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A publication of the Indiana Business Research Center at IU's Kelley School of Business

The Economic Contributions of Indiana Agriculture

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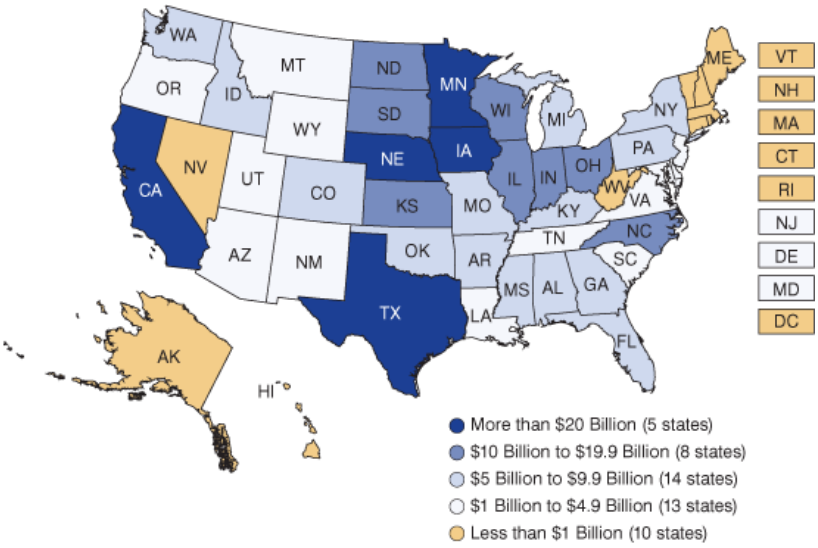
Indiana was home to nearly 58,700 individual farms as tallied by the 2012 Census of Agriculture. These farms cover more than 14.7 million acres, accounting for 64 percent of the state's total land area.

Hoosier farmers combined to sell $11.2 billion worth of unprocessed agricultural commodities in that same year—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).

Figure 1: Value of Agricultural Production by State



Source: U.S. Department of Agriculture, 2012 Census of Agriculture

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.

Table 1: Value of Indiana Agriculture by Commodity

	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

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. The following tables aim to account for all of these ripple effects and to provide estimates of the full economic contributions of agriculture.

For the purposes of this analysis, agriculture as an industry consists of 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. The processing and manufacturing activities refer to industries that utilize farm and forest production as the key input into their finished goods. Examples include fruit and vegetable canning, animal processing, ethanol production, and veneer and plywood manufacturing, to name a few.

The Indiana Business Research Center (IBRC) research team used IMPLAN economic modeling software to estimate the total economic effect of Indiana agriculture and forestry. The 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.

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 2**).

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.

Table 2: 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.

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." 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.

Indiana's agriculture-related establishments combined to generate an estimated $7.9 billion in direct value added in 2012 (see **Table 2**, second section). 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 eight jobs in the state.

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 3**). 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.**

Table 3: 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.
Source: IBRC, using data from the USDA and the IMPLAN economic modeling software.

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).

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.

As with the employment effects, grain and soybean production are easily agriculture's top contributors to Indiana value added (see **Table 4**). 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 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.

Table 4: 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.

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

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.

These findings 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.

*Note: This article is an excerpt from a larger report titled "**Beyond the Farm: A State and Regional Report on the Economic Contribution of Farms, Forests and Related Industries**." View this report to find estimates of the economic contributions of agriculture for Indiana's congressional districts and its USDA crop reporting districts. The report also includes a detailed methodology.*

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The Rearview Mirror: A 90-Year Retrospective on Indiana's Economy

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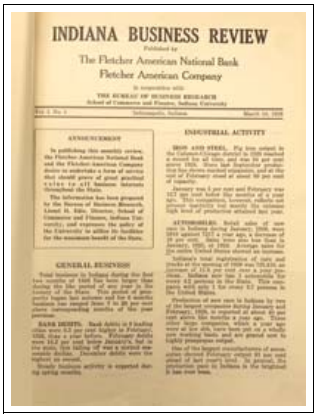
Ninety years ago, in 1925, the Indiana Business Research Center (IBRC) was born as the Bureau of Business Research in Indiana University's School of Commerce and Finance (predecessor to today's Kelley School of Business). Reflecting on this milestone leads one to wonder how different Indiana's economic and business climate is now vs. then.

Unfortunately, many of the key data series used to track employment, economic output, etc., either don't go back that far or they've changed how indicators are defined or measured, impeding direct comparisons over such a long period. Fortunately, in its very first year, the new Bureau had the insight to launch a periodical, the *Indiana Business Review* (IBR), to inform the state's business and government leaders about economic conditions and trends.[1]

Leafing through the pages of the early IBR reveals that much has changed, yet much remains quite similar despite the decades that have transpired. We'd thus like to share a few observations with the reader to reflect on these comparisons and contrasts, drawing from Volumes 1-5 of the IBR, which provided monthly perspective on Indiana's economy from March 1926 through December 1930.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The Roaring Twenties

The IBRC and the *Indiana Business Review* were born at a time of great economic vitality. The opening paragraph from the first IBR issue states,

> *"Total business in Indiana during the first two months of 1926 has been larger than during the like period of any year in the history of the State. This period of prosperity began last autumn and for 6 months business has ranged from 7 to 20 per cent above corresponding months of the year previous."*

The mid-1920s were indeed times of economic enthusiasm. The first IBR issue chronicled impressive gains (that often set records) in Indiana banking activity, industrial production, electricity generation, building-stone production and employment. Construction was strong, too, with half of all new construction dedicated to building homes to accommodate Indiana's growing population. Other indicators showing robust performance at the time included retail sales, freight car loadings and bank deposits.

The inaugural issue also summarized local conditions in the state's key cities. In Indianapolis, for example, auto production and manufacturing generally were upbeat and building permits were up 24 percent year-over-year. Blast furnaces in Gary were running at close to 100 percent of capacity. Building was up in South Bend, and auto production was 40 percent ahead of the previous year. Most Terre Haute factories were running full-time, though more than a third of the region's coal miners were out of

work due to “labor union trouble,” mild weather and price competition.

Thus, despite occasional bumps here and there, much of the Indiana economy showed substantial upward momentum in 1926. This reflects the national economic picture of growing cities, significant industrial expansion, and broader participation by the public in financial markets as investors borrowed at low rates to buy stocks, hoping to cash in on rising share values. In the spirit of the times, economist Irving Fisher proclaimed that “stock prices have reached what looks like a permanently high plateau.”

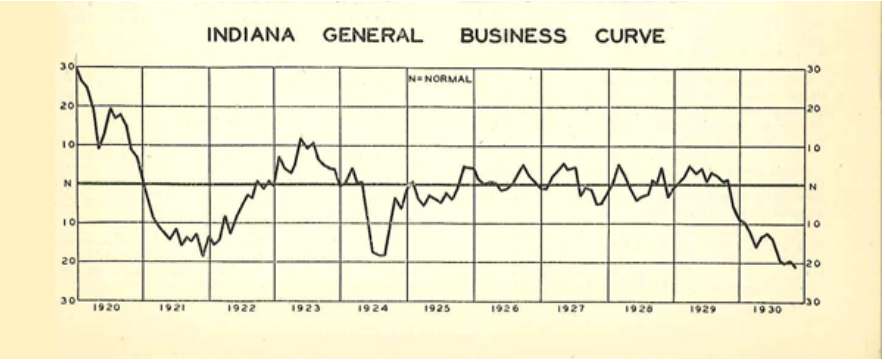
From Boom to Bust

Of course, what goes up must come down, as the U.S. and global economies did in the late-1920s. The stock market crash of October 1929 hammered the point home, leading to the collapse not only of the fortunes of major investors, but also of ordinary Americans and Hoosiers. Unemployment shot up and remained high for many years as the Great Depression slogged along.

It was just a year earlier that the IBR introduced a new multi-factor index of economic activity to track the Hoosier economy. The Indiana General Business (IGB) Curve graphed a weighted average of nine metrics tracked by the Bureau: automobile, coal, stone, electric power and pig iron production; building construction; bank debits; and hog and cattle receipts. These were all seasonally adjusted and weighted according to their importance to the Indiana economy, and then integrated into a composite index.

As shown in **Figure 1**, the IGB Curve depicts the percentage by which a given month’s activity was above or below the typical value for that month. A zero (“N”) value means business activity was normal, while positive values indicate activity above the normal level and conversely for negative values.

Figure 1: Indiana Economic Conditions, 1920 to 1930



Source: *Indiana Business Review, Vol. V, no. 11, November 20, 1930*

From late 1925 through most of 1929, Indiana economic conditions hovered within about ±5 percent of the normal range, with above-average results more common than below-average. But the last quarter of 1929 began a precipitous plunge to more than 20 percent below normal in late 1930. The December 1930 IBR reported that retail customers were making as many purchases as a year earlier, but in smaller quantities. “Freight car loadings at Indianapolis during November were far under any month in recent years,” as were new car registrations and used car sales. Gasoline sales, however, were up year over year.

Not surprisingly, automobile manufacturers were operating on reduced schedules. Limestone shipments for building reached their lowest point in years, and steel mills were running at 45 percent of capacity. Building permits were down 55 percent from a year earlier, and 61 percent from 1928.

Given such weak conditions, it’s not surprising that fewer workers were quitting their jobs (generally less than 1 percent across sectors), though November 1930 layoffs rose greatly in certain industries—reaching 17 percent in metals-and-metal-products and 32 percent in vehicles—while remaining in the low single-digit percentages in most others.

Then and Now

This brief trip back through history offers a contrast between Indiana’s experience during the harsh economic conditions of the early Great Depression years and how we fared in the Great Recession of 2007-2009. The recent recession was significantly less drastic, prolonged and widespread than the depression of the 1920s and 1930s. Indiana felt the Great Depression’s blow across many industries, whereas the current decade’s recession hit our manufacturing sector substantially harder than other industries (though most sectors experienced job losses).

And though Hoosiers’ recovery from the Great Recession was extended over several years, the state’s economy actually shrank for

less than two years. Indiana employment has returned to near-record-high levels in recent months, unemployment is down to levels last seen in 2008, and our state's total economic output is higher than ever.

As Indiana leaders seek to build on this momentum to reach even greater heights, they may find it helpful to review how the Hoosier economy has performed in the past.

Notes

1. Early volumes of the IBR were actually published by Indianapolis-based Fletcher American National Bank and the Fletcher American Company, in cooperation with the Bureau of Business Research, whose staff compiled and produced the content.

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The Great Recession's Influence on Indiana's Wood Products Industry

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As a state, we often take for granted the abundance, quality and value of the forestland that comprises approximately 20 percent of Indiana's land area. Within the wood products industry, the state is known for its hardwoods, especially oak and hickory. Similar to other industries, forestry was heavily impacted by the recession. This article will explore Indiana's wood products industry and articulate the economic trends before and after the Great Recession.

The Forestry Industry

Indiana will likely never return to the time where forestland covered 85 percent of the state (in 1800), due to the need for clearing for agriculture, community development and infrastructure. Interestingly, however, the current forestlands have stayed relatively the same since 1860.

The forestry industry entails more than the logging of trees; rather, it is routinely classified into three sectors—primary, secondary and ancillary.

The primary wood products sector includes firms that harvest, transport and perform the initial processing of logs. By adding additional value to wood, the secondary wood products sector includes businesses that dry, plane, cut and assemble wood products into parts or finished products. The final ancillary sector is comprised of firms that are related to the industry, but are not directly a part of either primary or secondary wood product sectors.

Table 1 shows the breakdown of each sector based on the North American Industry Classification System (NAICS) and the corresponding 2013 data on establishments, employment and average wage from the Quarterly Census of Employment and Wages (QCEW) produced by the U.S. Bureau of Labor Statistics.

Table 1: Wood Products Industry by Sector, 2013

Sector	NAICS	Industry
Primary 4,767 Employees 254 Establishments $34,993 Average Wage	113110	Timber Tract Operations
	113210	Forest Nurseries and Gathering of Forest Products
	113310	Logging
	321912	Cut Stock, Resawing, Lumber and Planing
	321113	Sawmills
	321114	Wood Preservation
	321211	Hardwood Veneer and Plywood Manufacturing
	321212	Softwood Veneer and Plywood Manufacturing
	321213	Engineered Wood Member (except Truss) Manufacturing
	321214	Truss Manufacturing
	321219	Reconstituted Wood Product Manufacturing
Secondary 26,070 Employees 762 Establishments $36,367 Average Wage	321911	Wood Window and Door Manufacturing
	321918	Other Millwork (including Flooring)
	321920	Wood Container and Pallet Manufacturing
	337110	Wood Kitchen Cabinet and Countertop Manufacturing
	337121	Upholstered Household Furniture Manufacturing
	337122	Non-upholstered Wood Household Furniture Manufacturing

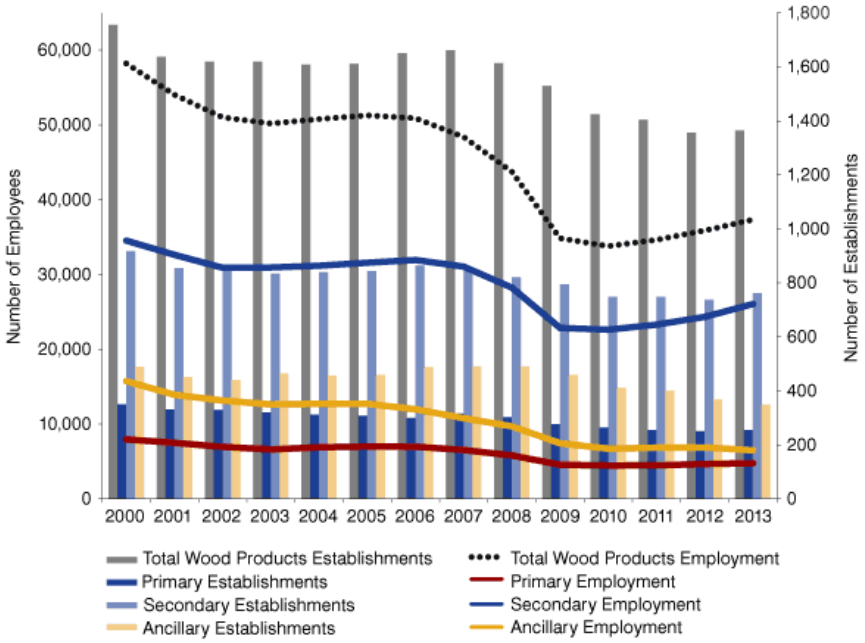
	337127	Institutional Furniture Manufacturing
	337129	Wood Television, Radio and Sewing Machine Cabinet Manufacturing
	337211	Wood Office Furniture Manufacturing
	337212	Custom Architectural Woodwork and Millwork Manufacturing
	337215	Showcase, Partition, Shelving and Locker Manufacturing
	337920	Blind and Shade Manufacturing
	321999	All Other Miscellaneous Wood Product Manufacturing
Ancillary 6,505 Employees 349 Establishments $47,368 Average Wage	115310	Support Activities for Forestry
	321991	Manufactured Home (Mobile Home) Manufacturing
	321992	Prefabricated Wood Building Manufacturing
	339995	Burial Casket Manufacturing
	423210	Furniture Merchant Wholesalers
	423310	Lumber, Plywood, Millwork and Wood Panel Merchant Wholesalers

Source: Purdue Extension, using definitions from the Louisiana Forest Products Development Center and U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data

Trends

The wood products industry tends to follow the economic cycles, thus it's of interest to see if that trend held true since 2000 (2013 is the most recent data year available). During this time, the state experienced an economic boom, two downturns and has since had lethargic, yet steady, growth. **Figure 1** shows the general trend of the employment and establishments over time for Indiana in both aggregate and by wood products sector.

Figure 1: Indiana Wood Products Industry Employment and Establishment Trends



Source: Purdue Extension, using U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data

The Great Recession began in December 2007 and ended in June 2009, thus analysis was done looking at several points in time for Indiana: 2000-2013, 2003-2006 (prior to recession), 2007-2009 (during the recession) and 2010-2013 (post-recession).

Impact of Recession on Counties

The employment trends of the wood products industry varies considerably among counties. As of 2013, the top three counties that employ wood products industry workers were Dubois, Elkhart and Marion counties. These top three counties have not changed over the past 13 years. **Table 2** shows the counties with the most substantial employment change in percentage terms since 2000. Hancock County led the way with a 381 percent change in employment since 2000, largely due to expansions within the secondary wood products sector. Wabash County had one of the largest losses in employment, due to drawdowns in both primary and

secondary wood products establishments.

Table 2: Top Employment Changes in the Wood Products Industry

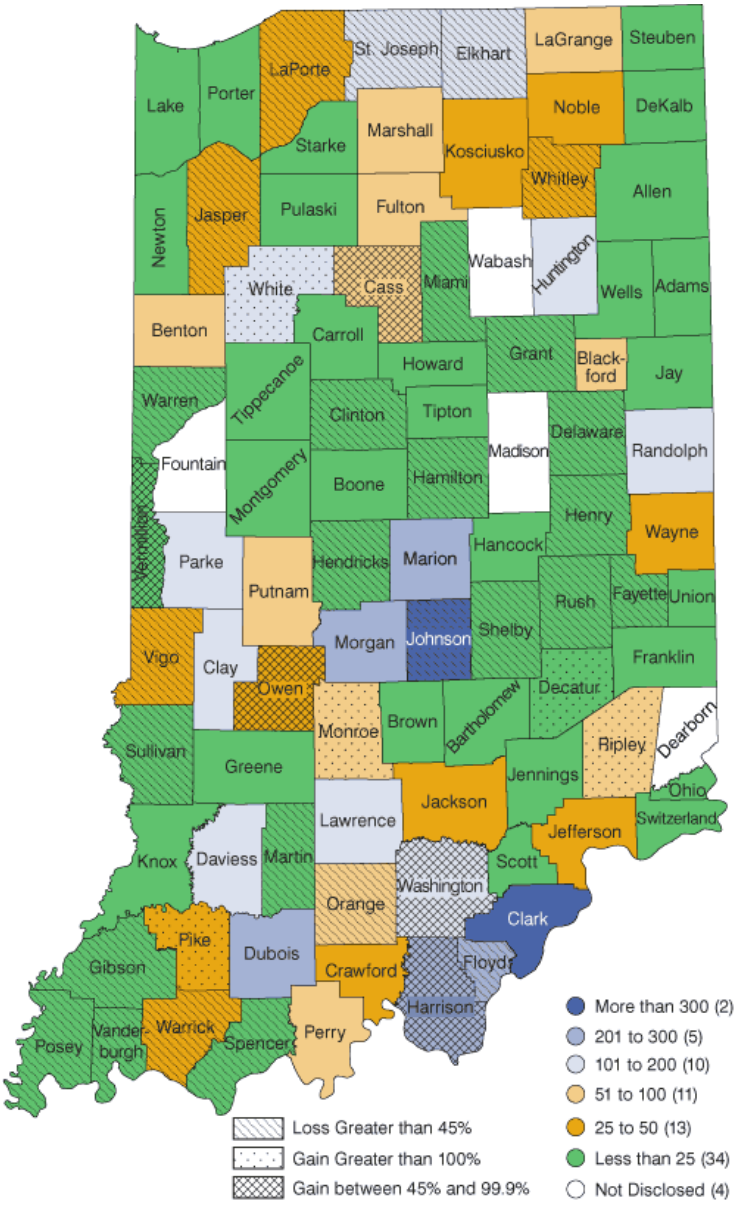
County	Job Growth since 2000	Change	County	Job Decline since 2000	Change
Hancock	179	380.9%	Wabash	-112	-95.7%
Boone	44	366.7%	Carroll	-460	-94.5%
Noble	252	237.7%	Scott	-69	-83.1%
Steuben	37	132.1%	Henry	-83	-78.3%
Grant	531	107.9%	Bartholomew	-166	-74.1%
Daviess	280	99.6%	Jackson	-439	-73.5%
Decatur	15	93.8%	Shelby	-324	-70.4%
Jay	46	86.8%	Harrison	-621	-69.5%
Huntington	77	70.0%	Johnson	-889	-65.8%
Marshall	194	39.8%	Sullivan	-80	-65.6%

Source: Purdue Extension, using U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data

Primary Wood Products Sector

The primary wood products sector consists of firms that harvest, transport and conduct the initial processing of logs. In 2013, Indiana had 254 of these firms with 4,767 employees, earning an average annual wage of $34,993. These jobs are present throughout the state: the top three employing counties being Johnson, Clark and Dubois counties (see **Figure 2**). Over the last 13 years, only two industries within this sector saw employment growth—softwood veneer and plywood manufacturing and engineered wood member (except truss) manufacturing, gaining a total of 255 jobs. These same two industries also had the largest employment growth since the recession, for a total of 425 jobs.

Figure 2 : Primary Wood Products Employment by County, 2000 to 2013



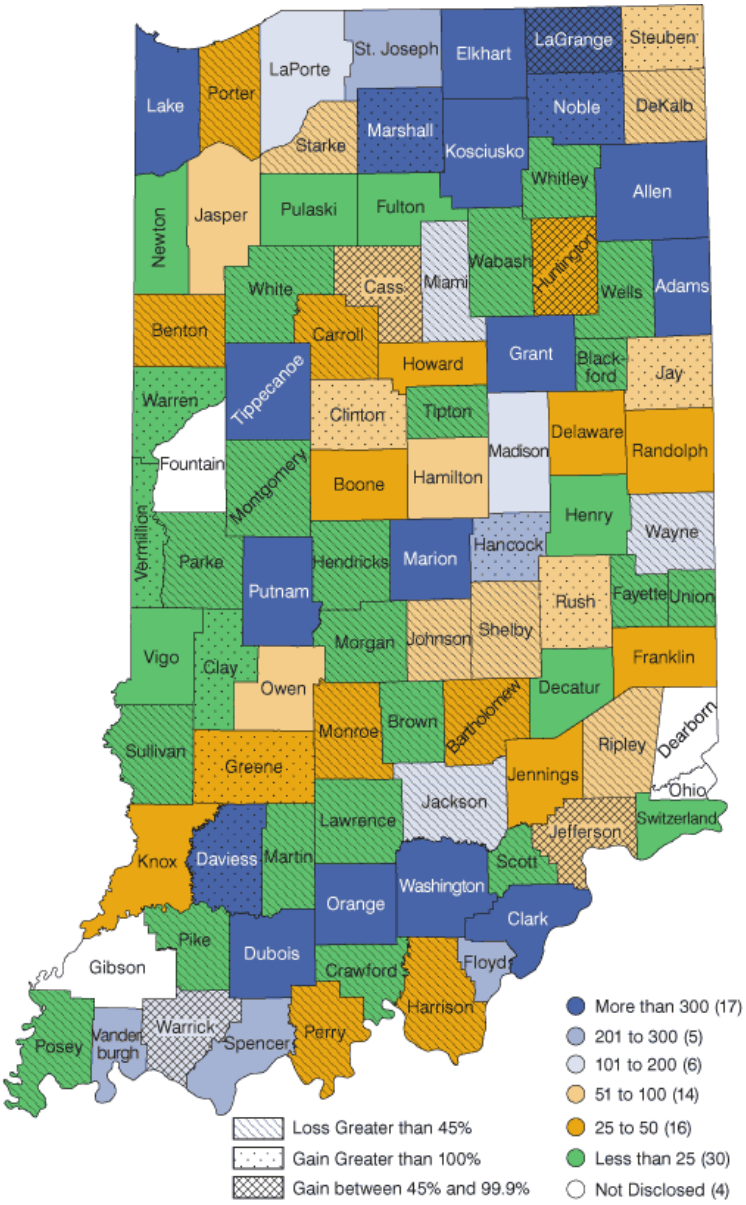
Source: Purdue Extension, using U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data

Statewide, the primary sector had a 40.1 percent loss in employment and a 27.4 percent decline in establishments. Since the end of the recession, Vigo County has seen the most expansion (1,467 percent) followed by Warrick county (255 percent) and White county (146 percent). However, Vigo and Warrick counties have lost a total of 173 jobs in the past decade—thus it appears they are rebounding. On the other end of the spectrum, several counties are still shedding jobs, such as Hamilton County (80 percent), Sullivan County (59 percent) and Floyd County (31 percent). All three of these counties have been on the downward trend since 2003.

Secondary Wood Products Sector

Businesses in the secondary wood products sector further add value to wood by drying, planing, cutting and assembling wood products into parts or finished products. In 2013, Indiana had 762 of these businesses, employing 26,070 workers at an average wage of $36,367. Dubois County remains the hub of secondary wood production in Indiana with over 6,452 employees followed by Elkhart County (4,902 employees). All other counties have significantly fewer employees than these two counties (see **Figure 3**).

Figure 3 : Secondary Wood Products Employment by County, 2000 to 2013



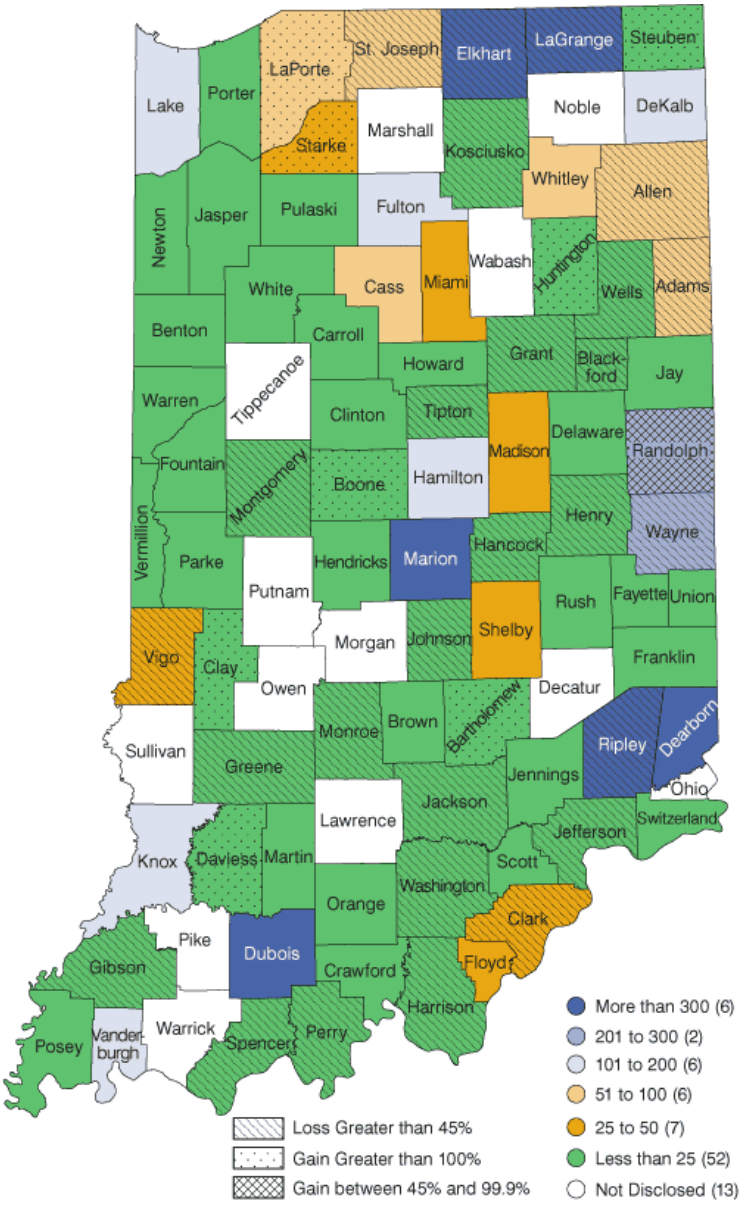
Source: Purdue Extension, using U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data

This sector had the largest quantity of employment loss statewide during the recession years (8,228 employees), yet has also had the strongest rebound since 2010 (3,435 employees). Forty percent of this rebound came from the wood kitchen cabinet and countertop manufacturing industry. Counties with the strongest percent gains in employment since the end of the recession had relatively small initial employment numbers (fewer than 25 employees). Jay, Grant, Kosciusko and Putnam counties were exceptions, which collectively have seen a growth of 982 employees since 2010. Counties who used to have a workforce greater than 200 in secondary wood products, yet have experienced a continuous decline in employment in the last decade include Wayne, Harrison, Carroll, Shelby and Miami counties. In total, these counties have lost 1,713 employees since 2003 with 367 employees lost after the recession.

Ancillary Wood Products Sector

The ancillary sector includes firms related to the forestry industry but that are not directly a part of the primary or secondary wood product sectors. As of 2013, Indiana had 349 firms employing 6,505 workers at an average wage of $47,368 in the ancillary sector. Elkhart remains the county with the largest pool of ancillary wood products industry workers (1,880), due to the presence of manufactured home manufacturing firms (see **Figure 4**). The next largest employing county was Marion County (700 employees), likely due to the large number of wood products' wholesalers. Ripley County, the home of burial casket manufacturing firms, ranked third with 440 workers in 2013.

Figure 4 : Ancillary Wood Products Employment by County, 2003-2013



Source: Purdue Extension, using U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data

Of the top 10 employing counties in 2013, 90 percent lost workers in the past decade—culminating to a total of 4,815 jobs. Since the end of the recession, only 17 counties have seen employment growth in this sector, with LaGrange County leading the pack with 167 new jobs (78 percent growth). Statewide, manufactured home and prefabricated wood building manufacturing sectors have had the most severe employment loss (-76.5 percent and -78.5 percent, respectively) since 2000. It is still speculated that this sector may be increasing the use of automated production, thus eliminating positions formerly held by individuals. The aforementioned industries may have experienced the automation the most, thus explaining the dramatic drop in employment since 2000. All other industries within the ancillary sector have also experienced a decline in employment, but none as severe as the manufactured home and prefabricated wood building manufacturing industries.

Exports of Indiana Wood Products

In 2014, Indiana exported $194.5 million of goods to other countries, down from the peak experienced in 2007 ($232.4 million), yet a 23 percent increase from 2004's export value.[1] Of all the agricultural exports leaving the state, 11.3 percent are wood products. In 2004 (earliest time provided), wood products comprised 32.1 percent; however, total agricultural exports have more than tripled in the past decade.

Nationally, Indiana ranked 17th among states for wood product exports in 2014. Among hardwood-producing states east of the Mississippi River, Indiana ranked 10th.[2] The top three exported items in both 2004 and 2014 were sawn sheet wood, oak lumber and non-coniferous lumber (primary sector)—comprising 51 percent of all exports.

In 2014, the top five export destinations for Indiana's wood products were Canada, China, Japan, Mexico and Germany; capturing 71.9 percent of all exports. Mexico's demand for Indiana's wood products accelerated in 2005, placing it in the top 10 destinations. The remaining top four destinations have historically been strong markets for Indiana. The top imported wood product by the leading destinations were as follows:

- Canada and Germany: Sawn sheet wood
- Japan: Oak and non-coniferous lumber
- China: Ash lumber as well as non-coniferous and oak logs
- Mexico: Non-coniferous lumber

Conclusions

Indiana's forests produce high quality wood that is converted into many different uses. Indiana is fortunate to have a productive and high quality stand of forestland, yet the industry is vulnerable to economic cycles. Eleven percent of all exported agricultural products are wood products, but that has not kept the pace with other agriculture exports. Opportunities abound to further enhance the value of Indiana wood products to the economy through its export channels. Doing so would likely help diversify existing markets and mitigate the effects from national economic cycles.

Notes

1. The 2010 article on wood products manufacturing (**www.incontext.indiana.edu/2010/sept-oct/article5.asp**) used WISERTrade as its data source, whereas the Global Agricultural Trade Service was used for this article—hence the differences in numbers.
2. Included states are Pennsylvania, Tennessee, Virginia, West Virginia, Kentucky, Wisconsin, New York, Ohio, Georgia, Indiana, Alabama, Maryland and Vermont.