

The Economic Contribution of the Horse Industry in Loudoun County

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October 30, 2015

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Introduction

Loudoun County, located in the heart of Virginia Horse Country, is widely known as a premier horse community. In the most recent comprehensive statewide horse inventory, it ranked first among Virginia localities in the number of horses (USDA, NASS 2008). In a follow-up study of Virginia horse industry economic impacts Loudoun County was found to host the largest number of horse shows and competitions in the state and generated the most sizeable local economic impacts (Rephann 2011).

Loudoun County provides an unrivalled horse industry infrastructure such as agricultural services that support horse breeding, boarding, health, grooming, outfitting, and training; a year-long calendar of horse clinics, auctions and sales, shows, camps, competitions, and races; a network of horse breed and sporting associations that collaborate for the benefit of the local horse industry under the umbrella of the Loudoun County Equine Alliance; an array of prominent equestrian resorts such as the recently opened Salamander Resort and Spa in Middleburg, and a variety of social functions, therapeutic activities, and philanthropic endeavors that center around equestrian pursuits. Major horse venues include Morven Park, Glenwood Park, the Virginia International Polo Club, and Fox Chase Farm.

The county is also home to several nationally prominent horse organizations and centers. The Marion DuPont Scott Equine Medical Center in Leesburg is a leading national equine veterinary hospital and research facility with approximately 120 staff dedicated to equine health. The National Sporting Library and Museum in Middleburg offers a world-class research library with collections, exhibitions, and programs on equestrian sports. Middleburg is also the location of one of the nation's leading equestrian magazines, *The Chronicle of the Horse*, which reports weekly on national and international equestrian topics. Virginia Tech's 420-acre Middleburg Agricultural Research and Extension (MARE) Center offers equine-related research and educational programming. Foxcroft School, a boarding and day school for girls in Middleburg, provides indoor and outdoor horse sporting facilities and offers extensive training and sporting programs for its students.

This report examines the economic contribution that the horse industry makes to Loudoun County. The horse industry as defined here encompasses all spending related to the maintenance and upkeep of horses and the expenditures of equestrian event participants and spectators. The expenditures in Loudoun County attributable to the horse industry are substantial. They also support other industries, including Loudoun County's farm economy through the purchase of local agricultural products such as hay for feed and wood shavings for bedding, and they have multiplicative effects on the economy, an issue that is explored in the remainder of this report.

This introduction is followed by three sections. The first section describes the economic impact methodology used to estimate the economic impact of the Loudoun County horse industry, including input output analysis and the IMPLAN software tool used. The second section describes horse-industry expenditures based on data collected from 2013 surveys of Loudoun County horse owners and surveys of county horse event participants and spectators. The third section presents the results of the economic impact analysis.

Methodology

This study defines the "horse industry" as consisting of activities involved in maintaining and supporting horses in Loudoun County and activities associated with recreational and entertainment uses of horses.¹

¹ This definition is similar to that used in the most recent statewide horse industry economic impact study (Rephann 2011). However, it does not include pari-mutuel racing, as those activities are located primarily at Colonial Downs and off-track betting facilities elsewhere in the state. As explained in that study, most horse owners value horses beyond their income producing value. Therefore, horse-related expenditures are used as the basis for estimating economic impact rather than horse related sales.

Therefore, it includes not only the expenditures of Loudoun County horse owners on horse maintenance and horse-related activities, but the expenditures of non-residents who board horses in the county, and the expenditures of visitors to horse-related events such as shows and clinics. It does not include the expenditures of non-residents who do not attend county equestrian events or board their horses in the county but spend money on local horse-related services (e.g., veterinary services) or equestrian goods and supplies (e.g., hay, tack). It also does not include the tourism expenditures of equestrian visitors who visit Loudoun County for trail-riding and equestrian resort vacations.

This study calculates economic impacts using input-output analysis. Input-output analysis produces industry economic multipliers that show how changes in the industry activity affect the local economy. While studies such as this type are often called “economic impact” studies, a more accurate description is “economic contribution” or “economic footprint” study (Watson et al. 2007). An “economic contribution” analysis traces the gross economic activity that results from a given expenditure. It does not consider whether the expenditure used to generate the economic activity might have been used elsewhere in the economy to generate economic activity and gauge the comparative effect of that alternative activity. While this distinction is important, we will continue to use the term “economic impact” to refer to the results of this analysis as is customary for these kinds of studies.

The total economic impact consists of three parts: a “direct effect,” “an indirect effect,” and an “induced effect.” The “direct effect” consists of the injection of economic activity or expenditure into Loudoun County. For example, the expenditures made by horse owners and equestrian tourists on Loudoun County would count as the direct effect. This expenditure then causes a “ripple effect” on the local economy when money is re-spent. For instance, local farms and businesses provide supplies and services to horse farms such as feed, veterinary services, utilities and insurance. These businesses spend a portion of their sales revenues on supplies and services from other local firms who, in turn, purchase a portion of their supplies and services from other local firms. This cascading sequence of spending continues until the subsequent rounds of spending dissipate due to leakages in the form of spending outside the Loudoun County economy. The cumulative effect of these cascading rounds of inter-industry purchases is referred to as the “indirect effect.” The final component of total impact (the “induced effect” or “induced impact”) is attributable to the spending of households. For instance, businesses pay households for their labor services. These households then purchase goods and services from local firms who in turn receive a portion of their labor, material, and service inputs from within the county. Again leakages occur at each round due to purchases of goods and services outside the county. The “induced effect” is the sum of the impacts associated with these household purchases.

The impact analysis for this study used IMPLAN (Impact analysis for PLANning). This model has been used in many economic impact studies, including studies of the statewide equine industry (Rephann 2011; The Wessex Group 2004) and studies of the Virginia Horse Center in Lexington, Virginia (Knapp 2005; Knapp and Barchers 2001). Impacts are evaluated within IMPLAN using four different measures: (a) total sales or total industrial output (TIO), (b) value-added, (c) labor income and (4) employment. Total sales or industry output is the total value of industry production during a period. It measures sales of intermediate inputs for use in production as well as sales of products to final consumers. Value-added is a subset of total industrial output. It reflects only sales to final consumers and therefore avoids the double counting that occurs when intermediate inputs are included. It is the most commonly used measure of economic activity. Value-added is the concept behind gross domestic product (GDP) and can be compared to the GDP numbers provided by the Bureau of Economic Analysis for states and metropolitan areas. It can also be represented as total factor income plus indirect business taxes. Labor income represents payments to workers and business owners in the form of employee compensation and proprietary income. Employment is measured in terms of person-years of employment. A person-year of employment is a job of one year in duration. Employment includes full-time and part-time employment as well as the self-employed and is measured by place of work.

Data

This section describes the data used for estimating the horse industry's direct expenditures for Loudoun County. These direct expenditures are generated by horse outlays by owners of Loudoun County horses on maintenance and support of horses, and the expenditures of non-resident horse event spectators and participants. Data for estimating these direct expenditures for 2013 were obtained from three sources: (a) a comprehensive survey of Loudoun County horse owners that asked about horse-related expenditures, (b) surveys of Loudoun County horse event participants and attendees that asked about local spending during horse event visits, and (c) a compilation of events and estimated attendance compiled by the Loudoun County Economic Development Office and the Center for Survey Research. Each of these sources is explained in more detail below.

The survey population for the horse owners survey was primarily horse owners in Loudoun County. The sampling strategy, survey procedure and complete results are described in another report (Ellis et al. 2015). **Table 1** provides a breakdown of average per horse expenditures of Loudoun County horse owners in 2013,² the percentage of the expenditures made within Loudoun County, total estimated equine expenditures, and total estimated horse expenditures made in Loudoun County. The estimated \$16,821 per equine spent is much higher than comparable estimates of \$3,642 per equine provided in the most recent Virginia equine survey (NASS 2008). Even adjusting for inflation using the consumer price index, the comparable statewide figure would be only \$4,208. This disparity likely stems from a larger proportion of horse owners who are active in equestrian sports, much higher county household incomes, and a likely greater proportion of higher valued horse breeds. Based on Loudoun County horse owners survey results, the average value per equine is \$13,245 (Ellis et al. 2015).³

The largest category of expenditure (\$11,385 per horse) was for non-equine purchases and upkeep of horses. Within this category, some of the outlays are agricultural, such as feed and bedding (\$1,616 per horse) which is needed for any horse. Many other high expenditure items such as boarding, farrier, and breeding fees (totaling \$2,343) are considered agricultural support services. Paid and contracted labor expenses (\$1,860 per horse) are also important. Loudoun County horse owners also spent an average of \$1,977 per horse on horse purchases and \$754 per horse and expenses associated with attending equine related activities such as shows and competitions. The survey estimated that 66.7 percent of total horse expenditures are made in Loudoun County.⁴

In order to estimate total Loudoun County horse expenditures, estimates of average expenditures per horse were multiplied by an estimate of the Loudoun County horse population based on extrapolation techniques described in Ellis et al. (2015). The county horse population was estimated at 14,452, lower than the esti-

2 These results are based on 284 responses where full or nearly complete information was provided on the number of horses owned, horse-related expenditures, and the percentage of horse-related purchases made locally. These responses represented 1,115 horses out of the 3,035 horses (or 37 percent) reported in the horse owner survey.

3 This value compares to average values per equine of \$18,650 in 2001 and \$13,475 in 2006 reported in the most recent state equine surveys (USDA, NASS 2008; USDA, NASS 2002). For those years, the Loudoun county average equine value was nearly double the statewide average of \$8,599 in 2001 and \$7,697 in 2006.

4 This estimate falls within the boundary of what has been found in other horse studies. In a survey of Texas horse owners, Gibbs, Moyer, and Martin (1997) estimate that approximately 60 percent horse-related spending occurs in the county where the owner resides. A Montgomery County, Maryland study (Montgomery Soil Conservation District 2004) finds that 78 percent of spending occurs in the county where the owner resides. The most recent Virginia horse industry economic impact study (Rephann 2011) assumed that 68 percent of total Virginia horse expenditures were spent in the locality where the horses resided.

mates 15,500-15,800 reported in the most recent comprehensive statewide surveys (NASS 2008; NASS 2002). Therefore, total horse expenditures were \$243.1 million. Of this amount, an estimated \$162.2 million was spent within Loudoun County. This total included approximately \$11.1 million in local taxes.

Table 1. Loudoun County Horse Maintenance and Support Expenditures, 2013

Item	Average per Equine	Percentage in Loudoun County	Total Expenditures	Total Expenditures in Loudoun County
Purchases of Equine	\$1,977	39.3%	\$28,577,428	\$11,243,526
Other Purchases and Upkeep				
Boarding	\$1,352	84.7%	\$19,544,174	\$16,545,838
Veterinarian/Health	\$1,366	71.5%	\$19,745,998	\$14,120,690
Feed and Bedding	\$1,616	69.8%	\$23,353,760	\$16,300,447
Grooming Supplies	\$220	75.8%	\$3,173,539	\$2,404,759
Insurance Premiums	\$390	51.1%	\$5,629,231	\$2,875,061
Utilities	\$274	73.6%	\$3,959,058	\$2,913,113
Maintenance/Repair	\$868	61.9%	\$12,548,595	\$7,765,418
Farrier	\$791	76.6%	\$11,433,560	\$8,762,481
Breeding Fees	\$199	22.5%	\$2,880,567	\$649,336
Tack	\$409	62.0%	\$5,907,724	\$3,660,414
Rent/Lease of Land & Buildings	\$446	99.8%	\$6,445,100	\$6,429,140
Rent/Lease of Equines	\$45	28.3%	\$650,372	\$183,970
Rent/Lease of Equipment	\$24	85.1%	\$343,389	\$292,386
Taxes	\$982	77.9%	\$14,192,236	\$11,052,914
Equipment Purchases	\$1,287	46.8%	\$18,605,836	\$8,708,835
Training Fees	\$866	69.3%	\$12,519,008	\$8,681,521
Participation in Clinics, Riding, Etc.	\$161	63.6%	\$2,327,608	\$1,479,385
Other/Miscellaneous	\$88	57.4%	\$1,278,630	\$734,247
Total Other Purchases and Upkeep	\$11,385	69.0%	\$164,538,383	\$113,559,953
Equine Related Activities				
Travel and Lodging	\$517	45.4%	\$7,478,888	\$3,393,304
Advertisement Expenses	\$46	59.5%	\$668,135	\$397,822
Professional Fees	\$162	55.5%	\$2,334,863	\$1,295,232
Other Miscellaneous Equine Related Expenses	\$28	58.8%	\$411,561	\$242,140
Total Equine Related Activities	\$754	48.9%	\$10,893,446	\$5,328,498
Labor Expenses				
Paid Labor	\$1,661	86.0%	\$24,005,659	\$20,650,878
Other Contracted Labor Expenses	\$198	84.3%	\$2,868,077	\$2,416,898
Total Labor Expenses	\$1,860	85.8%	\$26,873,737	\$23,067,776
Capital Improvements	\$744	82.2%	\$10,748,505	\$8,840,284
Other Expenditures	\$102	12.4%	\$1,470,619	\$182,011
Total	\$16,821	66.7%	\$243,102,118	\$162,222,048
Amount for Economic Impact Model				\$139,741,637

Source: Center for Survey Research and Center for Economic and Policy Studies, Weldon Cooper Center for Public Service

To estimate the expenditures for horse-related events in Loudoun County, the Loudoun County Economic Development Office drew up a master event list of 118 events scheduled for 2013. The list included sanctioned and unsanctioned shows in various disciplines and formats (e.g., hunter, jumper, dressage, eventing, horse trials, carriage riding, breeder, western), schooling shows and clinics, youth activities such as pony club shows and camps, steeplechase races, polo contests, fox-hunts, trail rides, and various other equestrian contests. For each event, additional information was provided regarding the category of event (e.g., dressage, fox club, polo), estimated attendance, date, and location. For large events, the Center for Survey Research conducted a short phone survey to verify information on spectator and participant attendance. The master list was used to obtain a representative sample of events to select venues for surveys of visitors and gather information about their visit and expenditures within the local area. The average expenditure per participant party and per spectator was then generalized to all events using the headcount attendance estimates from the master list to estimate total expenditures.

An estimated duplicated headcount of 78,164 attended Loudoun County equine events during 2013 (see **Table 2**). The term “duplicated” is used because some visitors included in this count may have attended more than one event. Of the total headcount, 29,890 were either participants or members of the participant travel party. An estimated 48,274 individuals attended as event spectators. Nearly 35 percent of spectators were residents of Loudoun County, 47 percent resided elsewhere in Virginia, and 18 percent were from out-of-state. Horse event participant parties came primarily from longer distances, with only 11 percent from Loudoun County, 28 percent from elsewhere in the state, and 61 percent from outside of Virginia.

Information on attendance characteristics and spending patterns was obtained from surveys of horse event attendees conducted by on-site interviews at twelve randomly sampled equine events held throughout the year (see **Table 3**). The sampling method used to select these events, questions posed, and survey instrument used are described in Ellis et al. (2015). The surveys resulted in 609 completions. **Appendix A** of this report

Table 2. Loudoun County Horse Event Attendance Estimates, 2013

	Number	Percentage of Total
Spectators		
In-county	16,782	34.8
In-state	22,790	47.2
Out-of-state	8,702	18.0
Total	48,274	100.0
Participant Parties		
In-county	3,359	11.2
In-state	8,241	27.6
Out-of-state	18,290	61.2
Total	29,890	100.0
Total		
In-county	20,141	25.8
In-state	31,031	39.7
Out-of-state	26,992	34.5
Total	78,164	100.0

Source: Center for Survey Research and Center for Economic and Policy Studies, Weldon Cooper Center for Public Service.

provides tabulated responses for survey questions that were not pertinent to calculating the economic impacts.

The following analysis of results focuses on two groups of respondents most relevant to estimating visitor expenditures: the parties of riders/owners (active participants) and spectators.

Visitor expenditures are a function of the origin of the visitor, party size, and number of horses. Holding all else constant, average visitor party expenditures were larger for non-resident attendees, larger party sizes, and participants bringing more horses. Travel party sizes and travel expenditure patterns for horse show/competition attendees are detailed in **Table 4**. Travel parties for in-county spectators were largest with an average size of 6.8 members followed by other in-state residents with an average party size of 5.4. Out-of-state spectators had an average party size of 3.8 persons. For participants, party sizes grew with greater distance from Loudoun County, with the largest party sizes (3.8) observed for out-of-state residents, 3.5 persons for Virginia residents outside of Loudoun County, and 3.2 for Loudoun County residents.

Table 3. Loudoun County Horse Event Interview Schedule

Event	Venue	Number of Surveys	Event Type	Date
Piedmont Races	Salem Course, Upperville	140	Steeplechase	3/23/13
Loudoun County Point-to-Point	Oatlands Planation, Leesburg	90	Point-to-point	4/14/13
Fox Chase	Fox Chase Farms, Middleburg	41	Hunter/jumper	6/2/13
Upper Ville Colt and Horse Show	Upperville, Middleburg	78	Hunter/jumper, Carriage	6/9/13
VADA/NOVA Summer Breed Show	Morven Park, Leesburg	39	Breed, Dressage	8/11/13
Schooling Event	Looking Glass Farm, Hamilton	25	Dressage, Schooling	9/7/13
VADA/NOVA Autumn Show	Morven Park, Leesburg	63	Dressage	9/14/13
VI Polo Event	Langolen Farm, Upperville	4	Polo	9/15/13
Middleburg Classic	Morven Park, Leesburg	52	Dressage, Show	9/21/13
Virginia Fall Races	Glenwood Park, Middleburg	46	Races	10/5/13
DeVaux Farm Hunter	DeVaux Farm, Lucketts	17	Schooling, Hunter	10/26/13
Middleburg Hunt Inaugural Fox Hunt	Groveton Farm, Middleburg	14	Fox hunt	11/2/13

Source: Center for Survey Research, Weldon Cooper Center for Public Service

Spectators from Loudoun County spent an average of \$33 per spectator compared to \$55 per spectator for other Virginia residents, and \$201 per spectator for out-of-state residents. The bulk of the difference in these expenditures was higher lodging and travel expenses for non-resident spectators. Participant expenses were much higher because of costs associated with horse transportation and care. County resident participants parties spent an average of \$1,309 per event compared to \$2,204 for other Virginia residents, and \$2,245 for out-of-state residents.⁵

In estimating horse owner expenditures for economic impact analysis, the Loudoun County expenditures described in column (4) of Table 1 were used with several exceptions. Taxes were excluded from the analysis. Also horse purchases and horse rentals and leases were excluded because in-county purchases would already be reflected in horse owner expenditures for maintenance and support of the horses sold and rented. When these items are subtracted, the total net local expenditure is \$139,741,637 (reported at the bottom of the table). Lastly, retail trade, wholesale trade, and transportation expenditures were margined.⁶ The result of these adjustments was a direct expenditure of \$113,813,514 into the Loudoun County economy.

To estimate horse event direct expenditures, attendance estimates by residency and category of attendance (i.e., participant party, spectator) combined with participant and spectator expenditure information from the horse event attendance surveys to estimate total direct expenditures of \$19,022,272. Since the horse owner survey already includes Loudoun County horse recreation-related expenditures on horse shows and other activities, these expenditures were excluded to avoid double counting. In addition, the expenditures of Loudoun County resident spectators are excluded since spending on other local activities likely would have occurred in the absence of these horse events. Next adjustments were made for margins. These adjustments

⁵ The estimated county per capita expenditures sometimes differed significantly from those obtained in the Virginia equine economic impact study event surveys using a similar survey instrument (Rephann 2011). Using unreported survey tabulations from that study, the average per participant member expenditure was (a) host county resident (\$153), (b) resident elsewhere in Virginia (\$448), (c) out-of-state resident (\$714). The average per spectator expenditure was (a) host county resident (\$10), (b) resident elsewhere in Virginia (\$79), and (c) out-of-state resident (\$234). The Loudoun County results using information from Table 1 for expenditures per participant member are (a) Loudoun County resident (\$401), (b) resident elsewhere in Virginia (\$631), and (c) out-of-state resident (\$596). The average per spectator expenditure in Loudoun County was (a) Loudoun County resident (\$33), (b) resident elsewhere in Virginia (\$54), and (c) out-of-state resident (\$202).

⁶ Margining is performed to convert local sales to local production. This adjustment involves assigning a portion of the total purchase to local retail trade, wholesale trade, and transportation and accounting for often significant spending leakages that occur as the result of often importing the actual product sold from elsewhere.

Table 4. Loudoun County Horse Event Expenditure Patterns by Residency, 2013

	Residency		
	Loudoun County (N=81)	Elsewhere in Virginia (N=110)	Out-of-State (N=42)
Spectators			
Spectator admission fees, parking, and program	107	96	96
Food and drink	66	100	139
Lodging	7	24	154
Entertainment	8	7	29
Gifts, souvenirs, clothing, etc.	10	29	154
Travel (gas, tolls, fares)	13	16	151
Car rental	0	0	22
Other	15	23	22
Total	226	295	766
Average party size	6.83	5.36	3.80
Participants			
	Loudoun County (N=44)	Elsewhere In Virginia (N=60)	Out-of-State (N=50)
Spectator admission fees, parking, and program	42	106	166
Food and drink	36	98	280
Lodging	8	49	519
Entertainment	7	12	11
Gifts, souvenirs, clothing, etc.	10	32	97
Travel (gas, tolls, fares)	18	40	128
Car rental	0	8	20
Other	0	215	39
Entry, registration, and showing fees	346	192	564
Stall or boarding fees	50	568	171
Feed and bedding	4	136	96
Horse care services (farrier, veterinary, grooming)	30	293	73
Tack and horse supplies	272	100	72
Horse transport	5	10	2
Other horse related expenses	480	346	7
Total expenditures	1,309	2,204	2,245
Average party size	3.26	3.49	3.77
Average number of horses	1.97	2.17	1.65

Source: Center for Survey Research, Weldon Cooper Center for Public Service

resulted in a total adjusted direct expenditure of \$14,208,088 million, which was used in the IMPLAN model to generate multiplier effects.

The expenditure categories used in Center for Survey Research surveys were fairly broadly defined. In order to assign the expenditures to specific IMPLAN sectors (e.g., equipment purchases were divided into agricultural and automotive equipment categories), assignment rules and parameters used in Virginia equine economic impact study (Rephann 2011) were used.

Results

Table 5 presents the economic impact of the Loudoun County horse industry for each major component—horse maintenance and support and local horse events. The largest component of impact is related to the expenditures of county horse owners, which accounts for approximately 88 percent of the local economic impact. Horse owners account for 2,407 Loudoun County jobs, \$81.8 million in labor income, \$103.5 million in value-added, and \$158.8 million in total output. Horse events account for 331 jobs, \$10.1 million in labor income, and \$13.2 million in value-added, and \$21.5 million in total output.

The Loudoun County horse industry is a significant source of county economic activity, accounting for a total of 2,738 jobs in 2013. The labor income impact was \$92.0 million. The value-added impact (which includes labor income, property income such as dividends, interest, rent, and profits, and indirect business taxes, and is directly comparable to gross domestic product) is \$116.7 million. The total sales impact (which includes intermediate sales as well as sales for final demand) is \$180.4 million.

Table 5. Loudoun County Total, Direct, indirect, and Induced Impacts of Horse Industry by Component, 2013

Category	Employment	Labor Income	Value-added	Total Sales
Maintenance and Support				
Direct	1,945	\$61,476,922	\$67,311,183	\$101,758,786
Indirect	159	\$6,606,261	\$10,825,142	\$17,122,095
Induced	303	\$13,756,756	\$25,377,347	\$39,950,189
Total	2,407	\$81,839,939	\$103,513,673	\$158,831,069
Events				
Direct	270	\$7,404,973	\$8,490,489	\$14,208,088
Indirect	31	\$1,396,011	\$2,255,058	\$3,563,225
Induced	30	\$1,316,582	\$2,428,679	\$3,781,727
Total	331	\$10,117,566	\$13,174,226	\$21,553,040
Total				
Direct	2,215	\$68,881,895	\$75,801,672	\$115,966,874
Indirect	189	\$8,002,271	\$13,080,200	\$20,685,319
Induced	333	\$15,073,338	\$27,806,026	\$43,731,916
Total	2,738	\$91,957,505	\$116,687,899	\$180,384,109

Source: Center for Economic and Policy Studies, Weldon Cooper Center for Public Service

The impacts of the Loudoun County horse industry were felt in other sectors of the economy (see **Table 6**). The largest effects in terms of employment were in the agriculture sector. Also experiencing large economic effects were the professional, scientific, and technical services sector (which includes veterinarians), retail trade, and accommodation and food services, and construction. The direct effects of industry purchases were dominant in agriculture (which includes farming as well as agricultural support services such as farriers and groomers) and construction. Services and retail sector impacts reflect the direct effects of industry spending as well as indirect and induced effects.

Table 6. Loudoun County Total Impact of Horse Industry by Major Sector, 2013

Sector	Employment	Labor Income	Value-added	Sales
Ag, forestry, fisheries & hunting	1,600	\$35,293,630	\$31,121,326	\$48,303,981
Mining	1	\$76,029	\$174,555	\$251,619
Utilities	2	\$194,834	\$685,636	\$1,124,437
Construction	131	\$12,041,285	\$12,577,637	\$18,126,603
Manufacturing	2	\$179,818	\$295,028	\$1,029,773
Wholesale trade	17	\$1,674,075	\$2,739,949	\$3,483,182
Retail trade	207	\$7,116,121	\$10,177,602	\$14,712,501
Transportation & warehousing	20	\$912,078	\$1,266,669	\$2,511,815
Information	9	\$1,066,104	\$2,775,374	\$4,622,255
Finance & insurance	39	\$3,215,605	\$5,039,407	\$8,112,017
Real estate & rental	85	\$1,241,050	\$15,049,237	\$21,855,987
Professional, scientific & technical services	243	\$13,067,198	\$15,454,041	\$22,988,219
Management of companies	2	\$259,589	\$302,512	\$505,404
Administrative & waste services	29	\$1,381,139	\$1,672,210	\$2,647,878
Educational services	17	\$541,979	\$651,657	\$1,041,043
Health & social services	53	\$3,366,703	\$3,656,300	\$5,981,756
Arts, entertainment & recreation	73	\$2,537,350	\$2,937,262	\$5,281,803
Accommodation & food services	164	\$5,211,178	\$7,339,878	\$13,353,368
Other services	36	\$1,882,818	\$1,961,515	\$2,894,976
Government & other	9	\$698,919	\$810,103	\$1,555,490
Total	2,738	\$91,957,505	\$116,687,899	\$180,384,109

Source: Center for Economic and Policy Studies, Weldon Cooper Center for Public Service

REFERENCES

- Ellis, Jr., J. M., M. Braswell, K. P. Janda, and R. Saunders. 2015. *2013 Loudoun County equine surveys: Report of results*. Charlottesville, VA: University of Virginia, Weldon Cooper Center for Public Service.
- Gibbs, P. G., W. Moyer, and M. T. Martin. 1997. Performance horse ownership and use: A Texas horse industry quality audit report. Proceedings of the Annual Convention of the American Association of Equine Practitioners (AAEP). *AAEP Proceedings*, Vol. 43: 27-30.
- Knapp, John L. 2005. *The Virginia Horse Center's economic impact in 2004*. Charlottesville, VA: University of Virginia, Weldon Cooper Center for Public Service.
- Knapp, John L. and Catherine E. Barchers. 2001. *The Virginia Horse Center's economic impact*. Charlottesville, VA: University of Virginia, Weldon Cooper Center for Public Service.
- Montgomery Soil Conservation District. 2004. *Montgomery County horse study*. Report compiled for the Montgomery County Department of Economic Development.
- Rephann, Terance J. 2011. *The economic impact of the horse industry in Virginia*. Charlottesville, VA: University of Virginia, Weldon Cooper Center for Public Service.
- U.S. Department of Agriculture, National Agricultural Statistics Service (USDA, NASS). 2008. *Virginia equine survey report: 2006*.
- U.S. Department of Agriculture, National Agricultural Statistics Service (USDA, NASS). 2002. *Virginia equine survey report: 2001*.
- Watson, Philip, Joshua Wilson, Dawn Thilmany, and Susan Winter. 2007. Determining economic contributions and impacts: What is the difference and why do we care? *Journal of Regional Analysis and Policy* 37, 2: 140-146
- The Wessex Group. 2003. *2001-2002 study of the economic impact of the equine industry in Virginia*. Prepared for the Virginia Equine Educational Foundation.

APPENDIX. Loudoun County Event Attendance Survey Results

Participation Reason	Number	Percentage
Spectator	296	48.6
Horse Rider or Owner	170	27.9
Horse Trainer	43	7.1
Paid Staff/Management	24	3.9
Volunteer Staff	45	7.4
Other	117	19.2
Total*	609	

Attended Area Specifically for this event?

	Loudoun County	Other In-State	Out-of-State
Yes	53.6%	84.2%	94.8%
No	46.4%	15.8%	5.2%

How far in advance did you plan this trip?

	Number	Percent
1 day or less	13	1.8
2-7 days	127	17.9
2-4 weeks	164	23.1
1-3 months	99	14.0
More than 3 months	132	18.6
Not available	174	24.5
Total	709	100.0

Age group

	Number	Percent
Under 25 years old	36	5.9
25-44 years old	165	27.1
45-64 years old	290	47.6
65 years old or older	80	13.1
Not available	38	6.2
Total	609	100.0

Education level

	Number	Percent
Some high school or less	12	2.0
High school graduate	37	6.1
Some college or trade school	94	15.4
Bachelor's degree	211	34.7
Some graduate or graduate degree	220	36.1
Not available	35	5.8
Total	609	100.0

Gender

	Number	Percent
Male	199	32.7
Female	346	56.8
Not available	64	10.5
Total	609	100.0

Household income	Number	Percent
Less than \$50,000	84	13.8
\$50,000 to \$100,000	141	23.2
\$100,000 to \$149,000	100	16.4
\$150,000 or more	209	34.3
Not available	75	12.3
Total	609	100.0

* May have participated in more than one role