

# OHFOOD: An Ohio Food Industries Input-Output Model (Year 2010, Version 13.0, June 2012)

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by  
Thomas L. Sporleder<sup>1</sup>

## *Abstract*

**OHFOOD**, an acronym for **Ohio food**, is a sophisticated input-output model. The model is designed specifically to capture the interdependencies and linkages among various sectors and industries composing the complex economy of Ohio. The input-output model of Ohio's economy also maintains substantial detail on the food and agricultural sectors, referred to as the agrifood supply chain. The interindustry model describes the linkages among various sectors of the economy and is designed specifically to provide estimates of the economic importance of the food and agriculture-related cluster, along with the general manufacturing and service sectors, of the Ohio economy. In addition, **OHFOOD** provides several types of economic multipliers for detailed food and agriculture-related sectors of the economy.

This abstract is a brief overview of the importance of food and agriculture to the state's economy, based on the interindustry model. The analysis indicates that for 2010 the food and agricultural cluster of Ohio's economy contributed 11.7 percent of the output, added 10.7 percent to Ohio's gross state product, and accounted for 14.0 percent of the total employment in the Ohio economy. The agrifood cluster of the Ohio economy accounts for 1 of every 7 jobs in Ohio. Of these, over 93,000 jobs are in production agriculture with over an additional 59,000 just in food processing.

In 2010, the Ohio economy generated a gross state product (GSP) of \$477.7 billion. The food and agricultural cluster's share of this GSP was \$51.0 billion, or \$10.70 of each \$100 of Ohio GSP. For 2010 the contributions to GSP for the five components of the agrifood cluster are \$2.0 billion for farm inputs, machinery, and professional services; over \$3.0 billion from agricultural production; about \$22.0 billion from processing; an additional \$13.1 from food wholesaling and retailing; and another \$10.8 billion in food services.

Of these five major components comprising the food and agricultural-related cluster, the food processing component is the largest in terms of contribution to GSP, contributing \$21.3 billion, or nearly 42% of the total contribution to the \$51.0 billion GSP by the entire agrifood supply chain. Grocery retailing and wholesaling is the second largest sector in terms of GSP, accounting for another \$13.1 billion, or nearly 26 percent to the total GSP of \$21.0 billion by the entire food and agriculture cluster. The food service sector is notable for its contribution to employment. This sector accounts for over 419,000 jobs, or about 47 of every 100 jobs within the entire agrifood cluster.

Total GSP improved by 1.3 percent in Ohio from 2008 to 2010. GSP attributable to the agrifood supply chain grew from \$39.0 billion in 2008 to \$51.0 billion in 2010, an increase of around 30 percent. Total employment declined over this period about 3 percent while the agrifood cluster gained 1 percent to over 900,000 jobs during this same period.

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<sup>1</sup> Thomas L. Sporleder is Professor of Agribusiness and Farm Income Enhancement Endowed Chair, Department of Agricultural, Environmental, and Development Economics, The Ohio State University. The author acknowledges computational and word processing support from Audrey R. Neal, undergraduate in Agribusiness and Applied Economics in the Department of Agricultural, Environmental, and Development Economics, The Ohio State University.

**Table 1. Ohio: Output, Gross State Product, and Employment, 2010.**

	<b>Total Output</b>	<b>Gross State Product (GSP)</b>	<b>Employment</b>
	<i>\$ Millions</i>	<i>\$ Millions</i>	<i>Person Years</i>
<b><i>Food &amp; Related Agricultural Cluster</i></b>			
<b>Farm Inputs, Equip &amp; Prof Services</b>	<b>7,916.3</b>	<b>2,003.2</b>	<b>32,419</b>
<b>Farming</b>	<b>8,809.5</b>	<b>3,041.7</b>	<b>93,196</b>
Dairy Cattle & Milk Production	981.6	359.4	5,813
Beef Cattle Production	426.2	70.9	2,871
Poultry & Egg Production	755.9	140.7	1,195
Hogs & Other Farm Animals <sup>a</sup>	664.3	326.2	13,930
Grain Production	2,267.2	490.7	36,305
Soybeans & Other Oil Crops	2,335.5	995.2	23,969
Misc Crops, Hay, Sugar, Tobacco & Nuts	366.3	115.0	1,579
Fruits & Vegetable Production	284.7	149.9	1,308
Greenhouse, Nursery & Floriculture Production	363.9	238.8	2,411
Forestry, Hunting & Fishing	363.8	155.0	3,816
<b>Processing</b>	<b>49,373.3</b>	<b>21,978.7</b>	<b>110,447</b>
Food Processing	35,087.0	21,317.8	59,035
Processed Meat, Fish, Poultry & Eggs	3,760.3	1,194.4	9,235
Dairy Processing	6,193.8	62.4	7,388
Processed Food & Kindred Products	15,543.6	15,270.0	33,969
Grain Milling & Flour	1,226.9	4,136.8	714
Fats & Oils Processing	1,300.1	146.6	323
Beverage Processing	7,062.3	507.7	7,404
Wood/Paper/Furniture Manufacturing	14,286.2	660.9	51,412
<b>Food &amp; Forestry Wholesale/Retail</b>	<b>18,085.6</b>	<b>13,131.6</b>	<b>245,146</b>
<b>Food Services<sup>b</sup></b>	<b>21,021.6</b>	<b>10,824.4</b>	<b>419,132</b>
<b>Total Agrifood Supply Chain (Food &amp; Ag Cluster)</b>	<b>105,206.2</b>	<b>50,979.7</b>	<b>900,339</b>
<b><i>General Manufacturing &amp; Service Sectors</i></b>			
Mining	804.8	542.0	2,980
Stone, Clay & Glass	7,353.4	3,267.9	26,458
Metal Industries	42,389.2	14,592.7	132,634
Chemicals, Polymers & Petroleum	68,116.5	18,060.9	125,068
Construction	35,774.0	4,354.2	291,561
Textiles, Apparel, Accessories, Yam & Leather	1,780.8	1,992.5	8,865
Machinery, Equipment & General Mfg	30,743.5	12,109.1	111,964
Motor Vehicles, Allied Equip & Services	61,299.7	16,928.8	211,808
Transportation & Communication	45,588.1	24,256.8	238,842
Computer & Electronic Products	17,867.1	9,174.5	114,493
Publishing & Information Technologies	11,841.9	5,354.7	57,124
Wholesale & Retail Trade (Mfg & Service Sectors)	55,733.1	40,466.7	609,020
Business, Professional & Personal Services <sup>c</sup>	67,899.9	43,671.4	778,569
Financial, Legal & Real Estate	153,107.5	104,020.9	681,140
Leisure Activities & Entertainment	11,228.1	5,683.3	165,067
Health Care & Social Assistance	80,467.4	46,217.8	834,294
Electricity, Gas & Sanitary	16,474.8	11,025.6	39,882
Education Services	8,326.5	4,168.2	137,490
Government, Military & Non-Profit	76,788.8	60,831.4	978,131
<b>Total of Mfg &amp; Service Sectors</b>	<b>793,585.2</b>	<b>426,719.3</b>	<b>5,545,393</b>
<b>2010 Total Ohio Economy</b>	<b>898,791.4</b>	<b>477,699.0</b>	<b>6,445,732</b>

Note: Each sector's output, gross state product, and employment are provided through U. S. Census of Manufacturing information. The wholesaling and retailing sector is one sector in the input-output model definition, but this sector is disaggregated for purposes of Table 1. The procedure used to estimate the percentage of all wholesale/retail payroll and employment that is food and agriculture-related is based on Ohio data (County Business Patterns 2009). The percentage of payroll (24.5%) is used to estimate the proportion of food- and agriculture-related output and GSP. The % of employment (28.5%) is used to allocate employment in a similar fashion.

<sup>a</sup> Sheep, goats, horses, and miscellaneous livestock.

<sup>b</sup> Excludes hotel/motel food service.

<sup>c</sup> Includes diverse service items such as advertising, cleaning, barber and beauty shops, and funerals.

Source: Computed