PENNSYLVANIA'S RACEHORSE INDUSTRY INVENTORY, BASIC ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS

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May 2003

Introduction Pennsylvania's Racehorse Industry*

Horse racing has had a long-standing presence in Pennsylvania, and is a significant and integral part of Pennsylvania's equine industry. In 2001, Pennsylvania's four race tracks held a total of 762 race days for both harness and Thoroughbred horses. Over 2.4 million patrons attended the track (1.8 million attendance for Thoroughbred and 597,155 for harness racing) and wagered $941.6 million for Thoroughbred racing and $259.5 million for harness racing. In total for 2001, the projected horse racing total handle (all wagering at all race tracks) for the state was $1.2 billion. An additional $432 million was wagered during the year on live ($49.8 million) and simulcast races ($383 million). Approximately 80% of the money wagered on harness and 76% from Thoroughbred racing is returned to the betting public with the remainder distributed among the state (in the form of taxes), purses for the horsemen, and operating costs.

Approximately 6,177 owners, trainers, grooms, exercise riders, feed and tack suppliers, veterinarians, farriers, and other industry professionals occupy the stable area at the Thoroughbred tracks during the meets. In addition, 4,274 equine professionals occupy the stable area of the harness tracks. During the meets, the tracks employs additional people for security, concessions, maintenance and mutual tellers that work on the front of the track.

*Information taken from the 2001 Annual Report, State Racing Commission, Pennsylvania Department of Agriculture.

Racing provides a significant economic contribution to Pennsylvania's horse industry. Horse racing in Pennsylvania has generated substantial economic benefits to the state and has been a vital cornerstone to the horse industry. Knowledge of the current size and character of the Pennsylvania racehorse industry, behold the tracks is essential to help shape the future of this industry.

The Pennsylvania Department of Agriculture, through the State Horse and Harness Racing Commissions, provided the funding for The Pennsylvania State University to conduct the 2002 Economic and Population Study of the Pennsylvania Equine Industry. During the development

of the study, The Pennsylvania State University also conducted a census of the state's horseracing industry.

The census population sampled totaled 2,867 addresses identified as specializing in the horse racing industry. Survey instrument was developed and distributed in October 2002. Mail-based reminder was sent to any non-respondents. The mailings consisted of three phases: postcard, duplicate copy of survey and another postcard. Follow up began two weeks after the initial survey mailing and occurred in two-week intervals. Data collection was terminated December 2002, and initial data analysis focused on response rates. The response rate for the racing industry survey was 20%. The financial information collected represents the tax-reporting period of 2001. The number of horses owned and characteristics of Pennsylvania horse owners represents the year 2002. Information on data collection can be reviewed in Appendix A: Methodology and Definitions. The following are the results of the racehorse industry census which was a portion of a total state equine population survey.

2002 Racehorse Industry Results:

Economic Value

By recognizing all the breeding farms and stables, land, equipment, facilities and products necessary to produce and use horses, one begins to understand how the horses and people involved represent an influential industry. Together, the breeding, raising, training, racing, riding and care of thousands of racehorses each year show a vast industry that when pulled together makes a huge contribution to the Pennsylvania economy. The following table contains some of the highlights of Pennsylvania's racehorse industry along with the general equine population information.

Table 1. Basic Facts about Pennsylvania's Equine Industry:

	General Equine Population	Racehorse Industry	Total State
Number of Horses:	**189,328**	**26,365**	**215,693**
Number of Operations	**28,200**	**2,800**	**31,000**
Employment (number of jobs)	**13,870**	**6,430**	**20,300**
Value of Pa's Horses:	**$978 million**	**$352 million**	**$1.3 billion**
Industry Outputs (Revenue):	**$780 million**	**$344.5 million**	**$1.12 billion**
**Sales & Income:*	*$246 million*	*$189 million*	*$435 million*
Related Assets/Investments:	**$7.15 billion**	**$1.12 billion**	**$8.27 billion**
Expenses:	**$508 million**	**$238 million**	**$746 million**
Total Taxes**	**$46.3 million**	**$6.9 million**	**$53.2 million**
Employment Compensation:	**$121.2 million**	**$291.1 million**	**$412.3 million**
****Wages and Benefits Paid:*	*$60 million*	*$32.9 million*	*$92.9 million*
Value Added (ripple effects)	**$427.5 million**	**$187.6 million**	**$ 615.1 million**

** Sales and Income are part of Industry Outputs.*
***Taxes include property taxes for equine-related land and payroll taxes only.*
****Wages paid to employees are included in labor costs or Employment Compensation.*

The Equine Industry's Estimated Contribution to the Pennsylvania Economy

The total contribution of the Equine Industry to the Pennsylvania economy was estimated using the economic impact software program IMPLAN (Impact Analysis for Planning). Originally developed by the US Forest Service, IMPLAN is an input-output model widely used to quantify how businesses use technology, labor and materials (i.e., inputs) to produce a product (i.e., output). In practice, the IMPLAN model is used in every state and hundreds of communities across the nation to catalog economic activity and predict the effect of alternative policies and various economic changes.

Total Effects

Results of the analysis are shown in Table 2. Here, the direct output effect of the Equine Industry in the state is $642.9 million. Based on the IMPLAN model, this translates into 14,960 jobs, with an annual total compensation for these workers of $235 million per year ($15,715 per worker). In

addition, our analysis suggests Pennsylvania's Equine Industry directly generates $330.5 million of value-added activity.[1]

Secondary effects are the spin-off or ripple effects of the Equine Industry. For example, equine-related businesses purchase a variety of inputs and services; and the companies that produce these goods and services also need labor. Accordingly, the secondary effects also capture the impact of local spending by employees of both the equine-related businesses as well as supporting industries. Using IMPLAN, it is estimated that these effects result in more than $481 million in additional output, of which more than $284 million is value-added. This translates into 5,340 additional jobs in the state economy, and more than $177 million in employee compensation. In terms of multipliers, the employment multiplier is 1.36, suggesting that for every job in an equine-related business, an additional 0.36 jobs are supported in the state economy. The labor income multiplier is 1.75, suggesting an additional dollar in employee compensation in the Equine Industry supports 75 cents of wages and benefits in other Pennsylvania industries. Similar interpretations can be given to the output multiplier (1.75) and value-added multiplier (1.86).[2]

Overall, the direct and secondary contributions of the state's Equine Industry are estimated at more than $1.12 billion in output, of which nearly $615 million is value-added. This translates into 20,300 jobs that compensate state workers with $412.2 million.

The racehorse survey indicated that this portion of the industry generated $197.4 million in output and $100.6 million in value added. This activity directly supported 4,740 jobs. Accounting for multiplier effects, the racing industry supported an additional $147.1 million in output, of which $87 million was value added, and 1,690 additional jobs.

The general population results indicated that the industry directly generates $445.5 million in output, of which $229.9 million is value added. This activity provides 10,220 jobs. And the

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[1] Appendix A overviews the method and defines the key terms used in this study.
[2] Economic multipliers are used to translate the direct impact into the total impact; multiplying the direct impact by the multiplier gives an estimate of the additional economic activity generated by a change in output. To derive the multiplier, simply divide the total impact (direct plus secondary) by the direct impact.

ripple effects generate still more economic activity, supporting $334.5 million in output, of which $197.6 million is value-added, and 3,650 additional jobs.

Table 2: The Equine Industry's Estimated Contribution to the Pennsylvania Economy, 2001

	Direct Effect	Secondary Effect	Total Effect	Multiplier
TOTAL				
Industry Output (millions)	$642.9	$481.6	$1,124.5	$1.75
Value Added (millions)	$330.5	$284.6	$615.1	$1.86
Employment	14,960	5,340	20,300	1.36
Labor Income (millions)	$235.1	$177.2	$412.3	$1.75
Per Worker Compensation	$15,715	$33,157	$20,305	
RACING				
Industry Output (millions)	$197.4	$147.1	$344.5	$1.75
Value Added (millions)	$100.6	$87.0	$187.6	$1.86
Employment	4,740	1,690	6,430	1.36
Labor Income (millions)	$67.1	$54.1	$121.2	$1.81
Per Worker Compensation	$14,162	$31,975	$18,848	
GENERAL				
Industry Output (millions)	$445.5	$334.5	$780.0	$1.75
Value Added (millions)	$229.9	$197.6	$427.5	$1.86
Employment	10,220	3,650	13,870	1.36
Labor Income (millions)	$168.0	$123.1	$291.1	$1.73
Per Worker Compensation	$16,435	$33,705	$20,981	

Some Characteristics of Pennsylvania's Racehorse owners:

- The racehorse owners were 70% male and 30% female.
- Within the racehorse industry, more than half of the owners have owned horses for 20 or more years, and the average length of equine ownership is just over 25 years.
- Within the racehorse industry, nearly 68% of the owners reported a level of education beyond high school and nearly half have received at least a college degree. Nineteen percent reported having an advanced college degree.
- In 2001, racehorse owners attend an average of 50 horse races within Pennsylvania and reported attending an average of 17 out of state races. In the racing industry Pennsylvania owners appear to be active participants in the sport, owners reported participating in an average of 37 races held with in the state and 18 out of state races per year.

Pennsylvania's Racehorse Breeds

Pennsylvania's racehorse industry included 26,365 head of horses. Ninety-three percent of these racehorses horses are housed within the state of Pennsylvania, 6.3% are housed in another state and 0.3 of the Pennsylvania owned horses are presently out of the United States. There are 14,815 and 11,550 head of Standardbreds and Thoroughbreds, respectively. An additional 6,317 Standardbreds and 9,567 Thoroughbreds were reported in the general equine survey (horses not used for racing). The two breed totals, when including the non-racing population are 21,132 for Standardbred and 21,117 for Thoroughbreds. In addition, a limited number of owners of American Quarter Horses, Arabians and Appaloosas reported racing these breeds out of state. Racehorse breed data, value and use by breed are presented in Tables A1 and A2 in the Appendix.

Numbers and Economic Value of Horses by County & District

From border to border, the horse industry represents a highly diverse industry that supports a wide variety of activities in all 67 counties. The industry combines the primarily rural activities of breeding, maintaining and training horse, farming, boarding, stabling, and other commercial purposes with the more urban activities of operating racetracks, off-track wagering facilities, horse shows and recreational riding.

Top Five Counties by Racehorse Population:

1. **Chester – 4,286**
2. **Lancaster – 3,012**
3. **York – 2,857**
4. **Washington – 2,250**
5. **Berks – 1,445**

Together, the state's South Eastern and Capital Regions account for the majority of Pennsylvania's racehorse population. County racehorse data regarding horse population is in Table A3, in the Appendix.

Equine Operations

Eighty-two percent of the farms/stables from the racehorse industry reported being commercial operations (for profit), while 20 % considered their equine operation for personal use. Interestingly, the general equine population reported 18% are commercial and 82 % were for personal use.

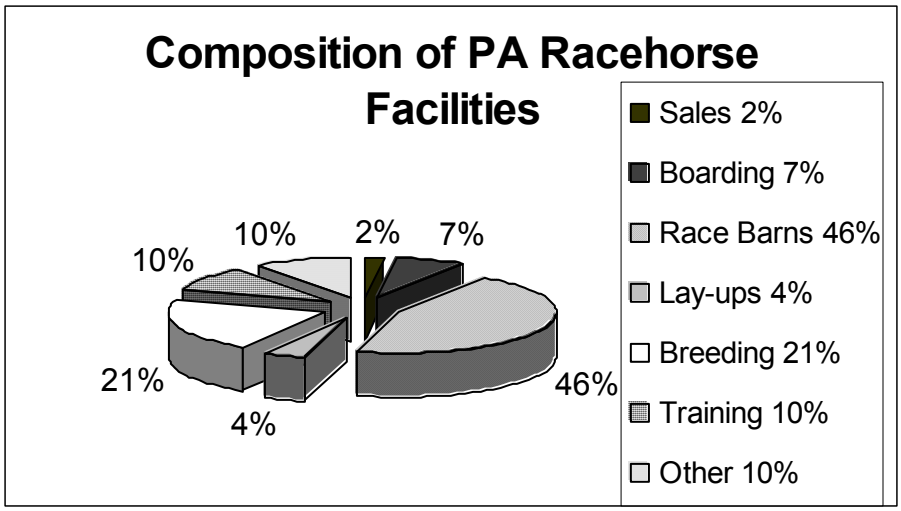
Table 3: Number of People Involved In the Total Equine Industry

	Total industry
Number of households that own equid, **2867 were identified as horseracing.**	38,000
Members of households that participate in equine activities.	190,000
Households within the state, participate in an equine activity, but do not own a horse	7,600
Operations that house equid in PA	31,000
Number of Jobs, **6,430 in the racehorse industry**	20,300

Composition of Pennsylvania's Racing Facilities

Almost half of the racehorse breed owners, 46%, consider their operations to be racing stables/ barns (on and off-track facilities). Second most common were breeding farms (21%), followed by training barns (10%); boarding facilities (7.5%); lay-up/equine therapy facilities (4.4%); sale preparations (1.8%) and other (10%).

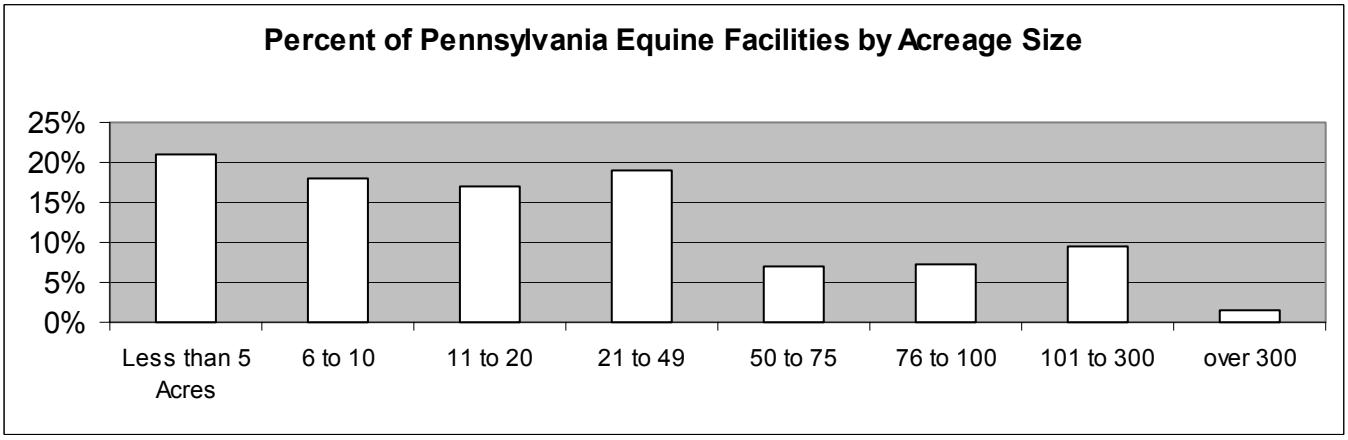
Figure 2: Types of facilities defined.



Land: Equine Operation Acreage

The equine community is actively preserving open space and maintains the public's connection to agriculture. Over half (56%) of Pennsylvania's equine population is housed on properties under 20 acres in size (Figure 3). Twenty-one percent of the equine operations are located on acreages that are less than 5 acres. An additional 20% of horse farms are located on acreages of 21 to 50 acres in size, 14% are located on land tracts over 50 but fewer than 100 acres. The remaining 11% operate facilities on acreages over 100 acres. Pennsylvania's equine community provides an estimated 1.14 million acres of open space (General population 1,037,153 and Racing industry 105,458 acres); horse related tracts of land range from a few acre farmette to thousand acre estates. Equine related land values, for the entire state, were reported to be $4.8 billion.

Figure 3: Facility Land Size for Operations in the General Survey.



Racing operations reported that over 10% of their equine related acreages were enrolled in Agricultural Preservation programs. Twenty – six percent of these racing operations listed pasture as their primary land use, 13% of the acreage was planted in crops, and 21% was utilized as hay fields.

Manure Handling Systems

There are two principal equine industry manure management systems. The first system permits horses to graze full-time on pastures and the manure is not collected or treated. Pasture manure usually is spread by harrow cultivation that promotes decomposition. The second system confines animal feeding, which relies on intensive management, and the horses are kept in stalls or runs. The horses may be housed in box stalls and provided a bedding source for urine absorption. Alternatively, horses are kept in corrals or runs and some runs are attached to stalls. Manure is managed in one or more of the following ways: 1) compost (manure is removed daily and composted); 2) stockpile (manure is removed daily and stored in piles) and, 3) daily land application (manure is removed daily and spread on cropland).

According to the survey, racehorse operations managed manure using the following systems: composted and used on the farm (21%), composted and hauled off farm (11%), spread fresh on crop and pasture fields (27%), hauled off the farm fresh (5%) and stock piled on the stable and left unmanaged in piles (20%). Manure management handling was not mutually exclusive, managers used more than one system and not all reported their management method. Larger horse operations (50 to1100 head of horses) were more likely to have manure hauled off the farm soon after it was removed from the stalls (58%). None of the farms with over 50 head of horses stockpiled manure on the premises. In comparison, the smaller operations (less than 10 head) stock piled manure and left it on the premises unused (24%). Commercial operations appeared to be more likely to have manure management plans.

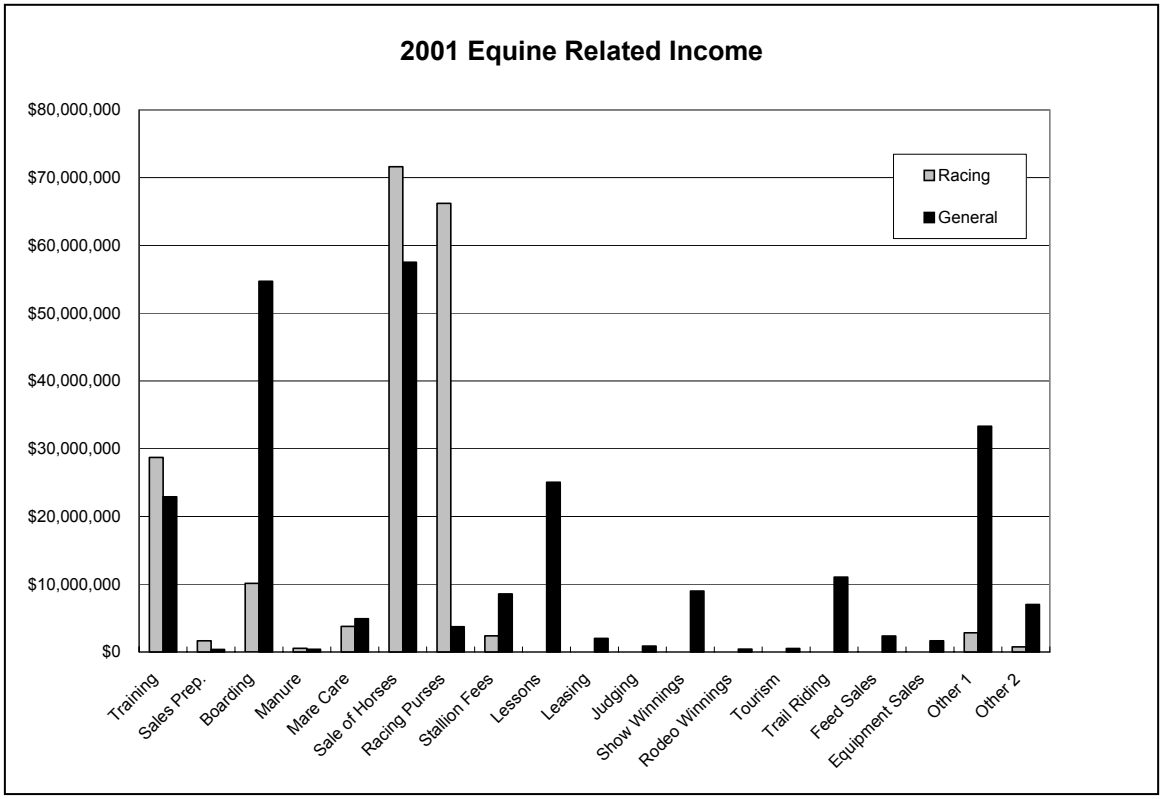
Equine-Related Income

Overall, the direct and secondary contributions of the state's equine industry are estimated at more than $1.12 billion in output (the total revenue generated by the industry), of which nearly $615 million is value-added. However, equine-related income (reported by racehorse census participants) from sales and associated equine/agricultural activities during 2001 reported generating $189 million in income and the general equine population reported income of $246 million.

Table 4: Income by Source for the Racehorse Industry.

Equine Related Income	Racing Industry
Training	$28,713,642
Sales Preparation	$1,643,474
Boarding / Lay-ups	$10,110,577
Manure Sales	$552,111
Mare Care	$3,755,666
Sale of Horses	$71,610,642
Racing Purses	$66,194,871
Stallion Services Fees	$2,391,752
Other Income	$2,843,174
Other Income	$749,155
Total Income:	$188,565,065

Figure 4: Equine related income for the racing and general populations.



*Note that some race horse owners were reported in the general survey.

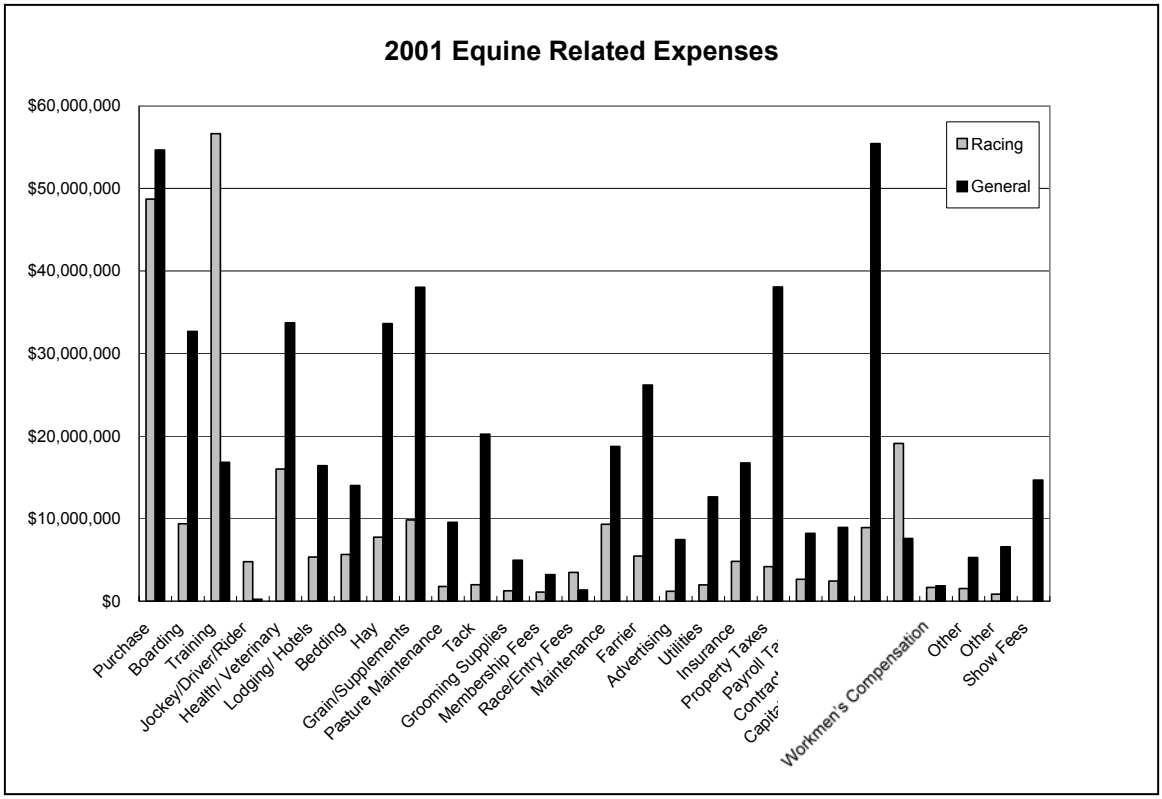
Equine-Related Expenditures

Equine-related expenditures during 2001 totaled an estimated $238 million for the racehorse industry. Purchases of feed and bedding accounted for $23 million in expenditures. Veterinarian and health-related care amounted to nearly $16 million. Taxes accounted for $6.7 million, while $48.7 million was spent on the purchase of horses, $9.3 million was spent on boarding horses and nearly $56.6 million was spent on training costs. (Expenses of commercial racetracks and public facilities were not included in these figures.)

Table 5: Expenditures by Category for the Racehorse Industry.

Expenditure Category:	**Racehorse Industry**
Purchase	$48,708,105
Boarding	$9,385,684
Training	$56,644,783
Jockey/Driver/Rider	$4,797,866
Health/ Veterinary	$16,017,488
Lodging/ Hotels	$5,368,699
Bedding	$5,668,411
Hay	$7,774,418
Grain/Supplements	$9,849,711
Pasture Maintenance	$1,790,025
Tack	$2,013,885
Grooming Supplies	$1,265,244
Membership Fees	$1,097,701
Race/Entry Fees	$3,503,131
Maintenance	$9,336,341
Farrier	$5,458,184
Advertising	$1,200,114
Utilities	$1,977,616
Insurance	$4,815,652
Property Taxes	$4,182,837
Payroll Taxes	$2,682,662
Contract Services	$2,439,454
Capital Improvements	$8,919,012
Breeding Fees	$19,098,502
Workmen's Compensation	$1,659,784
Other	$1,539,503
Other	$855,374
Show Fees	$0
Total Expenses:	**$238,050,186**

Figure 5: Equine related expenses for the racing and general populations.



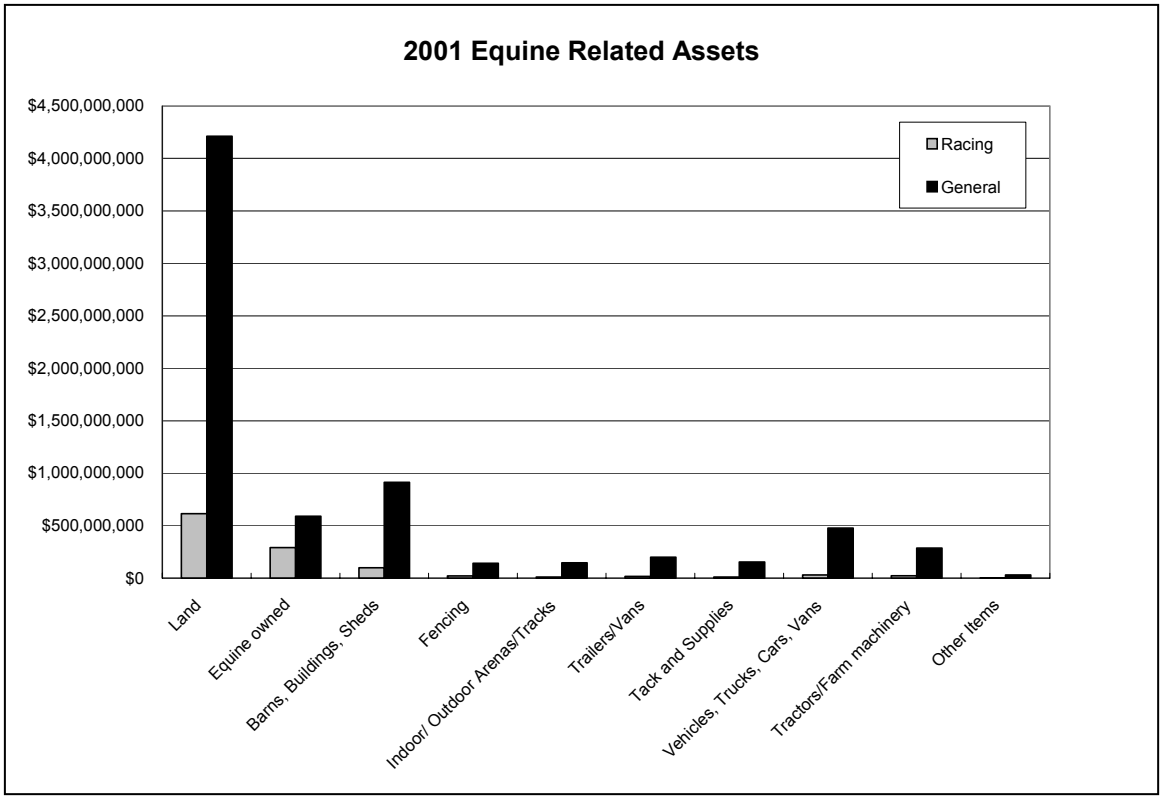
Equine-Related Assets

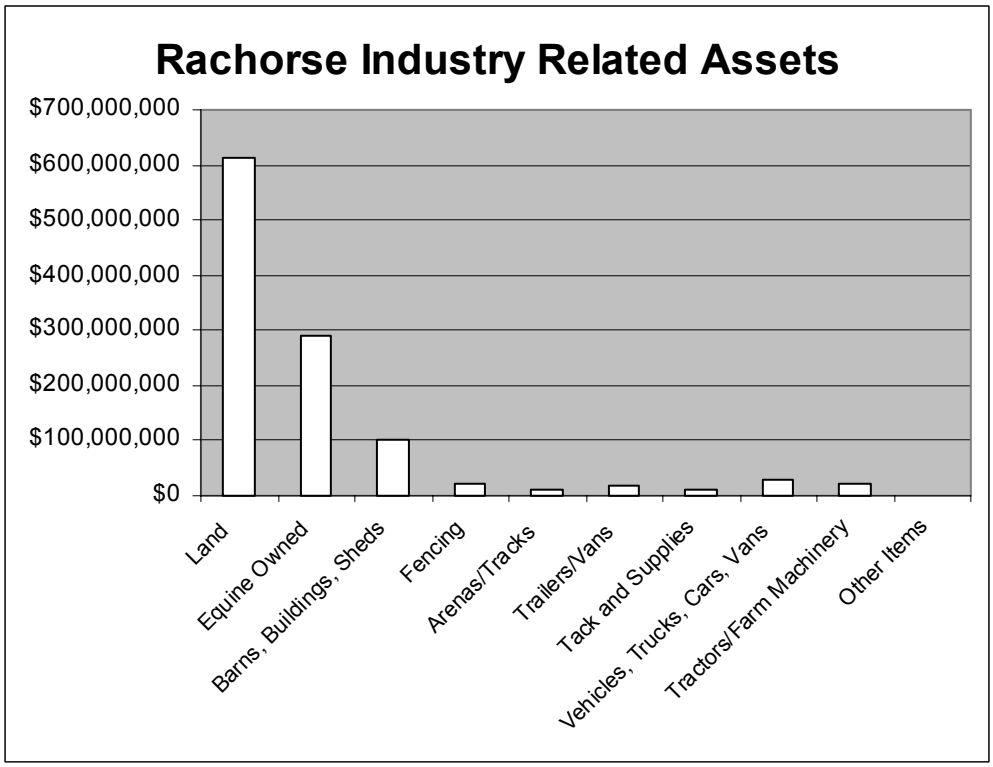
The value of all racehorse-related assets (excluding commercial racetracks and public facilities) totaled nearly $1.12 billion in 2001. Land was by far the largest asset, valued at $614 million or nearly 50% of the total assets reported.

Table 6: Equine Related Assets by Item:

Assets Category:	Racehorse Industry
Land	$614,005,827
Equine Owned	$291,448,705
Barns, Buildings, Sheds	$100,543,008
Fencing	$20,744,514
Indoor/ Outdoor Arenas/Tracks	$11,015,959
Trailers/Vans	$16,730,500
Tack and Supplies	$11,135,823
Vehicles, Trucks, Cars, Vans	$30,452,990
Tractors/Farm Machinery	$22,663,791
Other Items	$1,790,127
Totals	$1,120,531,245

Figure 6: Equine Related Assets for the Racing and General Populations.





Horse Owners and Participants

Many Pennsylvanians are involved in the horse industry. The number of jobs associated with the industry is endless a partial list includes but is not limited to grooms, trainers, veterinarians, farriers, breed organizations, stewards, judges, announcers, publicists, commercial suppliers, tack shop employees, riding apparel designers, sale companies, accountants, saddle and harness makers, transporters and other support industries such as feed and hay producers. Numerous Pennsylvania magazines, newspapers and newsletters are devoted to horses and the equine events.

The University of Pennsylvania, New Bolton Center has a world-renowned equine veterinary program. Several Colleges (The Pennsylvania State University, Delaware Valley and Wilson Colleges) in the Commonwealth offer an equine science curriculum. Numerous other schools provide equine courses.

In 2001, 10,451 people (6,177 Thoroughbred and 4,274 harness) were issued licenses to work at Pennsylvania horse racing tracks (State Horse and Harness Racing Commissions, 2001 Annual Report). Pennsylvania's racetracks, for example, require: security personnel, parking attendants, restaurant workers, mutual clerks, marketing, management and accounting staffs, as well as breeders, owners, trainers, grooms, jockeys, drivers, exercise riders, veterinarians, feed and equipment suppliers.

Racing provides a significant economic contribution to Pennsylvania's horse industry. Horse racing in Pennsylvania has generated substantial economic benefits to the state and has been a vital cornerstone to the horse industry.

Appendix A: Methodology and Definitions

Methodology

Prior to the survey, a comprehensive list of equine related names and addresses within the state of Pennsylvania did not exist. List development began in May 2002 with the primary goal of developing a population representative of all equine breeds, disciplines, and economic activity within the state. Pennsylvania membership rosters for national breed organizations, racetrack licensed individuals, and local groups and associations were combined into a computer database. Racetracks and commercial service industries were not included in the population. Each name and corresponding address was identified by a numeric source code. One hundred forty one different source codes are represented within the population. Every name and address generated through list development was provided for completely confidential use in this study and no individual data can be identified.

When multiple sources exist for population development, duplication is inevitable. Once all contacts for addresses had been exhausted, the population list was sorted electronically first by name, then by address, and finally by source code to identify and then delete any duplicate listings. If a duplicate listing was found that originated from multiple source codes, the individual source codes were listed and maintained for each name and address before the duplicate record was deleted. The final race horse population totaled 2,867 addresses. The racehorse census was part of a state-wide total equine population survey, which was being conducted at the same time.

Once the population was established, the survey questionnaire was developed. Throughout the survey design stages, needs assessment and feedback was provided by an industry advisory panel composed of representatives from the Pennsylvania Department of Agriculture, the Pennsylvania State Horse and Harness Racing Commissions, the Pennsylvania Equine Council and other supporting equine organizations and individuals. Two separate survey instruments were developed, one with terminology reflective of the horse racing sector and the second encompassing the general equine industry. When the survey design was completed, a random sample of equine related addresses was chosen from the previously collected list population.

From the population of 31,195 addresses, 2,867 were identified as specializing in the horse racing industry. These separated addresses were treated as a census of the racing segment, and all 2,867 addresses were mailed a survey questionnaire. The balance of the population addresses (28,328) were utilized to select a random sample that was stratified by source code. To ensure that each source code was sampled, 25% (7133 available surveys / 28,328 general list population) of the addresses in each source code were randomly chosen. In total, ten thousand surveys were allotted for mailing. Therefore, 2,867 surveys were racing related and the balance of 7,133 surveys was general industry focused. This sample selection and design ensured an equal geographic and discipline/breed representation that was reflective of the list population collected.

The racing specific surveys and instructions were mailed to the racing industry sample in October 2002. Follow up began two weeks after initial survey mailing and consisted of three phases occurring two weeks apart. Any non respondents received a reminder postcard as the first phase. The second phase mailed an additional copy of the respective survey and instructions to all non-respondents. The third and final mailing, again to the remaining non-respondents for each of the surveys (racing and general industry) was a final reminder postcard.

Total response rates were monitored weekly. Response by source code was monitored monthly to again ensure sample source code representation. All survey related mailings were completed six weeks

after the initial distribution of the industry specific survey and instructions. Collection of returned surveys terminated on December 31, 2002 to allow for data entry and verification before analysis. Surveys were mailed to 2,867 individuals directly involved in the horse racing industry. Five hundred sixty seven of those surveys were returned for a response rate of 20%.

In this analysis, we estimate the total contribution of the Equine Industry to the Pennsylvania economy using an economic impact software program known as IMPLAN (Impact Analysis for Planning). Originally developed by the US Forest Service, IMPLAN is an input-output model that is widely used to quantify how businesses use technology, labor and materials (i.e., inputs) to produce a product (i.e., output). The IMPLAN software and database (www.implan.com) establishes the characteristics of economic activity in terms of 10 broad industrial groups, involving as many as 528 sectors. In practice, the IMPLAN model is used in every state and hundreds of communities across the nation to catalog economic activity and predict the effect of alternative policies and various economic changes. In this analysis we use IMPLAN to generate information on a number of important economic indicators.

In order to use models such as IMPLAN to examine the role of an industry in the state economy, analysts should have information on the final demand for a product(s). The income, and asset and operating expenditure data we collected in the survey serve as the basis for this analysis. In the study, both racing and general respondents were asked to report their income from more than 15 equine-related sources, and total spending on 10 categories of assets and 26 categories of expenditures. These responses were then aggregated the responses to determine the total income and expenditures in Pennsylvania for the population, by category. Recognizing that some of the purchases were made out-of-state, adjustments were made to the total expenditures by category so as to include only purchases made within Pennsylvania. The in-state expenditures were the basis of the analysis, and were the largest component of the industry. When examining asset expenditures, only at purchases made in 2001 were included —it was assumed that the annual asset purchases are fairly constant over time. Income data from out-of-state sales was used to supplement the in-state expenditure data in order to capture industry exports.

In this study, final demand is expressed by the total expenditures or income by category. To determine the direct and secondary effects, the population data was matched with the IMPLAN sectoring scheme, and entered the in-state expenditures and out-of-state income as a final demand "shock" to the model. This generates estimates of both the direct and indirect economic effects.

Several categories of income, assets and expenditures for which data was gathered data were omitted from the analysis, including land, payroll and property taxes, and workmen's compensation. Furthermore, horse purchase expenditures were deflated to account for the "used horse or second career horses" market (which may make up 75 percent of all purchases) and ensure consistency with the base Pennsylvania model. As appropriate, income and expenditures were entered either on an industry or a commodity basis. For the retail sectors, IMPLAN's default household margins were applied. Secondary effects are based on the IMPLAN Type SAM multipliers, with households endogenous. The user of this data must be cautioned against interpreting the results as impact--in order to do so, one must assume that the money spent on equine-related businesses would not otherwise be spent in Pennsylvania. The multipliers for the model are based on data from 2000, the most recent year for which data is available. Because IMPLAN models are quite stable from year-to-year, the 2000 multipliers were applied to 2001 data to determine the results provided in Table 1. In the remainder of this appendix multipliers are defined and other topics related to this analysis are described. The material is largely drawn from the IMPLAN User's Guide. A detailed description of the methods and the IMPLAN sectoring scheme used are available in a technical appendix on the website.

Definitions

Multipliers

Input-output models are driven by final consumption (or final demand). Industries respond to meet demands directly or indirectly (by supplying goods and services to industries responding directly). Each industry that produces goods and services generates demand for other goods and services and so on, round by round. These so called *ripple effects* are described by **multipliers**. A multiplier examines how much spin off economic activity is generated by a marginal change in an industry. For example, multipliers can describe how many total jobs in the economy are created when an industry adds one new job. In general, input-output modelers describe three types of multiplier effects when examining the role of an industry in the state economy.

1. The **direct effect** is the contribution of the industry itself. It may represent the total revenue (output), employment or employee compensation. The value of the direct effect multiplier is always 1.
2. The **indirect effects** are effects of the industry on its suppliers. This multiplier captures the additional activity in businesses that provide inputs to the industry of interest.
3. The **induced effects** capture the impacts of changes in spending from households as income changes due to the direct effect. This effect captures the impact of spending by a) employees of the industry being studied, and b) employees of the input supplying businesses. These effects usually show up in retail and service industries. In the study here, the *secondary effects* are the sum of the indirect and induced effects.

In this study we use the IMPLAN type SAM multipliers. The Type SAM multiplier is obtained according to the following formula:

Type SAM multiplier = direct effect + indirect effect + induced effect) ÷ direct effect

Input-output analysis is a means of examining the relationships within an economy both between businesses and between businesses and final consumers. It captures all monetary transactions for consumption in a given time period. The resulting mathematical formulae allow one to examine the effects of change in one or several economic activities on an entire economy.

Industry output is a single number in dollar for each industry. The dollars represent the value of an industry's total production. In IMPLAN, the output data are derived from a number of sources including Bureau of Census economic censuses and the Bureau of Labor Statistics employment projections. Another way to think about industry output is as the total revenue generated by an industry.

Employment is total wage and salary employees and self-employed jobs in a region. It includes both full-time and part-time workers and is measured in total jobs. The data sets used to derive employment totals in the IMPLAN model are the ES-202 data, County Business Patterns, and the Regional Economic Information System (REIS) data.

While output captures the total dollar value of economic activity, its use as a measure of economic activity can be overstated in that it captures the value of all intermediate stages of the production process as well. For example, the price one pays for a car at the local auto dealership in large part represents economic activity that occurred in the production process. If one were to consider the price one paid for a car as the contribution to the local economy, then one would likely be overstating its impact. This is called double counting. To avoid double counting, economists usually examine economic contributions in terms of **Value Added**. At the local level, value added is equivalent to the concept of Gross Domestic

Product in that it examines the unique contribution of an industry to the overall economy. In input-output analysis, value added consists of four components.

1. **Employee compensation** is wage and salary payments as well as benefits including health and life insurance, retirement payment, and any other non-cash compensation. It includes all income to workers paid by employers.

2. **Proprietary income** consists of payments received by self-employed individuals as income. This is income recorded on Federal Tax Form 1040C. This includes income received by private business owners, doctors, lawyers and so forth. Any income a person receives for payment of *self-employed* work is counted here. Note: labor income is the sum of employee compensation and proprietary income.

3. **Other property type income** consists of payments for interest, rent, royalties, dividends and profits. This includes payments to individual in the form of rents received on property, royalties from contracts, and dividends paid by corporations. This also includes corporate profits earned by corporations.

4. **Indirect business taxes** consist primarily of excise and sales taxes paid by individual to businesses. These taxes occur during the normal operation of these businesses but do not include taxes on income or profit.

Table A1: Population Numbers and Values by Breed:

Breeds	Total PA Population Numbers *	Total Population Value **	PA Per Head Average Value
Standardbred (non racing)	6,317	$23,072,337	$4,296
Thoroughbred (non racing)	9,567	$57,553,485	$6,801
Standardbreds Racing	14,815	$69,707,000	$4,703
Thoroughbreds Racing	11,550	$153,481,000	$13,294

* Total horse numbers may not tally because of rounding and approximation.
**Numbers were rounded to the nearest whole dollar.

Table A2: Racehorse Inventory by Breed, Value and Type of Ownership:

Broodmares	**No. Horses**	**Average Value**	**Individual Ownership**	**Partnership**	**Syndicate or Other**
Standardbred	3,234	$14,417	75%	16%	9%
Thoroughbred	2,835	$32,136	72%	11%	17%
Other Breeds	1,440	$1,577	100%		
Stallions	**Number Horses**	**Average Value**	**Individual Ownership**	**Partnership**	**Syndicate or Other**
Standardbred	321	$41,989	33%	32%	35%
Thoroughbred	265	$29,547	69%	23%	8%
Other Breeds	105	$6,800	100%		
Training/ Racing	**Number Horses**	**Average Value**	**Individual Ownership**	**Partnership**	**Syndicate or Other**
Standardbred	3,809	$12,466	44%	54%	2%
Thoroughbred	4,060	$16,435	73%	24%	3%
Other Breeds	210	$31,000	99%	1%	
Yearlings	**Number Horses**	**Average Value**	**Individual Ownership**	**Partnership**	**Syndicate or Other**
Standardbred	1,343	$56,416	63%	37%	
Thoroughbred	1,440	$12,460	75%	19%	6%
Other Breeds	170	$5,650	100%		
Less than 1 year of age	**Number Horses**	**Average Value**	**Individual Ownership**	**Partnership**	**Syndicate or Other**
Standardbred	1,218	$12,275	11%	33%	56%
Thoroughbred	1,250	$12,860	80%	18%	2%
Other Breeds	70	$4,000	100%		
Other-retired pleasure etc.	**Number Horses**	**Average Value**	**Individual Ownership**	**Partnership**	**Syndicate or Other**
Standardbred	569	$1,063	74%	15%	11%
Thoroughbred	1,250	$2,130	81%	19%	
Other Breeds	1,210	$6,460	70%	15%	15%

* Total horse numbers may not tally because of rounding, approximation and not all owners reported inventory breakout.
**Numbers were rounded to the nearest whole dollar.

Table A2: Percent of Different Disciplines and Uses for Non-Racing Standardbreds and Thoroughbreds* (taken form the general equine population survey)

Breeds	Competition/ Showing	Work/ Farming	Racing	Youth Activity	Tourism/ Guest Farm	Trail Riding/ Recreation	Breeding	Other Activities
Standardbred	1.3%	27%	9%	3%	0.50%	11%	17%	32%
Thoroughbred	31%	1%	11%	6%	0.50%	13%	22%	16%

*Uses are not mutually exclusive.
*Data from the Racehorse Industry was not included in this table.
*Percentages were rounded up.

Table A3. Distribution of PA Total Racehorse Population by Counties and Regions*

NORTHWEST REGION	RACEHORSE POPULATION
Clarion	0
Crawford	99
Erie	47
Forest	0
Lawrence	12
Mercer	310
Venango	70
Warren	0
Total	**538**

NORTH CENTRAL REGION	RACEHORSE POPULATION
Cameron	0
Centre	363
Clearfield	18
Clinton	0
Elk	0
Jefferson	129
McKean	0
Potter	0
Total	**510**

SUSQUEHANNA REGION	RACEHORSE POPULATION
Bradford	0
Columbia	111
Lycoming	29
Montour	18
Northumberland	193
Snyder	0
Sullivan	0
Tioga	82
Union	59
Total	**492**

Table A3. (Cont'd) Distribution of PA Total Racehorse Population by Counties and Regions*

NORTHEAST REGION	RACEHORSE POPULATION
Carbon	88
Lackawanna	23
Luzerne	704
Monroe	35
Pike	164
Susquehanna	0
Wayne	76
Wyoming	0
Total	**1,090**

SOUTHEAST REGION	RACEHORSE POPULATION
Berks	1,445
Bucks	948
Chester	4,286
Delaware	0
Lehigh	281
Montgomery	351
Northampton	64
Philadelphia	88
Schuylkill	392
Total	**7,855**

CAPITAL REGION	RACEHORSE POPULATION
Adams	1,652
Cumberland	199
Dauphin	851
Franklin	29
Lancaster	3,012
Lebanon	832
York	2,857
Total	**9,432**

Table A3. (Cont'd) Distribution of PA Total Racehorse Population by Counties and Regions*

SOUTH CENTRAL REGION	RACEHORSE POPULATION
Bedford	205
Blair	88
Cambria	41
Fulton	99
Huntingdon	0
Juniata	304
Mifflin	158
Perry	29
Somerset	18
Total	**942**

SOUTHWEST REGION	RACEHORSE POPULATION
Allegheny	1,550
Armstrong	111
Beaver	70
Butler	351
Fayette	425
Greene	29
Indiana	357
Washington	2,250
Westmoreland	363
Total	**5,506**

* Total horse numbers may not tally because of rounding and approximation.

Table A4: Distribution of Pennsylvania's Equine (Racehorse Industry) Related Acreage by County

County	Racing Acres
Adams	4,914
Allegheny	4,300
Armstrong	1,468
Beaver	667
Bedford	503
Berks	2,867
Blair	819
Bradford	0
Bucks	1,363
Butler	1,457
Cambria	59
Cameron	0
Carbon	392
Centre	1,351
Chester	19,299
Clarion	0
Clearfield	88
Clinton	0
Columbia	649
Crawford	1,661
Cumberland	2,954
Dauphin	2,065
Delaware	0
Elk	0
Erie	176
Fayette	1,685
Forest	0
Franklin	29
Fulton	532
Greene	936
Huntingdon	0
Indiana	2,469
Jefferson	3,422
Juniata	2,761
Lackawanna	275
Lancaster	7,862
Lawrence	351
Lebanon	1,626
Lehigh	567
Luzerne	556
Lycoming	585
McKean	0
Mercer	2,375
Mifflin	468
Monroe	187
Montgomery	1,714
Montour	433
Northampton	2,223

Northumberland	521
Perry	18
Philadelphia	0
Pike	2,469
Potter	0
Schuylkill	1,006
Snyder	0
Somerset	82
Sullivan	0
Susquehanna	0
Tioga	1,638
Union	0
Venango	439
Warren	0
Washington	1,4801
Wayne	152
Westmoreland	1,966
Wyoming	0
York	4,259
TOTAL	**105,458**

*Includes values calculated for those survey respondents that specified a county location for their operation. (Not all respondents specified a county.)

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