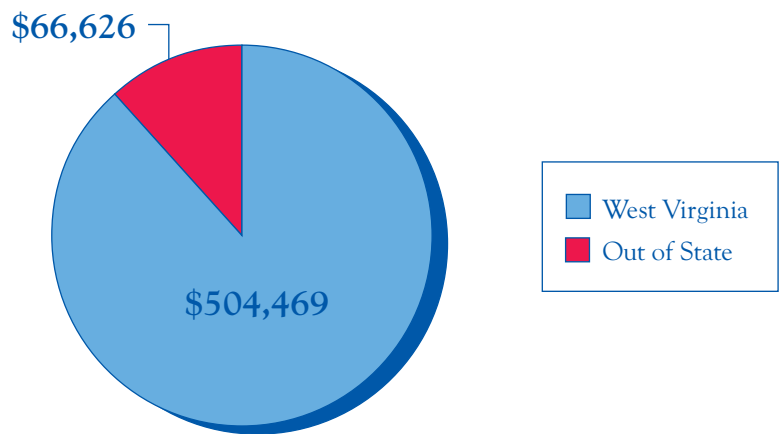
Figure 25. Equine Business Revenue for All Activities from West Virginia and Out-of-state Customers (Million \$)



Total Revenue for All Activities = \$3.384 Million

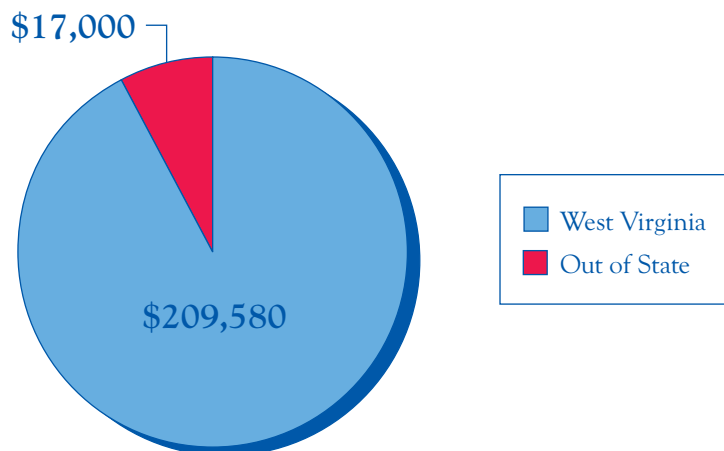
The importance of out-of-state customers and the total levels of business revenues varied by type of activity or services offered. Forty respondents indicated they provided equine boarding to 144 horse owners for \$571,095 in total revenue or \$14,277 per business. The customer base was primarily in state, with West Virginians comprising 88.2% of all customers and providing \$504,463 of all revenues (Figure 26). In terms of equine training and riding lessons, 17 respondents indicated that 226 customers provided \$226,580 in revenue and that their market was primarily (92.5%) in state (Figure 27).

Figure 26. Equine Business Revenue for Boarding Equine from West Virginia and Out-of-state Customers



Total Revenue from Boarding = \$571,096

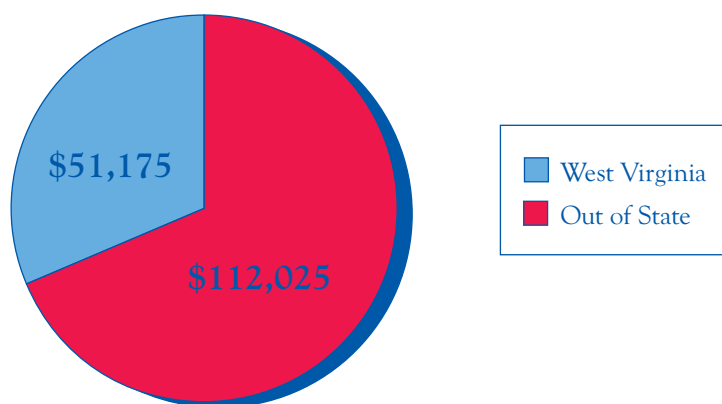
Figure 27. Equine Business Revenue for Training Equine from West Virginia and Out-of-state Customers



Total Revenue from Training Equine = \$226,580

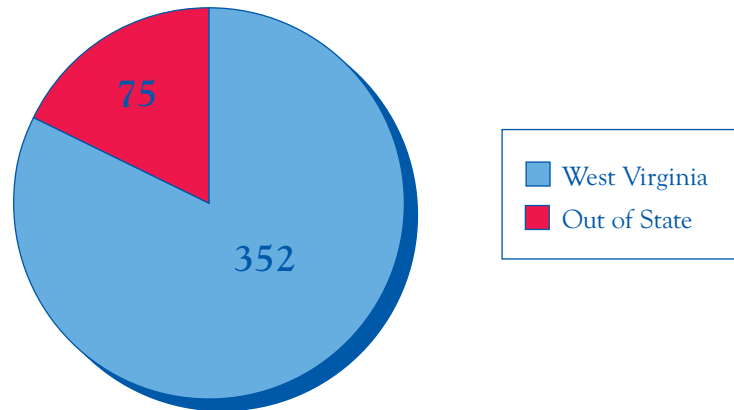
Equine breeding services, on the other hand, were done primarily for out-of-state customers in terms of value but not in number of customers. As shown in Figure 28, \$112,025 out of \$163,200 in breeding services provided by 28 West Virginia equine businesses were for out-of-state customers. However, West Virginia dominated in terms of number of customers at 352 versus 75 out-of-state customers (Figure 29). This result is likely explained by the involvement of out-of-state individuals in the breeding of Thoroughbred racehorses.

Figure 28. Equine Business Revenue for Breeding Equine from West Virginia and Out-of-state Customers



Total Revenue from Breeding Equine = \$163,200

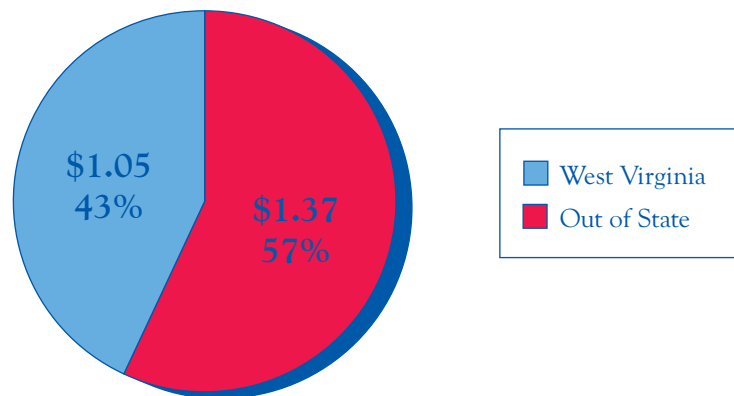
Figure 29. Equine Business Customers for Breeding Equine from West Virginia and Out-of-state Customers



Total Customers for Breeding Equine = 427

Responses in all other activities (other on-site riding as commercial activity, guided trail riding, rodeos, other show-event participation, commercial racing, and other) were summed in an other category.⁴ Among the 36 responses in this category, it was reported that 5,170 customers led to \$2,423,266 of revenue, with \$1,052,276 (or 43%) of the total coming from 1,391 West Virginia customers (Figure 30).

Figure 30. Equine Business Revenue from All Other Activities from West Virginia and Out-of-state Customers



Total Revenue from All Other Activities = \$2.42 Million

⁴ This was done because the numbers of responses in these categories were not as large as those found for boarding, training, and breeding services. Among the categories listed in the survey, no responses were given for therapeutic riding and for unguided trail riding as commercial activities.

Surveyed businesses were asked to report the percentage of time they and their employees spent on providing a given service. For equine boarding, 29 respondents indicated they spent 32.9% of work time on providing the service; for training and riding lessons, 15 respondents reported spending 28% of work time in providing these services; and for breeding services, 21 respondents indicated that 24.6% of their time and employee time was spent on providing that service. Across all other responses, 19 respondents stated that 29.9% of their and employee time was spent on providing the service in question.

Surveyed businesses were asked if their revenue-generating activities included other equine-related services such as farrier services. Fourteen businesses (15.4%) responded that such services were included, but 77 businesses stated that other equine services were not included. Only a few (3) businesses indicated that they offered overnight guest services (96 stated they did not), and only two said that they included meals as part of guest accommodations. A larger number of businesses did offer overnight boarding for horses (24 of 93, or 25.8% of respondents), with an average charge of \$22.02 for this service.

Surveyed businesses were asked if they refer customers to local area attractions, lodging, or restaurants; whether they were a member of the local Chamber of Commerce or Convention and Visitors' Bureau; whether they held permits, licenses, or contracts with government agencies such as the U.S. Forest Service; the percent of sales and promotional efforts they devoted to attracting tourists; and whether they partnered with other businesses in providing tourism-related services.

Businesses were asked about marketing efforts aimed at out-of-state customers. Among 124 responding businesses, only 13 stated that they devoted any sales and promotional efforts toward attracting tourists (defined in the survey as out-of-state customers). For these 13 businesses, however, an average of 56.7% of sales and promotional efforts were devoted to attracting tourists. Four businesses partnered with other businesses to offer tourism activities or services, and four businesses offered training in customer services. No respondents reported holding permits, licenses, or contracts with government agencies with the exception of a state business license, the U.S. Department of Agriculture, or professional associations in a few cases. However, a large number of businesses (45 or 58.4% of respondents to this question) did refer their customers to local areas attractions, lodging, or restaurants.

Only eight businesses (8.2% of 97 respondents) reported being members of a Chamber of Commerce. Almost 30% said they do not have a local Convention and Visitors' Bureau. Among the remaining respondents who do have a Convention and Visitors' Bureau, only 9.4% were members.

Economic Impact Model Results

Pleasure-horse Owners and Nonracing Businesses

An input-output (I-O) model of the West Virginia economy was used to estimate the total contribution (direct and indirect) of the West Virginia equine industry to the state economy. I-O models examine the market flow of products between industries, sales by industries to households and other final users, and industry use of factors of production (labor and capital). Such models can be very detailed, containing several hundred industries.

I-O models provide estimates of the direct and indirect contribution of an industry or a given set of activities through the use of multiplier analysis.⁵ Not only is a given industry's direct impact on an economy estimated (such as number jobs provided by that industry), but also the impact of spending by businesses belonging to that industry on the rest of the economy. The I-O model used in this study is based on the IMPLAN I-O Model building program and database (Minnesota IMPLAN Group, Inc. 2000) for the year 2000, on results from the two surveys that were conducted of the equine industry in West Virginia, and on other selected sources of information.⁶

Model results provided in Table 1 and Figures 31 through 34 illustrate the strong contribution of pleasure-horse activity and nonracing horse businesses to the West Virginia economy. Pleasure-horse activity and nonracing horse businesses directly led to \$130.202 million in total industry output, \$18.266 million in gross state product, \$6.779 million in employee compensation, and 3,836 jobs. When the secondary, or multiplier, effects of this spending were taken into account, the industry had a total impact on the West Virginia economy of \$221.712 million in total industry output, \$62.765 million in gross state product, \$30.713 in employee compensation, and 6,751 jobs.

Economic impacts are a mixture of direct and indirect, or multiplier, effects. In this case, the direct effect was the number of jobs and the income generated directly by pleasure-horse owners. Indirect or multiplier effects are the impacts that occur because of direct spending by pleasure-horse owners. For example, pleasure-horse owners and nonracing equine businesses purchase hay, bedding, and feed from farmers, who in turn purchase inputs to produce these products. West Virginia hay providers, for example, buy a variety of inputs. In this manner, spending by pleasure-horse owners ripples throughout the West Virginia economy. In terms of total industry output, secondary impacts were concentrated in the finance industry at \$16.829 million, trade at \$13.391 million, hay and pasture at \$12.026 million, and agricultural services at \$6.871 million (Table 1, Figure 31).

⁵ For more detail, see Appendix 6.5.

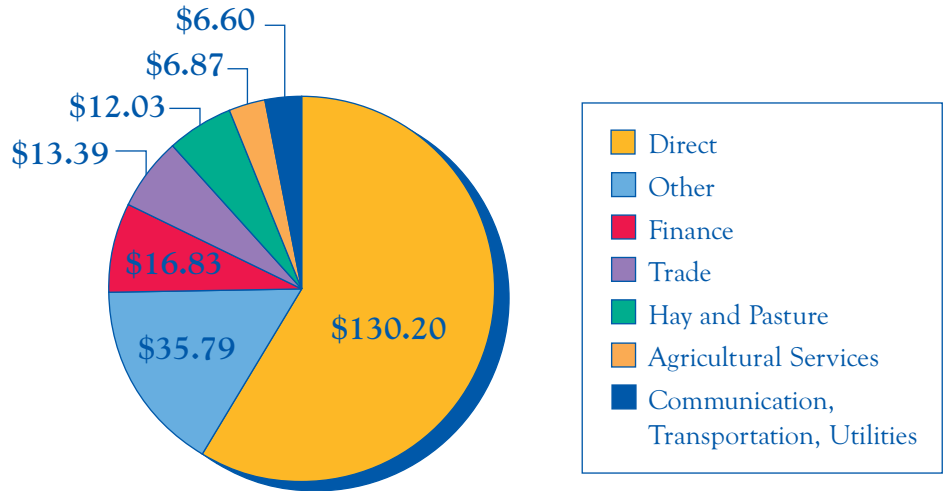
⁶ For more detail, see Appendix 6.4.

Table 1. Impact of West Virginia Equine Pleasure Activities and Nonracing Equine Businesses on the State Economy

<i>Industry</i>	<i>Gross State Product</i>	<i>Labor Income</i>	<i>Total Industry Output</i>	<i>Employment</i>
Agriculture	115,544	50,929	1,563,084	48
Feed Grains	129,318	16,919	1,206,025	37
Hay and Pasture	1,301,542	294,259	12,026,385	1,412
Agricultural Services	3,636,504	2,798,715	6,871,125	472
Mining	835,755	335,794	2,364,123	13
Construction	997,575	909,541	1,652,980	29
Food Processing	135,118	91,476	622,012	3
Textiles	73,517	59,783	294,888	3
Wood-Based Products	564,022	401,376	1,893,913	14
Chemicals	941,988	499,669	3,013,889	7
Agricultural Chemicals	732,055	320,555	1,292,043	4
Petroleum Products	370,613	135,973	3,288,094	2
Rubber-Leather Products	54,166	38,204	182,462	1
Stone, Glass and Clay	24,104	16,235	55,493	1
Primary-Fabricated-Metals	269,307	132,363	492,467	3
Other Manufacture	265,933	187,117	837,784	5
Trade	9,792,260	6,001,515	13,391,239	294
Finance	11,789,810	2,676,453	16,829,072	174
Personal Services	2,163,408	1,508,813	3,944,297	117
Business Services	2,290,750	1,822,909	4,519,416	87
Medical Services	1,704,161	1,542,547	2,603,554	39
Other Medical & Health Services	1,889,928	1,536,569	3,486,067	73
Legal-Education Services	560,337	536,576	876,677	22
Government and Other	553,993	389,177	1,603,073	11
Communication, Transport, Utilities	3,307,176	1,630,469	6,599,552	42
Horse-Pleasure	15,049,860	4,563,342	104,200,032	3,180
Horse-Business	3,216,000	2,216,000	26,002,000	656
Total	62,764,744	30,713,278	221,711,745	6,751

Note: Individual industries are in bold; all other industries are aggregates of IMPLAN industry sectors.

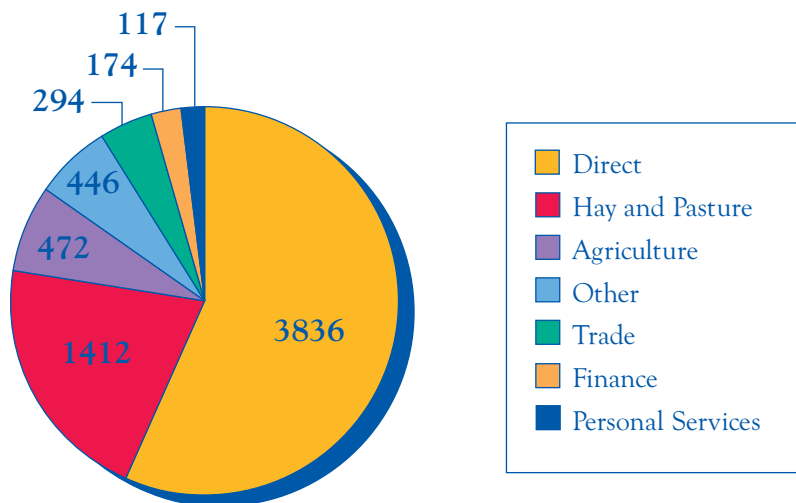
Figure 31. Impact of West Virginia Pleasure-Equine Owners and Nonracing Businesses on Total Industry Output (Million \$)



Total Impact = \$221.7 Million

In terms of employment, secondary impacts were concentrated in hay and pasture production at 1,412 jobs; agricultural services, 472 jobs; trade, 294 jobs; finance, 174 jobs; and personal services, 117 jobs (Table 1, Figure 32). Job impacts in the hay and pasture and agricultural services industries were primarily due to direct purchases by horse owners. Employment impacts in trade and personal services were primarily due to the effect of household spending that resulted from direct payments to households by individuals engaged in pleasure-horse activities and by nonracing equine businesses. Also important in this case were payments to workers (which support household spending) by providers of inputs to pleasure-horse activities and nonracing equine businesses.

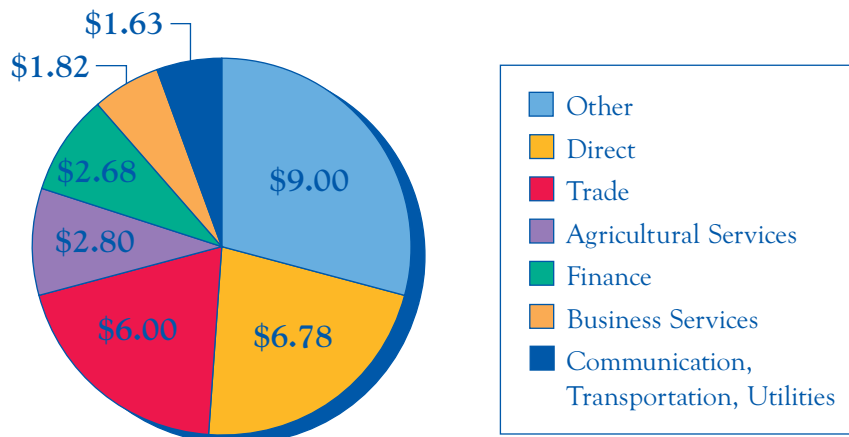
Figure 32. Impact of West Virginia Pleasure-Equine Owners and Nonracing Businesses and Employment



Total Impact on Employment = 6,751 jobs

Labor income consists of profits retained by owner operators and of employment compensation. The latter comprises wages and salaries plus most benefits paid to employees by firms. In terms of secondary impacts, effects on labor income were concentrated in trade at \$6.002 million; agricultural services, \$2.799 million; finance, \$2.676 million; business services, \$1.823 million; and communication, transportation, and utilities, \$1.630 million (Table 1, Figure 33).

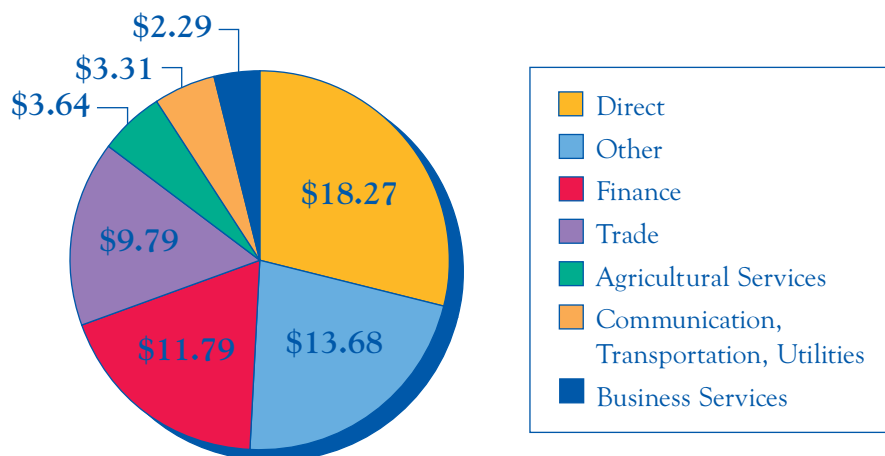
Figure 33. Impact of West Virginia Pleasure-Equine Owners and Nonracing Businesses on Labor Income (Million \$)



Total Impact on Labor Income = \$30.713 Million

Gross state product (GSP) is the measure of returns for factors of production (labor and capital) at the state level. Hence, it is the truest measure of economic activity in dollar terms. Secondary impacts in terms of GSP were concentrated in finance, \$11.790 million; trade, \$9.792 million; agricultural services, \$3.637 million; and communication, transportation, and utilities, \$3.307 million (Table 1, Figure 34).

Figure 34. Impact of West Virginia Pleasure-Equine Owners and Nonracing Businesses on Gross State Product (Million \$)



Total Impact on Gross State Product = \$30.713 Million

The economic impact of pleasure-horse owners and nonracing businesses can also be gauged by examining the effect of an average dollar in output, or spending, on the state economy. In terms of the output multiplier, one dollar of spending by pleasure-horse owners leads to \$1.70 in the state economy. This means that for every dollar spent by pleasure-horse owners, an additional 70 cents is generated in the state economy. This multiplier falls within the range of a typical, realistic output multiplier. Furthermore, multiplier results suggest that this is one of the larger multipliers found among West Virginia industries.

However, realistic output multipliers can exceed \$2, indicating a higher rate of in-state spending. (For example, the multiplier for poultry processing in West Virginia is \$2.02.) Multipliers and impact analyses reflect the strength of so-called backward linkages, or the level of buying inputs, from in-state rather than out-of-state sources in this case. This means that if the purchases of inputs from West Virginia sources increase, the multiplier for that activity will also increase. Hence, one can consider the issue of how to increase multiplier size. An examination of the purchasing patterns of West Virginia pleasure-horse owners and nonracing businesses indicates that for certain important items a significant level of purchases are from non West Virginia sources. For example, major equine surgeries are done in neighboring states, implying a lack of in-state equine hospitals. Show fees are often paid in other states, reflecting the lack of appropriate facilities for many types of equine activities in West Virginia. Likewise, with the exception of retail and wholesale margins, purchases made on items such as medicines and tack are generally from out-of-state sources. On the other hand, major expenditures on hay and to a lesser extent feed grains are largely from in-state sources, as determined by the survey results. A question that needs to be considered by state policy-makers and industry leaders is under what situations does plugging the leakages of dollars spent out of state by West Virginia pleasure-horse owners and nonracing businesses make sense and under what situations does it not.

Finally, the multiplier effect of spending on pleasure-horse activity can be examined in other ways. For example, the level of in-state linkages is also reflected in the multipliers for labor income and Gross State Product. One dollar of spending by pleasure-horse owners and nonracing equine businesses leads to 28 cents in GSP, including 14 cents in labor income. Model results also indicated that \$1 million of spending on pleasure-horse activities led to 30.45 jobs in the West Virginia economy.

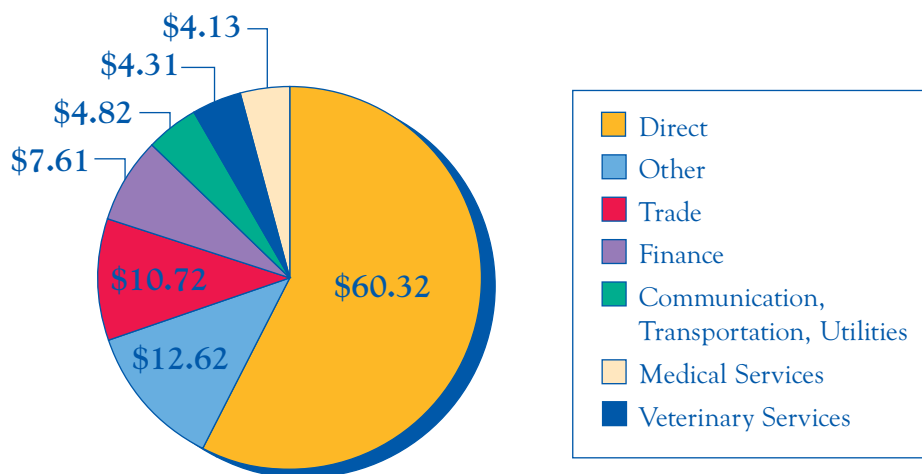
Impact of State Racehorse Industry

The race horse industry impacts the West Virginia economy in numerous ways. Activities that contribute to this impact include horse training at the racetracks in Chester and Charles Town and nearby off-track facilities, racing activities at both tracks, and racehorse breeding operations. Due primarily to the West Virginia Thoroughbred Horse Development Fund (Shenandoah Equine Investments, 2004), breeding operations have been a major growth area in recent years.⁷

Overall, spending by West Virginia racetrack operations, racehorse breeders, owners, and trainers directly led to \$203.724 million in total industry output, \$60.323 million in GSP, \$45.344 million in labor income, and 4,164 jobs in the West Virginia economy. When the secondary or multiplier effects of this spending were taken into account, the industry had an estimated total impact on the West Virginia economy of \$287.929 million in total industry output, \$104.526 million in gross state product, \$72.216 million in labor income, and 6,173 jobs (Table 2).

Secondary impacts from horseracing activity were spread across various sectors of the West Virginia economy. In terms of Gross State Product, secondary impacts were concentrated in trade at \$10.718 million; finance, \$7.605 million; communication, transport, and utilities, \$4.821 million; veterinary services, \$4.305 million; and medical services, \$4.134 million (Table 2, Figure 35). With the exception of veterinary services, most of these industries did not have strong direct links to any form of racehorse activity.

Figure 35. Impact of West Virginia Racehorse Activities on Gross State Product (Million \$)



Total Impact on Racehorse Activities = \$104.526 Million

⁷ The Fund is a percentage of the handle, simulcast racing, and video lotteries and is distributed based on horse winning at the Charles Town racetrack and whether the horse is bred or sired in West Virginia, or has a West Virginia registered owner. For more details, see Shenandoah Equine Investments.

Table 2. Impact of West Virginia Racing Industry
(Breeding, Training, and Tracks) on the State Economy

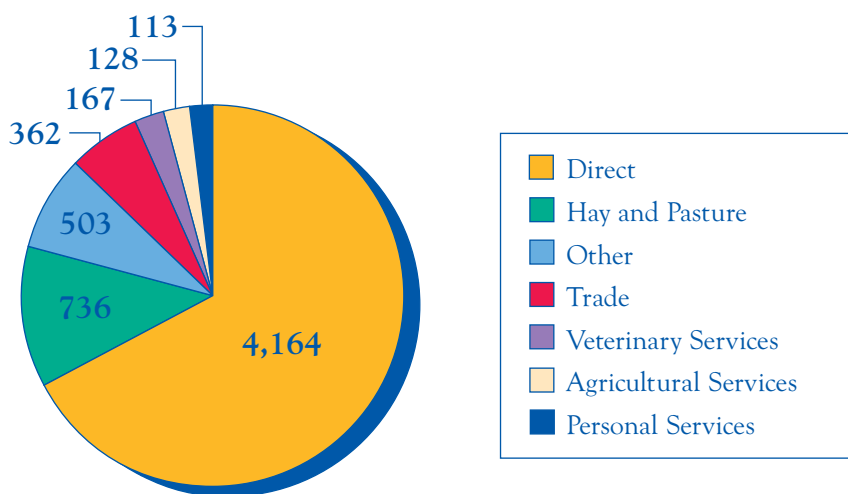
<i>Industry</i>	<i>Gross State Product</i>	<i>Labor Income</i>	<i>Total Industry Output</i>	<i>Employment</i>
Agriculture	43,709	20,518	635,062	14
Feed Grains	67,414	8,820	628,704	20
Hay and Pasture	678,497	153,398	6,269,386	736
Agricultural Services	1,030,608	781,574	1,926,855	128
Mining	618,727	249,790	1,773,830	10
Construction	881,442	803,951	1,448,044	26
Food Processing	208,269	141,478	881,976	5
Textiles	110,028	89,649	462,187	5
Wood-based Products	772,847	552,829	2,496,148	20
Agricultural Chemicals	325,512	142,217	567,660	2
Chemicals	756,270	403,089	2,206,311	6
Petroleum Products	241,771	83,675	2,200,507	1
Rubber-leather Products	39,939	28,533	115,347	1
Stone, Glass, and Clay	36,602	24,768	83,675	1
Primary Fabricated Metals	251,547	118,746	453,627	2
Other Manufacture	147,557	106,037	473,970	3
Trade	10,718,221	6,650,967	14,926,321	362
Finance	7,604,725	1,779,321	10,998,021	77
Personal Services	2,257,582	1,691,264	4,413,181	113
Racing and Track Operation	22,079,136	11,817,448	38,045,004	259
Medical Services	4,133,521	3,742,038	6,313,280	94
Veterinary Services	4,304,756	3,499,898	7,940,339	167
Legal Education Services	1,118,242	1,073,622	1,773,150	47
Business Services	2,518,567	2,117,326	4,790,446	106
Government and Other	515,633	422,022	1,272,735	10
Communication, Transport, Utilities	4,821,298	2,186,488	9,154,165	54
Breeders	5,689,999	3,150,000	13,069,997	378
Owner-Trainers	32,553,994	30,376,994	152,608,964	3,527
Total	104,526,412	72,216,458	287,928,890	6,173

Note: Individual industries are in bold; all other industries are aggregates of IMPLAN industry sectors.

The lion's share of Gross State Product was in labor income. For the total contribution of the racetrack industry, labor income, at \$72.216 million, was responsible for 69.1% of GSP. Secondary impacts for labor income also followed a similar pattern as was found for GSP, although business services (\$2.117 million) replaced finance as one of the top five sectors in terms of indirect effects (Table 2).

Secondary impacts in terms of jobs showed the strength of direct purchases by the horseracing industry from a variety of agricultural inputs. In terms of these indirect impacts, hay and pasture production had the largest impact, accounting for 736 jobs, while veterinary services (167 jobs) and agricultural services (128 jobs) also had substantial impacts (Table 2, Figure 36). Other sectors with large job impacts included trade (with 362 jobs, the second largest indirect job impact) and personal services (113 jobs).

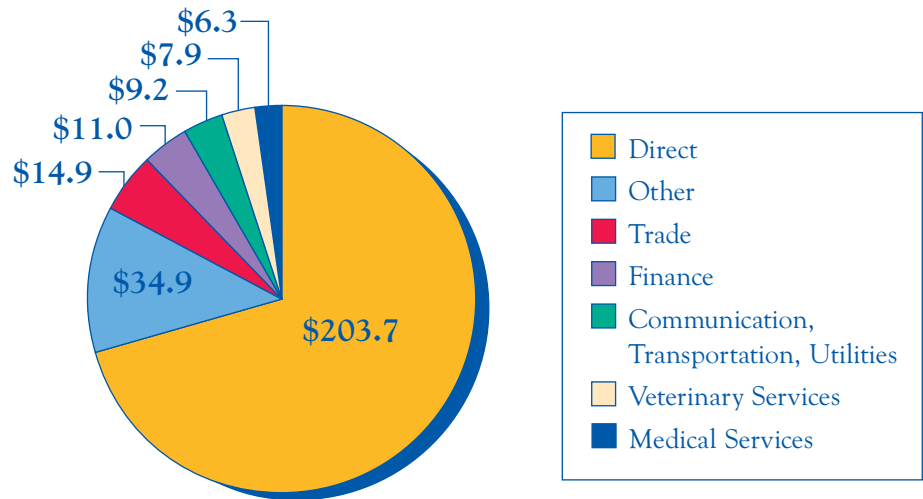
Figure 36. Impact of West Virginia Racehorse Activities on Employment



Total Impact on Employment = 6,173 jobs

Secondary impacts in terms of total industry output primarily showed the effect of household spending generated by the industry on state economic activity. Secondary impacts in terms of total industry output were concentrated in trade, \$14.926 million; finance, \$10.998 million; and veterinary services, \$7.940 million (Table 2, Figure 37).

Figure 37. Impact of West Virginia Racehorse Activities on Industry Output (Millions \$)



Total Impact on Industry Output = \$287.9 Million

The economic impact of the horseracing industry can also be gauged by examining the impact an average dollar in output or spending has on the state economy. In terms of the output multiplier, each dollar spent by the horse racing industry led to \$1.42 in the state economy (that is, for every one dollar spent by the horse racing industry an additional 42 cents is generated in the state economy). This multiplier is not particularly large, especially when compared to the multiplier estimated for pleasure-horse and nonracing equine business activity (\$1.70). Similar to the spending patterns of pleasure-horse owners, an examination of the purchasing patterns of the West Virginia racehorse industry indicates that major equine surgeries are done in neighboring states. This finding points to a lack of in-state equine hospitals. As was also found for pleasure-horse owners, with the exception of retail and wholesale margins, purchases of such items as medicines and tack are generally from out-of-state sources. Furthermore, major expenditures on hay and to a lesser extent feed grains were much more likely to come from out-of-state sources when compared with pleasure-horse activity and nonracing equine businesses. This result is not surprising given the location of both tracks and associated training facilities on the edge of the state and the concentration of racehorse breeding operations in the Eastern Panhandle. In particular, officials at the Charles Town Race Track, individuals who trained horses there, and Craig Yohn (WVU Jefferson County Extension Agent) all confirm that new supplies of hay are coming from Maryland because the local supply has not been able to keep up with the demand. As is the case for pleasure-horse owners and nonracing businesses, a question that needs to be considered by state policymakers and industry leaders is under what situations does plugging the leakages of dollars spent out of state by the West Virginia race horse industry make sense and under what situations does it not.

*Total Economic Impact
of Horseracing Activity*

Excluding horseracing, our estimates indicate a total of 43,000 equine owned by individuals and 6,000 owned by businesses (the latter being used for both business and pleasure purposes). For horseracing, data obtained from both state racetracks and information taken from the Jockey Club Web site were used to estimate the number of horses devoted to horseracing and racehorse breeding in West Virginia (7,800). Hence, it is estimated that a total of 56,800 equine in the state of West Virginia were devoted to pleasure and business purposes.⁸

Estimates of the total contribution of the equine industry in West Virginia to state economic activity should also be discussed. These total impacts (i.e., the impact of pleasure-horse activity, nonracing equine businesses, and racehorse activity) indicate an industry that is making a strong contribution to economic activity in West Virginia. Based on the results of our surveys and on the state input-output model, equine activity annually directly and indirectly contributes \$509.641 million in total industry output, \$167.291 million in Gross State Product, \$102.930 million in labor income, and 12,924 jobs. Putting these numbers into perspective, according to the latest annual estimates provided by the U.S. Department of Commerce (Bureau of Economic Analysis, 2004), there were 881,607 jobs in the West Virginia economy in 2003 and Gross State Product was \$47.256 billion. Based on the estimates provided in this study, the West Virginia equine industry is responsible for 1.5% of all jobs in the state economy and for 0.4% of Gross State Product.

Results were also examined by looking at recent growth in the West Virginia economy. According to the same U.S. Department of Commerce data source, the West Virginia economy lost 297 jobs in 2002 and another 664 jobs in 2003. After the effects of inflation were removed, the state economy showed only very marginal growth in terms of Gross State Product from 2000 through 2002 (0.3% over the entire period). Given the lack of economic growth in the state economy in recent years, the West Virginia equine industry in all of its major aspects has the potential to serve as an important source of growth in the future.

⁸ Included in this total are horses owned by out-of-state individuals who train at or near the two West Virginia horseracing tracks on a year-round basis. Comparisons of our estimates of number of horses in West Virginia to previous studies are discussed in Appendix 6.4.

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

Study summary and conclusions are centered on major findings and potential policy recommendations. The latter, based on study results, are designed to enhance the contribution of equine activity to the West Virginia economy.

The major finding of this study was that the contribution of all equine-related activity to the West Virginia economy is large and important. In particular, an estimated 56,800 equine reside in West Virginia. Based on the results of our surveys and on the state input-output model, equine activity annually contributes directly and indirectly \$509.641 million in total industry output, \$167.291 million in Gross State Product, \$102.930 million in labor income, and 12,924 jobs, or 1.5% of all jobs in the state economy, and 0.4% of Gross State Product. The output multipliers for pleasure-horse activity and nonracing businesses (1.70) and for horseracing activities (1.42) along with detailed impact results indicate that the impact of equine-related activities is spread throughout the state's economy. This activity is very much needed given the recent lack of growth in the West Virginia economy.

Another finding was that from all indications, the contribution of the equine industry is growing. For example, dramatic increases in West Virginia racehorse breeding were observed. At the national level, according to the American Horse Council, 1.9 million Americans are horse owners, and the equine industry has grown from a \$15.2 billion to a \$25.3 billion industry since 1987. Data from the 1997 and 2002 Census of Agriculture and from other studies also suggest that the West Virginia equine industry is growing in size and importance.

Study results also indicate that the contribution of equine activity to state economic activity could be enhanced in several important ways. For example, study results point to the lack of adequate facilities for horse showing events. The majority of horse show activity days - almost 52% - occurred outside of West Virginia. The same is true for dressage enthusiasts, who spent only 38% of their days pursuing this activity in West Virginia. Other activities such as team penning, cutting, 3-day eventing, and fox hunting had in-state participation rates of less than 50%. Several activities reported by survey respondents took place entirely (100%) out of state, such as various driving activities, polo, and Pony Club camps. Likewise, an examination of spending data indicated that a significant amount of showing fees and equine-related travel occurred in out-of-state locations. These results indicate leakages of dollars from the state economy for these activities, or lower economic multipliers. These results imply the need for developing appropriate facilities for horse showing and several other equine activities in West Virginia. Ongoing projects at Bethany College in the Northern Panhandle and at Mylan Park in Morgantown, and proposed projects such as the Phillips Run Project (Steelhammer, 2004) will fill this gap in appropriate West Virginia facilities. It is recommended that appropriate actions be taken to support ongoing and completed projects, and that proposed projects also receive appropriate forms of support that provide net benefits to the state of West Virginia.

Spending patterns and economic impact results also imply that the development of other facilities and sources of local supply may be appropriate. For example, survey results indicated that medicines, lab work, and especially equine surgery are often purchased from sources located in other states. Only 15.5% of promotion and

advertising was purchased from in-state sources. An examination of the purchasing patterns of the West Virginia racehorse industry also indicates that major equine surgeries are done in neighboring states. This result points to the lack of in-state equine hospitals. Overall, the purchasing patterns uncovered by this study suggest much potential for substituting West Virginia goods and services for those produced in other states. A feasibility study should be considered to determine if developing an in-state equine surgery facility is a viable option and if sources of local supply can be developed for other key inputs.

The West Virginia Tourism Commission has estimated that the tourism industry accounted for \$3.1 billion of the state's economy in 2001 (West Virginia Division of Tourism Web site, 2004). Study results also indicate that tourism or out-of-state markets were important sources of income for West Virginia equine-related businesses. However, the importance of out-of state markets varies greatly by the type of service provided. Furthermore, only 13 businesses reported making major marketing efforts aimed at out of-state tourists, and very few equine businesses reported membership in their local Chambers of Commerce or local Convention and Visitors' Bureau. Perhaps their businesses could be strengthened through membership in equine, agricultural, or tourism-related business cooperatives or associations. In particular, such organizations could be used to strengthen out-of-state marketing efforts.

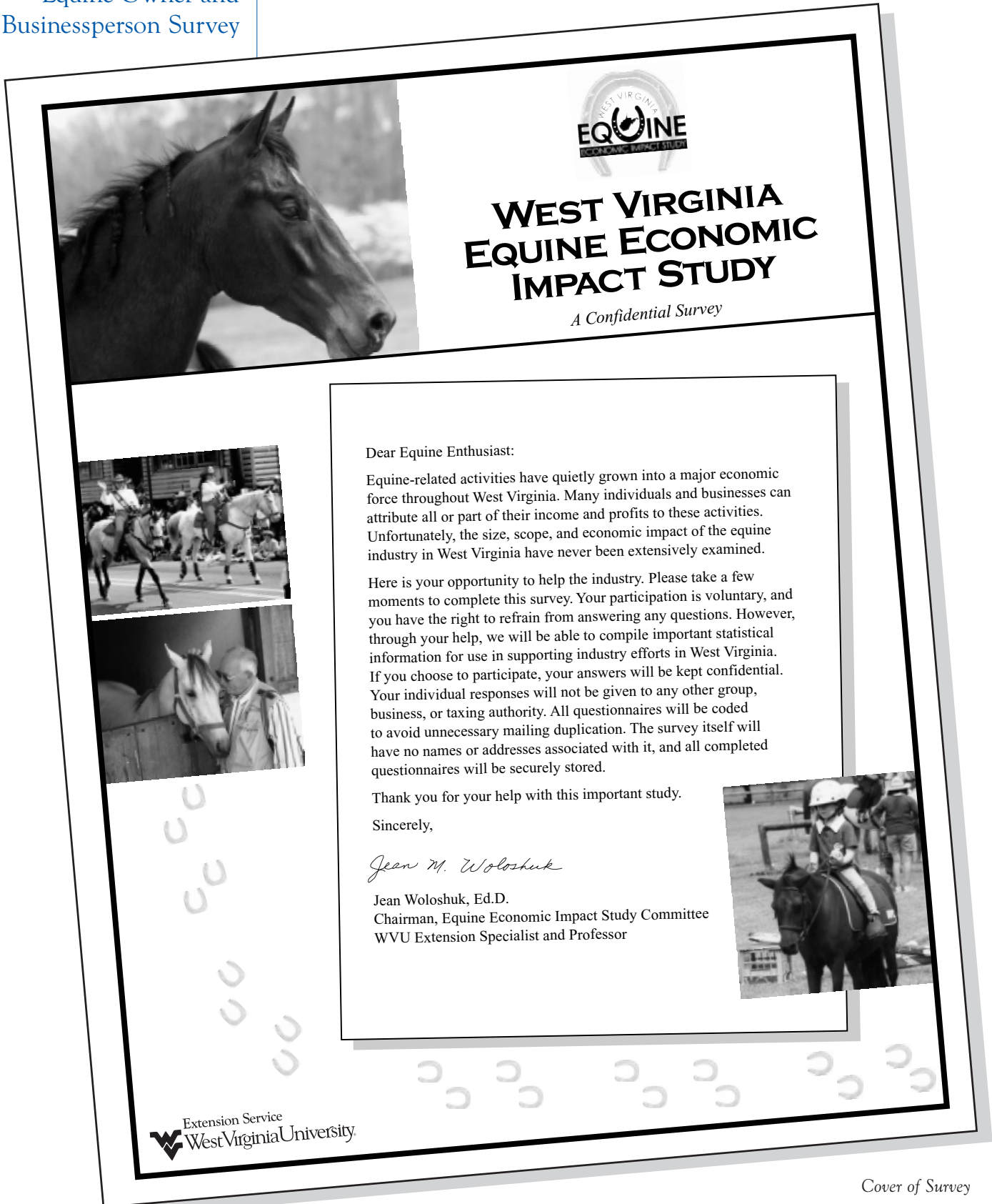
Perhaps more important, at both national and state levels, is that the preservation of historical, cultural, farmland, and natural resources is being linked to developing and marketing tourism as a strategy to sustain local economies. Horse owners and equestrian enthusiasts provide a potentially important and in some cases untapped segment of the tourism industry for the state of West Virginia. A related finding is that almost 10% of survey respondents said that they had lived in the community for five or fewer years. One conclusion that could be drawn from this information is that a significant part of the equine-owning population in West Virginia has recently moved here. This topic warrants further study. Especially important is the implication that further development of the West Virginia equine industry could be an attraction for affluent retirees and other individuals with high incomes and well-developed skills looking for a place to relocate.

A related concern is data needs. The West Virginia Department of Agriculture currently collects Coggins test records for any equine involved in showing events, racing, sales, or other activity on a two-year basis. At the county level, equine are reported as part of personal property tax estimates. With slight modification to the Coggins test form and the use of electronic databases, both of these data sources could be used as a way to track the annual growth of the equine industry in West Virginia. It is recommended that investments be made for both of these options to help improve and update information concerning equine in West Virginia.

It is also recommended that state government consider taking the lead in developing a partnership among members and leaders of the various equine-activity organizations found in West Virginia, leaders of equine nonracing and racing-based businesses, state government, and West Virginia University to enhance the contribution of the equine industry to the state economy. In particular, unclaimed

winnings at the racetracks and other sources of appropriate funds could be used to support educational programs and to fund an equine specialist (as recommended by several survey respondents) who would be jointly positioned with the WVU Extension Service and the WVU Davis College of Agriculture, Forestry, and Consumer Sciences. For example, such an individual could partner with the West Virginia Office of Tourism, with other government officials and policymakers, and with industry leaders to develop tourism and migration initiatives for the industry. Such an individual could also take the leadership in addressing the needs of this industry and develop other activities and studies with the goal of enhancing the contribution of the equine industry to West Virginia's economy.

6. APPENDICES
Equine Owner and
Businessperson Survey



**WEST VIRGINIA
EQUINE ECONOMIC
IMPACT STUDY**

A Confidential Survey

Dear Equine Enthusiast:

Equine-related activities have quietly grown into a major economic force throughout West Virginia. Many individuals and businesses can attribute all or part of their income and profits to these activities. Unfortunately, the size, scope, and economic impact of the equine industry in West Virginia have never been extensively examined.

Here is your opportunity to help the industry. Please take a few moments to complete this survey. Your participation is voluntary, and you have the right to refrain from answering any questions. However, through your help, we will be able to compile important statistical information for use in supporting industry efforts in West Virginia. If you choose to participate, your answers will be kept confidential. Your individual responses will not be given to any other group, business, or taxing authority. All questionnaires will be coded to avoid unnecessary mailing duplication. The survey itself will have no names or addresses associated with it, and all completed questionnaires will be securely stored.

Thank you for your help with this important study.

Sincerely,

Jean M. Woloshuk

Jean Woloshuk, Ed.D.
Chairman, Equine Economic Impact Study Committee
WVU Extension Specialist and Professor





SECTION 1. RECREATIONAL EQUINE USAGE OVER THE LAST 12 MONTHS

<i>Activity</i>	<i>Number of Days</i>	<i>Percent in W.Va.</i>
3-Day eventing		
Cutting		
Dressage		
Endurance riding		
Fox hunting		
Gumkana		
Horse showing		
Hunter/jumper		
Jousting		
Pack and hunting		
Reining		
Rodeos		
Roping		
Team penning		
Therapeutic riding		
Trail riding (competitive)		
Trail riding (noncompetitive)		
Vaulting		
Other _____		

*Please return your completed survey within
 two weeks in the envelope provided to:*

Dr. Jean Woloshuk
 Room 1062 Agricultural Sciences Bldg.
 PO Box 6108
 Morgantown WV 26506-6108
 Jean.Woloshuk@mail.wvu.edu

SECTION 2. INVENTORY AND TYPE OF BREED (OWNED OR BOARDED)
 The definitions listed below should be helpful in filling out the following chart.



1. **Estimated Value:** the price one would pay for the equine you own or board in today's market.
2. **Racing:** any equine being kept primarily for the intention of racing for purses. Report foals in their own category.
3. **Pleasure/Sport:** equine primarily used for pleasure riding, trail riding, hunting, pleasure driving, youth programs, and other recreational use.
4. **Competition:** equine used primarily for showing, eventing, vaulting, barrel racing, rodeo, and other gaming events.
5. **Broodmares:** a female that is being kept primarily for breeding.
6. **Stallions:** a male that is being kept primarily for breeding.
7. **Foals:** equine born in the last 12 months.
8. **Other:** equine used for work or teaching, or any retired equine.
9. **Ponies:** any equine under 14.2 hands (58 inches)

The total number of horses in each activity column should add up to the total number of horses you own or board for others.
 The numbers below match the numbers listed in the definitions list above.

Equine Category	Total Number of Equine		Total Estimated Value ⁽¹⁾ (owned and boarded)	Activities						
	Owned	Boarded for others		Racing ⁽²⁾	Pleasure ⁽³⁾	Competition ⁽⁴⁾	Broodmares ⁽⁵⁾	Stallions ⁽⁶⁾	Foals ⁽⁷⁾	Other ⁽⁸⁾
Arabian			\$							
Half Arabian			\$							
Anglo-Arab			\$							
American Saddlebred			\$							
Appaloosa			\$							
Morgan			\$							
Paint			\$							
Quarter Horse			\$							
Standardbred			\$							
Gaited Breed (Specify Breed)			\$							
a.			\$							
b.			\$							
c.			\$							
Thoroughbred			\$							
Warmblood (Specify Breed)			\$							
a.			\$							
b.			\$							
c.			\$							
Crossbreed or Grade			\$							
Draft Horse (Specify Breed)			\$							
a.			\$							
b.			\$							
c.			\$							
Ponies ⁽⁹⁾			\$							
Mules			\$							
Minatures			\$							
Other (Specify Breed)			\$							
a.			\$							
b.			\$							
c.			\$							



SECTION 3. EQUINE-RELATED EXPENSES (PAID BY YOU DURING THE LAST 12 MONTHS)

Please indicate percent that was purchased directly or from a retailer (for example, medicines bought at a feed store or through a vet.) *Percent wholesale (or direct) and percent retail should total 100 percent.*
 Also, please separately indicate the percent of purchase from a West Virginia source versus out-of-state sources.
 *The estimated dollar value of feed and other items that you produce for consumption or use by your equine.

Item	Purchased Dollar Value (Per Year)	Percent Purchased in West Virginia	Home-Grown* (Estimated Dollar Value)	Percent Wholesale Or Direct	Percent Retail
Boarding fees paid to others					
<i>Nonlabor expenses paid to others (not including boarding fees)</i>					
Seed, fertilizer, lime for pasture					
Equine purchased (in last 12 months)					
Feed (grain, hay)					
Feed supplements (vitamins, minerals)					
Bedding					
Veterinarian fees					
Medicine					
Lab Work					
Equine Hospital-Surgery					
Other miscellaneous health services					
Farrier					
Tack					
Clothing and other personal supplies					
Grooming supplies					
Other miscellaneous supplies					
Maintenance and repairs by others					
Maintenance and repair supply purchases					
Insurance premiums (equine-related liability, mortality, fire, etc.)					
Utilities (equine-related telephone, water, natural gas, electricity, waste disposal)					
Land rental					
Equipment rental (trucks, trailers, etc.)					
Equine rental					
Breeding and stud fees					
Training fees					
Show-related (entry, registration, showing fees, etc.)					
Equine-related personal vehicle use (fuel, vehicle and trailer maintenance)					
Equine shipping by others					
Other equine-related travel expenses (air travel, meals, lodging for human travel)					
Equine-related sales and promotion spending (cost of entertainment, pamphlets, promotions, advertisements, commissions, subscriptions, grooming fees)					
Miscellaneous					

SECTION 4. LABOR EXPENSES AND USE

Number of equine-related employees you have had in the last 12 months. Full-time _____ Part-time _____

What was your total equine-related payroll in the last 12 months? \$ _____
 (include cash wages, employer cost for insurance, pensions, employer social security contributions)



SECTION 5. CAPITAL SPENDING

Equine-related capital expenditures incurred by you during the past 12 months for animals you totally or partly own or board.

Capital Expenditure	Dollar Value
Purchase of equine	\$
Real estate purchases (land and buildings)	\$
Equine-only equipment purchases (horse vans, portable stalls, starting gates, hot walkers, treadmills, sulkies, carts, buggies, etc.)	\$
Equine-related equipment purchases that serve other purposes (trailers, tractors, manure spreaders, motor homes, campers, pickups, autos)	\$

SECTION 6. EQUINE-RELATED ASSETS YOU OWN OR PARTIALLY OWN

Capital Expenditure	Dollar Value
What is your estimate of the current value of all equine-related land, fencing, and buildings on your operation?	\$
What is your estimate of the current value of all vehicles, equipment, and tack related to your equine operation that you own?	\$

SECTION 7. GROSS RECEIPTS

This section is designed to estimate gross receipts from equine-related activities and to help us estimate income earned by your equine operation, not your expenses.

Have you generated any revenue from equine-related activity in the last 12 months? Yes No
 If no, please skip to Section 10.

How many months of the year does your equine-related business operate? _____
 Is your equine-related business Full-time Part-time

How many horses, ponies, mules, etc., did you sell during the last 12 months? _____
 What was the gross value of the horses, ponies, mules, etc., sold during the last 12 months? \$ _____

Please indicate information concerning your various revenue-generating activities in the following table.

Revenue generating activity	—Revenue—		—Customers—		Percent of Time Spent on Equine Work Related Activities (by you and your employees)
	(\$ value)	Percent W. Va. Customers	Number	Percent W. Va.	
Equine boarding	\$				
Equine breeding services	\$				
Equine training-riding lessons	\$				
Therapeutic riding	\$				
Other on-site riding as commercial activity	\$				
Guided trail riding as commercial activity	\$				
Unguided trail riding as commercial activity	\$				
Rodeos	\$				
Other show-event participation	\$				
Commercial racing	\$				
Other (specify)	\$				

p



SECTION 7. GROSS RECEIPTS (CONTINUED)

- Do these revenue-generating activities include other equine-related services such as farrier services? Yes No
- Do you offer overnight guest accommodations? Yes No
- If so, what is the average charge per night? \$ _____
- Are meals included in your guest accommodations? Yes No
- If so, what is the average charge per meal? \$ _____
- Do you offer overnight boarding for horses? Yes No
- If so, what do you charge per night per horse? \$ _____
- Do you ever refer your customers to local area attractions, lodging, or restaurants? Yes No

SECTION 8. TOURISM-RELATED ACTIVITIES

We are interested in tourism at the state level. A tourist is defined as a customer who does not reside in West Virginia. If all of your customers are in-state residents, please skip to section 9.

What percentage of your sales and promotional efforts are devoted to attracting tourists? _____%

Do you partner with any other local businesses in offering other tourism activities or services?
 Yes No

SECTION 9. MISCELLANEOUS INFORMATION

- Does your business provide employee training in customer service? Yes No
- Does your business hold any permits, licenses, or contracts from the following governmental agencies?
- National Parks Service: Yes No State Parks or Forest: Yes No
- U.S. Forest Service: Yes No Other State Agencies: Yes No
- Others: Yes No (Please specify) _____
- Are you a member of your local Chamber of Commerce? Yes No
- If it exists, are you a member of your local Convention and Business (or Visitors) Bureau?
 Yes No Doesn't Exist

SECTION 10. GENERAL INFORMATION

This section provides information concerning yourself and your equine-related operations.

Please check the category that best describes your educational background:

Some high school or less Some college or trade school Some graduate or graduate degree

A high school diploma An undergraduate college degree

What is your age? _____ years

How many years have you lived in your present community? _____ years

Please check the category that best describes your total household income.

1-4,999 15,000-19,999 40,000-49,999 70,000-99,999

5,000-9,999 20,000-29,999 50,000-69,999 over \$100,000

10,000-14,999 30,000-39,999

What is your current primary occupation (retired is considered an occupation)? _____

Number of people in your household. _____

Number of people in your household directly involved in equine-related activities. _____

In a typical week, how many hours do you and other family members spend on equine-related activities?
_____ hours

(If you board your horses, please do not answer this question.)

How many acres of leased, owned, or rented land do you devote to equine-related activities? _____ acres

SECTION 11. CONCLUSION AND COMMENTS

Are you interested in educational opportunities, seminars, clinics, or conferences concerning equine-related activities? Yes No

Would you like to receive information about the West Virginia Horse Council? Yes No
If so, please provide your name and mailing address in the space provided below.



Name _____

Address _____

Do you belong to any equine-related associations or groups? If so, please specify. _____

That completes this confidential survey. Thank you for your help! We very much appreciate your effort to answer the survey. The information obtained from your survey is very important for the quality of our results. Once again, thank you!

Would you like a copy of the executive summary of the report that we will generate based on survey results? If so, please provide your name and mailing address in the space provided below.

Name _____

Address _____

Comments _____



We would like to thank the following individuals for their participation as members of the equine industry leaders review committee.

Debbie Burnside
Kathy Courtemanche
James Henderson, D.V.M.
Janice Holland, Ph.D.
Sam Huff
Michele Koury
Edwin Linger
Connie Lupardus
David Miller
Noah Perry

This study is being conducted by the West Virginia University Extension Service, in cooperation with the West Virginia University Davis College of Agriculture, Forestry, and Consumer Sciences, the West Virginia Horse Council Inc., and other equine activity related organizations.

Programs and activities offered by the West Virginia University Extension Service are available to all persons without regard to race, color, sex, disability, religion, age, veteran status, political beliefs, sexual orientation, national origin, and marital or family status. Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Director, Cooperative Extension Service, West Virginia University.

Comments from Owner/Businessperson Survey

- My operation is strictly showing and breeding. I stand one of the most successful Paint Stallions in the nation in Western Pleasure by just listing him as standing in WV. I receive many negative comments as to the accessibility in reaching him to breed. A stronger state related commitment may go a long way to encourage business for those who run an operation of this nature.
- The business at his time is a barter arrangement. They help me about the place and I furnish pasture and barn. My husband died 3 years ago and I had to dispose of show and breeding minis. The \$ value, I don't know.
- I am a thoroughbred breeder and racer but during the past year I did not have any horses racing, training or boarding in WV. I assume I was involved in this survey as a result of my having an owner's license in WV but assume I cannot respond to the survey questions in view of my lack of any WV activity. I am hopeful I will be back in WV in 2004. For your information my house is in MO and our horse activity is primarily in IL.
- I am not able to answer the majority of your survey. My horses are boarded at 3 different barns; a lot of the costs are built into the monthly board. Also, I have never been to WV and do not own a barn. I am curious as to how you got my name?
- My daughter will graduate from Salem Int. Dec. 2003 with an equine science and industry management degree. She will owe approx. \$30,000 in student loans. This is loans that are equine related to a WV college. I'm not sure if this is relative to your survey.
- We would love to see more space devoted in WV to Horseback Riding with overnight accommodations ("primitive" fine). This is the area that we promote to friends from out-of-state (and in-state). It seems that in our area these type places are for "hunters" only and there is much conflict to the addition of any horse related activities in most of our state parks, etc. We have seen this relationship of hunters/horseback rider's work in the state of VA: most trails are ridden by horseback riders when hunting is NOT in season. This should be a common sense issue. BLAND Co., VA "Jefferson National Forest" has the perfect example. Anything we could do to help this would be an effort we would enjoy.
- I have been trying to find places in WV to trail ride for pleasure. My luck is less than zero with some respondents simply telling me to read the site that I had read and had questions about. VA, however, has been quite responsive and OH is excellent. WV has such great potential. You need to study these 2 states for ideas. Please don't send North Bend Rail Trail info. Rode the entire length 2 summers ago.
- I believe that this state needs to try to make a few nice, safe places that people like me would enjoy. I know that where I live there are quite a few trails that the riders around here love just as they are, but if the state would just help out with keeping them safe for the horse to travel I am sure that it would bring others from other states to this lovely place. There are not many places like this left to ride in. I'd give people a chance to see and enjoy all of the miracles God has put on this Earth.

- I started with good intentions to fill out this report for you. For me to complete this with accurate umbers would take me hours to complete. I do not have that kind of time. Yes, we have had an economic study in Jefferson County several years ago. Obviously, it went nowhere since you claim no economic study has been done. I believe the legislators know the economic impact of thoroughbreds in this state since the budget is balanced on gambling. The only person I recognize on your committee is Sam Huff, President of the WV Breeders Classic, and he resides in VA, breeds in VA, and races elsewhere. Shouldn't you have included someone from the breeding industry/racing industry in Jefferson County?
- I am a small animal veterinarian, the only horse work I do is to draw blood for an occasional Coggins test. My primary involvement in horses for recreation is customizing model horses (Breyer, Hartland, etc.) and showing them. One of the major model horse events occurs at the Kentucky Horse Park Lexington, KY (BreyerFest-essentially a trade show for Breyer (Reeves Int.)). I didn't include expenses/money spent on model horse-related activities, as I thought this survey was for live horse expenditures.
- Referring to the question "Do you belong to any equine-related association or groups"? No longer, I was a member of WV Horseman, but they are not about horses. They are teenage chat rooms, recipe exchange, and play games such as hangman and word scramble. If you have any differing opinions, they threaten you and push you to leave, I WOULD NOT RECOMMEND "WV HORSEMAN" TO ANYONE! WV is a poor state for equine business; people want you to sell them \$4,000 horses for \$500.00. My experience with breeders/stallion owners has been bad. They are only out for money, and you do not get bred mares, I am trying to move (with all 15 horses) to a state with realistic horse people.
- My 11 year old has gone back to riding Hunter/Jumper after many months of Saddle Seat lessons. Saddle Seat gets more recognition than H.J. and then you have your Quarter Horse shows, right now there is no local H.J. shows, our riding instructor has attended a board meeting at KVHA so hopefully next summer they will let us have a real H.J. show. Right now the shows her students attend are at Lakeside in OH, and I think she might have received a show bill from Morgantown, WV. We just bought a Pinto Arab, mixed breed, but you can really see the Arabian in her head formation, she is 4 years old and we board her in Cross Lanes, WV at Shady Creek Farm, and an awesome facility for H.J. people. I have another daughter that is a senior in the Equine program, is there anyway she could get in depth information on this. Use the same address, we've received postcards about it but that's all.
- Isn't it a pity that Beckley had the opportunity several years ago to have a Horse Park such as Lexington, VA in our own back yard? Someone let an out of state corp. come in and tell them it wasn't feasible. Instead, let's do "Tamarack". What a joke when Lexington, VA's Horse Park is booked every weekend and not just for "horse" activities, but concerts, motor sports, flower shows, you name it and I'll bet they offer it.

- I have been in the Pinto-Arabian and Paint Horse breeding since 1978. In the last few years we have been showing our 4-H cattle, with our youngest son, now 20 (97', 98'). I showed OVHA High Point English Horse a pure bred Arabian Mare. My sister and her 3 girls 12, 8, and 7 years old recently moved back from OH. We showed 3 shows this year. We are starting back in the horse business, we purchased an addition, a Paint Mare and foal 01' and Bred Mares in 01'.
- Sorry this is so late, hope it's not too late. My mother has been very ill this year, it has my life all out of order. I coped with her illness by rescuing (by purchasing) a starving horse from a neighbor (because the law wouldn't do anything). I have nursed him back to health and he is my angel that has seen me through a difficult year. He was only days from death. He spent the winter (a very bad winter) tied to a tree with no food or water. Attention and resources used to be focused on this issue as well. It is one of the dark sides of the horse industry. I can not be ignored. Gabriel will live out his life with him being treated like a king. Many horses last winter were not so lucky. Many suffered and some died. Please don't forget this difficult but important issue. Thanks.
- Nothing is ever truly confidential or secure! I have macular degeneration so I am messy on questions. Under section 1 it would be nice to have Mule, Donkey/Hinney instead of "other". I am an alone private person and like it that way. Want no further communication. Had an old pony (pushing 40) that had to be put down before her natural time due to an accident. Otherwise, I'm a donkey person.
- For 7 years I have tried to generate and/or establish an interest in pleasure/competitive driving in WV using direct mailing advertising and placing ads in the market bulletin, local papers, club newsletters and by advertising and writing articles for the now defunct WV Horseman's Report and also by being listed in the WV Horse Industry Directory. As a result of lack of public interest and /or knowledge, I am moving to NJ where the interest in driving is very high. Other states such as, OH, VA, PA, NJ, NY, and KY have excellent facilities to offer for horse driving related activities, such as shows, combined driving events and pleasure drives, WV Saddle has no such interest in the driving population of the horse industry. The only places I can pursue my interests have been in every other state but here at home. Driving is one of the fastest growing equine sports in the US and WV will miss out on the huge income! Estimates expenditures of just one person who is doing driving as a sport: \$44,100.00. Please think about how to attract more drivers to this beautiful state.
- Personally, I do not think that there are enough equine-related activities in WV. Most of the showing that I do is in the southern East Coast. Also, I am a student at WVU and I would like to receive some information on the Equestrian Club there. Thank you.
- I can remember the days when there were a dozen or more AHSA Hunter/Jumper multi-day shows in WV to attend. They brought in people from New England to Florida because of facilities and money paid, and that was before all the interstates of today. I hope the facility planned in Morgantown can bring at least a few USAEq shows back, it sure would be nice to not have to drive 4-10 hours one way and pay for motel and fuel.

- I'm glad to see this being done, the horse industry in WV gets absolutely no recognition, respect or consideration for anything, such a shame! We help generate many dollars in revenue, yet we can't get any financial help from our state to help us fertilize lime and seed our fields, only if you own cattle, sheep, etc! So not fair! We have over 100 riders on the Rail to Trails horse rides here at Ellenboro, WV several weekends in the spring, summer and fall. Think of all that fuel, cost of trailers and pickups, tack, etc! And this is just one small area.
- The state of WV does not do anything to promote the Horse Business. At the present rate of show numbers on the increase. More attention by the legislature towards the Horse Business. If the horse center is built in Morgantown as is rumored, it will have very positive effect on the horse industry within the state and will draw large amounts of revenue from bordering states. WVU needs to get more involved in equine affairs within the state.

Racehorse
Trainer Survey

SECTION 1. RECREATIONAL EQUINE USE

-OVER THE LAST 12 MONTHS

Activity	Number of Days	Percent in W. Va.
3-Day eventing		
Cutting		
Dressage		
Endurance riding		
Fox hunting		
Gumkana		
Horse showing		
Hunter/jumper		
Jousting		
Pack and hunting		
Reining		
Rodeos		
Roping		
Team penning		
Therapeutic riding		
Trail riding (competitive)		
Trail riding (noncompetitive)		
Vaulting		
Other _____		

SECTION 2. OPERATION

1. Please check all of the following activities that applied to your horse operations in 2002.

_____ Train own racehorses (approximate number of horses in 2002

_____ Train racehorses owned by others (approximate number of horses in 2002

_____ Operate own breeding and racehorse training farm

_____ Own racehorse breeding stock

_____ Operate own training facilities

_____ Utilize stall space/training facilities at other farms

Utilize stall space/training facilities at: Mountaineer Racetrack _____,
Charles Town _____,

Track locations out of state _____.

2. Circle the activity in question 1 which you considered your primary horse operation activity in 2002.

3. Which of the following best describes the business arrangement under which your horse business operates? (circle one)

- a. Individual or Family Operation- individual proprietorship
- b. Individual or Family Operation- partnership
- c. Individual or Family Operation- corporation
- d. Partnership with non-family partners
- e. Corporation with non-family owners

SECTION 3. HORSES

4. Please list the number of horses you trained for racing in 2002, by breed. [For 2 year old and younger horses, also please indicate (in parenthesis) the number of horses you put through a separate pre-training phase, i.e. breaking horses to saddle.]

Thoroughbred: 2 yr. olds and younger (____) 3 yr. olds and older (____)
 Quarter Horses: 2 yr. olds and younger (____) 3 yr. olds and older (____)
 Paint: 2 yr. olds and younger (____) 3 yr. olds and older (____)
 Appaloosa: 2 yr. olds and younger (____) 3 yr. olds and older (____)
 _____: 2 yr. olds and younger (____) 3 yr. olds and older (____)
 (other breed)

5. What number of horses that you had in training at some time during the year was raced in and/or out of West Virginia during 2002

	Only in state	Only out of state	Both in and out of state
Thoroughbred:	_____	_____	_____
Quarter Horse:	_____	_____	_____
_____ :	_____	_____	_____
(other breed)			
_____ :	_____	_____	_____
(other breed)			

6. a. On average, how many months in 2002 was a horse kept in training?
 _____(per horse)

b. On average, how many months does the pre-training phase include?
 _____(per horse)

7. What percent of your horses (owned and/or trained) that were in race training in 2002 did not start a race? _____% (Reasons: Injured/laid up _____%; Lack of running ability _____%; Other _____%, reason _____).

8. What do you consider to be the total maximum capacity of your training operation?

Horses per year _____

9. Please indicate the number of horses you had in training in 2002 in each of the estimated market value categories.

<i>Range in value per horse</i>	<i>Number of horses in training in the market value range</i>
Less than \$2,500	_____
\$2,501- 5,000	_____
\$5,001- 10,000	_____
\$10,001- 25,000	_____
\$25,001- 50,000	_____
\$50,001 -100,000	_____
\$100,001 - 250,000	_____
\$250,001 - 500,000	_____
\$500,001 or more	_____

SECTION 5. LABOR EXPENSES AND USE

Number of horseracing-related employees you have had in the last 12 months.

Full-time _____ Part-time _____

What percent was tied to horseracing in West Virginia? _____ percent

What was your total horse racing-related payroll in the last 12 months?

\$ _____ (include cash wages, employer cost for insurance, pensions, employer social security contributions)

What percent was tied to horseracing in West Virginia? _____ percent

SECTION 6. CAPITAL SPENDING

Equine-related capital expenditures incurred by you during the past 12 months for animals you totally or partly own or board.

Capital Expenditure	<i>Dollar value</i>
Purchase of equine	\$ _____
Real estate purchases (land and buildings)	\$ _____
Equine-only equipment purchases (horse vans, portable stalls, starting gates, hot walkers, treadmills, sulkies, carts, buggies, etc.)	\$ _____
Equine-related equipment purchases that serve other purposes (trailers, tractors, manure spreaders, motor homes, campers, pickups, autos)	\$ _____

What percent of the investments identified above are tied to horse racing in West Virginia? _____ percent

SECTION 7. EQUINE-RELATED ASSETS YOU OWN OR PARTIALLY OWN

Capital Expenditure	Dollar Value
What is your estimate of the current value of all equine-related land, fencing, and buildings on your operation?	\$ _____
What is your estimate of the current value of all vehicles, equipment, and tack related to your equine operation that you own?	\$ _____

SECTION 8. BUSINESS INCOME

Approximate Total 2002 Receipts from: Total \$

- a. Boarding and training fees _____
- b. Horse sales _____
- c. Purses/Incentives _____
- d. Other horse income _____

_____ (please specify)

18. Do you usually have an arrangement for a percentage of winnings ?
 Yes No If yes, about what percent? _____%

19. What was your training fee in 2002? \$_____ per day or \$_____ per month.

(Please provide the following explanations of the fee.)

List items and services included in the fee: (e.g., training?, board ?)

List items and services passed through to horse owners: (e.g., pony rider, veterinarian, farrier, track testing?)

Do you have facilities for laid up or turned out racehorses? Yes No (If yes, give fee per day \$_____ or per month \$_____)

<u>A. Profitability</u>	<u>B. Horse Numbers</u>	<u>C. Client Numbers</u>
Made money? _____	Added horses? _____	Added clients? _____
Broken even? _____	Same horse numbers? _____	Same client numbers? _____
Lost money? _____	Lost horse numbers? _____	Lost client numbers? _____

D. Horse Quality

Increased quality?_____

Same quality?_____

Decreased quality?_____

E. Future Plans-Quarter Horse

Increased QH? _____

Same QH number?_____

Decrease QH number?_____

F. Future Plans Thoroughbred

Increased TH?_____

Same TH number?_____

Decrease TH number?_____

SECTION 9. GENERAL INFORMATION

This section provides information concerning yourself and your equine related operations.

Please check the category that best describes your educational background:

Some high school or less

Some college or trade school

some graduate or graduate degree

A high school diploma

An undergraduate college degree

What is your age?_____years

How many years have you lived in your present community?_____years

Please check the category that best describes your total household income.

1-4,999

15,000-19,999

40,000-49,999

70,000-99,999

5,000-9,999

20,000-29,999

50,000-69,999

over \$100,000

10,000-14,999

30,000-39,999

What is your current primary occupation (retired is considered an occupation)?

Number of people in your household._____

Number of people in your household directly involved in equine-related activities._____

In a typical week, how many hours do you and other family members spend on equine-related activities?

_____hours

(if you board your horses, please do not answer this question.)

How many acres of leased, owned, or rented land do you devote to equine related activities?_____acres

SECTION 10. CONCLUSION AND COMMENTS

Are you interested in educational opportunities, seminars, clinics, or conferences concerning equine-related activities? Yes No

Would you like to receive information about the West Virginia Horse Council? Yes No

If so, please provide your name and mailing address in the space provided below.

Name _____

Address _____

Do you belong to any equine-related associations or groups? If so, please specify. _____

That completes this confidential survey. Thank you for your help! We very much appreciate your effort to answer the survey. The information obtained from your survey is very important for the quality of our results. Once again, thank you!

Would you like a copy of the executive summary of the report that we will generate based on survey results? If so, please provide your name and mailing address in the space provided below.

Name _____

Address _____

Comments: _____

Use of Survey and Other Data Sources in the IMPLAN Model

The IMPLAN (Impact Planning) modeling system (Minnesota IMPLAN Group, Inc) is used to compute the Input-Output (I-O) model used in this study. IMPLAN is a ready-made modeling system, which relies on secondary data, such as employment, and the assumption that the regional economy is similar in structure to the national economy. Because this assumption may be tenuous, it is well established that ready-made I-O models should be evaluated and altered in light of other data sources and knowledge concerning the local economy (Jensen, 1987). This fact is especially pertinent when the analysis in question involves a natural-resource-based industry such as the equine industry in West Virginia (Jensen).

For this study, we reconstructed coefficients in the IMPLAN model based on our survey data. Survey respondents were asked to indicate where they purchased their inputs (in state versus out of state) as well as the level of their expenditures. This information was used in estimating levels of use and regional purchase coefficients in the West Virginia I-O model for numerous inputs purchased by those involved in equine-related activity and industries. Estimates of regional purchase coefficients are critical. They determine the level of in-state versus out-of-state purchases, which in turn drive model multipliers and hence estimates of the effect of the equine industry on other parts of the state economy.

Survey respondents were also asked to indicate the percent breakdown by marketing channel (direct, retail, wholesale, or in some cases own-farm grown) when appropriate (generally for purchases of inputs that were not services). This information was then used in margining survey respondents into retail, wholesale, and transportation margin categories based on information obtained from IMPLAN (based on national data). For example, if direct purchases were indicated, then expenditures were directly allocated and indicated regional purchase coefficients were directly applied to the appropriate selling industry category. If purchases were made at the retail level, the IMPLAN margins were used to allocate the purchases to the appropriate category. Retail levels were also used in applying the regional purchase coefficients (RPC) that are used in IMPLAN; for example, if the purchase was direct, the RPC provided by the survey respondent was used directly in calculating a weighted average RPC. When purchases were made through the marketing channel, RPC estimates were adjusted to reflect this information concerning marketing level of purchase.

For pleasure-horse industry activity and nonracing equine businesses, survey respondents were assumed to be representative of the entire population and were used to estimate the number of equine and the total size of expenditures in both sectors. Our estimates indicate a total of 43,000 equine for private individual owners and 6,000 equine for horse-related businesses (the latter being a mixture of horses used for business and pleasure purposes in many cases). Spending per horse as estimated from survey results was used to estimate the size of activity in dollar terms by participants in the pleasure-horse category. For nonracing businesses, industry size was estimated based on pleasure horse use of boarding and riding lesson services obtained from the survey revenue questions, and by cost per horse information.

For the racehorse portion of the study, data taken from the 2002 study by Thalheimer Research Associates conducted for the racetrack at Charles Town were used to estimate spending levels for racehorse trainer, owner, and breeding activities. Their study covered all horseracing trainer and owner activity in the area, as well as all racehorse breeding in the West Virginia (which is concentrated in the Eastern Panhandle). The assumption was made that in terms of the mixture of costs and input use, this study provided an accurate representation of all horseracing activity in West Virginia. However, it did not provide estimates concerning where input purchases were made (i.e., from in-state versus out-of-state sources) that are critical in determining the level of economic impacts. To estimate where inputs were purchased, interviews with four owners/trainers from the Charles Town track, the 15 surveys obtained from individuals involved in training tied to the Chester track, and surveys from individuals involved in horseracing in the major survey were used to estimate where (in-state versus out-of-state) input purchases were made.

Estimates of industry size were based on the number of horses that trained year-round in both the Charles Town and Chester areas of West Virginia as determined by track officials at both facilities. These estimates were confirmed as accurate by local Horsemen's Benevolent and Protective Association officials in both Charles Town and Chester.

For breeding activity, data obtained from the Jockey Club (2004) and relationships from the Thalheimer Research Associates study were used to estimate the size of the racehorse breeding industry in West Virginia. These estimates were also confirmed by individuals from the Charles Town track.

Estimates of industry spending and employment levels for operating the racetracks were obtained from officials at both tracks. Regional purchase coefficients taken from the IMPLAN model for the racing and track operation industry were used in estimating track regional purchase coefficients and detailed spending patterns.

We also compared our estimates of the number of horses to several previous studies. One study conducted by the West Virginia Department of Agriculture in 1986 estimated that there were 48,000 equine in the state at that time. According to a study conducted by the National Agricultural Statistics Service for all states, there were an estimated 43,000 equine in West Virginia in 1999 (U.S. Department of Agriculture, 1999). This national effort was based on land measurements, the 1997 Census of Agriculture, and a survey of very large farms and equine facilities. However, the study recently conducted by Swinker et al. for Pennsylvania found that these estimates underestimated the number of equine in Pennsylvania by 36,000. Our study found a similar level of underestimation (the 43,000 versus our estimate of 56,800) in percentage terms for West Virginia. Furthermore, a comparison of the number of equine in the 1997 and 2002 Census of Agriculture (released in June 2004) indicated an estimated increase in the number of equine in West Virginia by 38.6%. For all of these reasons, we believe that the estimate of the number of equine in West Virginia released in this study is reasonably accurate for the purposes of drawing inferences and making policy decisions.

Limitations and Uses of Input-Output Models⁹

While a variety of methods can be used to generate economic multipliers, input-output (I-O) models are the most popular tool for such analysis. This popularity has been engendered by the growth of ready-made I-O modeling systems such as IMPLAN (Minnesota IMPLAN Group, Inc.), where a basic knowledge of personal computers is sufficient for generating models, multipliers, and impacts.

I-O models examine the market flow of products between industries, sales by industries to households and other final users, and industry use of factors of production (labor and capital). Such models can be very detailed, containing several hundred industries.

I-O models provide estimates of the direct and indirect contribution of an industry or a given set of activities through the use of multiplier analysis. Not only is the direct impact of a given industry on an economy ascertained, such as number jobs provided by that industry, but the impact the spending by businesses in that industry has on the rest of an economy can also be estimated.

Export base theory underlies the use of economic multiplier and impact analysis. It springs from the idea that a region must earn income to survive by producing a good or service that the outside world will purchase. The use of I-O models has caused this idea to be extended to the sales generated by any industry, whether export oriented or not. The income injected into an economy by exports has a multiplier effect as it is respent locally. The level of respending is based on how much local businesses and consumers buy from local businesses (Miller and Blair, 1985).

Impact analysis looks at the effects of a positive or negative change in economic activity. Impact analysis is based on economic multipliers, which account for the total effect across the entire economy of the event under study. For example, impact analysis is often used to estimate the effects of a new local industry on jobs and incomes in all parts of the economy. It is also used to estimate policy or investment impacts and the total contribution of an industry to an economy.

Multipliers are generated in I-O models based on the key assumption of fixed proportion production functions where input use moves in lock-step fashion with production. For example, if a poultry processor doubles production, its use of each input also doubles. This production function is based on a completely elastic supply. That is, shifts in demand result in changes in output, with no changes in real (inflation removed) prices. Such supply curves are based on the assumption that all units of a given input are equal in quality and there are no barriers to firms entering or exiting markets.

Similar assumptions are also made in I-O models of regional economies. For example, if a local poultry processor doubles production, its current use of regional inputs will also double. Household spending (and implicitly population) is also assumed to move in a lock-step fashion with economic activity.

Several types of multipliers are generated using regional I-O models. For a given local industry, the output multiplier measures the combined effect of a \$1 change in its sales on the output of all local industries. All I-O multipliers measure the strength of backward linkages or the degree to which an increase in activity by a given local

⁹ The Appendix draws heavily on Hughes, 2003.

industry causes additional purchases from other local industries and local resource providers. The same relationships are used in impact analysis, but the initial change in output is much larger than \$1 and is usually spread across several local industries.

Based on the size of the economy in question and the industry under study, output multipliers tend to vary from 1.5 to 2.5 in value. In this regard, any output multiplier larger than 2.5 should be especially examined. Further, all things being equal, multipliers will tend to be higher where the region is larger with a more diverse economy, competitive retail/service centers are a substantial distance, and the per capita income is low (Mulkey, 1978).

Several issues can influence the interpretation of results in multiplier-based studies. These issues may lead policy analysts to do additional analysis or use alternative models. Such issues include investment or project feasibility, employment impacts, effects on current residents, considerations about capital, impacts on local government, and accounting stance. For more detail concerning each of these limitations, see Hughes. For our purposes, it must be noted that model results should be interpreted carefully and that results from impact analysis by themselves do not constitute a cost-benefit study or a feasibility study.

7. REFERENCES

- Barents Group LLC., January 1996. "The Economic Impact of the Horse Industry in the United States." Report Prepared for the American Horse Council Foundation.
- Bureau of Economic Analysis, U.S. Dept. of Commerce, 2004. "Regional Economic Information System." www.bea.gov/bea/regional/reis/
- Dillman, D., 2000. "Mail and Internet Surveys: the Tailored Design Method." 2nd ed., John Wiley & Sons, New York.
- Jensen, R.C. 1987. "On the Concept of Ready-Made Regional Input-Output Models." *Review of Regional Studies*. 17: 20-25.
- The Jockey Club. 2004. "Information and Statistics." www.jockeyclub.com
- Hughes, David W. 2003. "Policy Uses of Economic Multiplier and Impact Analysis." *Choices*. 2nd Quarter:25-30. www.choicesmagazine.org.
- Miller, Ronald and Peter Blair. 1985. *Input-Output Analysis: Foundations and Extensions*. Prentice-Hall, Inc. Englewood Cliffs, NJ.
- Minnesota IMPLAN Group, Inc. IMPLAN Professional Version 2.0 User's Guide, Analysis Guide and Data Guide., Stillwater, MN: 2000.
- Moore, John Trotwood. 2004. www.geocities.com/Petsburgh/Farm/8300/hquote.htm
- Mulkey, David. 1978. *The Journal of the Community Development Society*, 9(2): 85-93.
- Reference USA. 2000. Reference USA Website, Access through West Virginia University Library. <http://reference.infousa.com/index2.asp>
- Shenandoah Equine Investments. 2004. "West Virginia Incentives." www.shenandoah-equine-investments.com/WestVirginiaIncentives.htm
- Steelhammer, R. "Top-Flight Horse Arena Would be an Economic Boom." February, 28th, 2004. *Charleston Gazette*, News Release.
- Swinker, A.M., P.R. Tozer, M.L Shields, and E.R. Landis. May, 2003. "Pennsylvania's Equine Industry Inventory, Basic Economic and Demographic Characteristics." Dept. of Dairy and Animal Science, College of Agricultural Sciences, Pennsylvania State University, University Park.
- Thalheimer Research Associates. 2002. "The Economic Impact of the Charles Town Thoroughbred Race Horse Industry on the Charles Town Economy." Reports Prepared for Charles Town Horsemen's Benevolent and Protective Association Inc. Lexington, KY.
- U.S. Department of Agriculture. 2004. "2002 Census of Agriculture: West Virginia: State and County Data." Vol.1, Geographic Area Series Part 48 AC-02-A-48. June. National Agricultural Statistics Service.
- U.S. Department of Agriculture. 1999. "Equine Inventory, January, 1999." March. National Agricultural Statistics Service.

West Virginia Department of Agriculture 2002. "Coggins' Test Results 1998-1999." Charleston, WV.

West Virginia Department of Agriculture 2003. "West Virginia Horse Directory, 2003." Charleston, WV.

West Virginia Department of Agriculture 1986. "1986 West Virginia Equine Survey." November. Charleston, WV.

West Virginia Division of Tourism 2004. "West Virginia Division of Tourism: 2003 Annual Report." Charleston, WV.