

# The Economic Impact of Animal Agriculture in Indiana Regions

## An Analysis of Existing and Prospective Producers



Research conducted by

*Indiana Business Research Center, Kelley School of Business, Indiana University*



**KELLEY SCHOOL OF BUSINESS**

INDIANA UNIVERSITY

Indiana Business Research Center

# The Economic Impact of Animal Agriculture in Indiana's Regions

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# Overview of Animal Agriculture in Indiana

## Industry Trends

Indiana is widely known as a major agricultural producer. In fact, as of the last USDA Census of Agriculture in 2012, Indiana ranked among the nation's top 10 agricultural states with \$11.2 billion in sales. With cropland dominating the landscape in many parts of the state, it's no surprise that corn and soybean production lead the way, combining to account for more than 60 percent of all sales. Also of considerable importance to the state, however, is animal agriculture. As of the 2012 census, Indiana was home to nearly 21,200 animal agriculture operations combining to generate nearly \$3.7 billion in sales.

Not only is Indiana a major player in this industry, but the state is seeing growth in every major category of animal agriculture—and in most cases, this growth is outpacing the nation as a whole. As **Table 1** shows, Indiana egg, turkey and dairy production saw dramatic increases between 2008 and 2015, while the state's hog and beef cattle outputs were also on the rise. Only the state's growth in hog production lagged the nation over this period. Also of note is that Indiana ranked among the nation's top producers of hogs, eggs and turkeys in 2015.

**Table 1: Indiana Animal Agriculture Production Volume, Select Industries, 2008 and 2015**

	2008 (millions)	2015 (millions)	Indiana % Change, 2008 to 2015	U.S. % Change, 2008 to 2015	Indiana Rank in 2015
Beef Cattle (lbs)	234	251	7.0%	-0.3%	34
Dairy (lbs)	3,287	4,030	22.6%	9.8%	14
Eggs (dozens)	544	667	22.7%	6.9%	3
Hogs (lbs)	1,726	1,844	6.9%	12.0%	5
Turkeys (lbs)	519	753	45.0%	-11.0%	3

Source: USDA annual surveys

Not surprisingly, the value of Indiana's animal agriculture production has been on the climb in recent years, too. With a nearly 100 percent increase in the value of sales between 2008 and 2015, Hoosier egg production is now a billion dollar industry, and the state's hog producers will likely reach that mark soon (see **Table 2**). Like the egg industry, the value of Indiana cattle and turkey production has essentially doubled over the past seven years, while dairy receipts are up by nearly eight percent. As with production volume, Indiana's growth in the value of sales in each of these industries has outpaced the nation over this period, with the exception of hog production.

**Table 2: Indiana Animal Agriculture Value of Sales, Select Industries, 2008 and 2015**

	2008 (millions)	2015 (millions)	Indiana % Change, 2008 to 2015	U.S. % Change, 2008 to 2015	Indiana Rank in 2015
Beef Cattle	\$183.1	\$363.5	98.5%	68.1%	34
Dairy	\$644.3	\$693.2	7.6%	2.5%	14
Eggs	\$535.6	\$1,066.2	99.1%	63.8%	3
Hogs	\$818.2	\$960.6	17.4%	33.7%	5
Turkeys	\$306.3	\$610.4	99.3%	27.7%	3

Source: USDA annual surveys

Annual survey data on broiler and duck production are not available, but the latest data from the agricultural census show that Indiana is seeing strong growth in these industries as well (see **Table 3**). Indiana remained the nation's top duck producer in 2012, but with a 27 percent jump in output, the state greatly increased its market share in this industry. In 2015, Indiana accounted for 54 percent of all duck production in the U.S., up from 36 percent of the total in 2007. Like turkey and cattle production in the previous table, Indiana's duck and broiler industries managed to grow in recent years, despite declining production of these commodities at the national level.

**Table 3: Indiana Production Volume of Broilers and Ducks, 2007 and 2012**

	2007 (millions)	2012 (millions)	Indiana % Change, 2007 to 2012	U.S. % Change, 2007 to 2012	Indiana Rank in 2012
Broilers (birds)	37.1	41.6	12.2%	-5.1%	23
Ducks (birds)	9.9	12.6	27.3%	-15.2%	1

Source: USDA Census of Agriculture

## Economic Impacts of Animal Agriculture

Indiana's position as a leader in animal agriculture means big business for the state. Not only do these industries generate billions of dollars in sales each year in their own right, but their activities trigger economic ripple effects that cascade throughout the Indiana economy. A Hoosier hog producer, for instance, purchases a range of goods and services, such as feed or veterinary care, from other businesses in the state. In addition to these supply chain purchases, farmers and their employees—as well as workers at supplier firms—spend their earnings on groceries, housing, health care, recreation, etc. All of these activities combine to describe the full economic impact of animal agriculture.

The economic impact of any given industry is often summarized by its multiplier effect. **Table 4** lists the economic multipliers of each major animal agriculture industry in Indiana, according to the IMPLAN economic modeling software. Taking hog production as an example, the employment multiplier of 1.41 means that every proprietor or employee working directly in this industry supports another 0.41 jobs at other businesses in Indiana (or, every 100 jobs in hog production support another 41 jobs in the state). Similarly, the sales multiplier of 1.67 means that every dollar of sales for an Indiana hog producer generates an additional \$0.67 in sales for other Hoosier businesses.

**Table 4: Economic Multipliers for Animal Agriculture Industries in Indiana**

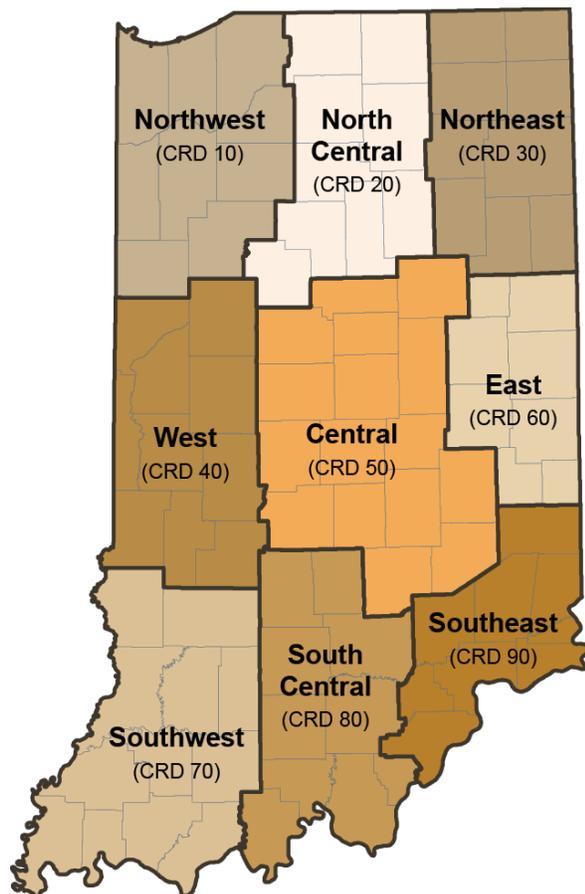
	Employment Multiplier	Sales Multiplier
Beef Cattle	2.04	1.64
Dairy	2.27	1.75
Hogs	1.41	1.67
Poultry and eggs	7.39	1.88

Source: IMPLAN Economic Modeling System

Note: Poultry production and egg production are treated as a single industry in the IMPLAN system

Each industry has its own unique multipliers based on differences in supply chain requirements and the balance between labor and material inputs needed to bring their products or services to market. Poultry and egg production, for instance, has a very large employment multiplier because this industry tends to be highly production input-intensive, meaning that this industry engages a very long supply chain while producing its products with relatively few direct employees. The employment multiplier for this industry suggests that every 100 workers involved with poultry and egg production supports an estimated 639 jobs in other industries in Indiana.

**Figure 1: Indiana’s USDA Crop Reporting Districts**



Note: See the appendix for a list of counties in each region

Not only do economic multipliers differ by industry, but they can also vary widely by geographic area. **Table 5**, for instance, shows the value of sales and employment impacts in 2012 for the hog production industry in each Indiana region (see **Figure 1** for reference). The year 2012 is used because it is the year of the latest Census of Agriculture. Hog production had the largest employment impact in Northeast Indiana, with the estimated 2,620 direct workers in this industry supporting another 720 jobs at other industries in the region. North Central and Central Indiana also had total employment impacts estimated at more than 3,000 jobs in 2012. The employment multiplier ranged from 1.13 in Southeast Indiana to 1.50 in the Northwest and Central regions.

**Table 5: Employment Impacts of Hog and Pig Production by Indiana Region**

Region	Direct Sales (\$ million)	Direct Employment	Employment Ripple Effects	Total Employment Impact	Employment Multiplier
Northwest	\$157.6	1,040	520	1,560	1.50
North Central	\$254.6	2,370	920	3,290	1.39
Northeast	\$157.3	2,620	720	3,340	1.27
West	\$66.6	660	190	850	1.29
Central	\$259.7	2,030	1,020	3,050	1.50
East	\$177.0	1,900	530	2,430	1.28
Southwest	\$127.6	1,340	460	1,800	1.34
South Central	\$45.9	1,190	180	1,370	1.15
Southeast	\$26.9	720	90	810	1.13

Source: IBRC, using data from USDA's 2012 Census of Agriculture and the IMPLAN economic modeling system

Multipliers vary across geographies for several reasons, such as differences in the industry base in each region and the productivity of the individual establishments in an area. With regard to industry base, a given industry's supply chain may be well represented in some geographic areas, resulting in a higher multiplier, while their industry mates in another region may have to go outside their area to purchase production inputs, leading to a lower multiplier in that region. The size of an area influences multipliers as well, with more populous regions usually generating larger ripple effects than less populous ones. As for productivity, some establishments are able to generate their output more efficiently than others. Therefore, a higher average value of sales per worker in a region often translates into a higher multiplier for the industry in that area.

As **Table 6** shows, poultry and egg production features very large employment multipliers, ranging from 2.75 in Southeast Indiana to 10.67 in the Northwest region. The primary reason for these larger multipliers is that this industry tends to be less labor intensive than other types of animal agriculture. Comparing hog and poultry production in North Central Indiana, for instance, shows that the hog producers in this region had an average of roughly \$107,400 in sales for every direct job in the industry, while the area's poultry industry had a sales-per-worker ratio of more than \$1.2 million. The economic impacts of the state's poultry and egg producers are most significant in Indiana's Southwest and North Central regions, where this industry has a total employment footprint of 1,530 jobs and 1,140 jobs, respectively.

**Table 6: Employment Impacts of Poultry and Egg Production by Indiana Region**

Region	Sales (\$ million)	Direct Employment	Employment Ripple Effects	Total Employment Impact	Employment Multiplier
Northwest	\$86.1	30	290	320	10.67
North Central	\$219.2	180	960	1,140	6.33
Northeast	\$157.9	160	690	850	5.31
West	\$0.6	—	—	—	—
Central	\$31.6	20	150	170	8.50
East	\$118.4	60	340	400	6.67
Southwest	\$334.2	210	1320	1,530	7.29
South Central	\$188.7	210	480	690	3.29
Southeast	\$27.6	40	70	110	2.75

Source: IBRC, using data from USDA's 2012 Census of Agriculture and the IMPLAN economic modeling system

Note: Poultry production and egg production are treated as a single industry in the IMPLAN system

**Table 7** provides details on the state's dairy producers. The three northern Indiana regions lead the way in this industry, combining to account for more than three-quarters of the state's sales and total employment effect. Northeast Indiana has the largest estimated total jobs impact while the Northwest region has the largest employment multiplier.

**Table 7: Employment Impacts of Dairy Production by Indiana Region**

Region	Sales (\$ million)	Direct Employment	Employment Ripple Effects	Total Employment Impact	Employment Multiplier
Northwest	\$236.2	310	590	900	2.90
North Central	\$142.5	430	440	870	2.02
Northeast	\$138.3	520	450	970	1.87
West	\$13.6	30	30	60	2.00
Central	\$31.8	70	110	180	2.57
East	\$42.5	110	100	210	1.91
Southwest	\$28.0	60	90	150	2.50
South Central	\$15.2	90	30	120	1.33
Southeast	\$11.2	80	30	110	1.38

Source: IBRC, using data from USDA's 2012 Census of Agriculture and the IMPLAN economic modeling system

The northern third of the state also dominates beef cattle production in Indiana (see **Table 8**). Northeast Indiana alone claimed more than 30 percent of sales in this industry and accounted for better than 40 percent of the state’s job impact. South Central Indiana has a very large direct employment effect in this industry relative to its sales tally, suggesting that this region is home to a sizeable collection of smaller operations.

**Table 8: Employment Impacts of Beef Cattle Production by Indiana Region**

Region	Sales (\$ million)	Direct Employment	Employment Ripple Effects	Total Employment Impact	Employment Multiplier
Northwest	\$65.0	90	170	260	2.89
North Central	\$97.1	240	230	470	1.96
Northeast	\$168.1	640	760	1,400	2.19
West	\$22.5	50	60	110	2.20
Central	\$41.4	80	130	210	2.63
East	\$27.8	70	70	140	2.00
Southwest	\$40.2	90	130	220	2.44
South Central	\$42.0	250	190	440	1.76
Southeast	\$18.7	110	60	170	1.55

Source: IBRC, using data from USDA’s 2012 Census of Agriculture and the IMPLAN economic modeling system

# Economic Impacts of New Animal Agriculture Operations

The tables in the previous section describe the economic effects of Indiana’s animal agriculture establishments that are already in place, but they do not necessarily tell us how new operations will impact the state’s regional economies. In this section, we will consider hypothetical scenarios for the opening of new facilities for several different types of animal agriculture. These scenarios will examine new operations to produce beef cattle, hogs, turkeys, eggs, dairy, broiler chickens and ducks. **Table 9** has the details for each hypothetical livestock operation. We will examine the economic effects that these scenarios would have in each Indiana region in terms of employment, income and total sales.

**Table 9: Annual Scenario Details for New Animal Agriculture Operations**

	Animal Capacity	Production Volume (thousands)	Value of Sales (thousands)
Beef Cattle	500	1,012.5 (lbs)	\$1,407.4
Broilers	72,000	2,667.6 (lbs)	\$1,653.9
Dairy	1,000	21,813.0 (lbs)	\$4,798.9
Ducks	15,000	672.8 (lbs)	\$417.1
Eggs	2,000,000	46,667.0 (dozens)	\$54,600.4
Hogs	4,400	2,710.4 (lbs)	\$1,951.5
Turkeys	29,000	2,700.5 (lbs)	\$1,890.3

For this portion of the analysis, the research team made one important adjustment to its economic models. Rather than use the region-specific sales-per-worker estimates the IMPLAN models calculated for these industries, the researchers applied the Indiana average sales-per-worker estimates to each region. The region-specific estimates calculated by the model are a reflection of the establishments that are already in place in each region, and the estimates can vary widely.

For the purposes of this analysis, however, we want to assume that the hypothetical new operation in a given industry will have the same level of productivity regardless of where it is located in the state. Therefore, the sales-per-worker estimate for a new hog operation in North Central Indiana, for instance, is the same as for a new hog facility in the Southeast region of the state. Applying uniform, industry-specific sales-per-worker estimates in each region means that the employment multipliers in some areas will be somewhat different from those listed in the previous section of this report.

# Impact of New Beef Cattle Operations

**Scenario Details:** This scenario considers the impacts of a new beef cattle operation with a capacity of **500** cattle at an average weight of **1,350** pounds and **1.5** production turns per year. This operation would produce an estimated **1.0 million pounds** of beef per year worth **\$1.4 million in sales** in 2015 dollars.

## Regional Economic Impacts

A new cattle farm with \$1.4 million in direct sales can be expected to generate total sales impacts between \$2.01 million to \$2.58 million in Indiana’s regions. This new economic activity will support between 8 and 13 total new jobs in these areas and an additional \$231,000 to \$350,000 in additional household income.

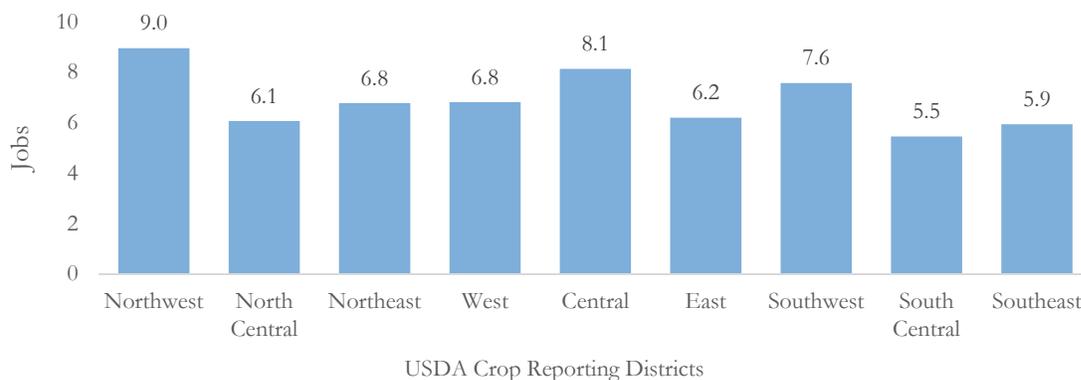
**Table 10: Impacts of New Beef Cattle Operation**

Region	Regional Sales (millions)	New Income	Total Jobs
Northwest	\$2.35	\$350,300	13
North Central	\$2.01	\$254,000	9
Northeast	\$2.58	\$347,400	10
West	\$2.16	\$283,300	10
Central	\$2.26	\$332,400	11
East	\$2.26	\$255,700	9
Southwest	\$2.54	\$299,400	11
South Central	\$2.33	\$244,400	8
Southeast	\$2.15	\$231,200	8

Total impacts by region—which include both the direct effects and the ripple effects of this new facility—are presented in **Table 10**. The total sales impacts would be greatest in the Northeast and Southwest regions of the state, where these new cattle farms would generate more than \$2.5 million in additional economic activity. This hypothetical project would have the largest employment impact in Northwest Indiana with a total of 13 new jobs created, followed by the Central and Southwest regions of the state with a total of 11 new jobs apiece.

A different way to understand the employment impacts of this new facility is to look at the estimated total number of jobs created (i.e., direct and ripple effect jobs) for every \$1 million in direct sales from the facility. **Figure 2** shows that each region in Indiana can expect at least 5.5 total jobs for every \$1 million dollars in direct sales from the cattle operation, with Northwest Indiana leading the way in this measure with a ratio of 9.0, followed by the Central (8.1) and Southwest (7.6) regions.

**Figure 2: Total Employment Impact per \$1 Million in Direct Beef Cattle Sales by Region**



Source: IBRC, using the IMPLAN economic modeling system

## Impact of New Broiler Operations

**Scenario Details:** This scenario considers the impacts of a new broiler operation with a capacity of **72,000** animals at an average weight of **5.7** pounds and **6.5** production turns per year. This operation would produce an estimated **2.7 million pounds** per year worth **\$1.7 million in sales** in 2015 dollars.

### Regional Economic Impacts

A new broiler farm with \$1.7 million in direct sales can be expected to generate total sales impacts between \$2.25 million to \$3.36 million in Indiana’s regions. This new economic activity will support between 7 and 17 total new jobs in these areas and an additional \$430,000 to \$701,000 in additional household income.

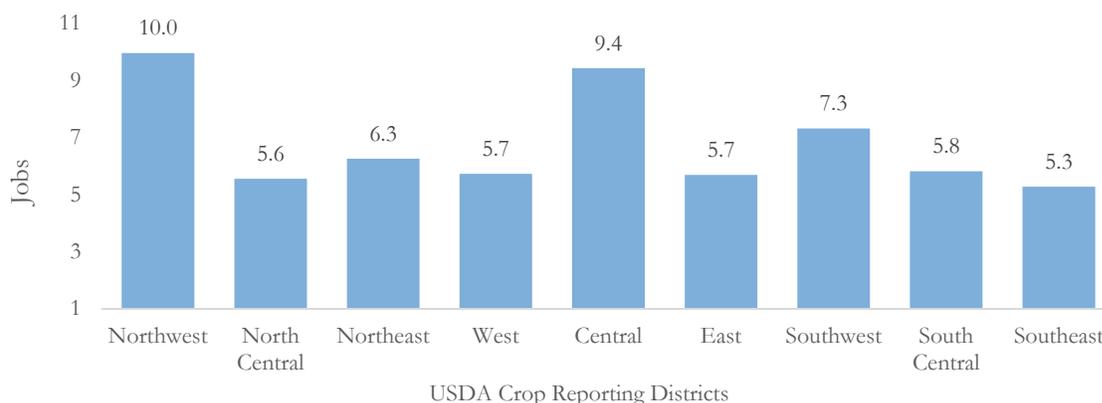
**Table 11: Impacts of New Broiler Operation**

Region	Regional Sales (millions)	New Income	Total Jobs
Northwest	\$2.92	\$701,000	17
North Central	\$3.24	\$647,200	10
Northeast	\$2.94	\$613,600	11
West	\$2.48	\$430,200	8
Central	\$3.36	\$690,100	17
East	\$2.64	\$432,100	10
Southwest	\$3.19	\$553,200	13
South Central	\$2.25	\$514,200	9
Southeast	\$2.49	\$544,700	7

Total impacts by region—which include both the direct effects and the ripple effects of this new facility—are presented in **Table 11**. The total sales impacts would be greatest in the Central, North Central and Southwest regions of the state, where this new broiler farm would generate more than \$3.1 million in additional economic activity. This hypothetical project would have the largest employment impact in Northwest and Central Indiana with a total of 17 new jobs apiece, followed by the Southwest regions of the state with a total of 13 new jobs.

A different way to understand the employment impacts of this new facility is to look at the estimated total number of jobs created (i.e., direct and ripple effect jobs) for every \$1.0 million in direct sales from the facility. **Figure 3** shows that each region in Indiana can expect at least 5.3 total jobs for every \$1 million dollars in direct sales from the broiler operation, with Northwest Indiana leading the way in this measure with a ratio of 10.0, followed by the Central (9.4) and Southwest (7.3) regions.

**Figure 3: Total Employment Impact per \$1 Million in Direct Broiler Sales by Region**



Source: IBRC, using the IMPLAN economic modeling system

## Impact of New Dairy Operations

**Scenario Details:** This scenario considers the impacts of a new dairy operation with a capacity of **1,000** animals producing an average of **21,813** pounds of milk per year. This operation would produce an estimated **21.8 million pounds** per year worth **\$4.8 million in sales** in 2015 dollars.

### Regional Economic Impacts

A new dairy farm with \$4.8 million in direct sales can be expected to generate total sales impacts between \$6.21 million to \$8.21 million in Indiana’s regions. This new economic activity will support between 22 and 36 total new jobs in these areas and an additional \$843,000 to \$1.4 million in additional household income.

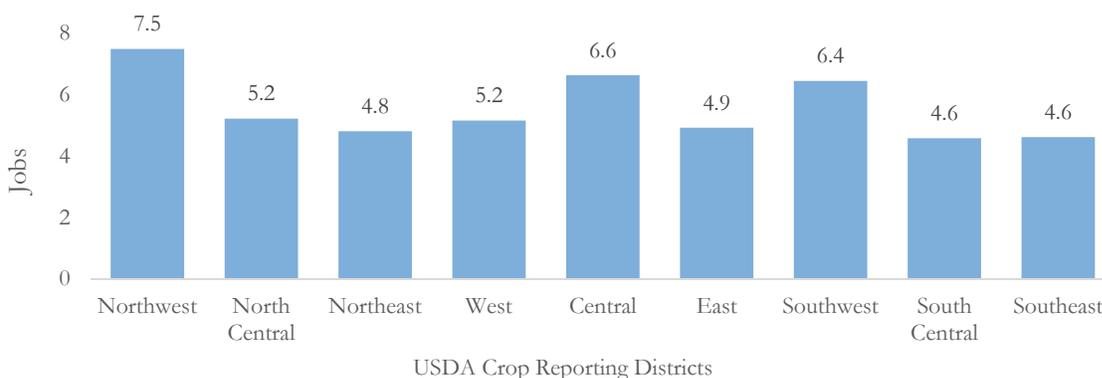
**Table 12: Impacts of New Dairy Operation**

Region	Regional Sales (millions)	New Income	Total Jobs
Northwest	\$7.62	\$1,214,700	36
North Central	\$7.88	\$1,169,200	25
Northeast	\$7.56	\$1,215,300	23
West	\$6.99	\$1,076,500	25
Central	\$8.21	\$1,396,700	32
East	\$7.12	\$1,010,800	24
Southwest	\$8.10	\$1,166,100	31
South Central	\$6.21	\$897,100	22
Southeast	\$6.22	\$842,900	22

Total impacts by region—which include both the direct effects and the ripple effects of this new facility—are presented in **Table 12**. The total sales impacts would be greatest in the Central and Southwest regions of the state, where this new dairy farm would generate more than \$8.0 million in additional economic activity. This hypothetical project would have the largest employment impact in Northwest Indiana with a total of 36 new jobs created, followed by the Central and Southwest regions of the state with a total of 32 and 31 new jobs, respectively.

A different way to understand the employment impacts of this new facility is to look at the estimated total number of jobs created (i.e., direct and ripple effect jobs) for every \$1.0 million in direct sales from the facility. **Figure 4** shows that each region in Indiana can expect at least 4.6 total jobs for every \$1 million dollars in direct sales from the dairy operation, with Northwest Indiana leading the way in this measure with a ratio of 7.5, followed by the Central (6.6) and Southwest (6.4) regions.

**Figure 4: Total Employment Impact per \$1 Million in Direct Dairy Sales by Region**



Source: IBRC, using the IMPLAN economic modeling system

## Impact of New Duck Operations

**Scenario Details:** This scenario considers the impacts of a new duck operation with a capacity of **15,000** ducks at an average weight of **6.9** pounds and **6.5** production turns per year. This operation would produce an estimated **672,750 pounds** per year worth **\$417,100 in sales** in 2015 dollars.

### Regional Economic Impacts

A new duck farm with \$417,100 in direct sales can be expected to generate total sales impacts between \$544,300 and \$813,100 in Indiana’s regions. This new economic activity will support between 2 and 4 total new jobs in these areas and an additional \$104,200 to \$169,700 in additional household income.

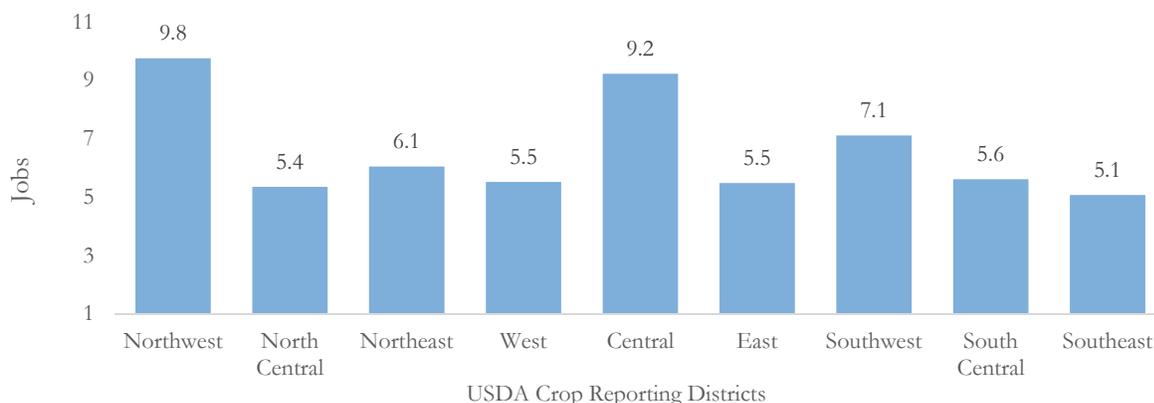
**Table 13: Impacts of New Duck Operation**

Region	Regional Sales	New Income	Total Jobs
Northwest	\$707,700	\$169,700	4
North Central	\$784,800	\$156,700	2
Northeast	\$711,500	\$148,500	3
West	\$600,600	\$104,200	2
Central	\$813,100	\$167,100	4
East	\$638,200	\$104,600	2
Southwest	\$771,900	\$133,900	3
South Central	\$544,300	\$124,500	2
Southeast	\$602,500	\$131,900	2

Total impacts by region—which include both the direct effects and the ripple effects of this new facility—are presented in **Table 13**. The total sales impacts would be greatest in the North Central, Central, and Southwest regions of the state, where this new duck farm would generate at least \$771,900 in additional economic activity. This hypothetical project would have the largest employment impact in Northwest and Central Indiana with a total of 4 new jobs apiece.

A different way to understand the employment impacts of this new facility is to look at the estimated total number of jobs created (i.e., direct and ripple effect jobs) for every \$1.0 million in direct sales from the facility. **Figure 5** shows that each region in Indiana can expect at least 5.1 total jobs for every \$1 million dollars in direct sales from the duck operation, with Northwest Indiana leading the way in this measure with a ratio of 9.8, followed by the Central (9.2) and Southwest (7.1) regions.

**Figure 5: Total Employment Impact per \$1 Million in Direct Duck Sales by Region**



Source: IBRC, using the IMPLAN economic modeling system

## Impact of New Egg Operations

**Scenario Details:** This scenario considers the impacts of a new egg operation with a capacity of **2,000,000** birds producing an average of **280** eggs per year. This operation would produce an estimated **46.7 million dozens** of eggs per year worth **\$54.6 million in sales** in 2015 dollars.

### Regional Economic Impacts

A new egg farm with \$54.6 million in sales can be expected to generate total sales impacts between \$74.22 million to \$110.87 million in Indiana’s regions. This new economic activity will support between 198 and 466 total new jobs in these areas and an additional \$14.20 million to \$23.14 million in additional income.

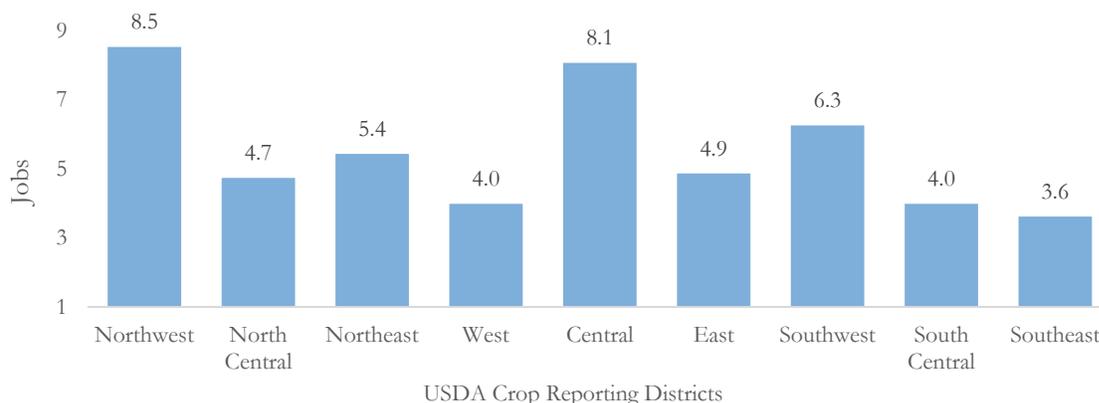
**Table 14: Impacts of New Egg Operation**

Region	Regional Sales (millions)	New Income	Total Jobs
Northwest	\$96.50	\$23,143,600	466
North Central	\$107.01	\$21,364,600	259
Northeast	\$97.01	\$20,255,900	297
West	\$81.90	\$14,203,800	218
Central	\$110.87	\$22,781,200	441
East	\$87.02	\$14,263,800	266
Southwest	\$105.26	\$18,262,500	342
South Central	\$74.22	\$16,976,300	218
Southeast	\$82.15	\$17,893,400	198

Total impacts by region—which include both the direct effects and the ripple effects of this new facility—are presented in **Table 14**. The total sales impacts would be greatest in the Central, North Central, and Southwest regions of the state, where this new egg farm would generate more than \$100 million in additional economic activity. This hypothetical project would have the largest employment impact in Northwest Indiana with a total of 466 new jobs created, followed by the Central and Southwest regions of the state with a total of 441 and 342 new jobs, respectively.

A different way to understand the employment impacts of this new facility is to look at the estimated total number of jobs created (i.e., direct and ripple effect jobs) for every \$1.0 million in direct sales from the facility. **Figure 6** shows that each region in Indiana can expect at least 3.6 total jobs for every \$1 million dollars in direct sales from the egg operation, with Northwest Indiana leading the way in this measure with a ratio of 8.5, followed by the Central (8.1) and Southwest (6.3) regions.

**Figure 6: Total Employment Impact per \$1 Million in Direct Egg Sales by Region**



Source: IBRC, using the IMPLAN economic modeling system

## Impact of New Hog Operations

**Scenario Details:** This scenario considers the impacts of a new hog operation with a capacity of **4,400** hogs at an average weight of **280** pounds and **2.2** production turns per year. This operation would produce an estimated **2.7 million pounds** of pork per year worth **\$2.0 million in sales** in 2015 dollars.

### Regional Economic Impacts

A new hog farm with \$2.0 million in direct sales can be expected to generate total sales impacts between \$2.72 million to \$3.15 million in Indiana’s regions. This new economic activity will support between 24 and 28 total new jobs in these areas and an additional \$508,000 to \$795,000 in additional household income.

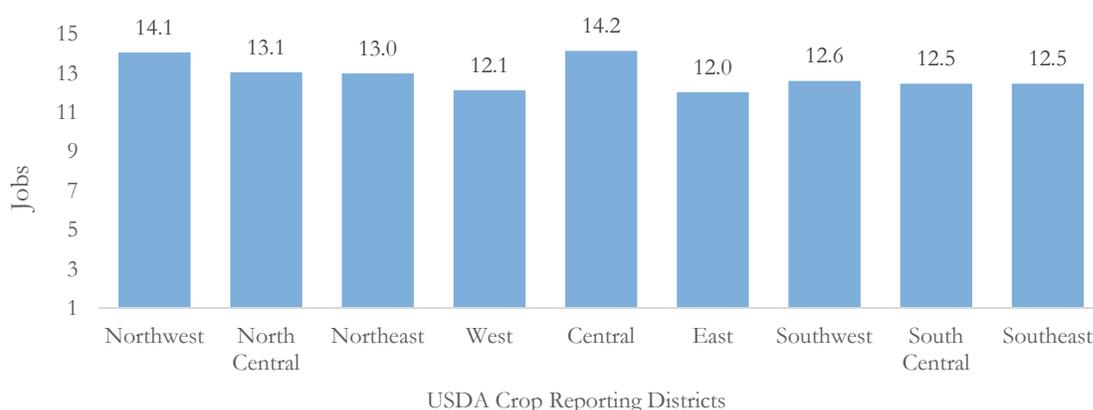
**Table 15: Impacts of New Hog Operation**

Region	Regional Sales (millions)	New Income	Total Jobs
Northwest	\$3.00	\$794,600	27
North Central	\$2.99	\$622,100	25
Northeast	\$3.01	\$667,900	25
West	\$2.74	\$639,000	24
Central	\$3.15	\$701,800	28
East	\$2.76	\$508,100	24
Southwest	\$3.06	\$570,600	25
South Central	\$2.73	\$520,000	24
Southeast	\$2.72	\$515,400	24

Total impacts by region—which include both the direct effects and the ripple effects of this new facility—are presented in **Table 15**. The total sales impacts would be greatest in the Central and Southwest regions of the state, where these new hog farms would generate at least \$3.06 million in additional economic activity. This hypothetical project would have the largest employment impact in Central Indiana with a total of 28 new jobs created, followed by the Northwest region of the state with a total of 27 new jobs.

A different way to understand the employment impacts of this new facility is to look at the estimated total number of jobs created (i.e., direct and ripple effect jobs) for every \$1.0 million in direct sales from the facility. **Figure 7** shows that each region in Indiana can expect at least 12.0 total jobs for every \$1 million dollars in direct sales from the hog operation, with Central Indiana leading the way in this measure with a ratio of 14.2, followed by the Northwest (14.1) and North Central (13.1) regions.

**Figure 7: Total Employment Impact per \$1 Million in Direct Hog Sales by Region**



Source: IBRC, using the IMPLAN economic modeling system

## Impact of New Turkey Operations

**Scenario Details:** This scenario considers the impacts of a new turkey operation with a capacity of **29,000** turkeys at an average weight of **38.8** pounds and **2.4** production turns per year. This operation would produce an estimated **2.7 million pounds** turkey per year worth **\$1.9 million in sales** in 2015 dollars.

### Regional Economic Impacts

A new turkey farm with \$1.9 million in direct sales can be expected to generate total sales impacts between \$2.56 million to \$3.84 million in Indiana’s regions. This new economic activity will support between 10 and 19 total new jobs in these areas and an additional \$492,000 to \$801,000 in additional household income.

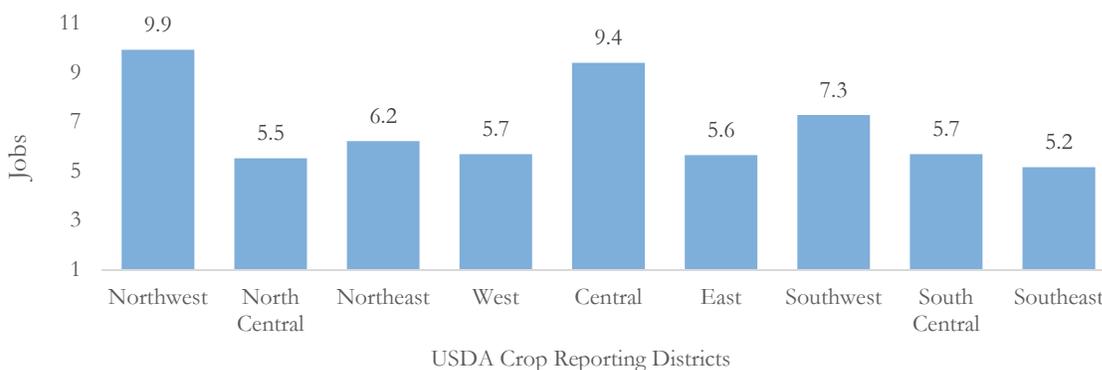
**Table 16: Impacts of New Turkey Operation**

Region	Regional Sales (millions)	New Income	Total Jobs
Northwest	\$3.34	\$801,300	19
North Central	\$3.70	\$739,700	10
Northeast	\$3.36	\$701,300	12
West	\$2.84	\$491,800	11
Central	\$3.84	\$788,700	18
East	\$3.01	\$493,800	11
Southwest	\$3.64	\$632,300	14
South Central	\$2.56	\$584,000	11
Southeast	\$2.83	\$618,000	10

Total impacts by region—which include both the direct effects and the ripple effects of this new facility—are presented in **Table 16**. The total sales impacts would be greatest in the Central and North Central regions of the state, where these new turkey farms would generate at least \$3.7 million in additional economic activity. This hypothetical project would have the largest employment impact in Northwest Indiana with a total of 19 new jobs created, followed by the Central and Southwest regions of the state with a total of 18 jobs and 14 jobs, respectively.

A different way to understand the employment impacts of this new facility is to look at the estimated total number of jobs created (i.e., direct and ripple effect jobs) for every \$1.0 million in direct sales from the facility. **Figure 8** shows that each region in Indiana can expect at least 5.2 total jobs for every \$1 million dollars in direct sales from the turkey operation, with Northwest Indiana leading the way in this measure with a ratio of 9.9, followed by the Central (9.4) and Southwest (7.3) regions.

**Figure 8: Total Employment Impact per \$1 Million in Direct Turkey Sales by Region**



Source: IBRC, using the IMPLAN economic modeling system

# Conclusion

This report highlights the fact that Indiana is a national leader in animal agriculture. The Hoosier economy receives a significant boost from the state's position among the nation's top producers of ducks, eggs, hogs and turkeys. While Indiana may not rank quite as high in beef cattle, dairy or broiler production, this report demonstrates that these industries still play an important economic role in the state.

The goal of this analysis is less about taking stock of Indiana animal agriculture as it stands today, however, but is instead focused more on how growing these industries will impact the state's regional economies moving forward. We already saw that Indiana has had production growth in each of these major categories of animal agriculture in recent years. In fact, with the exception of the hog industry, the state's production growth rates are outpacing the U.S. as a whole, meaning that Indiana is gaining market share in these important industries. This report shows that any efforts to further expand animal agriculture will not only strengthen these industries directly, but will also generate important economic ripple effects in Indiana's regions. Therefore, the degree to which animal agriculture continues to grow in the future will be an important economic indicator for Indiana and its regions.

# Appendix

## Total Economic Impacts of New Operations by Region

The following tables list the total economic impacts of the hypothetical new animal agriculture operations organized by region. The impact values are the same as those presented earlier in the report.

**Table 17: Northwest Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.35	\$350,300	13
Broilers (72,000 birds)	\$2.92	\$701,000	17
Dairy (1,000 head)	\$7.62	\$1,214,700	36
Ducks (15,000 birds)	\$0.71	\$169,700	4
Eggs (2 million birds)	\$96.50	\$23,143,600	466
Hogs (4,400 head)	\$3.00	\$794,600	27
Turkeys (29,000 birds)	\$3.34	\$801,300	19

Source: IBRC, using the IMPLAN economic modeling system

**Table 18: North Central Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.01	\$254,000	9
Broilers (72,000 birds)	\$3.24	\$647,200	10
Dairy (1,000 head)	\$7.88	\$1,169,200	25
Ducks (15,000 birds)	\$0.78	\$156,700	2
Eggs (2 million birds)	\$107.01	\$21,364,600	259
Hogs (4,400 head)	\$2.99	\$622,100	25
Turkeys (29,000 birds)	\$3.70	\$739,700	10

Source: IBRC, using the IMPLAN economic modeling system

**Table 19: Northeast Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.58	\$347,400	10
Broilers (72,000 birds)	\$2.94	\$613,600	11
Dairy (1,000 head)	\$7.56	\$1,215,300	23
Ducks (15,000 birds)	\$0.71	\$148,500	3
Eggs (2 million birds)	\$97.01	\$20,255,900	297
Hogs (4,400 head)	\$3.01	\$667,800	25
Turkeys (29,000 birds)	\$3.36	\$701,300	12

Source: IBRC, using the IMPLAN economic modeling system

**Table 20: West Central Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.16	\$283,300	10
Broilers (72,000 birds)	\$2.48	\$430,200	8
Dairy (1,000 head)	\$6.99	\$1,076,500	25
Ducks (15,000 birds)	\$0.60	\$104,200	2
Eggs (2 million birds)	\$81.90	\$14,203,800	218
Hogs (4,400 head)	\$2.74	\$639,000	24
Turkeys (29,000 birds)	\$2.84	\$491,800	11

Source: IBRC, using the IMPLAN economic modeling system

**Table 21: Central Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.26	\$332,400	11
Broilers (72,000 birds)	\$3.36	\$690,100	17
Dairy (1,000 head)	\$8.21	\$1,396,700	32
Ducks (15,000 birds)	\$0.81	\$167,100	4
Eggs (2 million birds)	\$110.87	\$22,781,200	441
Hogs (4,400 head)	\$3.15	\$701,800	28
Turkeys (29,000 birds)	\$3.84	\$788,700	18

Source: IBRC, using the IMPLAN economic modeling system

**Table 22: East Central Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.26	\$255,700	9
Broilers (72,000 birds)	\$2.64	\$432,100	10
Dairy (1,000 head)	\$7.12	\$1,010,800	24
Ducks (15,000 birds)	\$0.64	\$104,600	2
Eggs (2 million birds)	\$87.02	\$14,263,800	266
Hogs (4,400 head)	\$2.76	\$508,100	24
Turkeys (29,000 birds)	\$3.01	\$493,800	11

Source: IBRC, using the IMPLAN economic modeling system

**Table 23: Southwest Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.54	\$299,400	11
Broilers (72,000 birds)	\$3.19	\$553,200	13
Dairy (1,000 head)	\$8.10	\$1,166,100	31
Ducks (15,000 birds)	\$0.77	\$133,900	3
Eggs (2 million birds)	\$105.26	\$18,262,500	342
Hogs (4,400 head)	\$3.06	\$570,600	25
Turkeys (29,000 birds)	\$3.64	\$632,300	14

Source: IBRC, using the IMPLAN economic modeling system

**Table 24: South Central Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.33	\$244,400	8
Broilers (72,000 birds)	\$2.25	\$514,200	9
Dairy (1,000 head)	\$6.21	\$897,100	22
Ducks (15,000 birds)	\$0.54	\$124,500	2
Eggs (2 million birds)	\$74.22	\$16,976,300	218
Hogs (4,400 head)	\$2.73	\$520,000	24
Turkeys (29,000 birds)	\$2.56	\$584,000	11

Source: IBRC, using the IMPLAN economic modeling system

**Table 25: Southeast Indiana, Summary of Total Economic Impacts of New Operations**

<b>Farm Type (capacity)</b>	<b>Regional Sales (millions)</b>	<b>New Income</b>	<b>Total Jobs</b>
Beef cattle (500 head)	\$2.15	\$231,200	8
Broilers (72,000 birds)	\$2.49	\$544,700	7
Dairy (1,000 head)	\$6.22	\$842,900	22
Ducks (15,000 birds)	\$0.60	\$131,900	2
Eggs (2 million birds)	\$82.15	\$17,983,400	198
Hogs (4,400 head)	\$2.72	\$515,400	24
Turkeys (29,000 birds)	\$2.83	\$618,000	10

Source: IBRC, using the IMPLAN economic modeling system

## County Definitions for Indiana Regions

<b>Northwest Indiana</b>	<b>North Central Indiana</b>	<b>Northeast Indiana</b>
Benton County	Carroll County	Adams County
Jasper County	Cass County	Allen County
Lake County	Elkhart County	DeKalb County
LaPorte County	Fulton County	Huntington County
Newton County	Kosciusko County	LaGrange County
Porter County	Marshall County	Noble County
Pulaski County	Miami County	Stueben County
Starke County	St. Joseph County	Wells County
White County	Wabash County	Whitley County
<b>West Central Indiana</b>	<b>Central Indiana</b>	<b>East Central Indiana</b>
Clay County	Bartholomew County	Blackford County
Fountain County	Boone County	Delaware County
Montgomery County	Clinton County	Fayette County
Owen County	Decatur County	Henry County
Parke County	Grant County	Jay County
Putnam County	Hamilton County	Randolph County
Tippecanoe County	Hancock County	Union County
Vermillion County	Hendricks County	Wayne County
Vigo County	Howard County	
Warren County	Johnson County	
	Madison County	
	Marion County	
	Morgan County	
	Rush County	
	Shelby County	
	Tipton County	
<b>Southwest Indiana</b>	<b>South Central Indiana</b>	<b>Southeast Indiana</b>
Daviess County	Brown County	Clark County
Dubois County	Crawford County	Dearborn County
Gibson County	Floyd County	Franklin County
Greene County	Harrison County	Jefferson County
Knox County	Jackson County	Jennings County
Martin County	Lawrence County	Ohio County
Pike County	Monroe County	Ripley County
Posey County	Orange County	Scott County
Spencer County	Perry County	Switzerland County
Sullivan County	Washington County	
Vanderburgh County		
Warrick County		