Beyond the Farm

A State and Regional Report on the Economic Contribution of Farms, Forests and Related Industries

Research conducted by
Indiana Business Research Center, Kelley School of Business, Indiana University

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Beyond the Farm: A State and Regional Report on the Economic Contribution of Farms, Forests and Related Industries

Prepared for
Indiana Soybean Alliance

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Executive Summary

It is easy to see that agriculture and forestry play a major role in Indiana's economy. A look at the geographic reach of these activities offers some indication of their importance. The state's farms combined to cover nearly two-thirds of Indiana's total land area in 2012, while our forests cover another 20 percent of the state.

The economic contributions of agriculture also extend beyond the farm and forest. Indiana is home to many agriculture-related processing and manufacturing establishments, such as grain milling operations or sawmills. These establishments are found all over the state—from our largest cities to our more rural areas, and they employ nearly 29,000 Hoosiers.

The economic activity generated by these various activities packs a powerful punch, but the full economic contributions of Indiana agriculture are not well known. This report aims to provide comprehensive estimates of the total economic footprint of Indiana agriculture. The analysis includes estimates of the total value of sales, gross domestic product (GDP) and employment directly linked to agriculture-related industries, as well as the economic ripple effects that these activities generate in other industries around the state. The estimates are presented at the state level, as well as for Indiana's congressional districts and its U.S. Department of Agriculture (USDA) crop reporting districts.

Key Findings

- The total direct value of sales for all Indiana agriculture-related industries was an estimated $31.2 billion in 2012. The economic ripple effects of these sales—which refer to supply chain purchases and the household spending of workers—generated another $12.9 billion in sales. Add these effects together, and agriculture's total impact on sales was an estimated $44.1 billion in 2012.
- A better way to measure the effect of agriculture on Indiana's economy is to look its contribution to GDP (or value added). The combined effects of agriculture (i.e., direct effects + ripple effects) generated an estimated $14.9 billion in value added—which accounts for nearly 5 percent of the state's total GDP.
- The value added multiplier effect was 1.88, meaning that every dollar of GDP created directly by agriculture industries generates another $0.88 in economic activity in other industries in the state.
- The total GDP contributions of agriculture are split almost evenly between agricultural production industries ($7.44 billion) and agriculture-related manufacturing ($7.46 billion).
- The state's agriculture industries combine to employ more than 107,500 direct workers. Add in the ripple effects, and the total climbs to 188,600 jobs in Indiana. The ratio of direct jobs to total jobs yields a multiplier of 1.8, meaning that every 10 jobs directly related to agriculture support an additional eight jobs in the state.
- Looking at specific industries, grain and oilseed (i.e., soybeans) farming dominate the economic contributions of agriculture. These two industries account for 40 percent of agriculture's total employment effect and 31 percent of agricultural GDP.
- Indiana ranks 10th among states in crop and livestock production with total sales at $11.2 billion in 2012. The state ranked in the top five in the production of corn, soybeans, and hogs and pigs.

Every dollar of GDP created directly by agriculture industries generates another $0.88 in economic activity in other industries in the state.

Indiana Agriculture by the Numbers

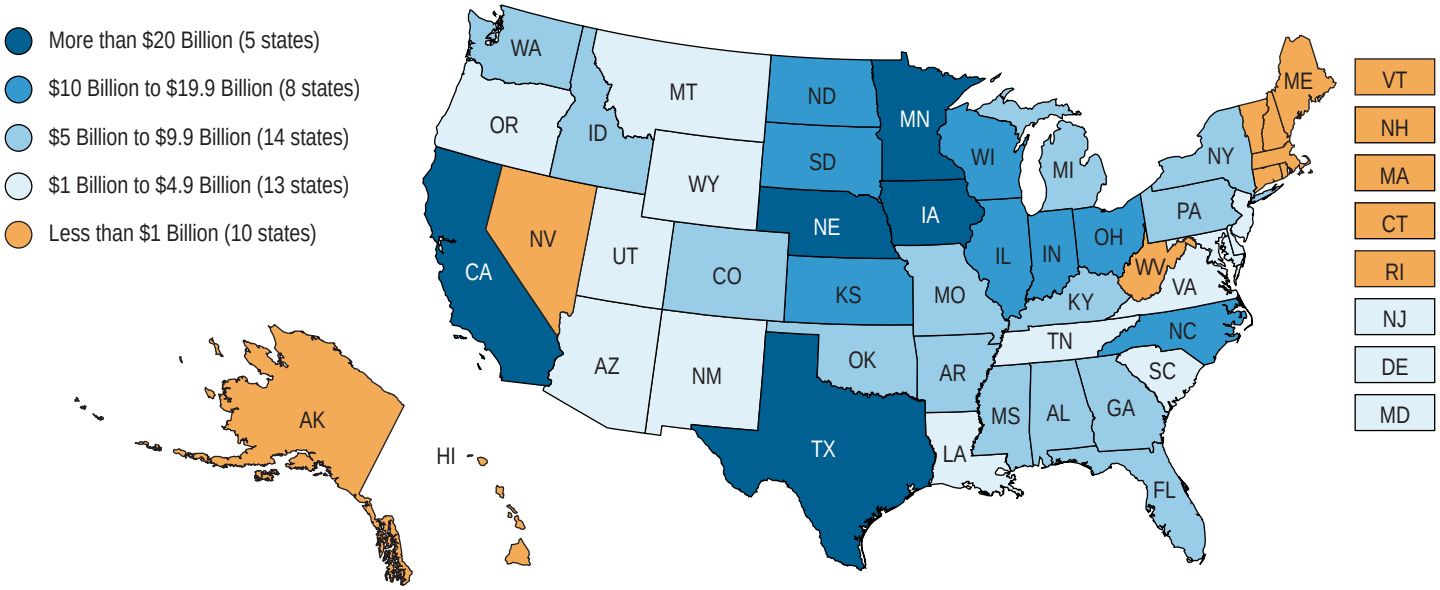
As of 2012, Indiana was home to nearly 58,700 individual farms covering more than 14.7 million acres, which accounts for 64 percent of the state's total land area. Hoosier farmers combined to sell $11.2 billion worth of unprocessed agricultural commodities in that same year—a tally which ranked as the 10th-highest total among states (see **Figure 1**). With $42.6 billion in commodity sales in 2012, California is far and away the nation's top agricultural producer, followed by Iowa ($30.8 billion) and Texas ($25.4 billion). Indiana ranked just behind North Carolina ($12.6 billion) and Wisconsin ($11.7 billion), but ahead of North Dakota ($11.0 billion), South Dakota ($10.2 billion) and Ohio ($10.1 billion).

Indiana's agricultural production is heavily concentrated in corn and soybean growing. The state ranked fifth and fourth, respectively, among states in the value of sales of these commodities in 2012 (see **Table 1**). What's more, these two crops alone combined to account for 63 percent of the state's total value of agriculture production. By contrast, these commodities generated just 27 percent of the value of sales nationally in 2012. Only Illinois had a larger share of total sales claimed by these two crops at 77 percent.

Indiana was also a national leader in hog and pig production in 2012. Hoosier hog farmers generated nearly $1.3 billion in sales—the fifth-highest total nationally. Poultry and egg production was the only other agriculture industry in the state to top $1 billion in sales in 2012. The nearly $1.3 billion in sales in this industry ranked as 13th-best among states. Indiana actually ranks much higher in some of the key industries under the umbrella of "poultry and eggs." Based on production levels (USDA does not publish value of sales figures for these specific industries), the state ranks sixth for turkey production and seventh for

Hoosier farmers combined to sell $11.2 billion worth of unprocessed agricultural commodities in 2012—a tally which ranked as the 10th-highest total among states.

Figure 1: Value of Agricultural Production by State, 2012



Source: USDA, 2012 Census of Agriculture

eggs. Other industries where Indiana ranked in the top 15 states were milk from cows; horses, ponies, etc.; and tobacco.

Table 2 highlights changes in the volume of production for some of Indiana's key commodities between 2007 and 2012 (the last two USDA Census of Agriculture years). The nearly 40 percent decline in the volume of corn produced for grain certainly leaps out. This drop is due in large part to the severe drought in some regions of the country (including Indiana) in 2012. Other Midwestern states like Missouri and Illinois saw even sharper declines in grain corn production over this period. It is important to point out that Indiana rebounded to tally two consecutive record years for grain corn production in 2013 and 2014. According to the USDA's annual surveys, Indiana topped 1 billion bushels in each of these years, marking the first time the state has ever eclipsed this mark.

Another factor in this decline was a shift in the types of crops planted in these two years. Comparing 2012 to 2007, Indiana crop farmers dedicated roughly 326,000 fewer acres of land to grain corn but planted 360,000 more acres in soybeans. This shift helps to explain how the state increased soybean production during a drought year. The state also saw volume increases in each of its major animal agriculture industries over this period.

Table 1: Value of Indiana Agricultural Production by Industry, 2012

	Value of Sales ($ million)	U.S. Rank
Corn	4,070.2	5
Soybeans	2,956.8	4
Hogs and pigs	1,273.1	5
Poultry and eggs	1,164.2	13
Milk from cows	659.3	14
Cattle and calves	522.7	29
Wheat and all other grains, oilseeds, and dry beans	189.9	21
Nursery, greenhouse, floriculture, and sod	110.8	26
Vegetables, melons, potatoes, and sweet potatoes	104.4	22
Other crops and hay	76.5	39
Horses, ponies, mules, burros, and donkeys	23.9	15
Other animals and other animal products	22.3	19
Fruits, tree nuts, and berries	10.9	36
Sheep, goats, wool, mohair, and milk	10.1	25
Tobacco	7.7	9
Aquaculture	5.1	35
Cut Christmas trees and short rotation woody crops	2.0	21

Source: USDA, 2012 Census of Agriculture

Table 2: Indiana Agricultural Production Volume for Select Commodities, 2007 and 2012

	Quantity, 2012 (1,000 units)	Quantity, 2007 (1,000 units)	Change 2007–2012
Corn for grain (bushels)	597,271	959,947	-37.8%*
Corn for silage (tons)	1,775	1,956	-9.3%*
Soybeans (bushels)	218,928	211,117	3.7%
Hogs and pigs (head)	10,551	9,523	10.8%
Poultry (head)**	94,728	84,809	11.7%
Eggs (dozen eggs)	102,603	96,619	6.2%
Milk from cows (1,000 lbs.)	3,713	3,345	11.0%
Cattle and calves (head)	665	638	4.2%

*The decline in corn production was driven primarily by the severe drought experienced in Indiana in 2012. The state rebounded to post consecutive record corn harvests in 2013 and 2014.
**Values comprise chickens, turkeys, ducks, pheasant, quail, geese and pigeons/squab only. Some poultry commodities are excluded due to data suppression.
Source: USDA, 2012 Census of Agriculture

Economic Contributions of Agriculture and Forestry

Indiana's status as a top 10 agricultural producer translates into big business for a host of other industries in the state. A Hoosier grain farmer, for instance, buys a range of production inputs from other Indiana businesses. From fertilizers and fuels to trucking and accounting services, the ripple effects from these supply chain purchases cascade throughout the state economy. Furthermore, Indiana's farms and forests support hundreds of agricultural processing and manufacturing establishments in the state, which also engage other Indiana-based suppliers.

This section of the report provides estimates of the full economic contributions of Indiana agriculture. For this analysis, the Indiana Business Research Center (IBRC) research team considered two types of activities: agricultural production and agriculture-dependent processing or manufacturing industries. Production refers to the crop and livestock industries covered in the previous section as well as forestry and agricultural support services. Within the NAICS industry classification scheme, production activities refer to any industry classified in sector 11 with the exception of fishing, hunting and trapping (subsector 114). The processing and manufacturing activities refer to industries that utilize farm and forest production as the key input into their finished goods. All of these industries are classified under NAICS sectors 31 or 32. Examples include fruit and vegetable canning, animal processing, ethanol production, and veneer and plywood manufacturing, to name a few.[1]

The IBRC research team used the IMPLAN economic modeling software to estimate the total economic effect of Indiana agriculture and forestry. The IMPLAN model draws from a variety of secondary data sources to provide a detailed account of the Indiana economy. For example, the model indicates that Indiana sawmills purchase nearly 50 percent of their production inputs from other Hoosier establishments. The estimated economic effects of these supply chain purchases are reported in the "indirect effects" columns in the tables. Additionally, workers in the agriculture production and processing industries—as well as employees at supplier firms—spend their earnings on food, housing, health care, entertainment, etc. The estimated ripple effects from this household spending are presented in the "induced effects" columns.[2]

In 2012, Indiana's agriculture- and forestry- related establishments combined to generate an estimated $31.2 billion in direct economic output—a measure which is analogous to total sales.

The research team made some adjustments to the IMPLAN model to eliminate any potential double counting in the following estimates. Without any adjustments, the impact of agriculture could be inflated when the effects of closely related industries are added together. Take the corn production and corn milling industries, for instance. Milling operations buy a portion of Indiana's corn production, which they use as an input to produce oils, sweeteners, starches, etc. If the IBRC did not adjust the model, then the value of the corn would be counted twice—once as the sale of raw corn and again as an input in the sale of the processed goods. These types of supply linkages are present throughout agriculture and forestry.

The adjustments to the model eliminate these intra-agriculture relationships within Indiana and, thus, avoid the double counting that would otherwise appear in the indirect and induced output effects. These adjustments also allow for valid estimates of all value added effects (which already removes the value of production inputs) and employment effects, but they do not remove the double counting reported in the direct output effects. Therefore, the value added and employment numbers offer the best measures of the industry's contributions to the Indiana economy.

Summary of Economic Contributions

In 2012, Indiana's agriculture- and forestry-related establishments combined to generate an estimated $31.2 billion in direct economic output—a measure which is analogous to total sales (see **Table 3**). In addition to these direct effects,

the state's agriculture producers and manufacturers triggered an estimated $8.2 billion in additional economic activity in the state when they purchased inputs from Indiana-based suppliers. The household spending of agricultural employees, as well as that of employees in the supply chain, supported another $4.7 billion in economic output. All told, the total economic output footprint of Indiana's agriculture and forestry industries was nearly $44.1 billion in 2012.

The multiplier offers a useful way to interpret these ripple effects. The ratio of total effects to direct output yields a multiplier of 1.41, meaning that each dollar of output generated by Indiana's agriculture and forestry establishments stimulates another $0.41 in economic activity in the state.

With an estimated total output effect of nearly $25.8 billion, the state's processing and manufacturing industries accounted for nearly 59 percent of Indiana agriculture's total economic footprint in 2012. While the state's production industries may have had a smaller contribution to total output, their output multiplier effect of 1.57 was quite a bit stronger.

Economic output estimates are useful "headline numbers" in that they provide an approximate sales total and most people readily understand the concept of a dollar's worth of sales. That said, the value added metric provides a more meaningful appraisal of agriculture's contribution to Indiana's economy because this measure is analogous to the official GDP figures released at the national or state level. As the second section of **Table 3** shows, Indiana's agriculture-related establishments combined to generate an estimated $7.9 billion in direct value added in 2012. This level of activity triggered nearly $7.0 billion in indirect and induced effects throughout the state to bring the industry's total value added impact to $14.9 billion. In 2012, the state's total value added was roughly $306 billion, which means that the combined effects of agriculture and forestry accounted for 4.9 percent of Indiana's GDP in that year.

As for employment, more than 107,500 jobs in Indiana were directly related to agricultural production and processing in 2012. Nearly 75 percent of these direct jobs were in the state's agricultural production industries. The purchase of production inputs from Indiana-based suppliers supported an estimated 40,450 additional jobs in the state, while the household spending of direct and indirect workers accounted for another 40,660 jobs. In all, the total employment footprint of agriculture- and forestry-related industries in the state was an estimated 188,640 jobs in 2012. The ratio of total employment effects to direct employment gives a multiplier of 1.8, meaning that every 10 jobs directly related to Indiana agriculture and forestry supported an additional 8 jobs in the state.

Table 3: The Economic Contributions of Agriculture and Forestry to Indiana's Economy, 2012

	Direct Effects	Indirect Effects	Induced Effects	Total	Multiplier
Total Output ($ million)					
All Agriculture and Forestry	31,162	8,228	4,688	44,078	1.41
Production	11,612	4,058	2,607	18,277	1.57
Processing and Manufacturing	19,550	4,170	2,081	25,801	1.32
Value Added ($ million)					
All Agriculture and Forestry	7,930	4,160	2,818	14,908	1.88
Production	3,955	1,924	1,567	7,447	1.88
Processing and Manufacturing	3,975	2,235	1,251	7,461	1.88
Employment					
All Agriculture and Forestry	107,530	40,450	40,660	188,640	1.8
Production	78,860	16,400	22,650	117,910	1.5
Processing and Manufacturing	28,670	24,050	18,010	70,730	2.5

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Economic Contributions by Industry

With Indiana ranking among the top five states in the production of corn, soybeans and hogs, it is no surprise that these three industries dominate the state's agricultural employment. As of 2012, nearly one-third of Indiana's

direct agriculture and forestry workers were engaged in corn, wheat, and other grain farming (see **Table 4**). Add in soybean and other oilseed farming and hog production, and these three industries combine to account for six out of every 10 direct agricultural workers in the state.

The ripple effects of Indiana's grain production in 2012 supported an estimated 14,970 additional jobs around the state while soybean and other oilseed farming and hog production combined to generate an estimated 14,030 additional jobs in other non-agriculture industries. In total, these three industries were responsible for nearly 93,600 jobs in 2012. Among other agriculture industries, non-poultry animal processing had the next largest total employment impact (10,010 jobs) followed by agricultural support services (9,520), and wet corn milling (9,390).[3]

While Indiana's "big three" production industries account for a large share of agriculture's total employment effect, the state's processing and manufacturing industries tend to have larger employment multipliers. Wet corn milling, for instance, has an employment multiplier above 7, while fats and oils refining and flour milling are not far behind at 6.8 and 4.4, respectively. Taken as a group, Indiana's agricultural processing industries have an employment multiplier of 2.5 compared to 1.5 for farm production. Industries with large employment multipliers are those that tend to be production input-intensive, meaning that they engage very long supply chains while producing their output with relatively few direct employees.

Table 4: Agriculture and Forestry's Contribution to Indiana's Employment, Top 15 Industries, 2012

	Direct Effects	Ripple Effects*	Total	Multiplier
Corn, wheat, and other grain farming	34,940	14,970	49,910	1.4
Soybean and other oilseed farming	15,600	11,150	26,750	1.7
Hog and pig production	14,040	2,880	16,920	1.2
Animal (except poultry) slaughtering, rendering, and processing	6,310	3,700	10,010	1.6
Support activities for agriculture and forestry	7,400	2,120	9,520	1.3
Wet corn milling	1,320	8,070	9,390	7.1
Fruit and vegetable canning, pickling, and drying	3,160	4,450	7,610	2.4
Poultry processing	3,290	3,640	6,930	2.1
Fluid milk and butter manufacturing	1,760	4,900	6,660	3.8
Poultry and egg production	950	3,620	4,570	4.8
All other food manufacturing	2,100	2,350	4,450	2.1
Dairy cattle and milk production	1,910	1,470	3,380	1.8
Veneer and plywood manufacturing	1,860	1,270	3,130	1.7
Sawmills and wood preservation	1,700	1,300	3,000	1.8
Flour milling and malt manufacturing	610	2,090	2,700	4.4
All other industries**	10,580	13,130	23,710	2.2
Total	107,530	81,110	188,640	1.8

* Ripple effects refer to both indirect and induced effects.
** Includes ethanol production. Please see Appendix Table 9 on page 29 for complete detail.
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

As with the employment effects, grain and soybean production are easily agriculture's top contributors to Indiana value added (see **Table 5**). The combined effects of corn, wheat, and other grain production totaled an estimated $2.4 billion in value added in 2012, while the direct and ripple effects of soybean and other oilseed farming in the state were an estimated $2.3 billion. Again, given that the state's total value added of $306 billion in 2012, the combined effects of these two industries represent 1.5 percent of Indiana's GDP. The wet corn milling ($1.1 billion in value added), milk and butter manufacturing ($991 million), and fruit and vegetable canning ($934 million) industries round out the top five generators of GDP.

Contributions to Government Revenues

The economic activity created by Indiana's agriculture and forestry industries also generates federal, state and local government revenues. The IMPLAN model estimates the tax revenues from corporate profits, indirect business taxes (e.g., sales, property and excise taxes), personal taxes (e.g., income and property taxes), and employer and employee contributions to social insurance. The largest share of federal revenue comes from contributions to social insurance through employee compensation. At the state and local level, indirect business taxes are the largest source of government revenue. As **Table 6** shows, the economic activity related to Indiana agriculture and forestry generated an estimated $911 million in state and local revenue in 2012 and over $1.6 billion in federal collections.

Agriculture's Impact in Indiana Regions

When it comes to the economic impacts of agriculture, there is quite a bit of variation between different regions of the state. The Central, North Central and Northeast regions (see **Figure 2** for reference) generate the greatest contributions to the Indiana economy. The Southwest region is also a strong contributor, particularly in the agricultural processing and

Table 5: Agriculture and Forestry's Contribution to Indiana's Value Added, Top 15 Industries, 2012

	Direct Effects ($ million)	Ripple Effects* ($ million)	Total ($ million)	Multiplier
Corn, wheat, and other grain farming	954	1,431	2,385	2.50
Soybean and other oilseed farming	1,323	941	2,264	1.71
Wet corn milling	440	695	1,135	2.58
Fluid milk and butter manufacturing	593	398	991	1.67
Fruit and vegetable canning, pickling, and drying	540	394	934	1.73
Hog and pig production	668	239	907	1.36
Poultry processing	396	286	681	1.72
Poultry and egg production	223	343	566	2.54
Fats and oils refining and blending	344	179	523	1.52
Animal (except poultry) slaughtering, rendering, and processing	229	277	506	2.21
All other food manufacturing	266	187	453	1.70
Dairy cattle and milk production	262	145	407	1.55
Support activities for agriculture and forestry	214	155	370	1.72
Flour milling and malt manufacturing	142	190	332	2.34
Ethanol production	176	94	270	1.54
All other industries**	1,160	1,024	2,184	1.88
Total	7,930	6,978	14,908	1.88

* Ripple effects refer to both indirect and induced effects.
** Please see Appendix Table 9 on page 29 for complete detail.
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Table 6: Tax Effects of Indiana's Agriculture and Forestry, 2012 ($ million)

	Employee Compensation	Proprietary Income	Household Expenditures	Enterprises (Corporations)	Indirect Business Tax	Total
Federal	550.1	101.1	458.7	416.4	95.0	1,621.4
State and Local	5.1	0.0	216.8	42.0	647.5	911.3

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

manufacturing industries. Meanwhile, with a relative lack of high-quality farmland, the South Central and Southeast regions are the least agriculturally productive regions of the state.

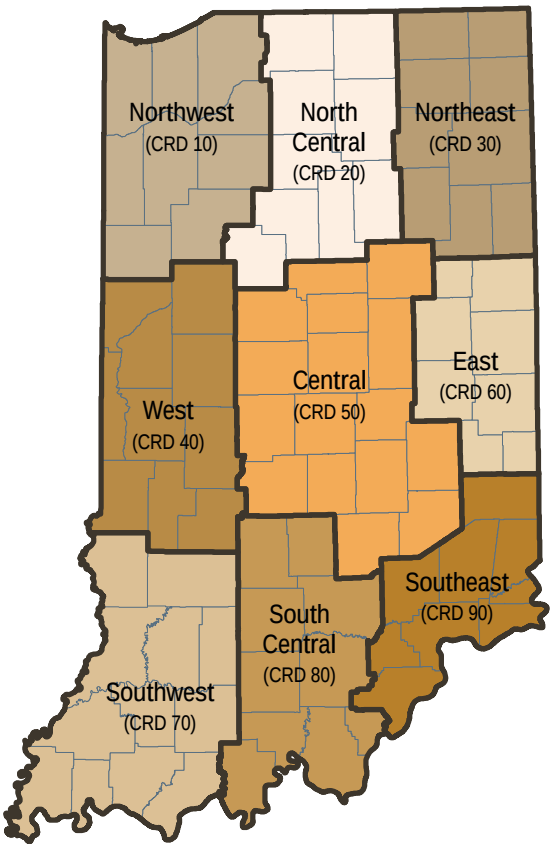
Table 7 presents the value added and employment effects of agriculture in each USDA-defined crop reporting district. The Central region leads all areas in both categories, contributing slightly more than $4.3 billion in total GDP to the district and supporting an estimated 43,840 total jobs. Not only is the Central region a strong agricultural producer, but it's also the state's most populous and economically diverse area, which explains the large multiplier effects. The North Central and Northeast regions place second and third, respectively, in each measure. Together, these top three regions account for 58 percent of the value added that agriculture generates in Indiana and 56 percent of the jobs.

For a more complete look at the impact of agriculture in each region, see the district-specific fact sheets beginning on page 10 of this report.

Agriculture's Impact in Indiana Congressional Districts

As with the crop reporting districts, there are wide disparities in the economic contributions of agriculture in Indiana's congressional districts. The combined effects of agriculture in the state's District 4 (see **Figure 3** for reference) produce nearly $2.7 billion in value added and support roughly 33,600 jobs. Both of these estimates rank at the top of Indiana's congressional districts (see **Table 8**). District 8 provides the second-largest contribution to GDP, while District 3 boasts the second-highest jobs tally. As largely urban districts, Districts 1 and 7 rank near the bottom in both categories, although

Figure 2: Indiana's USDA Crop Reporting Districts



Source: USDA

Table 7: Value Added and Employment Effects by Crop Reporting District, 2012

	Value Added ($ million)			Employment		
Region (CRD)	Direct Effects	Total Effects	Multiplier	Direct Effects	Total Effects	Multiplier
Northwest (10)	841	1,413	1.68	9,850	16,589	1.7
North Central (20)	1,206	2,038	1.69	18,880	29,287	1.6
Northeast (30)	1,042	1,738	1.67	16,720	25,519	1.5
West (40)	606	1,018	1.68	8,280	13,450	1.6
Central (50)	2,203	4,327	1.96	20,360	43,844	2.2
East (60)	505	958	1.90	6,610	11,565	1.7
Southwest (70)	972	1,656	1.70	11,950	20,256	1.7
South Central (80)	293	438	1.49	7,210	9,240	1.3
Southeast (90)	242	351	1.45	6,010	7,410	1.2

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

the manufacturing-heavy nature of agricultural activities in District 7 produces a large employment multiplier effect for that area.

The congressional district fact sheets, which begin on page 19, provide an in-depth look at the economic effects of agriculture in each area.

Conclusion

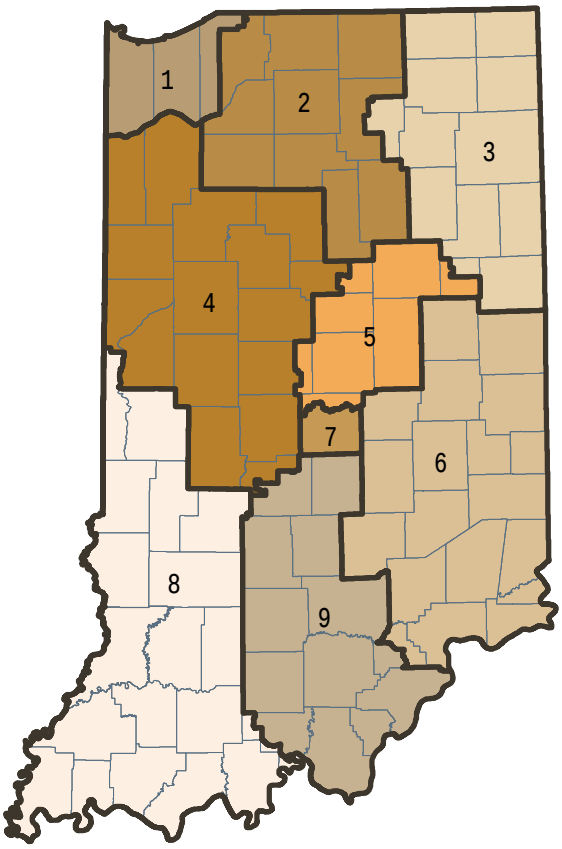
The importance of agriculture to the Indiana economy is clear. The combined effects of agriculture industries support an estimated 188,600 jobs in the state and create $14.9 billion in value added—an amount equal to nearly 5 percent of Indiana's total GDP. Keep in mind that Indiana's farmers and agriculture-related manufacturers generated these impressive numbers during a tough year plagued by a severe drought. These impacts would likely be higher during a more typical year.

The findings in this report demonstrate that efforts to support, or even expand, Indiana's agricultural production and processing can have positive ripple effects throughout the state's economy. This is especially true in regions of the state that are facing declines in other key industries. Therefore, the degree to which agriculture is able to contribute to Indiana's economic growth going forward will be an important economic indicator for the state.

Notes

1. See "Defining Agriculture and Forestry" on page 28 in the appendix for an explanation of how the research team selected the processing and manufacturing industries included in this analysis.
2. See "Key Terms" on page 29 in the appendix for a more detailed explanation of some of the terminology used in this report.
3. See "Table 9: Total Economic and Employment Contributions of Each Agriculture and Forestry Industry, 2012" on page 29 for a listing of total economic and employment contributions for each industry considered in this analysis.

Figure 3: Indiana Congressional Districts



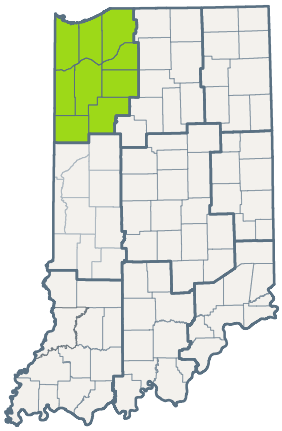
Source: Indiana Business Research Center

Table 8: Value Added and Employment Effects by Congressional District, 2012

	Value Added ($ million)			Employment		
Congressional District	Direct Effects	Total Effects	Multiplier	Direct Effects	Total Effects	Multiplier
District 1	284	509	1.80	3,140	5,840	1.9
District 2	1,077	1,763	1.64	15,290	23,808	1.6
District 3	1,141	1,855	1.63	18,740	27,915	1.5
District 4	1,541	2,664	1.73	19,640	33,606	1.7
District 5	892	1,540	1.73	7,630	14,485	1.9
District 6	879	1,348	1.53	15,720	21,901	1.4
District 7	551	1,010	1.83	2,610	7,190	2.8
District 8	1,136	1,942	1.71	15,850	25,850	1.6
District 9	422	682	1.62	9,780	13,330	1.4

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 10



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 10 generated an estimated $3.2 billion in direct economic output (i.e., sales) in 2012. Approximately 57 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 43 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $4.3 billion.

In 2012, agricultural activities in District 10 generated an estimated total of $1.4 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.68, meaning that every dollar of GDP directly related to agriculture in District 10 generates an additional $0.68 in economic activity elsewhere in the district.

As for employment, more than 16,580 jobs in District 10 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.7 indicates that every 10 agricultural jobs in District 10 generate another seven jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 10 at an estimated 6,950 in 2012, which accounted for nearly 42 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 2,240 jobs. Corn, wheat, and other grain farming generated the largest contribution to GDP in District 10 with an estimated total value added impact of $389 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 10, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	3,173	1,142	4,315	1.36
Production	1,819	827	2,646	1.45
Processing and Manufacturing	1,354	315	1,669	1.23
Value Added ($ million)				
All Agriculture and Forestry	841	571	1,413	1.68
Production	588	395	983	1.67
Processing and Manufacturing	254	176	430	1.70
Employment				
All Agriculture and Forestry	9,850	6,739	16,589	1.7
Production	8,370	4,620	12,990	1.6
Processing and Manufacturing	1,480	2,119	3,599	2.4

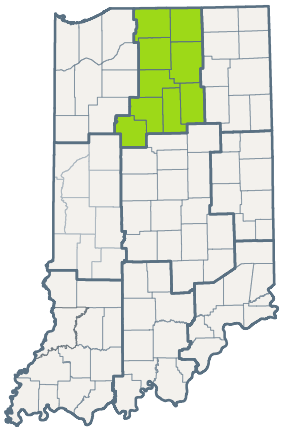
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 10, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	4,730	2,220	6,950	1.5	191	199	389	2.04
Soybean and other oilseed farming	1,200	1,040	2,240	1.9	158	80	238	1.51
Hog and pig production	1,038	336	1,374	1.3	83	26	109	1.32
Wet corn milling	260	1,090	1,350	5.2	87	94	181	2.08
Support activities for agriculture and forestry	860	130	990	1.2	13	9	22	1.73
All other industries	1,762	1,923	3,685	2.1	311	163	474	1.53

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 20



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 20 generated an estimated $5.2 billion in direct economic output (i.e., sales) in 2012. Approximately 35 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 65 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $6.7 billion.

In 2012, agricultural activities in District 20 generated an estimated $2 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.69, meaning every dollar of GDP directly related to agriculture in District 20 generates an additional $0.69 in economic activity elsewhere in the district.

As for employment, more than 29,280 jobs in District 20 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.6 indicates that every 10 agricultural jobs in District 20 generate another six jobs in other industries in the area.

Among individual agricultural industries, animal processing (except poultry) supported the greatest number of jobs in District 20 at an estimated 7,070 in 2012, accounting for nearly 25 percent of agriculture's total employment impact in the district. Corn, wheat, and other grain farming was the district's second-largest job producer with a total impact of 6,550 jobs. Animal processing (except poultry) generated the largest contribution to GDP in District 20 with an estimated total value added impact of $341 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 20, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	5,185	1,536	6,721	1.30
Production	1,793	776	2,570	1.43
Processing and Manufacturing	3,392	759	4,151	1.22
Value Added ($ million)				
All Agriculture and Forestry	1,206	831	2,038	1.69
Production	600	398	998	1.66
Processing and Manufacturing	606	434	1,040	1.72
Employment				
All Agriculture and Forestry	18,880	10,407	29,287	1.6
Production	11,090	4,750	15,840	1.4
Processing and Manufacturing	7,790	5,657	13,447	1.7

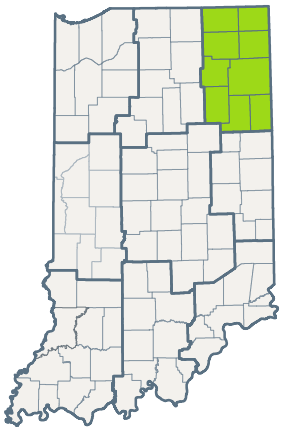
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 20, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Animal (except poultry) slaughtering, rendering, and processing	4,740	2,330	7,070	1.5	173	168	341	1.97
Corn, wheat, and other grain farming	4,830	1,720	6,550	1.4	141	152	292	2.08
Hog and pig production	2,368	484	2,852	1.2	134	38	171	1.28
Soybean and other oilseed farming	1,710	1,130	2,840	1.7	164	86	251	1.53
Poultry processing	840	760	1,600	1.9	100	59	158	1.59
All other industries	4,392	3,983	8,375	1.9	495	329	825	1.67

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 30



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 30 generated an estimated $4 billion in direct economic output (i.e., sales) in 2012. Approximately 39 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 61 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $5.3 billion.

In 2012, agricultural activities in District 30 generated an estimated total of $1.7 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.67, meaning that every dollar of GDP directly related to agriculture in District 30 generates an additional $0.67 in economic activity elsewhere in the district.

As for employment, more than 25,500 jobs in District 30 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.5 indicates that every 10 agricultural jobs in District 30 generate another five jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 30 at an estimated 7,090 in 2012, which accounted for nearly 30 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 4,180 jobs. Soybean and other oilseed farming generated the largest contribution to GDP in District 30 with an estimated total value added impact of $273 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 30, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	4,035	1,255	5,290	1.31
Production	1,567	662	2,229	1.42
Processing and Manufacturing	2,468	592	3,060	1.24
Value Added ($ million)				
All Agriculture and Forestry	1,042	697	1,738	1.67
Production	541	363	904	1.67
Processing and Manufacturing	500	334	834	1.67
Employment				
All Agriculture and Forestry	16,720	8,799	25,519	1.5
Production	13,750	4,460	18,210	1.3
Processing and Manufacturing	2,970	4,339	7,309	2.5

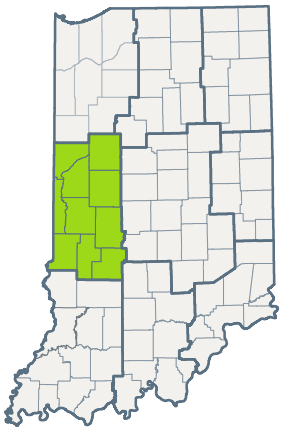
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 30, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	5,740	1,350	7,090	1.2	100	117	218	2.17
Soybean and other oilseed farming	2,870	1,310	4,180	1.5	173	100	273	1.58
Hog and pig production	2,621	323	2,944	1.1	83	25	108	1.30
Fluid milk and butter manufacturing	520	1,230	1,750	3.4	170	92	261	1.54
Ice cream and frozen dessert manufacturing	600	640	1,240	2.1	78	47	124	1.60
All other industries	4,369	3,946	8,315	1.9	439	316	756	1.72

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 40



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 40 generated an estimated $2.9 billion in direct economic output (i.e., sales) in 2012. Approximately 32 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 68 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $3.6 billion.

In 2012, agricultural activities in District 40 generated an estimated total of $1 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.68, meaning that every dollar of GDP directly related to agriculture in District 40 generates an additional $0.68 in economic activity elsewhere in the district.

As for employment, more than 13,400 jobs in District 40 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.6 indicates that every 10 agricultural jobs in District 40 generate another six jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 40 at an estimated 4,510 in 2012, which accounted for more than 30 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 2,300 jobs. Wet corn milling generated the largest contribution to GDP in District 40 with an estimated total value added impact of $303 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 40, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	2,850	701	3,551	1.25
Production	908	314	1,222	1.35
Processing and Manufacturing	1,942	387	2,329	1.20
Value Added ($ million)				
All Agriculture and Forestry	606	412	1,018	1.68
Production	314	193	507	1.62
Processing and Manufacturing	292	219	511	1.75
Employment				
All Agriculture and Forestry	8,280	5,170	13,450	1.6
Production	6,330	2,370	8,700	1.4
Processing and Manufacturing	1,950	2,800	4,750	2.4

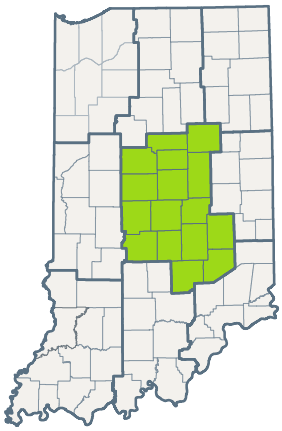
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 40, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	3,380	1,130	4,510	1.3	101	98	200	1.97
Soybean and other oilseed farming	1,420	880	2,300	1.6	139	67	206	1.49
Wet corn milling	480	1,790	2,270	4.7	158	144	303	1.91
Support activities for agriculture and forestry	680	120	800	1.2	14	8	22	1.57
Hog and pig production	658	114	772	1.2	35	9	44	1.26
All other industries	1,662	1,136	2,798	1.7	158	85	244	1.54

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 50



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 50 generated an estimated $8.7 billion in direct economic output (i.e., sales) in 2012. Approximately 24 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 76 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $12.2 billion.

In 2012, agricultural activities in District 50 generated an estimated total of $4.3 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.96, meaning that every dollar of GDP directly related to agriculture in District 50 generates an additional $0.96 in economic activity elsewhere in the district.

As for employment, more than 43,840 jobs in District 50 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 2.2 indicates that every 10 agricultural jobs in District 50 generate another 12 jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 50 at an estimated 9,700 in 2012, which accounted for more than 20 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 5,830 jobs. Soybean and other oilseed farming generated the largest contribution to GDP in District 50 with an estimated total value added impact of $557 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 50, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	8,657	3,583	12,240	1.41
Production	2,101	1,261	3,362	1.60
Processing and Manufacturing	6,556	2,322	8,877	1.35
Value Added ($ million)				
All Agriculture and Forestry	2,203	2,123	4,327	1.96
Production	780	754	1,534	1.97
Processing and Manufacturing	1,424	1,369	2,793	1.96
Employment				
All Agriculture and Forestry	20,360	23,484	43,844	2.2
Production	13,380	8,240	21,620	1.6
Processing and Manufacturing	6,980	15,244	22,224	3.2

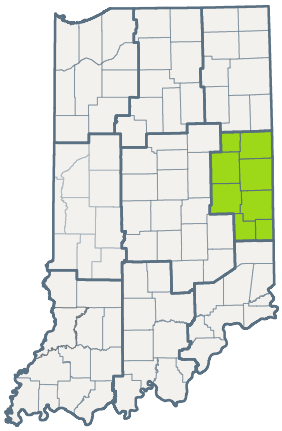
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 50, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	6,220	3,480	9,700	1.6	194	339	533	2.75
Soybean and other oilseed farming	3,020	2,810	5,830	1.9	308	249	557	1.81
Wet corn milling	510	3,580	4,090	8.0	172	327	499	2.90
Fruit and vegetable canning, pickling, and drying	1,460	2,320	3,780	2.6	260	222	481	1.85
Fluid milk and butter manufacturing	730	2,320	3,050	4.2	258	200	458	1.78
All other industries	8,420	8,974	17,394	2.1	1,012	786	1,799	1.78

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 60



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 60 generated an estimated $1.6 billion in direct economic output (i.e., sales) in 2012. Approximately 62 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 38 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $2.1 billion.

In 2012, agricultural activities in District 60 generated an estimated total of $763 million in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.51, meaning that every dollar of GDP directly related to agriculture in District 60 generates an additional $0.51 in economic activity elsewhere in the district.

As for employment, more than 10,850 jobs in District 60 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.5 indicates that every 10 agricultural jobs in District 60 generate another five jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 60 at an estimated 3,530 in 2012, which accounted for 30 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 2,380 jobs. Soybean and other oilseed farming generated the largest contribution to GDP in District 60 with an estimated total value added impact of $190 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 60, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	1,638	487	2,125	1.30
Production	1,022	370	1,392	1.36
Processing and Manufacturing	616	117	733	1.19
Value Added ($ million)				
All Agriculture and Forestry	504	259	763	1.51
Production	372	197	569	1.53
Processing and Manufacturing	132	62	194	1.48
Employment				
All Agriculture and Forestry	7,490	3,365	10,855	1.5
Production	6,570	2,520	9,090	1.4
Processing and Manufacturing	920	845	1,765	1.9

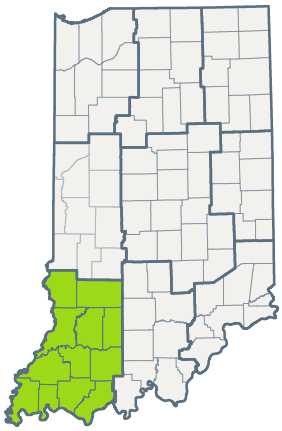
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 60, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	2,800	730	3,530	1.3	70	59	129	1.85
Soybean and other oilseed farming	1,560	820	2,380	1.5	132	58	190	1.44
Hog and pig production	1,380	424	1,804	1.3	93	37	129	1.39
Support activities for agriculture and forestry	530	140	670	1.3	20	9	29	1.46
Fluid milk and butter manufacturing	150	270	420	2.8	50	20	69	1.40
All other industries	1,070	981	2,051	1.9	140	76	216	1.55

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 70



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 70 generated an estimated $3.8 billion in direct economic output (i.e., sales) in 2012. Approximately 39 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 61 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $5.2 billion.

In 2012, agricultural activities in District 70 generated an estimated $1.7 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.70, meaning every dollar of GDP directly related to agriculture in District 70 generates an additional $0.70 in economic activity elsewhere in the district.

As for employment, more than 20,250 jobs in District 70 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.7 indicates that every 10 agricultural jobs in District 70 generate another seven jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 70 at an estimated 4,450 in 2012, which accounted for more than 20 percent of agriculture's total employment impact in the district. Poultry processing was the district's second-largest job producer with a total impact of 3,510 jobs. Poultry processing generated the largest contribution to GDP in District 70 with an estimated total value added impact of $348 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 70, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	3,789	1,375	5,165	1.36
Production	1,459	716	2,174	1.49
Processing and Manufacturing	2,330	660	2,990	1.28
Value Added ($ million)				
All Agriculture and Forestry	972	684	1,656	1.70
Production	465	330	795	1.71
Processing and Manufacturing	507	354	861	1.70
Employment				
All Agriculture and Forestry	11,950	8,306	20,256	1.7
Production	7,900	3,860	11,760	1.5
Processing and Manufacturing	4,050	4,446	8,496	2.1

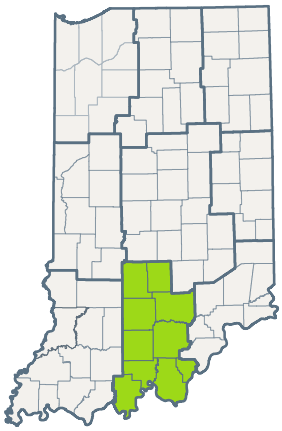
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 70, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	3,220	1,230	4,450	1.4	107	111	218	2.03
Poultry processing	1,830	1,680	3,510	1.9	221	127	348	1.58
Soybean and other oilseed farming	1,410	1,000	2,410	1.7	152	78	229	1.51
Hog and pig production	1,342	214	1,556	1.2	67	17	84	1.26
Support activities for agriculture and forestry	1,310	230	1,540	1.2	25	16	41	1.63
All other industries	2,838	3,952	6,790	2.4	401	335	736	1.84

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 80



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 80 generated an estimated $1.1 billion in direct economic output (i.e., sales) in 2012. Approximately 52 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 48 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $1.3 billion.

In 2012, agricultural activities in District 80 generated an estimated total of $438 million in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.49, meaning that every dollar of GDP directly related to agriculture in District 80 generates an additional $0.49 in economic activity elsewhere in the district.

As for employment, more than 9,200 jobs in District 80 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.3 indicates that every 10 agricultural jobs in District 80 generate another three jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 80 at an estimated 2,060 in 2012, which accounted for more than 20 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 1,390 jobs. Soybean and other oilseed farming generated the largest contribution to GDP in District 80 with an estimated total value added impact of $64 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 80, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	1,057	257	1,314	1.24
Production	554	147	701	1.26
Processing and Manufacturing	503	110	613	1.22
Value Added ($ million)				
All Agriculture and Forestry	293	145	438	1.49
Production	162	82	245	1.51
Processing and Manufacturing	131	63	193	1.48
Employment				
All Agriculture and Forestry	7,210	2,030	9,240	1.3
Production	5,610	1,130	6,740	1.2
Processing and Manufacturing	1,600	900	2,500	1.6

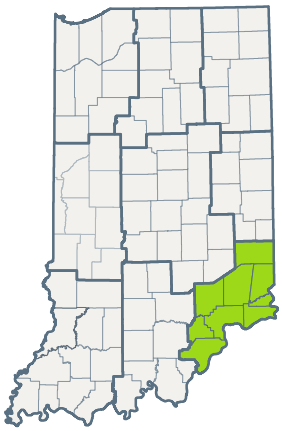
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 80, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	1,820	240	2,060	1.1	23	20	43	1.88
Soybean and other oilseed farming	1,120	270	1,390	1.2	45	19	64	1.43
Hog and pig production	1,186	57	1,243	1.0	24	4	28	1.17
Veneer and plywood manufacturing	490	240	730	1.5	36	17	52	1.47
Poultry processing	340	240	580	1.7	41	17	57	1.41
All other industries	2,254	983	3,237	1.4	125	68	193	1.54

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Crop Reporting District 90



The agriculture- and forestry-related establishments in Indiana's Crop Reporting District 90 generated an estimated $760 million in direct economic output (i.e., sales) in 2012. Approximately 49 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 51 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $948 million.

In 2012, agricultural activities in District 90 generated an estimated $351 million in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.45, meaning every dollar of GDP directly related to agriculture in District 90 generates an additional $0.45 in economic activity elsewhere in the district.

As for employment, more than 7,400 jobs in District 90 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.2 indicates that every 10 agricultural jobs in District 90 generate another two jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 90 at an estimated 2,580 in 2012, which accounted for nearly 35 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 1,650 jobs. Fruit and vegetable processing generated the largest contribution to GDP in District 90 with an estimated total value added impact of $97 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Crop Reporting District 90, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	760	188	948	1.25
Production	371	104	475	1.28
Processing and Manufacturing	389	84	473	1.22
Value Added ($ million)				
All Agriculture and Forestry	242	110	351	1.45
Production	131	63	193	1.48
Processing and Manufacturing	111	47	158	1.42
Employment				
All Agriculture and Forestry	6,010	1,400	7,410	1.2
Production	4,990	790	5,780	1.2
Processing and Manufacturing	1,020	610	1,630	1.6

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Crop Reporting District 90, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	2,320	260	2,580	1.1	27	22	50	1.82
Soybean and other oilseed farming	1,360	290	1,650	1.2	54	22	76	1.42
Fruit and vegetable canning, pickling, and drying	410	350	760	1.9	70	27	97	1.39
Hog and pig production	715	29	744	1.0	14	2	17	1.18
Veneer and plywood manufacturing	280	120	400	1.4	19	9	28	1.48
All other industries	925	351	1,276	1.4	58	26	84	1.46

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 1

The agriculture- and forestry-related establishments in Indiana's Congressional District 1 generated an estimated $1.3 billion in direct economic output (i.e., sales) in 2012. Approximately 24 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 76 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $1.7 billion.

In 2012, agricultural activities in District 1 generated an estimated total of $509 million in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.80, meaning that every dollar of GDP directly related to agriculture in District 1 generates an additional $0.80 in economic activity elsewhere in the district.

As for employment, more than 5,800 jobs in District 1 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.9 indicates that every 10 agricultural jobs in District 1 generate another nine jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 1 at an estimated 1,720 in 2012, which accounted for nearly 30 percent of agriculture's total employment impact in the district.

Wet corn milling was the district's second-largest job producer with a total impact of 1,440 jobs. Wet corn milling generated the largest contribution to GDP in District 1 with an estimated total value added impact of $190 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 1, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	1,277	419	1,697	1.33
Production	311	137	448	1.44
Processing and Manufacturing	967	282	1,249	1.29
Value Added ($ million)				
All Agriculture and Forestry	284	226	509	1.80
Production	104	73	177	1.70
Processing and Manufacturing	180	153	332	1.85
Employment				
All Agriculture and Forestry	3,140	2,700	5,840	1.9
Production	2,320	920	3,240	1.4
Processing and Manufacturing	820	1,780	2,600	3.2

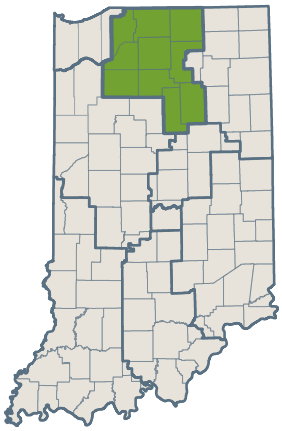
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 1, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	1,290	430	1,720	1.3	36	37	73	2.02
Wet corn milling	260	1,180	1,440	5.5	87	103	190	2.18
Soybean and other oilseed farming	460	290	750	1.6	43	22	65	1.52
Non-chocolate confectionery manufacturing	320	300	620	1.9	50	25	75	1.51
Support activities for agriculture and forestry	370	60	430	1.2	5	4	9	1.78
All other industries	440	440	880	2.0	64	35	98	1.55

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 2



The agriculture- and forestry-related establishments in Indiana's Congressional District 2 generated an estimated $4 billion in direct economic output (i.e., sales) in 2012. Approximately 43 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 57 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $5.2 billion.

In 2012, agricultural activities in District 2 generated an estimated total of $1.8 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.64, meaning that every dollar of GDP directly related to agriculture in District 2 generates an additional $0.64 in economic activity elsewhere in the district.

As for employment, more than 23,800 jobs in District 2 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.6 indicates that every 10 agricultural jobs in District 2 generate another six jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 2 at an estimated 6,820 in 2012, which accounted for nearly 30 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 3,050 jobs. Corn, wheat, and other grain farming generated the largest contribution to GDP in District 2 with an estimated total value added impact of $275 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 2, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	4,000	1,223	5,223	1.31
Production	1,718	594	2,312	1.35
Processing and Manufacturing	2,282	629	2,911	1.28
Value Added ($ million)				
All Agriculture and Forestry	1,077	686	1,763	1.64
Production	563	342	905	1.61
Processing and Manufacturing	514	344	858	1.67
Employment				
All Agriculture and Forestry	15,290	8,518	23,808	1.6
Production	11,140	4,280	15,420	1.4
Processing and Manufacturing	4,150	4,238	8,388	2.0

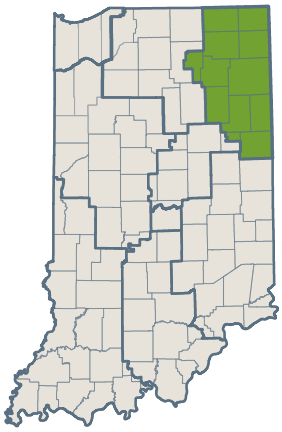
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 2, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	5,210	1,610	6,820	1.3	135	139	275	2.03
Soybean and other oilseed farming	1,910	1,140	3,050	1.6	169	88	257	1.52
Hog and pig production	1,949	325	2,274	1.2	91	24	115	1.26
Poultry processing	850	790	1,640	1.9	101	62	163	1.61
Fruit and vegetable canning, pickling, and drying	600	680	1,280	2.1	101	56	157	1.56
All other industries	4,771	3,973	8,744	1.8	479	318	797	1.66

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 3



The agriculture- and forestry-related establishments in Indiana's Congressional District 3 generated an estimated $4.3 billion in direct economic output (i.e., sales) in 2012. Approximately 45 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 55 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $5.6 billion.

In 2012, agricultural activities in District 3 generated an estimated total of $1.9 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.63, meaning that every dollar of GDP directly related to agriculture in District 3 generates an additional $0.63 in economic activity elsewhere in the district.

As for employment, more than 27,900 jobs in District 3 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.5 indicates that every 10 agricultural jobs in District 3 generate another five jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 3 at an estimated 7,610 in 2012, which accounted for nearly 30 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 4,780 jobs. Soybean and other oilseed farming generated the largest contribution to GDP in District 3 with an estimated total value added impact of $327 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 3, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	4,345	1,266	5,611	1.29
Production	1,952	668	2,620	1.34
Processing and Manufacturing	2,393	598	2,991	1.25
Value Added ($ million)				
All Agriculture and Forestry	1,141	714	1,855	1.63
Production	667	391	1,058	1.59
Processing and Manufacturing	474	324	798	1.68
Employment				
All Agriculture and Forestry	18,740	9,175	27,915	1.5
Production	15,690	5,070	20,760	1.3
Processing and Manufacturing	3,050	4,105	7,155	2.3

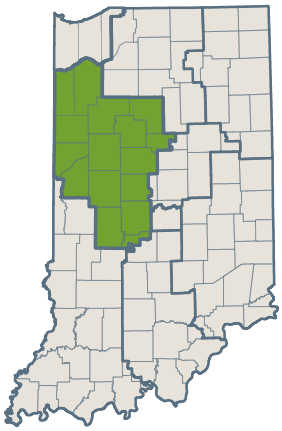
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 3, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	6,140	1,470	7,610	1.2	117	124	241	2.06
Soybean and other oilseed farming	3,240	1,540	4,780	1.5	212	115	327	1.54
Hog and pig production	3,326	409	3,735	1.1	117	30	147	1.26
Support activities for agriculture and forestry	1,090	390	1,480	1.4	50	26	75	1.51
Fluid milk and butter manufacturing	400	920	1,320	3.3	130	71	200	1.55
All other industries	4,544	4,446	8,990	2.0	515	349	864	1.68

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 4



The agriculture- and forestry-related establishments in Indiana's Congressional District 4 generated an estimated $6.8 billion in direct economic output (i.e., sales) in 2012. Approximately 40 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 60 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $8.8 billion.

In 2012, agricultural activities in District 4 generated an estimated total of $2.7 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.73, meaning that every dollar of GDP directly related to agriculture in District 4 generates an additional $0.73 in economic activity elsewhere in the district.

As for employment, more than 33,600 jobs in District 4 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.7 indicates that every 10 agricultural jobs in District 4 generate another seven jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 4 at an estimated 10,280 in 2012, which accounted for more than 30 percent of agriculture's total employment impact in the district. Animal processing (except poultry) was the district's second-largest job producer with a total impact of 6,290 jobs. Corn, wheat, and other grain farming generated the largest contribution to GDP in District 4 with an estimated total value added impact of $591 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 4, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	6,821	1,952	8,773	1.29
Production	2,761	1,038	3,800	1.38
Processing and Manufacturing	4,060	914	4,973	1.23
Value Added ($ million)				
All Agriculture and Forestry	1,541	1,122	2,664	1.73
Production	942	614	1,556	1.65
Processing and Manufacturing	600	508	1,108	1.85
Employment				
All Agriculture and Forestry	19,640	13,966	33,606	1.7
Production	13,330	7,510	20,840	1.6
Processing and Manufacturing	6,310	6,456	12,766	2.0

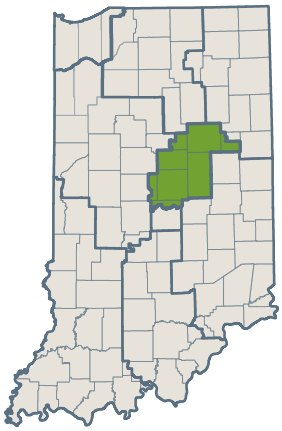
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 4, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	6,710	3,570	10,280	1.5	278	313	591	2.13
Animal (except poultry) slaughtering, rendering, and processing	4,230	2,060	6,290	1.5	163	145	308	1.89
Soybean and other oilseed farming	2,330	2,160	4,490	1.9	303	168	471	1.55
Hog and pig production	2,379	681	3,060	1.3	186	49	236	1.27
Wet corn milling	480	2,390	2,870	6.0	158	199	358	2.26
All other industries	3,511	3,105	6,616	1.9	453	248	700	1.55

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 5



The agriculture- and forestry-related establishments in Indiana's Congressional District 5 generated an estimated $3.1 billion in direct economic output (i.e., sales) in 2012. Approximately 24 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 76 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $4.2 billion.

In 2012, agricultural activities in District 5 generated an estimated total of $1.5 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.73, meaning that every dollar of GDP directly related to agriculture in District 5 generates an additional $0.73 in economic activity elsewhere in the district.

As for employment, more than 14,480 jobs in District 5 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.9 indicates that every 10 agricultural jobs in District 5 generate another nine jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 5 at an estimated 3,330 in 2012, which accounted for more than 20 percent of agriculture's total employment impact in the district. Fruit and vegetable processing was the district's second-largest job producer with a total impact of 3,330 jobs. Fruit and vegetable processing also generated the largest contribution to GDP in District 5 with an estimated total value added impact of $463 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 5, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	3,090	1,069	4,159	1.35
Production	732	336	1,067	1.46
Processing and Manufacturing	2,359	734	3,092	1.31
Value Added ($ million)				
All Agriculture and Forestry	892	648	1,540	1.73
Production	278	211	489	1.76
Processing and Manufacturing	614	437	1,051	1.71
Employment				
All Agriculture and Forestry	7,630	6,855	14,485	1.9
Production	4,550	2,440	6,990	1.5
Processing and Manufacturing	3,080	4,415	7,495	2.4

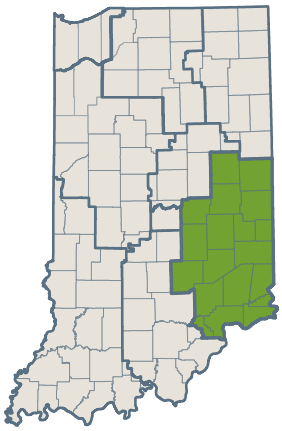
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 5, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	2,370	960	3,330	1.4	71	90	161	2.27
Fruit and vegetable canning, pickling, and drying	1,450	1,880	3,330	2.3	257	205	463	1.80
Soybean and other oilseed farming	1,140	810	1,950	1.7	113	69	182	1.61
Fats and oils refining and blending	140	790	930	6.6	134	73	207	1.54
All other food manufacturing	440	450	890	2.0	57	40	97	1.71
All other industries	2,090	1,965	4,055	1.9	261	170	431	1.65

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 6



The agriculture- and forestry-related establishments in Indiana's Congressional District 6 generated an estimated $2.9 billion in direct economic output (i.e., sales) in 2012. Approximately 60 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 40 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $3.7 billion.

In 2012, agricultural activities in District 6 generated an estimated total of $1.4 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.53, meaning that every dollar of GDP directly related to agriculture in District 6 generates an additional $0.53 in economic activity elsewhere in the district.

As for employment, more than 21,900 jobs in District 6 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.4 indicates that every 10 agricultural jobs in District 6 generate another four jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 6 at an estimated 7,170 in 2012, which accounted for more than 30 percent of agriculture's total employment impact in the district. Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 4,700 jobs. Soybean and other oilseed farming generated the largest contribution to GDP in District 6 with an estimated total value added impact of $351 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 6, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	2,893	838	3,730	1.29
Production	1,747	544	2,291	1.31
Processing and Manufacturing	1,145	294	1,439	1.26
Value Added ($ million)				
All Agriculture and Forestry	879	469	1,348	1.53
Production	635	314	949	1.50
Processing and Manufacturing	244	155	400	1.64
Employment				
All Agriculture and Forestry	15,720	6,181	21,901	1.4
Production	13,730	4,140	17,870	1.3
Processing and Manufacturing	1,990	2,041	4,031	2.0

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 6, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	5,750	1,420	7,170	1.2	133	117	250	1.88
Soybean and other oilseed farming	3,180	1,520	4,700	1.5	240	111	351	1.46
Hog and pig production	3,011	391	3,402	1.1	141	28	169	1.20
Support activities for agriculture and forestry	970	250	1,220	1.3	35	17	51	1.48
All other food manufacturing	380	360	740	1.9	49	26	75	1.53
All other industries	2,429	2,240	4,669	1.9	282	170	452	1.60

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 7

The agriculture- and forestry-related establishments in Indiana's Congressional District 7 generated an estimated $2.9 billion in direct economic output (i.e., sales) in 2012. Approximately 1 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 99 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $3.7 billion.

In 2012, agricultural activities in District 7 generated an estimated total of $1 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.83, meaning that every dollar of GDP directly related to agriculture in District 7 generates an additional $0.83 in economic activity elsewhere in the district.

As for employment, almost 7,200 jobs in District 7 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 2.8 indicates that every 10 agricultural jobs in District 7 generate another 18 jobs in other industries in the area.

Among individual agricultural industries, wet corn milling supported the greatest number of jobs in District 7 at an estimated 2,810 in 2012, which accounted for nearly 40 percent of agriculture's total employment impact in the district. Fluid milk and butter manufacturing was the district's second-largest job producer with a total impact of 1,460 jobs. Wet corn milling generated the largest contribution to GDP in District 7 with an estimated total value added impact of $411 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 7, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	2,939	783	3,721	1.27
Production	32	14	47	1.45
Processing and Manufacturing	2,906	768	3,675	1.26
Value Added ($ million)				
All Agriculture and Forestry	551	459	1,010	1.83
Production	19	9	28	1.50
Processing and Manufacturing	533	449	982	1.84
Employment				
All Agriculture and Forestry	2,610	4,580	7,190	2.8
Production	970	90	1,060	1.1
Processing and Manufacturing	1,640	4,490	6,130	3.7

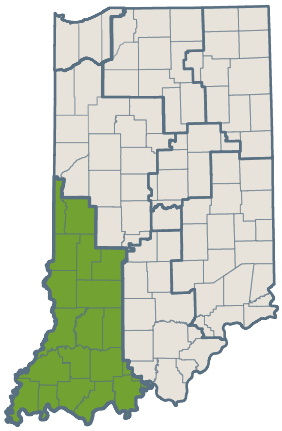
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 7, 2012, Top 5 Industries

	Employment Effects				Value Added Effects ($ million)			
Industry	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Wet corn milling	510	2,300	2,810	5.5	172	239	411	2.39
Fluid milk and butter manufacturing	490	970	1,460	3.0	169	91	261	1.54
Fats and oils refining and blending	140	630	770	5.5	134	63	197	1.47
All other animal production	714	39	753	1.1	8	3	11	1.37
Flour milling and malt manufacturing	140	380	520	3.7	32	41	74	2.27
All other industries	616	261	877	1.4	36	21	57	1.59

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 8



The agriculture- and forestry-related establishments in Indiana's Congressional District 8 generated an estimated $4.3 billion in direct economic output (i.e., sales) in 2012. Approximately 40 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 60 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $5.9 billion.

In 2012, agricultural activities in District 8 generated an estimated total of $1.9 billion in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.71, meaning that every dollar of GDP directly related to agriculture in District 8 generates an additional $0.71 in economic activity elsewhere in the district.

As for employment, more than 25,800 jobs in District 8 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.6 indicates that every 10 agricultural jobs in District 8 generate another six jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 8 at an estimated 6,560 in 2012, which accounted for 25 percent of agriculture's total employment impact in the district.

Poultry processing was the district's second-largest job producer with a total impact of 3,590 jobs. Poultry processing generated the largest contribution to GDP in District 8 with an estimated total value added impact of $355 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 8, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	4,346	1,576	5,922	1.36
Production	1,755	757	2,511	1.43
Processing and Manufacturing	2,591	820	3,411	1.32
Value Added ($ million)				
All Agriculture and Forestry	1,136	807	1,942	1.71
Production	559	380	939	1.68
Processing and Manufacturing	577	427	1,003	1.74
Employment				
All Agriculture and Forestry	15,850	10,000	25,850	1.6
Production	10,850	4,660	15,510	1.4
Processing and Manufacturing	5,000	5,340	10,340	2.1

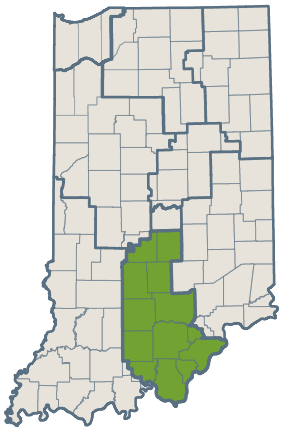
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 8, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	4,800	1,760	6,560	1.4	144	157	301	2.10
Poultry processing	1,830	1,760	3,590	2.0	221	134	355	1.61
Soybean and other oilseed farming	1,860	1,250	3,110	1.7	177	98	275	1.55
Hog and pig production	1,811	253	2,064	1.1	79	19	98	1.24
Support activities for agriculture and forestry	1,520	290	1,810	1.2	30	21	51	1.69
All other industries	4,029	4,687	8,716	2.2	485	378	863	1.78

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Congressional District 9



The agriculture- and forestry-related establishments in Indiana's Congressional District 9 generated an estimated $1.5 billion in direct economic output (i.e., sales) in 2012. Approximately 42 percent of this total was generated by commodity production from the district's farms and forests, while agriculture-related processing and manufacturing accounted for the remaining 58 percent of direct output. Adding in the economic ripple effects initiated by the sale of agricultural products, the total economic footprint of agriculture and forestry industries in the district was $1.9 billion.

In 2012, agricultural activities in District 9 generated an estimated $682 million in value added—a measure that highlights agriculture's contribution to GDP. The ratio of total value added to the direct effect yields a multiplier of 1.62, meaning that every dollar of GDP directly related to agriculture in District 9 generates an additional $0.62 in economic activity elsewhere in the district.

As for employment, more than 13,300 jobs in District 9 were supported either directly or indirectly by agriculture in 2012. The employment multiplier of 1.4 indicates that every 10 agricultural jobs in District 9 generate another four jobs in other industries in the area.

Among individual agricultural industries, corn, wheat, and other grain farming supported the greatest number of jobs in District 9 at an estimated 3,400 in 2012, which accounted for 25 percent of agriculture's total employment impact in the district.

Soybean and other oilseed farming was the district's second-largest job producer with a total impact of 1,960 jobs. Veneer and plywood manufacturing generated the largest contribution to GDP in District 9 with an estimated total value added impact of $110 million.

The Economic Contributions of Agriculture and Forestry to Indiana's Congressional District 9, 2012

	Direct Effects	Ripple Effects	Total	Multiplier
Total Output ($ million)				
All Agriculture and Forestry	1,453	461	1,914	1.32
Production	606	209	815	1.35
Processing and Manufacturing	848	251	1,099	1.30
Value Added ($ million)				
All Agriculture and Forestry	422	260	682	1.62
Production	190	122	312	1.64
Processing and Manufacturing	232	138	370	1.60
Employment				
All Agriculture and Forestry	9,780	3,550	13,330	1.4
Production	7,150	1,600	8,750	1.2
Processing and Manufacturing	2,630	1,950	4,580	1.7

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Agriculture and Forestry's Economic Contribution in Congressional District 9, 2012, Top 5 Industries

Industry	Employment Effects				Value Added Effects ($ million)			
	Direct Effects	Ripple Effects	Total	Multiplier	Direct Effects	Ripple Effects	Total	Multiplier
Corn, wheat, and other grain farming	2,890	510	3,400	1.2	39	41	81	2.04
Soybean and other oilseed farming	1,500	460	1,960	1.3	64	34	99	1.53
Veneer and plywood manufacturing	980	580	1,560	1.6	69	41	110	1.60
Hog and pig production	1,166	82	1,248	1.1	25	6	31	1.24
Support activities for agriculture and forestry	590	90	680	1.2	8	6	14	1.80
All other industries	2,654	1,828	4,482	1.7	216	132	347	1.61

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

Appendix

Data Sources

The IBRC performed the analysis of the crop and livestock production industries using data from the USDA's 2012 Census of Agriculture. The USDA conducts the Census of Agriculture every five years, and the first of the 2012 data were released in early 2014. Results from the census are available for several different levels of geography, including states, congressional districts and counties. The IBRC aggregated county-level data to create estimates for the crop reporting districts.

In cases where a single farm or establishment is the dominant producer in a specific industry in a given geographic area, the USDA will suppress the data for that industry in that geographic area so that they don't reveal information about individual producers. Data suppression can be common in smaller industries and in smaller counties. For this analysis, IBRC researchers estimated values for any suppressed data cells. The basic estimation approach was to sum the actual reported values for each Indiana county in a given industry and then find the difference, or residual, between that total and the state total in the same industry. The residual was then allocated proportionally to each suppressed county based on these county's output estimates in the corresponding industry in their IMPLAN models for 2012. In some cases, the USDA would publish county rankings for suppressed industries, which the research team could use to determine if the estimates we generated were reasonable, and to make adjustments if not. The estimated data were then controlled to county and state totals.

For the analysis of processing and manufacturing industries, the research team relied on the output estimates for each industry in each geographic area found in the 2012 IMPLAN models. IMPLAN derives these numbers primarily from Bureau of Economic Analysis and USDA data, and they cover both wage and salary workers and the self-employed.

Defining Agriculture and Forestry

One challenge in this analysis was deciding which collection of industries properly defines agriculture and forestry. The selection of production industries is straightforward; the research team simply included all industries in sector 11 of the NAICS industry classification scheme with the exception of fishing, hunting and trapping (subsector 114). The NAICS subsectors for production included in this study are crop production, animal production, forestry and logging, and support activities for agriculture and forestry.

The selection of processing and manufacturing industries was trickier. There have been several studies similar to this one conducted in other states. Some have used very broad definitions of agriculture that include nearly all types of food, fabric and wood product manufacturing, while others have attempted to focus their analysis on processing industries that are most closely tied to the farm or forest. The IBRC research team selected the latter approach so as not to inflate the impact estimates with industries that have little direct link to Indiana agriculture.

The research team used the IMPLAN model to help distinguish which industries it considered primary agricultural processing and manufacturing. The IMPLAN model features production functions for each industry, which are akin to a recipe of the production inputs that each industry needs to produce its output. These production functions also include regional purchase coefficients (RPCs), which are estimates of the share of each production input that is supplied by other Indiana firms. The research team used the RPCs to calculate for each industry the share of production inputs that are sourced from Indiana. A large share of the inputs for Indiana's cheese makers, for instance, come from Indiana-based agriculture production, while only a tiny share of the inputs for local tortilla makers come directly from state agriculture production.

The research team settled on a 7 percent threshold, meaning that a processing or manufacturing industry is considered part of agriculture and forestry if at least 7 percent of its production inputs come directly from Hoosier farms or forests. We chose this threshold for two reasons: there was a large break in the values of the ranked list of industries at this point and it began to make intuitive sense to exclude the industries just below this level. **Table 9** lists each industry that was included in this analysis along with each industry's total contribution to Indiana output, value added and employment (total effects = direct + indirect + induced effects).

Adjustments to the IMPLAN Model

As mentioned in the body of the report, the research team adjusted the IMPLAN model to eliminate double counting in the estimates of indirect and induced effects. Without adjustments, the economic activity and employment related agricultural industries would be double counted when these industries supply production inputs to one another. Researchers followed the procedures outlined by the IMPLAN Group to avoid double counting when conducting multi-industry contribution analysis. These adjustment procedures are online at "Multi-Industry Contribution Analysis" (https://implan.com/index.php?option=com_content&view=article&id=467). Note that there is still some double counting

when the direct output of multiple industries is added together because the value of production inputs is embedded in the output figures.

Key Terms

Direct Effects: Refers to the increase in final demand or employment in Indiana that can be attributed specifically to agriculture or forestry.

Indirect Effects: A measure of the change in dollars or employment caused when agricultural producers increase their purchases of goods and services from suppliers and, in turn, those suppliers purchase more inputs and so on throughout the economy. A corn milling operation, for instance, will buy inputs from a supplier. Those suppliers buy electricity to power their plants, buy material inputs for their products, and employ people to run the equipment. These transactions are the indirect ripple effects associated with the corn milling operation's purchases.

Induced Effects: These reflect the changes—whether in dollars or employment—that result from the household spending of agricultural employees and their suppliers. Induced spending will increase or decrease as output changes along the economic supply chain. For example, as a farm's production and sales increase, the output of its supply chain increases correspondingly. Those output changes also result in changes in household income and spending of suppliers' employees. Induced effects represent the change in overall economic output and employment resulting from such household spending changes.

Total Effects: The total of all economic effects is the size of the economic impact and is the sum of the direct, indirect and induced effects.

Tax Effects: The IMPLAN model tracks the tax effects associated with all the transactions and economic activity associated with the direct and ripple effects. For example, household spending at retailers generates state sales tax. In addition, those retailers pay property taxes to local governments. As a result, this analysis was also able

Table 9: Total Economic and Employment Contributions of Each Agriculture and Forestry Industry, 2012

Description	Total Output ($ million)	Total Value Added ($ million)	Total Employment
Soybean and other oilseed farming	4,596	2,264	26,750
Corn, wheat, and other grain farming	6,836	2,385	49,910
Vegetable and melon farming	183	99	770
Fruit farming	19	11	80
Greenhouse, nursery, and floriculture production	193	120	980
Tobacco farming	8	0	0
All other crop farming	125	51	450
Cattle ranching and farming	666	167	2,480
Dairy cattle and milk production	1,008	407	3,380
Poultry and egg production	2,076	566	4,570
Hog and pig production	1,762	907	16,920
All other animal production	85	44	820
Forest nurseries, forest products, and timber tracts	50	23	180
Logging	96	33	1,110
Support activities for agriculture and forestry	574	370	9,520
Flour milling and malt manufacturing	1,163	332	2,700
Wet corn milling	4,472	1,135	9,390
Soybean and other oilseed processing	1,507	223	2,310
Fats and oils refining and blending	2,126	523	2,530
Chocolate and confectionery manufacturing from cacao beans	8	2	20
Confectionery manufacturing from purchased chocolate	488	191	1,780
Non-chocolate confectionery manufacturing	651	258	2,210
Frozen food manufacturing	197	63	820
Fruit and vegetable canning, pickling, and drying	2,464	934	7,610
Fluid milk and butter manufacturing	3,073	991	6,660
Cheese manufacturing	202	29	470
Dry, condensed, and evaporated dairy product manufacturing	372	100	940
Ice cream and frozen dessert manufacturing	549	210	2,040
Animal (except poultry) slaughtering, rendering, and processing	2,503	506	10,010
Poultry processing	2,045	681	6,930
Seafood product preparation and packaging	12	3	40
All other food manufacturing	1,090	453	4,450
Sawmills and wood preservation	581	174	3,000
Veneer and plywood manufacturing	603	227	3,130
Engineered wood member and truss manufacturing	358	157	2,060
Ethanol production	1,337	270	1,630
Total	44,078	14,908	188,640

Source: IBRC, using data from the USDA and the IMPLAN economic modeling software

to estimate the federal, state and local government tax flows.

Multiplier: The multiplier is the magnitude of the economic response in a particular geographic area associated with a change—either an increase or a decrease—in the direct effects. For example, multiply every dollar of agricultural and forestry output by 1.41 to find an estimate of the total contribution of this activity to Indiana's economy. Another way to look at it is that every dollar of output supports $0.41 in additional economic activity in the state.

Output: The value of an industry's total production. Output includes both the price of production inputs and the value added of the industry.

Value Added: Also known as gross domestic product (GDP), value added is the difference between an industry's total output and the cost of its production inputs. Value added consists of four components: employee compensation, proprietor income, other property income and indirect business tax.

About IMPLAN Economic Impact Modeling Software

MIG, Inc. (formerly the Minnesota IMPLAN Group) is the company responsible for developing IMPLAN data and software. Using classic input-output (I-O) analysis, IMPLAN can be used to measure the economic effects of an economic event, such as a factory closing or a new plant opening, or the size of the economic footprint of an economic entity like a production facility, headquarters or university.

The Economic Theory behind IMPLAN

IMPLAN is built on a mathematical I-O model that expresses relationships between sectors of the economy in a chosen geographic location. In expressing the flow of dollars through a regional economy, the I-O model assumes fixed relationships between producers and their suppliers based on demand. It also omits any dollars spent outside of the regional economy—say, by producers who import raw goods from another area or by employees who commute and do their household spending elsewhere.

The idea behind input-output modeling is that the inter-industry relationships within a region largely determine how that economy will respond to economic changes. In an I-O model, the increase in demand for a certain product or service causes a multiplier effect, layers of effect that come in a chain reaction. Increased demand for a product affects the producer of the product, the producer's employees, the producer's suppliers, the supplier's employees, and so on, ultimately generating a total effect in the economy that is greater than the initial change in demand. Say demand for Andersen Windows' wood window products increases. Sales grow, so Andersen has to hire more people, and the company may buy more from local vendors, and those vendors in turn have to hire more people … who in turn buy more groceries. The ratio of that overall effect to the initial change is called a regional multiplier and can be expressed like this:

(Direct Effect + Indirect Effects + Induced Effects) / (Direct Effect) = Multiplier

Multipliers are industry and region specific. Each industry has a unique output multiplier, because each industry has a different pattern of purchases from firms inside and outside of the regional economy. (The output multiplier is in turn used to calculate income and employment multipliers.)

Estimating a multiplier is not the end goal of IMPLAN users. Most wish to estimate other numbers and get the answers to the following questions: How many jobs will this new firm produce? How much will the local economy be affected by this plant closing? What will the effects be of an increase in product demand? Based on those user choices, IMPLAN software constructs "social accounts" to measure the flow of dollars from purchasers to producers within the region. The data in those social accounts will set up the precise equations needed to finally answer those questions users have—about the impact of a new company, a plant closing or greater product demand—and yield the answers.

IMPLAN constructs its I-O model using aggregated production, employment and trade data from local, regional and national sources, such as the U.S. Census Bureau's annual County Business Patterns report and the U.S. Bureau of Labor Statistics' annual report called Covered Employment and Wages. In addition to gathering enormous amounts of data from government sources, the company also estimates some data where they haven't been reported at the level of detail needed (county-level production data, for instance), or where detail is omitted in government reports to protect the confidentiality of individual companies whose data would be easily recognized due to a sparse population of businesses in the area.

IMPLAN's accessibility and ease of use also make it a target of criticism by some economists, who charge that in the wrong hands, the software—or any input-output model—will produce inflated results at best, and at worst, completely ridiculous projections. Anyone can point and click their way to an outcome without fully understanding the economics in which the tool is grounded and without knowing how to look at data sets with a nuanced eye. The IBRC has two analysts that have attended advanced training in the use of the IMPLAN modeling software. The estimates that the IBRC analysts generate are pressure-tested and triple-checked to ensure that they are accurate and reflect the most trustworthy application of the modeling software. In all instances, the most conservative estimation assumptions and procedures are used to produce the IMPLAN results.