

Summary Measures of the Economic Importance of Agri-food Industries in Clayton County, Iowa

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This summary report provides county-level statistics for Clayton County, Iowa as a supplement to *The Economic Importance of Agri-food Industries in Iowa*¹ (hereafter referred to as the "state report"). Throughout this summary, local data will be presented that reflects the data provided in the state report. Brief descriptions of the data will be provided along with references back to the state report for more detailed explanations of the data and its use.

Table 1 shows that Clayton County had 1,601 farms in 2002. These farms averaged 270 acres apiece compared to an average of 350 acres per farm, statewide. Nationwide, farms are generally larger than in Iowa. The average US farm included 441 acres in 2002. The estimated market value of land and buildings per farm in Clayton County was \$620,073 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Clayton County farms marketed an average of \$99,905 worth of farm products according to the US Census of Agriculture.

Table 1. Clayton County Farm Statistics from the US Census of Agriculture

	Clayton County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	1,601	1,738	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	432,724	464,582	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	270	267	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	528,238	375,331	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	91,835	65,666	100,422	79,607	66,570	53,861
Farm products sold (\$)	99,905	99,013	135,388	125,766	94,245	90,880

Table 2 shows employment data for Clayton County and the state of Iowa compiled within a framework used by the US Department of Agriculture (USDA) to identify a broad range of farm and farm-related employment. These numbers are a reduced set of the statistics provided as Table 4 in the state report. The USDA compiles these employment numbers annually for each of the 50 states². For this summary, we have used the USDA classification system and data from the US Bureau of Economic Analysis and the Iowa Department of Workforce Development to generate similar results for Clayton County. Detail is restricted in this summary, due to the smaller employment base and privacy issues at the county level.

¹ Mark Imerman, David Swenson, Liesl Eathington, Daniel Otto. Iowa State University Department of Economics. 2005.

² The USDA's definition of farm-related industries includes all food-based businesses through retailing and restaurants. Substantial portions of packaging manufacture, of gravel and lime extraction, and apparel manufacturing are also included. A discussion of the implications of the breadth of this framework is included on pages 6-9 of the state report.

Table 2. USDA-style Compilation of 2002 Farm and Farm-related Employment (Jobs)

	Clayton County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	2,431	21.21	1.20	201,967	10.57
Peripherally-related	665	5.80	0.35	191,669	10.04
Total farm and farm-related	3,096	27.02	0.79	393,636	20.61
Total employment	11,457	100.00	0.60	1,909,934	100.00

Data derived from the US Bureau of Economic Analysis and the Iowa Department of Workforce Development within a framework obtained from the USDA.

Tables 3 and 4 estimate the value of a more restricted definition of the agri-food industries for Clayton County. These tables are consistent with Tables 5 and 6 in the state report. Estimates included in these tables limit the agri-food industries to ag production (traditional farm production and nonfarm production facilities), food and other primary farm commodity processing, and ag input manufacturing (machinery, ag chemicals, and fertilizer)³.

Table 3 provides value estimates for an industry-only aggregation of the economic activity that takes place within Clayton County's borders. Output is the value of total in-county production for each industry in 2002. Value-added is the value that was added to Output by each industry's in-county production process. The difference between Output and Value-added is the value of purchased inputs that go into the production process. For individual industries, these inputs may be sourced from out-of-county or from within the county. Value-added represents the value of Output minus the value of purchased inputs. Table 3 also provides an estimate of jobs⁴ and labor income (compensation for employees and proprietors) within the agri-food industries in Clayton County.

Table 3 shows that, in 2002, the total output value of Clayton County's agricultural production industry was \$142.614 million. \$48.851 million of this output (34.25 percent of the total output value) was the value added to the output by Clayton County's ag production activity (ag production's value added). The remainder came from purchased inputs into the process (from either in-county or out-of-county sources). 57.04 percent of this value added, or \$27.865 million, was paid out as compensation to the 2,080 production agriculture jobs in Clayton County.

³ Estimates were generated through a process of recompiling and analyzing statistics derived from the IMPLAN database system maintained by MIG, Inc. A detailed discussion of the estimates presented here, the differences between the two tables, and how they can be interpreted is provided in pages 9 through 17 of the state report.

⁴ Jobs do not refer to the number of people working or to full-time-equivalent employment. Jobs can be full or part time. A single individual can hold multiple jobs. In short, jobs cannot be looked upon as interchangeable or comparable across industries, businesses, or location. Comparisons of wages and compensation are more appropriate in an economic value context.

Table 3. Industry-only Estimation Based on IMPLAN and Census Data

Clayton County	Output*	Jobs	Labor	Value-Added	
			Income*	Value*	Pct. Of Tot.
Agricultural Production					
Oilseeds	14.812	162	4.880	7.964	2.11
Grain	42.443	700	10.245	19.221	5.08
Other Crops	17.591	77	3.581	9.026	2.39
Cattle	27.497	214	0.294	1.942	0.51
Poultry	3.594	8	0.473	1.173	0.31
Hogs and Pigs	12.034	311	0.869	1.869	0.49
Other Ag Production	24.643	608	7.523	7.656	2.02
Sum of Ag Production	142.614	2,080	27.865	48.851	12.92
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	62.707	112	4.248	5.952	1.57
Meat	17.606	51	1.258	1.504	0.40
Sum of Primary Food Proc.	80.313	163	5.506	7.456	1.97
Other Food/Ag Processing					
Animal and Pet Foods	1.669	4	0.063	0.089	0.02
Other Food Processing	1.394	13	0.254	0.523	0.14
Sum of Other Ag Proc.	3.063	17	0.317	0.612	0.16
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.511	2	0.061	0.090	0.02
Farm Machinery	0.000	0	0.000	0.000	0.00
Sum of Ag Input Mfg.	0.511	2	0.061	0.090	0.02
Sum of All Agri-food Ind.	226.501	2,262	33.749	57.009	15.07
NonAg Industries	568.329	7,212	212.365	321.184	84.93
Totals	794.830	9,474	246.114	378.193	100.00

* Numbers represent millions of dollars

If we add food and other ag processing and ag input manufacturing to agricultural production, the value of Clayton County's agri-food industry output was \$226.501 million, or 28.50 percent of Clayton County's total industrial production. Of this, \$57.009 million (25.17 percent) was value added within these industries in Clayton County. \$33.749 million of this value added was paid out as wages and salaries to the 2,262 agri-food industry jobs in the county.

Overall, Table 3 shows that Clayton County's agri-food industries directly accounted for 28.50 percent of the county's total output, 15.07 percent of total value added, 13.71 percent of labor income, and 23.88 percent of the county's jobs⁵.

⁵ It is unusual but possible for counties to have negative output, value-added, and labor income values in some categories, resulting in negative percents of totals. Where this happens, it is generally due to write-downs of assets and proprietor interests due to firm closings or bankruptcies, market situations where output must be sold at less than production costs, or reverse flows of incomes, pensions, or benefits.

Table 4. Industry-of-output aggregation including local inputs

Clayton County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	19.929	8.409	11.175	2.95	3.48
Grain	53.626	19.624	26.659	7.05	8.31
Other Crops	10.109	3.748	5.454	1.44	1.70
Cattle	0.738	0.121	0.186	0.05	0.06
Poultry	4.423	1.193	1.715	0.45	0.53
Hogs and Pigs	16.206	3.231	4.782	1.26	1.49
Other Ag Production	22.581	4.951	7.041	1.86	2.19
Sum of Ag Production	127.612	41.277	57.012	15.07	17.77
Primary Food Processing					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	98.483	13.028	19.166	5.07	5.97
Meat	28.195	3.842	5.575	1.47	1.74
Sum of Primary Food Proc.	126.678	16.870	24.742	6.54	7.71
Other Food/Ag Processing					
Animal and Pet Foods	2.341	0.325	0.454	0.12	0.14
Other Food Processing	1.255	0.364	0.531	0.14	0.17
Sum of Other Ag Proc.	3.596	0.689	0.984	0.26	0.31
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.515	0.100	0.137	0.04	0.04
Farm Machinery	0.000	0.000	0.000	0.00	0.00
Sum of Ag Input Mfg.	0.515	0.100	0.137	0.04	0.04
Sum of All Agri-food Ind.	258.400	58.936	82.875	21.91	25.83
NonAg Industries	445.761	181.699	237.998	62.93	74.17
Household Consumption	90.668	249.727	57.320	15.16	17.86
Totals	794.830	490.363	378.193	100.00	117.86

* Numbers represent millions of dollars

Table 4 shows a different aggregation of the county's industrial output. Table 4 is derived from the same data as is Table 3, and total values for Table 4 are identical to total values for Table 3. The difference is the point at which values were counted. In Table 3, values were counted in each industry where productive activity took place. In Table 4, values were counted at the industry that made the final export (out-of-county) sale of goods and services produced⁶. This is final demand analysis. It helps illustrate the magnitude of inter-industrial linkages and the value of those linkages to local income generation from export sales⁷.

⁶ Goods not sold out of county were counted under the heading of "Household Consumption" and not in industry totals in Table 4.

⁷ The point at which final products are sold out-of-county was chosen as an endpoint because it coincides with the point at which industrial output brings revenue into the county. This point also avoids problems

Table 4 reallocates all industrial activity in the county to the sectors producing goods for sale beyond the county's borders (export sale). This means that if there is a local meat packer that purchases all of its live cattle from local farmers, the output value, value-added, and personal income generated in the production of those cattle is aggregated up to the meat packing industry. Similarly, the value of locally produced farm machinery purchased for use on local farms is not included in the aggregation under farm machinery, but is subsumed under agricultural production (and partially subsumed, again, into food processing if the farm output that it was used to produce passes through local food processors on its journey to final sale outside of the county). In a nutshell, the output, value-added, and income estimates in Table 4 estimate the total share of the local economic activity utilized to generate final output from the agri-food sectors.

Under this aggregation, the total exported output value of locally produced goods and services supporting Clayton County's agricultural production industry was \$127.612 million. \$57.012 million of this output (44.68 percent of the total output value) was the value added to the output by economic activity within Clayton County (value added). The remainder came from inputs purchased from out-of-county sources. 72.40 percent of this value added, or \$41.277 million, was paid out as personal income to residents of Clayton County that were involved (as workers, owners, investors, etc) in these activities.

If we add food and other ag processing and ag input manufacturing to agricultural production, the export value of goods and services supporting Clayton County's agri-food industry output was \$258.400 million, or 32.51 percent of Clayton County's total industrial production. Of this, \$82.875 million (32.07 percent) was value added within these industries in Clayton County. \$58.936 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Clayton County's agri-food industries accounted for 32.51 percent of the county's total output, 21.91 percent of total value added, and 12.02 percent of the county's personal income.

Table 5. Crop Statistics From the U.S. Census of Agriculture

	Clayton County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	159,948	172,085	12,273,634	12,162,165
Value of Crops Sold*	53,678	54,687	6,071,272	6,381,676
Total Cropland Harvested (acres)	248,030	275,172	23,994,343	24,008,826
Corn for grain	130,871	159,349	11,761,392	11,930,542
Corn for silage and green-chop	8,431	7,441	247,269	244,913
Soybeans	58,962	45,207	10,418,621	10,258,681
Oats	7,022	10,417	143,513	214,485
Harvested forage crops	47,335	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	21,476,036	21,098,566	1,851,276,224	1,581,093,092
Soybeans	3,195,307	2,137,296	487,380,897	459,309,682
Oats	512,590	665,275	10,761,952	14,451,930

* Values are in \$1,000s

that would accompany trying to separate local household consumption between that which consumes local food products and that which consumes food products imported from outside the county.

Table 5 shows Clayton County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Clayton County livestock. Data in both tables comes from the US Census of Agriculture. In both tables “(NA)” entries denote categories where data was not collected or compiled, and “(D)” entries designate that data was collected but results were suppressed to comply with personal disclosure restrictions.

Table 6. Livestock Statistics From the U.S. Census of Agriculture

	Clayton County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	159,948	172,085	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	106,270	117,398	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	182,393	237,414	15,486,531	14,513,319
Inventory of breeding stock	23,631	28,893	1,145,323	1,354,166
Number sold	484,848	433,048	41,232,492	27,340,921
Value of sales*	33,638	43,651	3,078,455	3,012,764
Cattle and Calves				
Total inventory	81,839	84,114	3,535,945	3,717,394
Beef cows	17,355	16,221	987,670	1,051,178
Milk cows	18,671	21,704	206,965	222,090
Number sold	43,455	41,000	2,929,704	2,936,978
Value of sales*	26,553	21,346	2,119,935	1,886,416
Value of Dairy Products Sold*	38,707	40,569	442,431	407,897
Poultry and Poultry Products				
Value of sales*	6,563	11,273	511,949	414,587
Inventory of layers 20 weeks and older	407,381	449,690	38,650,210	21,514,768
Broiler and meat-type chicken inventory	(D)	219	1,730,091	1,023,349
Broiler and meat-type chickens sold	68,809	3,050	9,558,127	6,919,963
Turkey inventory	(D)	(D)	3,681,862	2,552,845
Turkeys sold	(D)	(D)	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	318	(NA)	23,366	(NA)
Inventory of sheep and lambs	2,841	1,757	249,908	272,913
Number of sheep and lambs sold	1,292	1,747	257,130	326,868

* Values are in \$1,000s

The first three data columns of Table 7 show aggregated annual earnings in thousands of dollars from farm employment, nonfarm employment, and totals employment in Clayton County from 1990 through 2003. The values are not adjusted for inflation. Note that nonfarm earnings steadily rise throughout the period. Total earnings rise, but with somewhat more variation. Farm earnings swing significantly from year-to-year. This is typical of earnings in economies with a substantial ag production sector.

The final three data columns of Table 7 show the data again. In Table 7, however, the data is differenced year-by-year. Entries for 1991, for example, are the difference between, change from, 1990 to 1991. Positive numbers denote unadjusted growth. Negative numbers denote unadjusted decline. This representation shows that nonfarm earnings tend to be growing over time, causing total earnings to trend upward over time. The variability in this growth, however, is strongly associated with the variability of farm earnings. This is due to the weather and market factors that make production agriculture returns highly variable (which is also true of many basic mining industries).

While ag production's growth in most areas is limited by the availability of suitable land, its variability has a substantial effect upon rural areas. Even in urbanized areas, the difference between a good earnings year and a bad earnings year is often heavily influenced by conditions affecting agricultural production and marketing.

A more detailed state-level discussion and illustrations are included in the state report on pages 22 through 24.

Table 7. Annual Earnings and Annual Earnings Changes

Year	Annual County Earnings by Source			Annual Changes in County Earnings		
	Farm	Nonfarm	Total	Farm	Nonfarm	Total
1990	54,005	128,704	182,709	(NA)	(NA)	(NA)
1991	40,604	133,595	174,199	-13,401	4,891	-8,510
1992	46,741	146,352	193,093	6,137	12,757	18,894
1993	25,472	150,450	175,922	-21,269	4,098	-17,171
1994	37,462	152,925	190,387	11,990	2,475	14,465
1995	24,179	179,792	203,971	-13,283	26,867	13,584
1996	48,021	188,192	236,213	23,842	8,400	32,242
1997	49,505	204,225	253,730	1,484	16,033	17,517
1998	40,313	210,375	250,688	-9,192	6,150	-3,042
1999	24,038	224,086	248,124	-16,275	13,711	-2,564
2000	29,163	233,154	262,317	5,125	9,068	14,193
2001	24,718	226,724	251,442	-4,445	-6,430	-10,875
2002	25,190	231,345	256,535	472	4,621	5,093
2003	22,448	235,019	257,467	-2,742	3,674	932

Data from the US Bureau of Economic Analysis