

Trade Area Analysis

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Introduction

The research completed in this report studies Pull Factor and Surplus/Leakage for every county in Ohio. Counties located in the Ohio Valley Regional Development Commission (OVRDC) are focused on to understand Trade Analysis in this area. To obtain analysis for Pull Factor and Surplus/Leakage, sales retention and Trade Area Capture is studied as well. The results of this enable analysis of what Ohio counties have a sustainable Trade Analysis and can be compared to Ohio counties with less successful Trade Analysis. Causations for these results are considered and further study counties located within the OVRDC.

Methodology

Sales retention is a measurement of locally available goods within a community (assuming people buy locally if possible). Actual sales are easy to measure from various sources, but measuring potential sales is a bit more difficult. When measuring local sales we assume tastes, preferences, and the local trade area is demographically similar to the state at-large. The local sales potential can be estimated by taking the statewide average sales per capita adjusted by the ratio of local to state per capita income,

$$(1) \quad PS_c^i = P_c * PCS_{state}^i * \frac{PCI_c}{PCI_{state}}$$

where PS_c^i is potential sales in community c for sector i , P is population, PCS is per capita sales, and PCI is per capita income. When analyzing these estimates, a few things must be taken into consideration. This estimate ignores all of the shopping area and consumer characteristics within the immediate and nearby shopping areas. It is assumed there is no differences in local consumptions patterns except for each county's respective local incomes.

The second estimate is a Trade Area Capture. This is an estimate of the number of customers a community's retailers sell to. While most trade area models consider market area as a function of population and distance, Trade Area Capture uses income and expenditure factors coupled with the assumption local tastes and preferences are similar to the state tastes and preferences. Since a Trade Area Capture is aspatial, there are similar limitations between this estimate and the Potential Sales estimate,

$$(2) \quad TAC_c^i = \frac{AS_c^i}{PCS_{state}^i * \frac{PCI_c}{PCI_{state}}}$$

where the notation is the same as the previous estimate with the addition of TAC is Trade Area Capture and AS is actual sales. The TAC calculates the number of people purchased for, not the number of people sold to or the number of customers within a certain industry. For example, if a person buys food that will be shared with their spouse, two people will be counted. If the TAC is higher than the population within the trade area, that community is capturing trade from outside the community or local residents have spending patterns that exceed the state average. On the other hand, if the TAC is lower than the population within the trade area, that community is losing

potential trade or the community's spending patterns are lower than the state average. Comparing the TAC estimate for a specific industry to the total allows for insight into which local trade sectors are either strengths or weaknesses for a community. Take note that the TAC is for only one year. Calculating TACs over several years is important to identify industry trends.

The third estimate is the Pull Factor. While the TAC allows us to measure purchases made by both residents and nonresidents of a particular community, the Pull Factor makes clear the proportion of residential consumers to nonresidential consumers. In other words, this estimate measures the size of the primary market within a community (residential consumers) compared to the size of the secondary market made up of consumers who live outside the community and tourists.

$$(3) \quad PF_c^i = \frac{TAC_c^i}{P_c}$$

As a ratio of TAC to community population (in this case county population), a Pull Factor greater than one implies that local community is pulling in consumers from outside the primary market, while a Pull Factor less than one implies the community is losing consumers from within its primary market to other communities. Caution must be taken when making conclusions based on Pull Factors. For example, tourism can often inflate the overall value of a community's Pull Factor, while drowning out other industries that are losing consumers.

The four and final estimate is a Surplus or Leakage estimate. This is calculated by taking the difference between Actual Sales and Potential Sales.

$$(4) \quad S/L_c^i = AS_c^i - PS_c^i$$

This can be seen as another way to measure sales retention. If Actual Sales is larger than Potential Sales, it will result in a positive estimate, or a Surplus, and that local market is performing better than one would expect. If Actual Sales is smaller than Potential Sales, the estimate will be negative, meaning there is a leakage, and that local market is performing below expectations. A Surplus can be viewed as the dollar amount of a greater than one Pull Factor, while a leakage is the dollar amount of Pull Factor less than one.

Trade Area Analysis Results

Implementation

Before interpreting the results of the Trade Area Analysis, it is important to note two reasons certain counties will not have estimates for certain industries. The first reason is that the county simply does not have any businesses that operate within that particular industry. The second reason is that for data to be collected for an individual industry, there must be at least ten entities within that industry. If an industry does not meet the reporting threshold of ten

entities, their collections are reported in the “Unclassified” category. This is done to prevent the disclosure of an entity’s revenue. In more rural counties, there may be only one entity within a certain industry, making it easy to not only identify that entity, but identify their revenue as well from the Sales and Use Tax data. To prevent this, that entity is shifted out of its respect industry classification and into the “Unclassified” category. While there is a great deal of data created from the different estimates, the results will focus on the last two estimates, the Pull Factors and the Surplus/Leakage estimate, since they incorporate elements of the first two estimates.

Statewide Pull Factor Analysis

Of the 88 Ohio counties, over half of them (47 to be exact) have a Pull Factor of one or greater. The three counties with the highest Pull Factors are Monroe (2.78), Holmes (1.81), and Fayette (1.78), with Surpluses of \$3,571,431.32, \$4,703,090.91, and \$3,375,241.39, respectively. The drivers for these high Pull Factors differ for each county. For Monroe County, the largest industry by Pull Factor is Mining with a Pull Factor of 104.93. This is most likely driven by high levels of natural gas production in the county, which are factored into the Mining classification. In Holmes County, the industry with the largest Pull Factor was Agriculture, Forestry, and Fishing at 7.57, most likely driven by the world’s largest Amish Community and their reliance on farming. For Fayette County, Clothing and Clothing Accessories Stores is the industry with the highest Pull Factor at 4.88. This could mostly be attributed to the presence of the Tanger Outlet Mall in Jeffersonville.

OVRDC Pull Factor Analysis

Adams County and Scioto County also have Pull Factors greater than one, coming in at 1.07 and 1.04 with Surpluses of \$240,393.35 and \$377,112.28, respectively. For Adams County, their largest Pull Factor industry is technically the Unclassified category at 4.16. This is probably due to the fact the county has one of the smaller populations in the state, leaving few entities per industry sector and forcing their tax information to be collected under the Unclassified category. The next largest industry in Adams County is Utilities at 2.92, probably from the recently closed Killen Station Power Plant and the J.M. Stuart Station Coal Plant. Seeing that this industry is more than likely going to see a significant drop in its Pull Factor, the third highest Pull Factor should be considered. With a Pull Factor of 1.81, Agriculture, Forestry, and Fishing is the industry with the third highest Pull Factor. This industry is probably driven by several State protected areas that are open to outdoor recreation and the Ohio River serving as the county’s southern border. In Scioto County, the industry with the highest Pull Factor is Education, Health Care, and Social Assistance at 2.01. The two largest contributors to this Pull Factor are the hospital Southern Ohio Medical Center, which is the largest employer in the county, and the newest state college in Ohio, Shawnee State University.

The OVRDC counties of Jackson and Ross also draw interest as these counties have the two highest Pull Factors in the OVRDC, of 1.22 and 1.18 respectfully. The OVRDC counties that encompass Jackson and Pike also obtained a pull factor greater than one; however, Vinton does not follow this trend. Vinton county has the second lowest pull factor (0.77) in the OVRDC which could be the result of multiple causes. Vinton County is Ohio’s least populated county; where, this population’s average age ranks among the highest in Ohio counties. These demographics create a lack of employment in the county which results in some of the Vinton County population to work in adjacent counties. The only other OVRDC county to have a lower Pull

Factor than Vinton County is Clermont County (0.68). This low Pull Factor can be understood as a result of Clermont County's close proximity to Cincinnati.

Statewide Surplus/Leakage Analysis

Looking at the Surplus/Leakage estimates, the three counties with the highest Surplus are Franklin (\$43,973,489.85), Hamilton (\$31,402,344.59), and Lucas (\$26,769,098.28). It should come as no surprise that these counties, home to three of the four largest cities in Ohio (1st: Columbus-Franklin, 3rd: Cincinnati-Hamilton; 4th: Toledo-Lucas), have the highest Surplus in Ohio. This reflects the relatively large size of the overall markets in these three counties.

The remaining 41 counties have Pull Factors of less than one. The three counties with the lowest Pull Factors are Summit (0.43), Stark (0.46), and Carroll (0.59), with Leakages of \$59,590,682.63, \$34,337,171.39, and \$1,877,943.94, respectively. The large difference in Leakage value between Summit County and Stark County compared to Carroll County is due to the relatively small population of Carroll County. The counties with the highest leakage value are Summit (-\$59,590,682.63), Stark (-\$34,337,171.39), and Butler (-\$28,105,786.10). The high leakage values can be attributed to these counties' close proximity to large cities out of their respective counties. Stark County and Summit County, in addition to competing with each other, lose actual sales to Youngstown (Mahoning County) and Cleveland (Cuyahoga County), while Butler County must compete with Dayton (Montgomery County) and Cincinnati (Hamilton County).

OVRDC Surplus/Leakage Analysis

Lawrence County has a pull factor of 0.96, which translates to a Leakage value of \$337,601.43. The county's highest Pull Factor comes from the Unclassified category at 5.48. The next largest industry is General Merchandise Stores at 1.89. This industry is probably driven by the sale of manufactured goods from companies like Vertiv, JENNMAR McSweeney, and McGinnis.

Ross and Jackson County hold the highest Surplus, of \$4,079,595.57 and \$954,475.81 respectively. This is expected as these counties also have the highest Pull Factor. The high surplus in these counties is a result of the diverse set of industries located in these counties. When investigating OVRDC counties with leakage, two counties can be found with over one million dollars in leakages. Clermont and Brown County have a leakage of \$13,048,245.62 and \$1,457,678.93 respectively. This leakage could be a result of how close Clermont and Brown County are to the Cincinnati area.

Conclusion

The results of this study provide a state wide Trade Area Analysis for Ohio, and specifically the OVRDC. Clermont and Brown County were identified as counties within the OVRDC that have the highest Leakage and lowest Pull Factor. The causation for this Trade Area Analysis is manipulated by these counties' close geographic location to Cincinnati. Vinton County was also identified as an OVRDC county with Leakage and a low Pull Factor, this is a result of the demographics located within this county. Ross and Jackson County can be understood as the counties with the highest Surplus and Pull Factor in the OVRDC. This is a causation of the plethora of industries present in this area. Application of these results can be used to identify what OVRDC counties need assistance with their respected Trade Area Analysis.

Figures, Tables, and Maps

Table 1: Ohio County Index of Income

County	Population	Per Capita Income	Index of Income	County	Population	Per Capita Income	Index of Income
Adams	27,724	\$20,248	0.70	Licking	175,769	\$29,093	1.00
Allen	102,663	\$24,551	0.85	Logan	45,358	\$26,525	0.91
Ashland	53,745	\$24,612	0.85	Lorain	309,461	\$28,555	0.98
Ashtabula	97,493	\$21,936	0.76	Lucas	429,899	\$27,111	0.93
Athens	65,818	\$20,062	0.69	Madison	44,413	\$27,798	0.96
Auglaize	45,804	\$28,340	0.98	Mahoning	229,642	\$25,901	0.89
Belmont	67,505	\$25,326	0.87	Marion	65,256	\$22,579	0.78
Brown	43,602	\$24,525	0.85	Medina	179,146	\$34,174	1.18
Butler	382,378	\$29,745	1.03	Meigs	23,106	\$22,396	0.77
Carroll	27,081	\$26,908	0.93	Mercer	40,959	\$27,540	0.95
Champaign	38,754	\$25,528	0.88	Miami	106,222	\$28,051	0.97
Clark	134,585	\$25,270	0.87	Monroe	13,790	\$23,154	0.80
Clermont	205,466	\$31,812	1.10	Montgomery	532,331	\$27,602	0.95
Clinton	42,057	\$25,238	0.87	Morgan	14,604	\$22,122	0.76
Columbiana	102,665	\$24,758	0.85	Morrow	35,112	\$24,864	0.86
Coshocton	36,629	\$21,520	0.74	Muskingum	86,183	\$22,877	0.79
Crawford	41,550	\$24,386	0.84	Noble	14,354	\$23,119	0.80
Cuyahoga	1,243,857	\$30,441	1.05	Ottawa	40,769	\$31,574	1.09
Darke	51,323	\$24,768	0.85	Paulding	18,760	\$24,319	0.84
Defiance	38,165	\$26,941	0.93	Perry	36,033	\$21,557	0.74
Delaware	204,826	\$45,116	1.56	Pickaway	58,086	\$25,460	0.88
Erie	74,615	\$30,223	1.04	Pike	28,067	\$21,983	0.76
Fairfield	155,782	\$29,582	1.02	Portage	162,927	\$27,985	0.96
Fayette	28,666	\$24,013	0.83	Preble	40,997	\$25,374	0.87
Franklin	1,310,300	\$31,199	1.08	Putnam	33,780	\$28,568	0.98
Fulton	42,276	\$27,922	0.96	Richland	121,099	\$23,439	0.81
Gallia	29,979	\$22,293	0.77	Ross	76,931	\$22,714	0.78
Geauga	94,031	\$39,513	1.36	Sandusky	58,799	\$25,219	0.87
Greene	167,995	\$33,138	1.14	Scioto	75,502	\$22,586	0.78
Guernsey	39,022	\$22,864	0.79	Seneca	55,207	\$25,004	0.86
Hamilton	816,684	\$32,638	1.13	Shelby	48,627	\$28,410	0.98
Hancock	75,930	\$29,608	1.02	Stark	371,574	\$27,401	0.94
Hardin	31,480	\$21,099	0.73	Summit	541,918	\$30,803	1.06
Harrison	15,174	\$22,965	0.79	Trumbull	198,627	\$25,542	0.88
Henry	27,086	\$27,325	0.94	Tuscarawas	92,176	\$25,054	0.86
Highland	43,058	\$22,079	0.76	Union	57,835	\$33,066	1.14
Hocking	28,385	\$23,192	0.80	Van Wert	28,281	\$26,130	0.90
Holmes	43,892	\$21,143	0.73	Vinton	13,139	\$19,876	0.69
Huron	58,504	\$24,193	0.83	Warren	232,173	\$37,479	1.29
Jackson	32,384	\$21,730	0.75	Washington	60,155	\$26,608	0.92
Jefferson	65,767	\$24,028	0.83	Wayne	115,967	\$25,762	0.89
Knox	61,893	\$24,523	0.85	Williams	36,804	\$24,160	0.83

Lake	230,514	\$32,125	1.11	Wood	130,696	\$30,042	1.04
Lawrence	59,866	\$22,844	0.79	Wyandot	21,935	\$25,431	0.88
				Ohio	11,536,504	\$29,011	1.00

Table 2: Ohio County Pull Factor and Surplus/Leakage

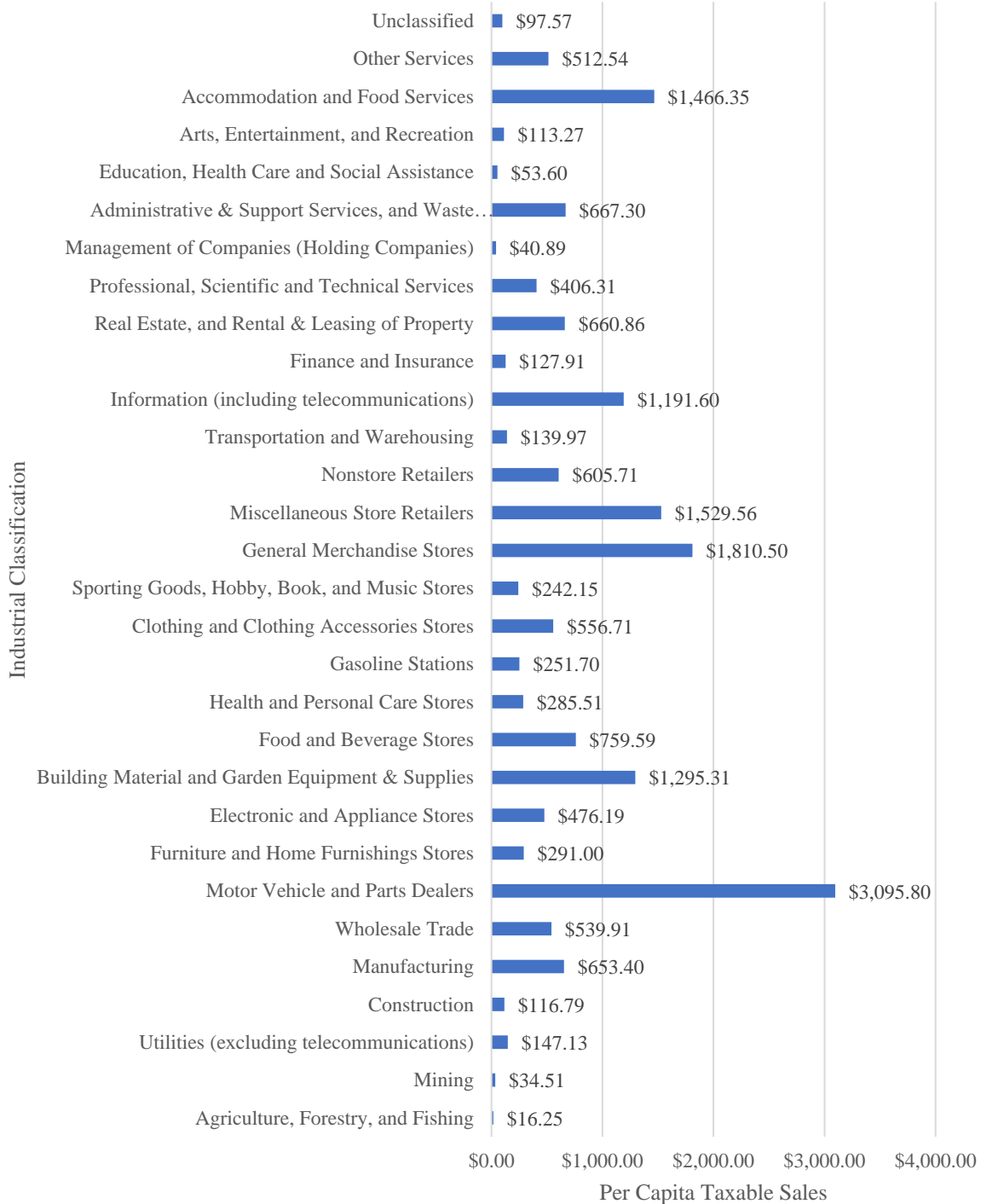
County	Pull Factor	Surplus/Leakage	County	Pull Factor	Surplus/Leakage
Adams	1.07	\$240,393.35	Licking	1.17	\$5,575,720.45
Allen	1.08	\$1,191,981.07	Logan	1.43	\$3,274,093.44
Ashland	1.00	\$10,071.12	Lorain	0.71	-\$15,839,247.47
Ashtabula	0.78	-\$2,892,598.22	Lucas	1.37	\$26,769,098.28
Athens	0.97	-\$286,030.73	Madison	0.92	-\$582,514.31
Auglaize	1.18	\$1,438,499.72	Mahoning	1.12	\$4,401,599.50
Belmont	1.71	\$7,660,952.15	Marion	1.31	\$2,885,597.32
Brown	0.78	-\$1,457,678.93	Medina	0.71	-\$11,262,641.32
Butler	0.61	-\$28,105,786.10	Meigs	0.76	-\$778,142.64
Carroll	0.59	-\$1,877,942.94	Mercer	1.24	\$1,697,924.22
Champaign	0.84	-\$978,399.67	Miami	0.97	-\$558,044.96
Clark	1.10	\$2,153,069.77	Monroe	2.78	\$3,572,431.32
Clermont	0.68	-\$13,048,245.62	Montgomery	0.87	-\$12,086,648.70
Clinton	0.90	-\$641,199.24	Morgan	0.76	-\$494,247.15
Columbiana	0.99	-\$94,341.04	Morrow	0.69	-\$1,692,930.11
Coshocton	1.11	\$561,894.70	Muskingum	1.62	\$7,646,341.05
Crawford	0.90	-\$616,602.70	Noble	0.79	-\$427,159.03
Cuyahoga	1.10	\$22,902,210.64	Ottawa	1.06	\$476,373.84
Darke	1.10	\$804,509.03	Paulding	0.71	-\$817,611.92
Defiance	0.93	-\$453,956.49	Perry	0.82	-\$896,298.90
Delaware	1.06	\$3,745,242.03	Pickaway	0.95	-\$480,090.30
Erie	1.14	\$1,971,014.47	Pike	1.18	\$683,857.19
Fairfield	0.74	-\$7,368,242.83	Portage	0.93	-\$1,954,910.78
Fayette	1.78	\$3,375,241.39	Preble	0.87	-\$837,874.69
Franklin	1.17	\$43,973,489.85	Putnam	0.84	-\$956,718.00
Fulton	1.06	\$468,108.19	Richland	1.23	\$4,055,944.46
Gallia	1.16	\$690,142.26	Ross	1.37	\$4,079,595.57
Geauga	0.66	-\$7,885,533.69	Sandusky	1.27	\$2,516,054.43
Greene	0.78	-\$7,642,406.43	Scioto	1.04	\$377,112.28
Guernsey	1.54	\$3,025,980.01	Seneca	0.99	-\$44,374.57
Hamilton	1.19	\$31,402,344.59	Shelby	1.14	\$1,230,295.43
Hancock	1.10	\$1,427,684.75	Stark	0.46	-\$34,337,171.39
Hardin	1.04	\$181,700.38	Summit	0.43	-\$59,590,682.63
Harrison	1.49	\$1,080,448.87	Trumbull	0.80	-\$6,318,341.31
Henry	0.93	-\$334,917.62	Tuscarawas	0.97	-\$395,984.55
Highland	1.07	\$441,913.81	Union	1.23	\$2,807,499.26
Hocking	1.20	\$834,127.58	Van Wert	0.99	-\$28,602.96
Holmes	1.81	\$4,703,090.91	Vinton	0.77	-\$370,336.99
Huron	1.12	\$1,059,092.98	Warren	0.93	-\$3,944,055.03
Jackson	1.22	\$952,475.81	Washington	1.31	\$3,080,406.52
Jefferson	1.27	\$2,666,007.77	Wayne	0.62	-\$7,189,802.21

Knox	1.08	\$775,223.11	Williams	1.08	\$448,037.11
Lake	0.80	-\$9,287,850.23	Wood	0.91	-\$2,314,543.82
Lawrence	0.96	-\$337,601.43	Wyandot	1.23	\$819,910.40

Table 3: Ohio Per Capita Taxable Sales

Industrial Classification	Per Capita Taxable Sales
Agriculture, Forestry, and Fishing	\$16.25
Mining	\$34.51
Utilities (excluding telecommunications)	\$147.13
Construction	\$116.79
Manufacturing	\$653.40
Wholesale Trade	\$539.91
<u>Retail</u>	
Motor Vehicle and Parts Dealers	\$3,095.80
Furniture and Home Furnishings Stores	\$291.00
Electronics and Appliance Stores	\$476.19
Building Material and Garden Equipment & Supplies	\$1,295.31
Food and Beverage Stores	\$759.59
Health and Personal Care Stores	\$285.51
Gasoline Stations	\$251.70
Clothing and Clothing Accessories Stores	\$556.71
Sporting Goods, Hobby, Book, and Music Stores	\$242.15
General Merchandise Stores	\$1,810.50
Miscellaneous Store Retailers	\$1,529.56
Non-Store Retailers	\$605.71
All Taxable Retail	\$11,199.74
<u>Services</u>	
Transportation and Warehousing	\$139.97
Information (including telecommunications)	\$1,191.60
Finance and Insurance	\$127.91
Real Estate, and Rental & Leasing of Property	\$660.86
Professional, Scientific and Technical Services	\$406.31
Management of Companies (Holding Companies)	\$40.89
Administrative & Support Services, and Waste Management & Remediation Services	\$667.30
Education, Health Care and Social Assistance	\$53.60
Arts, Entertainment, and Recreation	\$113.27
Accommodation and Food Services	\$1,466.35
Other Services	\$512.54
All Taxable Services	\$5,380.59
Unclassified	\$97.57
All Taxable Sales	\$18,185.89

Ohio Per Capita Taxable Sales



County Pull Factor

