

The Influence of the Agricultural to Clark County's Economy

Alison F. Davis, PhD

H.B. Price Professor, Department of Agricultural Economics

Abstract

This study estimates the influence of the Agricultural Cluster to the economy of Clark County. Historically, employment associated with agriculture has been limited to production agriculture. Recently, the agricultural cluster has been extended to include agricultural inputs and food processing and manufacturing. Clark County is diverse in the type of industries represented, with the manufacturing sector as the largest, followed by the retail trade, administrative and support services, health care, and accommodation and food service sectors. Although it is not the largest sector in terms of employment, production agriculture has the highest location quotient (LQ) of 2.87 in the county. The LQ measures employment in agriculture, in the region, as compared to the nation. A LQ greater than 1 means that the agricultural sector is more concentrated in the county than the national average.

When the agricultural sector is defined to include agricultural based manufacturing and inputs, in addition to the traditional way agriculture has been measured, it is estimated that 1,373 jobs are attributed to this cluster. Given total employment in the county (approximately 15,859) these results suggest that approximately 9% of jobs are directly associated with the agricultural sector. In addition, the Agricultural sector generates approximately \$197 million in output annually.

I. Economic Overview of Clark County

Figure 1 presents a visual representation of local commuters. There are 14,649 people employed within Clark County, according to 2017 U.S. Census data. Over 34% (5,060) people work and live inside Clark County. The remaining 9,589 people employed in Clark County are in-commuters (people that live outside the county and travel to work in Clark County). Furthermore, Clark has 11,282 out-commuters (people who live in Clark County but work outside their county of residence). Of the out-commuters, more than 5,251 Clark County residents work in Fayette County and over 700 in Jefferson County. Fayette County has 1,768 residents commuting to work in Clark County, and nearly 1,000 Montgomery County residents working in Clark County.

Clark County is diverse in the type of industries represented, with the manufacturing sector as the largest, followed by the retail trade, administrative and support services, health care, and accommodation and food service sectors.

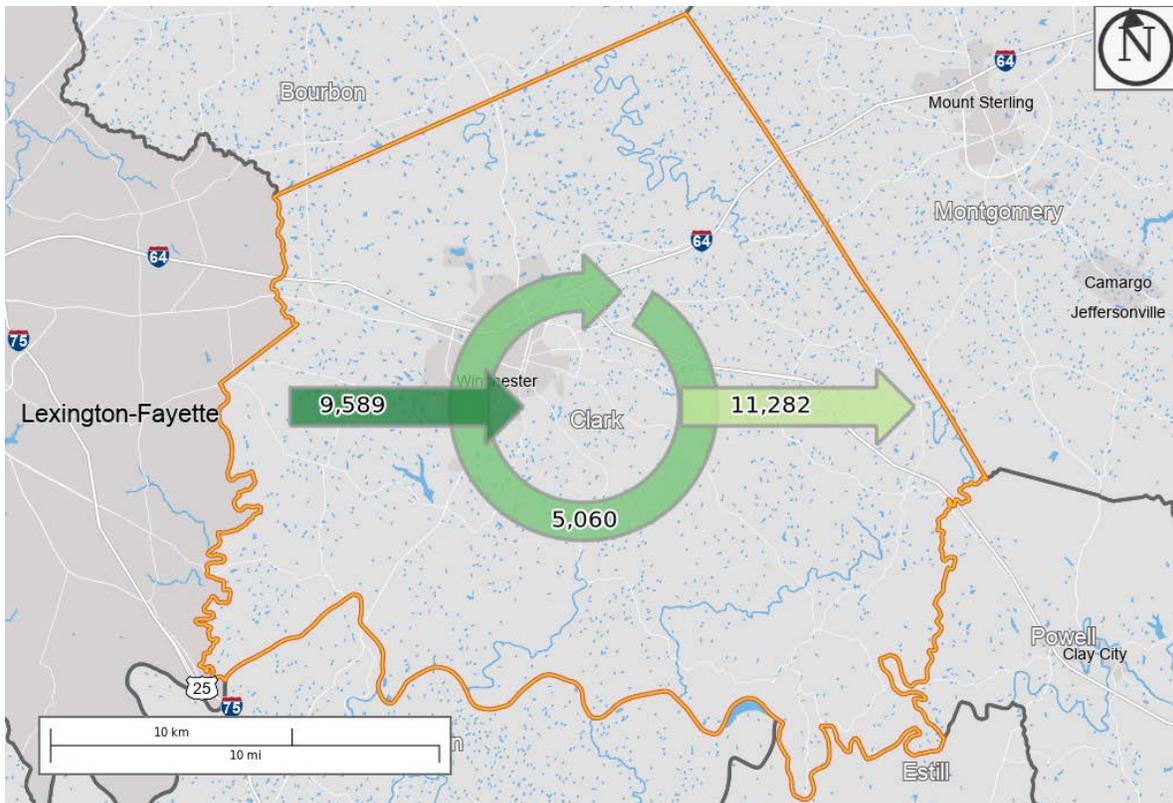


Figure 1. Commuting to Work

Source: Census/On the Map, 2017

Table 1 details employment, employment growth, earnings and location quotient, by 2-digit NAICS (North American Industry Classification System) in Clark County. Though the number of jobs declined for 9 of the 20 industries in the county between 2015 and 2020, overall, agriculture experienced the overall greatest increase in total employment in jobs followed by health care, retail trade, and manufacturing. The largest decline in employment occurred in NAICS sector 56, where the majority of the job loss resulted from a significant decline in the “temporary help services” sector. This table does not include employment for proprietors, only those establishments that have at least one paid employee. According to the Bureau of Economic Analysis, in 2018, in Clark County, there are 15,859 employed in addition to 4,226 proprietors.

Location Quotients (LQ) are a way to gauge the concentration of employment in a selected region as compared to the national average, in a given industry. When the LQ is above 1, the region holds a greater share of total employment than the national average. In this instance, Crop and Animal Production, Utilities, Management of Companies and Enterprises, and Manufacturing sectors have Location Quotients greater than 2, indicating that there is a higher concentration of employment for these industries in Clark County as compared to the national average. On the other hand, if the LQ is under 1, then that industry’s employment is less concentrated in Clark County than the rest of the country on average. In addition, when the

LQ is high, there is a likelihood of support industries to be present in the region, as seen with agricultural production.

Table 1. Industry Overview by 2-digit NAICS Codes (for non-prorietors)

NAICS	Description	2019 Jobs	5 year change	2020 Location Quotient	2015-19 local competitiveness
11	Crop & Animal Production	597	202	2.87	257
21	Mining	7	-10	0.10	-15
22	Utilities	170	-13	2.10	-48
23	Construction	802	-7	0.88	-199
31	Manufacturing	3,027	181	2.33	-81
42	Wholesale Trade	590	-86	0.99	-128
44	Retail Trade	1,847	183	1.14	-13
48	Transportation & Warehousing	329	98	0.45	-25
51	Information	73	-59	0.23	-618
52	Finance & Insurance	296	-33	0.47	-66
53	Real Estate & Rental & Leasing	126	10	0.46	-36
54	Professional, Scientific & Technical Services	700	0	0.65	238
55	Management of Companies	559	134	2.33	23
56	Administrative & Support & Waste Management & Remediation Services	1,773	-389	1.75	861
61	Educational Services	953	74	0.74	-89
62	Health Care & Social Assistance	1,732	197	0.76	-283
71	Arts, Entertainment & Recreation	105	-21	0.33	-16
72	Accommodation & Food Services	1,182	160	0.83	-94
81	Other Services (except Public Administration)	530	-9	0.75	-88
92	Public Administration	458	36	0.61	-7
	Total	15,859	663	1.00	-425

Source: Chmura JobsEQ, 2020, Q1

The last column in Table 1 details a measure for “local competitiveness” based on shift share analysis. Shift share breaks down the components of job change over a specified time period by incorporating overall economic and industry-specific trends by isolating a local competitiveness measure. For example, while the actual growth in agriculture jobs was 202 over a 5-year time period, based on overall national industry decline and the overall economy, jobs in this sector *should* have fallen by 55 jobs. However, because there was an increase of 202 jobs, there was a significant local competitiveness factor of 257 jobs. Two other sectors had strong local competitive job growth including administrative, support, and waste management services and professional services. Although the admin services sector experienced an overall decline in

employment, projections suggested that there should have been a much larger reduction in jobs, largely due to the employment services sector.

II. Agriculture and the Economic Importance of the Agricultural Cluster

Agriculture in Clark County, on the whole, has remained relatively steady over the last fifteen years. The total number of farms has remained stable however, the number of active farms (those with cropland) has declined by just under 20%. Approximately two-thirds of the farms are actively harvesting crops, which is down from 74% in 2002. The market value has again remained stable both through the ups and down in the agricultural markets. The value of land and buildings in the county have steadily climbed and are predicted to continue increasing. This doubling of land value is consistent with national trends. As producers continue to age, and land prices continue to climb, it will be difficult for young and/or beginning farmers to access land.

Table 2. Trends in Clark County, Kentucky Agriculture, Source: Census of Agriculture, 2002-2017

	<u>2002</u>	<u>2007</u>	<u>2012</u>	<u>2017</u>
Total Farms	861	907	883	871
Total Farms with Cropland	795	730	648	653
Total Farms with Harvested Cropland	637	609	582	581
Total Farms with Grazing Cropland	551	263	215	205
Market Value of Agriculture (per farm)	\$ 29,367	\$ 35,694	\$ 34,756	\$ 34,028
Total Market Value	\$ 25.3 Million	\$ 32.4 Million	\$ 30.5 Million	\$ 29.6 Million
Market Value of land and building (Average per farm)	\$ 387,108	\$ 550,833	\$ 510,663	\$ 749,313
Market Value of land and building (Average Per Acre)	\$ 2,182	\$ 3,349	\$ 3,282	\$ 4,431

Soil surveys provide detailed analyses of local soil types based on a variety of characteristics which are used to assess the soils for suitability to agricultural and urban land uses. In Clark County, soils in the areas located north and south of I-64 and west of KY 627 consist of the most productive agricultural land in the County. “Prime farmland” is described as having the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. “Farmland of statewide importance” includes land that include soils that meet nearly all requirements for prime farmland that economically produce high yields of crops when treated and managed according to acceptable farming methods. The Prime Farmland Map in Figure 2 highlights areas in Clark County that are prime for farmland, not prime for farmland, and those of statewide importance.

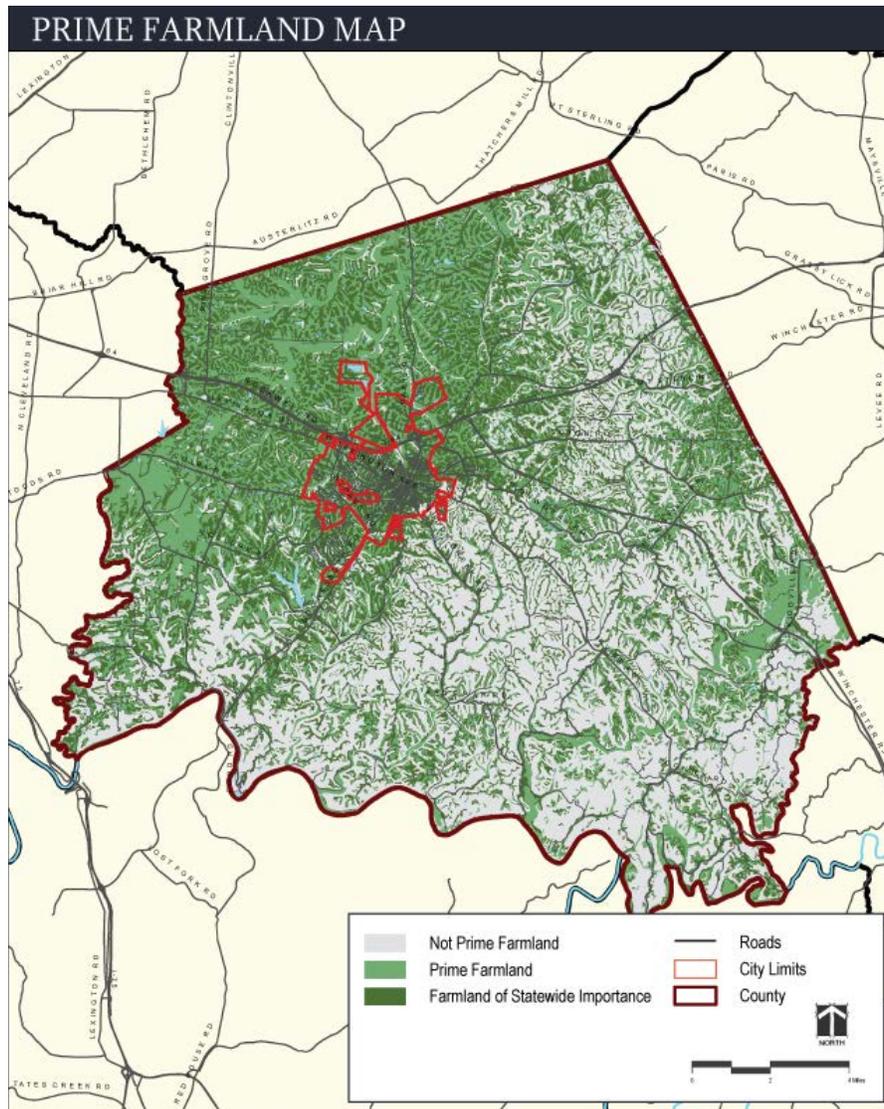


Figure 2. Clark County Prime Farmland Map, *Source: Clark County Winchester Comprehensive Plan, 2018-2038*

Statistics highlighting agricultural employment often includes employment only from production agriculture. Although production agricultural employment has fallen in Clark County, there are still approximately 900 jobs in this sector, a decrease from about 1,100 in 2001. Total employment for the county, across all sectors, has increased from approximately 8,200 to nearly 14,000 in the same years, thereby reducing the share of farm employment. Figure 3 provides an overview of total Clark County farm employment and farm employment as a percentage of total employment across all sectors in Clark County.

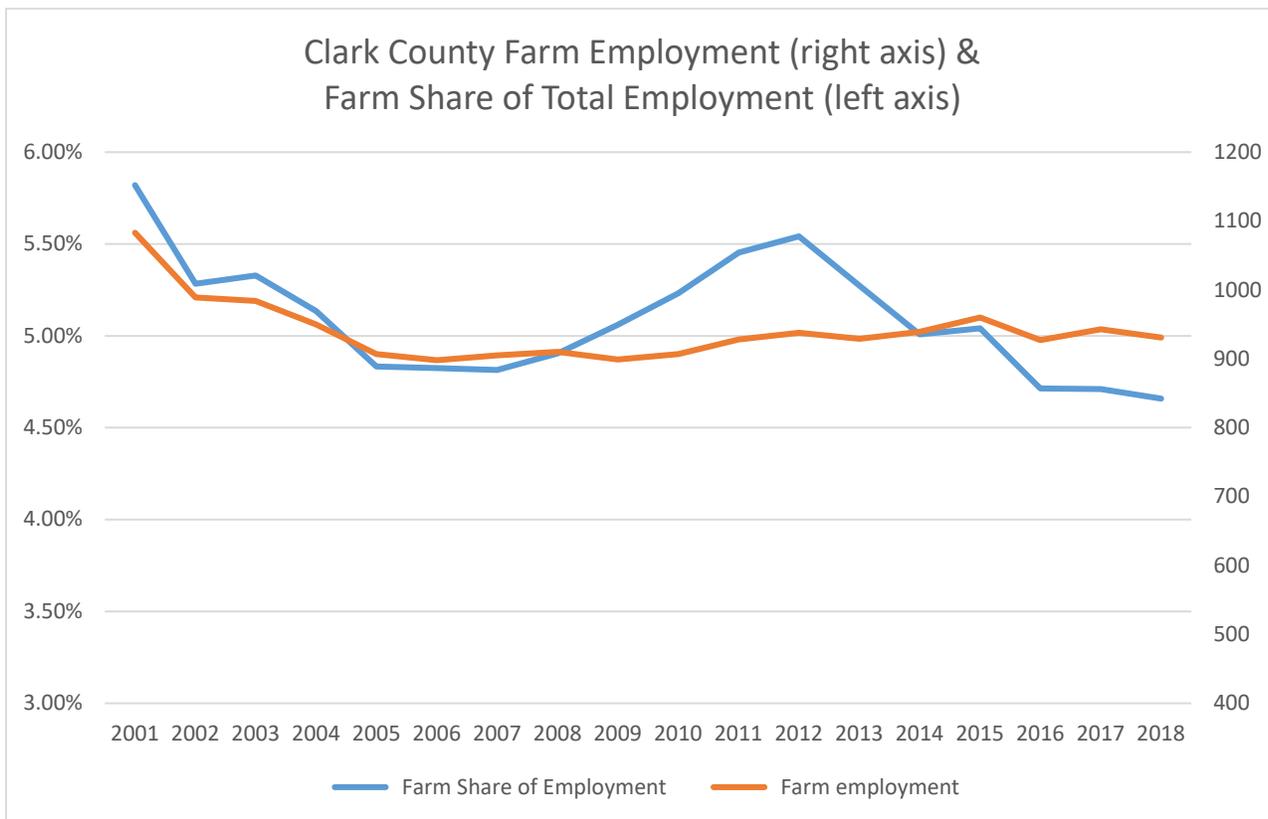


Figure 3. Farm Employment as % of Total Employment 2001 - 2018 Source: Bureau of Economic Analysis

Table 3 provides an approximate breakdown of jobs by type off on-farm production. These data are sourced from a different data set so do not match exactly with the data provided in Figure 3. IMPLAN data are the only data available that provide a breakdown by agricultural industry. The discrepancy in the data typically fall within “Support activities for agriculture and forestry” sector. This sector includes services like breeding activities that sometimes get included in “animal production” which would be included in the BEA data as agricultural but if they are included in the support activities, they will not. In addition, BEA data do not include proprietor employment, only those establishments that have at least one paid employee. Regardless, the data in Table 3 provide an overview of on-farm employment by industry. In addition, the output column is an estimate of total sales by sector. Production agriculture accounts for approximately \$38 million in sales (in 2018).

The Agricultural “Cluster.” Agriculture has evolved into a broader definition that includes production agriculture, agricultural inputs, and food processing/manufacturing.^{1,2}

¹ Goetz, Shields and Wang. 2004. Agricultural and Food Industry Clusters in the Northeast U.S.: Technical report. Regional Rural Development Paper No. 26. Northeast Regional Center for Rural Development.

² Deller, Steven C. and David Williams. 2009. The Contribution of Agriculture to the Wisconsin Economy. UW-Cooperative Extension.

Excluding these firms underestimates the value of the agricultural sector. Table 4 provides employment and output, for each of the additional industries included in the production agriculture and food processing cluster including animal food manufacturing, cheese manufacturing, and milk manufacturing. Finally, there are 74 jobs associated with different agricultural wholesale industries including farm supplies, livestock merchants, and machinery. There are a total of **1,373 jobs** and \$197 million in output in this cluster.

Table 3. Clark County Production Agriculture

Industry Description	Direct Employment	Output/Revenues
Oilseed farming	21	\$ 3,928,483
Grain farming	35	\$ 2,883,968
Vegetable and melon farming	3	\$ 201,009
Fruit farming	1	\$ 29,161
Tree nut farming	0	\$ 2,832
Greenhouse, nursery, and floriculture production	2	\$ 100,161
Tobacco farming	129	\$ 4,536,815
All other crop farming	309	\$ 3,593,754
Beef cattle ranching and farming	241	\$ 12,654,058
Dairy cattle and milk production	2	\$ 314,829
Poultry and egg production	1	\$ 240,590
Animal production, except cattle and poultry and eggs	44	\$ 830,878
Forestry, forest products, and timber tract production	1	\$ 65,483
Commercial logging	15	\$ 673,001
Support activities for agriculture and forestry	247	\$ 12,528,306
Total On-Farm Agriculture	1,051	\$ 38,129,250

Source: IMPLAN (2018)

Furthermore, the county is home to service-based firms (finance, veterinary, and recreation), transportation, communications, wholesale, and retail businesses that contribute to the agricultural sector. The perfect analysis would incorporate employment within all industries that support the Agricultural Cluster even if the business also serves other industries. Including all employment overstates the importance of agriculture and excluding all employment understates the value of agriculture. There are service industries including legal, accounting, insurance, banking, retail, food and drinking places, and accommodations that clearly support the Agricultural Cluster. However, without having specific information detailing the distribution of employment devoted to the Agricultural Cluster, the authors felt uncomfortable including these industries in the analysis and assumed that a percentage of the real employment associated with agriculture would be picked up in the multiplier impact.

Table 4. Clark County Agricultural Cluster

Industry Description	Direct Employment	Output
Other animal food manufacturing	51	\$ 38,129,250
Cheese manufacturing	32	\$ 13,265,977
Fluid milk manufacturing	161	\$ 82,263,000
Fertilizer mixing	4	\$ 4,094,582
Wholesale		
Grain and Field Bean Merchant Wholesalers		
Farm and Garden Machinery Wholesalers		
Farm Suppliers Merchant Wholesalers		Estimated
Livestock Merchant Wholesalers	74	\$21,152,385
Processing, Inputs and Wholesale	322	\$158,905,194
All Agricultural Industry	1,373	\$ 197,034,444

Source: IMPLAN (2018)

Table 5. Industries with a loss in sales of at least \$15,000 with a 10% reduction in ag sales

Industry	Loss in Sales
Wholesale trade	\$182,017
Other animal food manufacturing	\$67,243
Real estate	\$65,687
Truck transportation	\$30,084
Maintenance and repair construction of nonresidential structures	\$28,494
Other local government enterprises	\$26,569
Monetary authorities and depository credit intermediation	\$25,603
Production Agriculture	\$25,565
Employment services	\$9,527
Natural gas distribution	\$9,479
Electric power transmission and distribution	\$8,129
Insurance agencies, brokerages, and related activities	\$7,184
Management of companies and enterprises	\$7,122
Accounting, tax preparation, bookkeeping, and payroll services	\$6,135
Architectural, engineering, and related services	\$5,654
Veterinary services	\$5,550
Electric power generation - Fossil fuel	\$5,310
Non-depository credit intermediation and related activities	\$5,068
Scenic and sightseeing transportation and support activities for transportation	\$4,725
Automotive equipment rental and leasing	\$3,881

Source: JobsEq, 2020

Industries Impacted by a Loss in Agriculture

With the increasing pressures on land use in a growing county, it is interesting to explore what happens to the overall county's economy when there is a loss in production agriculture.

Because of the linkages between agriculture and the other industries, a \$1 loss in production agriculture will ripple throughout the rest of the economy. For example, if we expect production agriculture to decline by 10% (\$3.8 million), there will be an overall **additional** decrease of at least \$800,000 in output from indirect (business spending) and induced effects (household spending).

Table 5 provides detail about those industries that would be most affected with a decrease in production agriculture. Table 5 suggests that wholesale trade, other animal food manufacturing, real estate, and truck transportation would be most affected by a loss in agriculture due to indirect effects. If there were a decline in production agriculture, then producers would need fewer agricultural products and would not need the same level of real estate services, banking, etc. to support their enterprise. There would be over \$593,000 reduction in annual sales from business spending (indirect effect) in addition to the direct loss of \$3.8 million in agriculture sales.

Conclusion

This report provides an overview of the economic importance of a Clark County's Agricultural Cluster. By broadening the definition of the cluster to include businesses that strictly support the Agricultural Cluster, we can now capture a more accurate value of agriculture in the area. The results suggest that nearly **one in ten workers** in Clark County is either directly associated with the Agricultural Cluster. These are conservative numbers, as the analysis does not account for businesses that partially support agriculture including veterinary services, financial and real estate companies, etc. Undoubtedly there are other important clusters in the county, including manufacturing, health care, and retail to name a few. These results suggest that agriculture is also an important component to this diverse, growing economy.