



An Improved Assessment of Agriculture's Contribution to the Kansas Economy

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IMPLAN Software

- Common tool
- Input-output software
- Uses multipliers
- Multiplier analysis has limitations

IMPLAN Multipliers

	Value	Total Impact	Percent of Total
Output	\$368,095	\$634,714	172%
Value Added	\$172,678	\$310,648	180%
Employment	1,943,151	3,491,083	180%

Alternative Methods

- Export Base Theory
- Matrix Algebra

	Production Sectors				Factors			Institutions			Rest of World				Balancing Accounts		
	Ag	Mfg.	Trade	Serv.	Labor	Capital	Land	Low Income	Medium Income	High Income	Govt	Capital	Work	Trade			
Region	Ag	Inter-Industry Transaction Table						Regional Household Demand			Regional Govt Demand	Regional Investment	Regional Exports	Total Demand	Demand (Out put)		
	Mfg.																
	Trade																
	Services																
Region	Labor	Factor Returns											Factor Income ROW	Total Factor Income			
	Capital																
	Land																
Region	Low Inc				Household Income Distribution			Household to Household Transfers			Transfers to HH		Unearned Income	Total HH Income			
	Medium Inc																
	High Inc																
Inputs	Government	Indirect Business Taxes			Factor Taxes			Household Taxes			Transfers	Invest & Earn	ROW	Taxes	Balancing Accounts		
	Capital				Factor Savings			Household Savings									
	Rest of World	Imported Inputs			Factor Trade			Imported Consumption									Imports
	Total Inputs	Total Industry Inputs			Factor Distributions			Household Expenditures			Govt Exp					Investment	Trade

Organizing the Data

- IMPLAN has 546 sectors (too many)
- Used NAICS codes to put data into 20 standard industry sectors
- Combined to create roughly 15 industries

Agriculture Industry

- For sure production
- But what other activities should be included when we're discussing the contribution of agriculture?

Crops Industry Sectors

IMPLAN Code	Description
1	Oilseed Farming
2	Grain Farming
3	Vegetable and Melon Farming
4	Fruit Farming
5	Tree Nut Farming
6	Greenhouse, Nursery, and Floriculture Production
7	Tobacco Farming
8	Cotton Farming
9	Sugarcane and Sugar Beet Farming
10	All Other Crop Farming

Livestock Industry Sectors

IMPLAN Code	Description
11	Beef Cattle Ranching and Farming, including feedlots and dual-purpose ranching and farming
12	Dairy Cattle and Milk Production
13	Poultry and Egg Production
14	Animal Production, except cattle and poultry and eggs

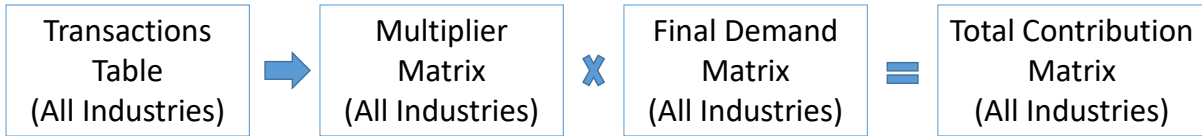
Other Ag Industry Sectors

IMPLAN Code	Description
15	Forestry, Forest Products, and Timber Tract Production
16	Commercial Logging
17	Commercial Fishing
18	Commercial Hunting and Trapping

Ag-Related Industry Sectors

- Besides production, what else can be considered “agriculture?”
- How far down the supply chain do you go?
- Food processing and manufacturing isn’t automatically or necessarily agriculture
- Need a threshold or “cut off” point

IMPLAN Code	Description
19	Support Activities for Agriculture and Forestry
64	Other Animal Food Manufacturing
65	Flour Milling
68	Wet Corn Milling
69	Soybean and Other Oilseed Processing
78	Frozen Specialties Manufacturing
83	Dry, Condensed, and Evaporated Dairy Product Manufacturing
84	Fluid Milk Manufacturing
88	Poultry Processing
89	Animal, except poultry, Slaughtering
90	Meat Processed from Carcasses
98	Other Snack Food Manufacturing
102	Spice and Extract Manufacturing
103	All Other Food Manufacturing
106	Breweries
110	Fiber, Yarn, and Thread Mills
132	Sawmills
163	Other Basic Organic Chemical Manufacturing



Estimate shares of activity where
 Total Inputs = Total Outputs = Total Industry Production
 Everything = 100%

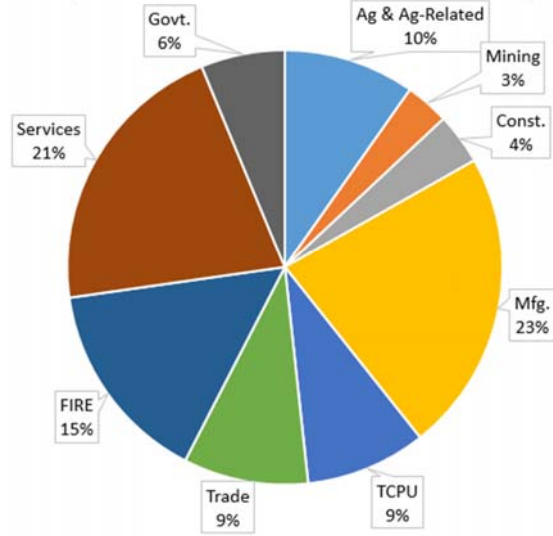
2018\$ millions	Crops	Livestock	Other Ag	Ag Related	Manufacturing	Services	Government	HH	Gross Export (Output)	Gross Share
Crops	\$4,535.3	\$ 133.8	\$ 0.2	\$ 1,167.0	\$ 383.7	\$ 44.4	\$ 45.4	\$ 145.9	\$ 6,531.2	1.77%
Livestock	\$ 52.3	\$4,945.9	\$ 0.2	\$ 3,753.3	\$ 478.7	\$ 51.4	\$ 43.7	\$ 138.3	\$ 9,542.1	2.59%
Other Ag	\$ 0.1	\$ 0.2	\$ 21.8	\$ 6.4	\$ 9.9	\$ 1.0	\$ 0.5	\$ 1.6	\$ 42.5	0.01%
Ag Related	\$ 202.9	\$ 418.4	\$ 1.0	\$17,437.3	\$ 887.2	\$ 139.7	\$ 114.6	\$ 358.8	\$ 19,776.3	5.37%
Mining	\$ 30.1	\$ 20.7	\$ 0.1	\$ 91.5	\$ 3,669.9	\$ 62.2	\$ 59.1	\$ 118.5	\$ 11,975.2	3.25%
Construction	\$ 60.8	\$ 29.3	\$ 0.1	\$ 101.8	\$ 512.9	\$ 176.8	\$ 412.8	\$ 366.8	\$ 13,995.7	3.80%
Manufacturing	\$ 196.7	\$ 118.7	\$ 0.6	\$ 709.3	\$ 77,972.5	\$ 560.2	\$ 439.6	\$ 1,269.6	\$ 82,880.6	22.52%
TCPU	\$ 336.1	\$ 402.1	\$ 1.6	\$ 1,855.1	\$ 5,652.4	\$ 1,989.1	\$ 1,440.2	\$ 4,201.8	\$ 32,996.8	8.96%
Trade	\$ 523.7	\$ 718.1	\$ 2.4	\$ 2,111.8	\$ 7,955.2	\$ 1,976.6	\$ 2,081.6	\$ 6,557.8	\$ 34,171.6	9.28%
FIRE	\$1,254.7	\$ 795.2	\$ 3.8	\$ 2,242.7	\$ 8,404.9	\$ 5,636.4	\$ 4,570.2	\$14,017.1	\$ 55,840.3	15.17%
Services	\$ 704.3	\$ 595.1	\$ 3.9	\$ 2,493.0	\$ 12,171.5	\$ 27,092.9	\$ 5,414.3	\$16,859.6	\$ 77,388.7	21.02%
Government	\$ 36.1	\$ 28.0	\$ 0.1	\$ 131.8	\$ 437.1	\$ 221.0	\$ 21,064.4	\$ 572.4	\$ 22,954.2	6.24%
Base Export (Output)	\$7,933.1	\$8,205.6	\$ 35.8	\$32,100.9	\$ 118,535.9	\$ 37,951.4	\$ 35,686.4	\$44,608.1	\$ 368,095.2	100.00%
Base Export	2.16%	2.23%	0.01%	8.72%	32.20%	10.31%	9.69%	12.12%	100.00%	
Gross Domestic Product (Value Added)										
Employee Compensation	\$1,003.2	\$ 801.1	\$ 11.2	\$ 4,361.1	\$ 20,015.8	\$ 13,004.2	\$ 19,111.4	\$11,887.8	\$ 88,383.6	51.18%
Proprietor Income	\$ 893.0	\$ 633.2	\$ 1.0	\$ 1,351.2	\$ 2,611.9	\$ 2,345.1	\$ 855.0	\$ 2,505.2	\$ 16,947.9	9.81%
Other Property Income	\$1,041.0	\$ 823.7	\$ 2.1	\$ 2,704.9	\$ 17,261.6	\$ 4,867.2	\$ 7,461.1	\$ 8,170.7	\$ 55,485.1	32.13%
Tax	\$ 148.7	\$ 219.5	\$ 3.8	\$ 678.2	\$ 2,875.7	\$ 1,417.9	\$ 388.0	\$ 2,199.5	\$ 11,861.0	6.87%
Base Export VA Created	\$3,085.9	\$2,477.6	\$ 18.2	\$ 9,095.4	\$ 42,765.1	\$ 21,634.5	\$ 27,815.5	\$24,763.2	\$ 172,677.6	100.00%
Base Export VA	1.79%	1.43%	0.01%	5.27%	24.77%	12.53%	16.11%	14.34%	100.00%	
Household Income										
Base Export HH Income	\$2,003.3	\$1,520.7	\$ 11.5	\$ 5,827.1	\$ 24,329.7	\$ 15,001.8	\$ 19,575.2	\$63,971.2	\$ 157,074.3	100.00%
Base Export HH Income	1.28%	0.97%	0.01%	3.71%	15.49%	9.55%	12.46%	40.73%	100.00%	

Industry Value to HH & R.O.W.

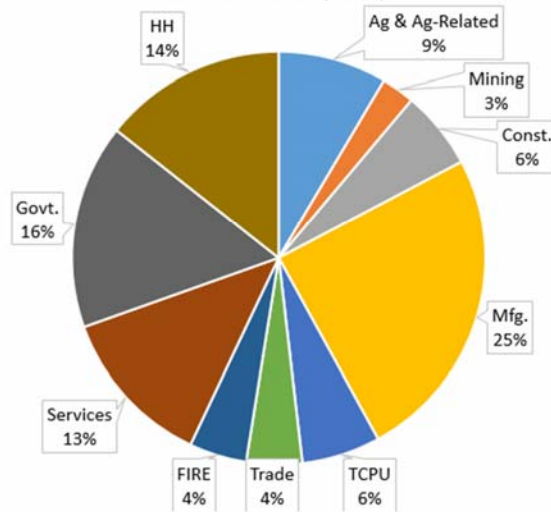
Industry Attracts to Region

HH Contribution to Region

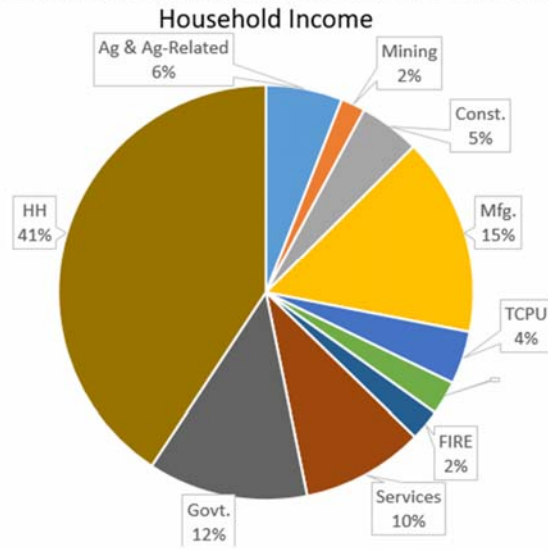
Gross Exports as Percent of Total Kansas Gross Exports



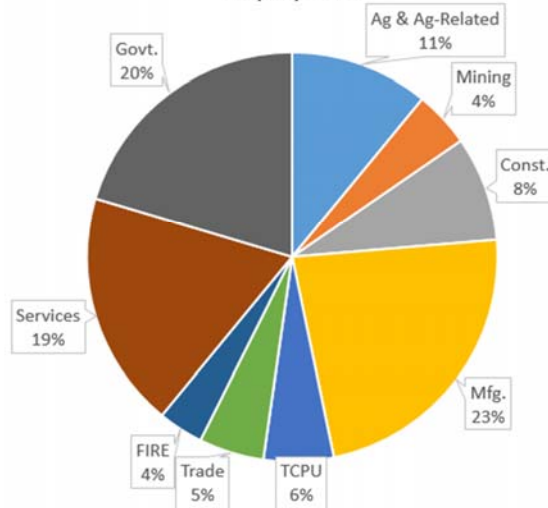
Base Value Added (GDP) as Percent of Total Kansas Base Value Added (GDP)



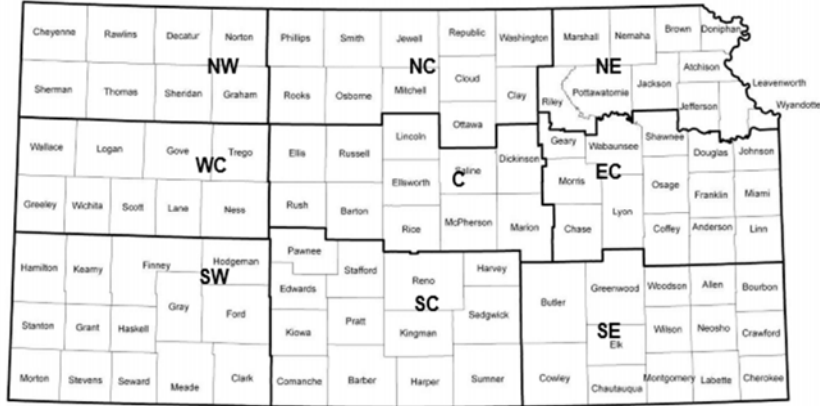
Base Household Income as Percent of Total Kansas



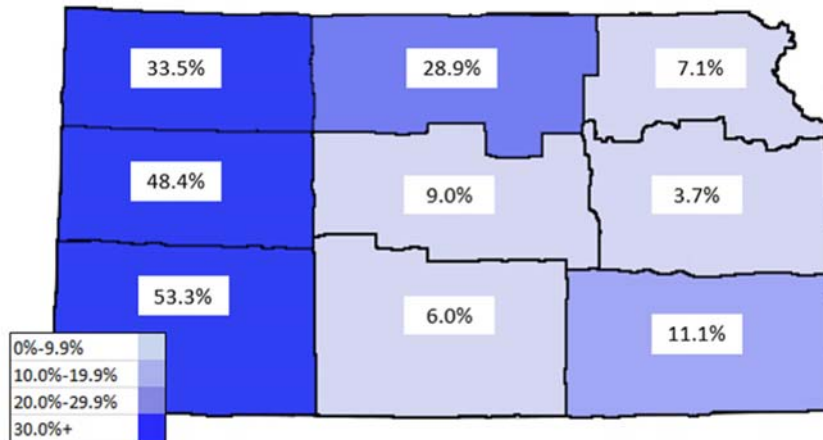
Base Employment as Percent of Total Kansas Employment



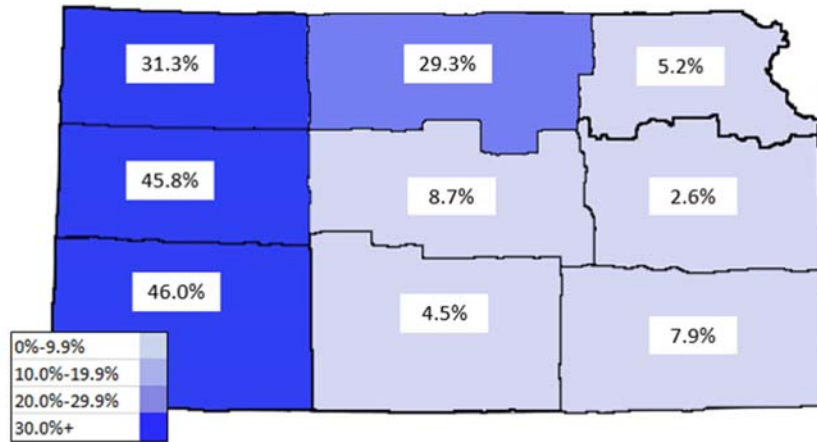
Sub-State Districts



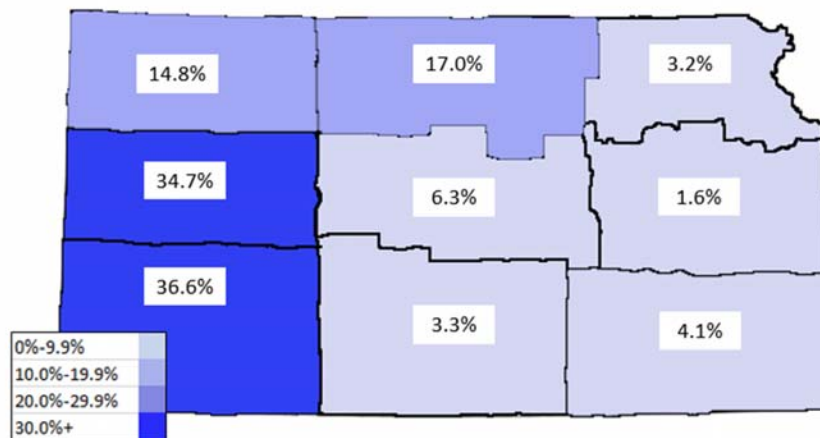
District Combined Ag Gross Exports



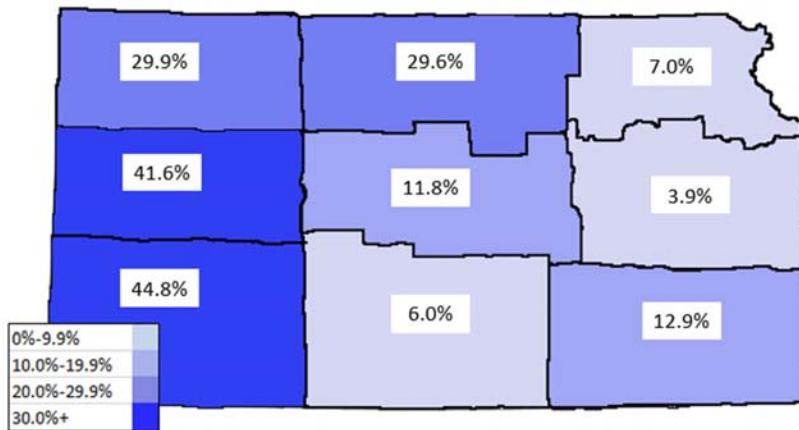
District Combined Ag GDP



District Combined Ag Household Income



District Combined Ag Employment



In Summary

- Agriculture is a large part and important industry for Kansas
 - Makes up 10% of total state exports (4th Place)
 - Makes up 9% of total value of KS economy (GDP)
 - Generates 6% of total HH income
 - Provides jobs directly and supports numerous others (11%) based on the transactions within the economy the ag industry generates
- Manufacturing ranks first in almost all of the categories mentioned
 - Parts of manufacturing requires quite a few direct inputs from ag industry in order to provide their outputs
- Depending on how one defines ag-related and how much manufacturing is included in that industry, total ag contributions will change

