National Grain and Feed Association

TRANSFORMING AMERICA'S HARVEST ®

# THE HARVEST ECONOMY

## 2025 Economic Impact of the U.S. Grain and Feed Industry

SEPTEMBER 2025

# Key Takeaways

America's grain and feed industry makes a positive economic contribution to every state and every congressional district in the country. Nationwide, grain and feed delivers ...

**1.16**
MILLION TOTAL U.S. JOBS

**$85.9**
BILLION IN WORKERS' WAGES

**$32.7**
BILLION IN FEDERAL, STATE, AND LOCAL TAXES

**$401.7**
BILLION IN TOTAL ECONOMIC IMPACT

All told, there are 9,683 grain and feed facilities in communities across America, and the 175,737 people employed directly by those facilities make, on average, $84,768 a year.

# Executive Summary

| | Direct | Supplier | Induced | Total |
|---|---|---|---|---|
| **Jobs (FTE)** | 175,737 | 612,016 | 372,578 | 1,160,332 |
| **Wages** | $14,896,942,064 | $45,303,934,096 | $25,701,858,043 | $85,902,734,203 |
| **Economic Impact** | $150,653,393,807 | $171,437,085,051 | $79,651,258,954 | $401,741,737,811 |
| | | | **Taxes** | $32,677,631,813 |

The Harvest Economy, an economic impact study of the U.S. grain and feed industry, estimates the economic contributions made by the grain and feed industry to the U.S. economy in 2025. John Dunham & Associates (JDA) conducted this research, which was funded by the National Grain and Feed Association (NGFA). This work used standard econometric models first developed by the U.S. Forest Service, and now maintained by IMPLAN, Inc. [1] Data came from NGFA, the Federal Government, and Data Axle.

The study defines the grain and feed industry as any business that engages in services related to, the production, processing, distribution, and industrial use of grain and feed products. The study measures the number of jobs in these sectors, the wages paid to employees, and their economic output.

Industries are linked to each other when one industry buys from another to produce its own products. Each industry in turn makes purchases from a different mix of other industries, and so on. Employees in all industries extend the economic impact when they spend their earnings.

Thus, economic activity started by the grain and feed industry generates output (and jobs) in hundreds of other industries, often in sectors and

states far removed from the original economic activity. The impact of supplier firms, and the "induced impact" of the re-spending by employees of the industry and supplier firms, is calculated using an input/output model of the United States. The study calculates the impact on a national basis, by state, and by congressional district.

The study also estimates taxes paid by the industry and its employees. Federal taxes include industry- specific excise and sales taxes, business and personal income taxes, FICA, and unemployment insurance. State and local tax systems vary widely. Direct retail taxes include state and local sales taxes, license fees, and applicable gross receipt taxes. The grain and feed industry pays real estate and personal property taxes, business income taxes, and other business levies that vary in each state and municipality. All entities engaged in business activity generated by the industry pay similar taxes.

The grain and feed industry is a dynamic part of the U.S. economy, accounting for about $401.7 billion in total economic output or roughly 1.3 percent of GDP.[2] The industry directly or indirectly employed approximately 1,160,332 Americans in 2025. These workers earned nearly $85.9 billion in wages and benefits, and overall, the industry paid $32.7 billion in federal, state and local business taxes.

The grain and feed industry is a major driver in the U.S. economy. The overall food and agriculture sector has an even larger impact. The National Grain and Feed Association helps fund an annual economic impact study of the larger agricultural community, which is also conducted by JDA. That study – Feeding the Economy – includes data by state and congressional district and is available at https://feedingtheeconomy.com.

# Summary Results

The Harvest Economy measures grain and feed companies, and their supply-chain partners in the United States, including companies that produce, process, and distribute grain and feed products, as well as the industrial use of said products. The industry contributes about $401.7 billion in economic output, or 1.3 percent of GDP, and through its production and distribution linkages impacts firms in 506 of the 528 sectors of the US economy.[3]

Other firms are related to the grain and feed industry as suppliers. These firms provide a broad range of goods and services, including equipment, personnel services, financial services, advertising services, consulting services or transportation services. Finally, a number of people are employed in government enterprises responsible for the regulation of the sector. All told, we estimate that the grain and feed industry is responsible for about 612,020 supplier jobs. These firms generate about $171.4 billion in economic activity.

An economic analysis of the grain and feed industry will also take additional linkages into account. While it is inappropriate to claim that suppliers to the supplier firms are part of the industry being analyzed[4] , the spending by employees of the industry, and those of supplier firms whose jobs are directly dependent on the grain and feed industry, should surely be included. This spending on everything from housing, to food, to entertainment and medical care makes up what is traditionally called the "induced impact" or multiplier effect. In other words, this spending, and the jobs it creates, is induced by the grain and feed industry. The induced impact of the sector is estimated to be nearly $79.7 billion, and generates just over 372,560 jobs, for a multiplier of about 0.53.[5]

An important part of an impact analysis is the calculation of the contribution of the industry to the public finances of the community. In the case of the grain and feed industry, the traditional business taxes paid by the firms and their employees provide $32.7 billion in revenues to the federal, state and local governments.

# Summary Results

The following table presents a summary of the total economic impact of the grain and feed industry in the United States, including a breakdown by state.

| | Alaska | Alabama | Arkansas | Arizona | California | Colorado |
|---|---|---|---|---|---|---|
| Direct Jobs | 23 | 1,684 | 4,492 | 635 | 5,295 | 1,582 |
| Supplier Jobs | 579 | 5,728 | 13,473 | 4,121 | 50,424 | 6,567 |
| Induced Jobs | 119 | 3,371 | 7,518 | 2,111 | 15,762 | 3,579 |
| Direct Wages | $1,364,400 | $132,482,500 | $248,500,600 | $53,721,200 | $477,931,900 | $102,110,600 |
| Supplier Wages | $44,979,400 | $365,236,300 | $823,148,500 | $269,846,100 | $3,303,633,700 | $422,250,000 |
| Induced Wages | $9,707,200 | $220,029,100 | $484,849,100 | $152,359,800 | $1,213,764,200 | $253,720,800 |
| Direct Output | $21,924,500 | $1,665,285,900 | $2,141,406,500 | $687,511,700 | $5,145,275,200 | $1,040,236,100 |
| Supplier Output | $188,210,900 | $1,574,381,200 | $3,192,646,700 | $870,901,600 | $8,546,175,600 | $1,618,997,600 |
| Induced Output | $111,170,600 | $763,168,100 | $1,423,769,900 | $594,593,200 | $4,232,030,100 | $930,709,200 |
| Federal Taxes | $899,000 | $139,318,500 | $330,654,400 | $79,512,800 | $920,126,500 | $166,423,100 |
| State Taxes | ($20,002,800) | $28,483,600 | ($170,426,400) | $53,133,700 | $1,010,591,900 | $48,572,400 |

Note: The negative tax reflects net government outflows in those states, largely attributable to subsidies and transfers due to the vital nature of the agriculture industry.

# Summary Results

| | Connecticut | D.C. | Delaware | Florida | Georgia | Hawaii |
|---|---|---|---|---|---|---|
| Direct Jobs | 87 | 7 | 1,729 | 1,148 | 1,725 | 17 |
| Supplier Jobs | 802 | 66 | 2,235 | 11,213 | 8,177 | 537 |
| Induced Jobs | 694 | 88 | 4,297 | 5,125 | 4,718 | 167 |
| Direct Wages | $7,121,600 | $323,300 | $452,775,300 | $77,250,700 | $137,486,600 | $1,833,300 |
| Supplier Wages | $62,829,700 | $6,057,600 | $195,363,500 | $666,791,600 | $547,766,900 | $22,412,000 |
| Induced Wages | $63,020,800 | $8,025,300 | $292,703,100 | $337,013,700 | $324,222,500 | $10,357,100 |
| Direct Output | $85,804,700 | $9,435,600 | $568,087,500 | $974,764,700 | $1,780,775,800 | $22,866,900 |
| Supplier Output | $342,558,400 | $27,913,700 | $780,897,800 | $2,299,739,300 | $2,061,606,800 | $88,700,600 |
| Induced Output | $330,609,200 | $102,058,300 | $905,875,400 | $1,200,319,400 | $1,139,209,300 | $114,334,000 |
| Federal Taxes | $2,216,200 | $256,500 | $188,725,200 | $131,812,700 | $205,583,900 | $9,600 |
| State Taxes | $668,00 | $99,700 | ($25,914,100) | $86,707,000 | $153,938,100 | ($27,300) |

# Summary Results

| | Iowa | Idaho | Illinois | Indiana | Kansas | Kentucky |
|---|---|---|---|---|---|---|
| Direct Jobs | 18,386 | 1,211 | 16,436 | 9,088 | 8,691 | 1,980 |
| Supplier Jobs | 52,629 | 5,454 | 42,697 | 28,340 | 22,685 | 9,941 |
| Induced Jobs | 36,538 | 2,600 | 35,455 | 18,118 | 14,474 | 3,955 |
| Direct Wages | $1,868,486,600 | $109,930,000 | $1,591,662,100 | $762,746,400 | $452,602,100 | $143,141,000 |
| Supplier Wages | $4,586,643,700 | $351,326,800 | $3,968,301,100 | $2,187,846,200 | $1,726,674,100 | $574,168,300 |
| Induced Wages | $2,324,922,700 | $170,423,100 | $2,503,290,100 | $1,229,626,300 | $975,242,300 | $265,379,500 |
| Direct Output | $18,631,566,800 | $973,218,300 | $11,950,453,300 | $8,130,957,700 | $6,312,636,400 | $1,629,203,300 |
| Supplier Output | $18,028,719,500 | $1,247,896,500 | $15,498,932,200 | $8,556,352,200 | $5,837,127,600 | $2,628,581,500 |
| Induced Output | $6,477,092,600 | $579,233,100 | $7,039,341,700 | $3,618,026,800 | $2,694,044,400 | $914,213,900 |
| Federal Taxes | $2,450,674,900 | $146,140,800 | $2,310,572,400 | $1,109,678,000 | $886,371,900 | $171,478,300 |
| State Taxes | $1,942,458,900 | $46,761,100 | $1,906,799,300 | $854,922,400 | $193,518,500 | $49,567,500 |

# Summary Results

| | Louisiana | Massachusetts | Maryland | Maine | Michigan | Minnesota |
|---|---|---|---|---|---|---|
| Direct Jobs | 2,059 | 175 | 2,068 | 180 | 1,698 | 16,635 |
| Supplier Jobs | 7,384 | 1,766 | 4,757 | 1,101 | 9,348 | 46,264 |
| Induced Jobs | 4,019 | 1,285 | 3,596 | 503 | 4,457 | 36,213 |
| Direct Wages | $131,696,600 | $20,326,200 | $113,921,700 | $14,107,500 | $114,792,600 | $1,657,237,000 |
| Supplier Wages | $537,196,700 | $131,540,200 | $347,158,900 | $61,249,000 | $593,416,100 | $3,997,170,100 |
| Induced Wages | $265,254,300 | $114,662,800 | $252,685,100 | $34,085,100 | $307,183,200 | $2,534,392,700 |
| Direct Output | $1,383,357,400 | $155,877,600 | $999,583,000 | $215,348,300 | $1,209,956,200 | $15,915,435,600 |
| Supplier Output | $3,038,292,600 | $614,303,500 | $1,348,876,100 | $220,419,500 | $2,431,269,900 | $14,523,629,200 |
| Induced Output | $934,637,700 | $554,731,400 | $794,670,400 | $185,702,900 | $1,198,187,500 | $6,882,432,000 |
| Federal Taxes | $168,490,800 | $19,174,800 | $119,257,500 | $18,186,600 | $193,428,300 | $2,507,160,800 |
| State Taxes | ($41,956,700) | $12,744,800 | $110,741,700 | $20,918,700 | $63,612,300 | $1,925,952,400 |

# Summary Results

| | Missouri | Mississippi | Montana | North Carolina | North Dakota | Nebraska |
|---|---|---|---|---|---|---|
| Direct Jobs | 15,779 | 2,312 | 833 | 4,012 | 3,923 | 10,243 |
| Supplier Jobs | 50,144 | 9,522 | 3,458 | 14,245 | 10,192 | 24,719 |
| Induced Jobs | 30,473 | 4,145 | 1,512 | 8,731 | 7,468 | 18,833 |
| Direct Wages | $1,239,303,900 | $145,491,800 | $46,841,500 | $308,215,900 | $443,053,800 | $976,659,400 |
| Supplier Wages | $3,345,855,600 | $516,343,600 | $208,556,100 | $1,026,443,500 | $1,014,472,200 | $2,374,379,600 |
| Induced Wages | $2,019,399,700 | $257,860,100 | $99,802,600 | $604,188,900 | $499,998,700 | $1,248,557,600 |
| Direct Output | $16,890,374,500 | $2,040,223,100 | $442,129,400 | $3,728,479,800 | $2,666,179,800 | $9,946,148,800 |
| Supplier Output | $12,577,311,900 | $1,960,912,200 | $758,204,100 | $3,895,228,300 | $4,323,959,800 | $8,829,238,300 |
| Induced Output | $5,551,331,600 | $824,425,800 | $354,959,400 | $1,960,539,000 | $1,402,195,600 | $3,449,818,400 |
| Federal Taxes | $1,976,843,500 | $189,680,200 | $71,976,900 | $470,956,100 | $443,013,200 | $1,302,768,400 |
| State Taxes | $936,116,200 | ($787,800) | $22,014,500 | $352,786,600 | ($96,382,800) | $950,255,900 |

# Summary Results

| | New Hamp. | New Jersey | New Mexico | Nevada | New York | Ohio |
|---|---|---|---|---|---|---|
| Direct Jobs | 17 | 261 | 211 | 22 | 1,578 | 8,284 |
| Supplier Jobs | 449 | 2,655 | 1,323 | 874 | 6,978 | 31,328 |
| Induced Jobs | 211 | 1,789 | 476 | 425 | 5,619 | 17,573 |
| Direct Wages | $1,123,900 | $32,622,700 | $10,679,700 | $1,544,500 | $132,264,900 | $604,519,400 |
| Supplier Wages | $25,862,600 | $239,473,500 | $77,894,500 | $68,880,000 | $626,773,700 | $2,011,865,800 |
| Induced Wages | $16,312,900 | $136,683,400 | $34,634,400 | $30,146,900 | $565,599,400 | $1,186,688,900 |
| Direct Output | $23,567,800 | $276,220,100 | $116,201,100 | $26,098,200 | $1,658,026,700 | $7,166,315,100 |
| Supplier Output | $101,278,100 | $1,309,757,800 | $232,025,900 | $288,800,200 | $2,337,282,100 | $7,772,658,900 |
| Induced Output | $139,891,600 | $677,792,300 | $182,205,400 | $186,769,800 | $1,936,209,800 | $3,461,394,700 |
| Federal Taxes | $1,920,400 | $31,021,300 | $10,417,000 | $2,189,500 | $192,861,400 | $1,018,252,400 |
| State Taxes | $1,694,200 | $36,858,500 | ($43,846,700) | $992,300 | $316,293,600 | $983,100,600 |

# Summary Results

| | Oklahoma | Oregon | Pennsylvania | Rhode Island | South Carolina | South Dakota |
|---|---|---|---|---|---|---|
| Direct Jobs | 4,419 | 886 | 2,260 | - | 473 | 3,656 |
| Supplier Jobs | 14,452 | 5,947 | 9,231 | 221 | 3,158 | 10,250 |
| Induced Jobs | 7,515 | 2,082 | 5,856 | 134 | 1,356 | 7,339 |
| Direct Wages | $259,588,400 | $49,737,500 | $200,728,800 | $1,700 | $22,445,000 | $411,786,100 |
| Supplier Wages | $809,659,000 | $357,700,100 | $647,759,500 | $13,746,400 | $187,122,800 | $862,171,000 |
| Induced Wages | $500,253,200 | $146,422,600 | $424,693,800 | $10,429,900 | $92,272,200 | $482,883,300 |
| Direct Output | $3,713,246,600 | $572,900,500 | $2,458,109,300 | $13,400 | $356,632,200 | $2,930,293,500 |
| Supplier Output | $3,082,891,300 | $980,573,000 | $2,515,870,800 | $65,444,700 | $737,686,100 | $3,354,044,300 |
| Induced Output | $1,486,706,500 | $542,562,300 | $1,517,762,100 | $117,668,100 | $411,624,800 | $1,386,871,700 |
| Federal Taxes | $354,338,300 | $89,449,500 | $249,704,500 | $2,100 | $32,602,900 | $428,545,100 |
| State Taxes | ($730,901,100) | $32,295,200 | $196,387,300 | ($7,900) | $26,821,000 | ($56,147,600) |

# Summary Results

| | Tennessee | Texas | Utah | Viginia | Vermont | Washington |
|---|---|---|---|---|---|---|
| Direct Jobs | 2,906 | 8,476 | 973 | 1,235 | 110 | 2,168 |
| Supplier Jobs | 11,375 | 30,264 | 3,287 | 5,477 | 639 | 11,440 |
| Induced Jobs | 5,649 | 18,698 | 2,324 | 2,909 | 279 | 4,762 |
| Direct Wages | $187,982,600 | $559,755,200 | $82,191,400 | $90,640,800 | $8,905,800 | $177,589,600 |
| Supplier Wages | $621,205,000 | $2,153,877,700 | $230,159,300 | $322,727,800 | $31,766,500 | $769,387,800 |
| Induced Wages | $400,599,800 | $1,342,740,900 | $157,178,800 | $204,668,100 | $18,462,100 | $349,505,500 |
| Direct Output | $2,257,124,100 | $5,623,204,200 | $1,105,514,000 | $1,276,306,400 | $139,955,200 | $1,438,046,300 |
| Supplier Output | $2,327,395,900 | $10,170,304,100 | $857,414,600 | $1,230,387,000 | $120,145,100 | $2,247,311,600 |
| Induced Output | $1,272,726,500 | $4,596,926,900 | $555,957,500 | $737,571,300 | $132,515,200 | $1,186,895,800 |
| Federal Taxes | $260,697,600 | $773,112,400 | $105,028,800 | $115,034,700 | $10,037,100 | $325,673,500 |
| State Taxes | $36,368,100 | $173,419,000 | $30,888,400 | $93,800,000 | $12,420,900 | $90,643,900 |

# Summary Results

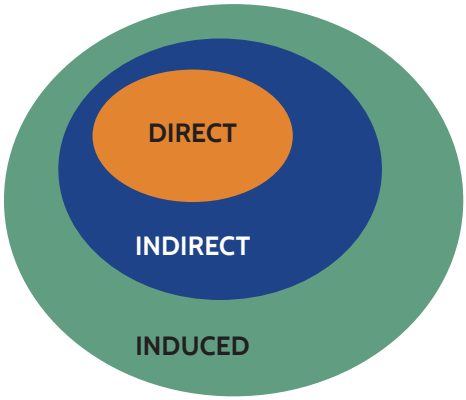
| | Wisconsin | West Virginia | Wyoming |
|---|---|---|---|
| Direct Jobs | 3,487 | 129 | 52 |
| Supplier Jobs | 12,586 | 803 | 717 |
| Induced Jobs | 7,145 | 314 | 185 |
| Direct Wages | $223,612,400 | $3,936,100 | $2,167,700 |
| Supplier Wages | $859,564,600 | $56,771,700 | $50,507,700 |
| Induced Wages | $488,672,100 | $23,993,100 | $12,288,000 |
| Direct Output | $2,060,095,500 | $79,817,400 | $11,201,800 |
| Supplier Output | $3,217,974,500 | $297,675,600 | $278,179,500 |
| Induced Output | $1,579,343,000 | $166,725,900 | $111,707,100 |
| Federal Taxes | $343,509,600 | $4,074,900 | $1,990,200 |
| State Taxes | ($2,069,700) | ($6,979,400) | ($2,121,200) |

# Output Model

JDA produced this economic impact study for the NGFA. The analysis consists of a number of parts, each of which will be described in the following sections of this document. These include data, models, calculations and outputs. These components were linked together into an interactive system that allows the NGFA to examine the links between the various parts of the industry and to produce detailed output documents on an as-needed basis. As such, there is no book – no thick report – outlining the impact of the industry, but rather a system of models and equations that can be continuously queried and updated.

## Economic Impact Modeling – Summary

The Economic Impact Study of the Grain and Feed Industry begins with an accounting of the direct employment in grain and feed facilities. The data comes from a variety of government and private sources. It is sometimes mistakenly thought that initial spending accounts for all of the impact of an economic activity or a product. For example, at first glance it may appear that consumer expenditures for a product are the total of the impact on the local economy. However, one economic activity always leads to a ripple effect whereby other sectors and industries benefit from this initial spending. This inter-industry effect of an economic activity can be assessed using multipliers from regional input-output modeling.




- Direct outpit (economic contribution) of the Grain and Feed Industry
- Effect of direct spending in supplier firms and their employees
- Induced economic effect re-spending by employees of the Grain and Feed industry and supplier firms.


The economic activities of events are linked to other industries in the state and national economies. The activities the grain and feed industry perform - such as hiring engineers, scientists, marketing and business teams among other jobs account for the direct effects on the economy. Regional (or indirect) impacts occur when these activities require purchases of goods and services such as real estate, equipment or electricity from local or regional suppliers. Additional induced impacts occur when workers involved in direct and indirect activities spend their wages. The ratio between induced economic and direct impact is termed the multiplier. The framework in the chart to the left illustrates these linkages. This method of analysis allows the impact of local activities to be quantified in terms of final demand, earnings, and employment in the states and the nation as a whole.

Once the direct impact of the industry has been calculated, the input-output methodology discussed below is used to calculate the contribution of the supplier sector and of the re-spending in the economy by employees in the industry and its suppliers. This induced impact is the most controversial part of economic impact studies and is often quite inflated. In the case of the grain and feed industry model, only the most conservative estimate of the induced impact has been used.

## Model Description and Data

This analysis is based on data provided by the National Grain and Feed Association, Data Axle, and the federal government. The analysis utilizes the IMPLAN Model in order to quantify the economic impact of the grain and feed industry on the economy of the United States.[6] The model adopts an accounting framework through which the relationships between different inputs and outputs across industries and sectors are computed. This model can show the impact of a given economic decision – such as a factory opening or operating a sports facility – on a pre-defined, geographic region. It is based on the national income accounts generated by the US Department of Commerce, Bureau of Economic Analysis (BEA).[7]

Every economic impact analysis begins with a description of the industry being examined. In the case of the grain and feed industry model, the industry is defined as the grain and feed industry and their supply-chain partners in the United States, including companies that produce, process, distribute, and employ the use of grain and feed products.

The IMPLAN model is designed to run based on the input of specific direct economic factors. It uses a detailed methodology (see IMPLAN Methodology section) to generate estimates of the other direct impacts, tax impacts and supplier and induced impacts based on these entries. In the case of this model, direct employment in the grain and feed industry is the starting point for the analysis. Data for individual grain and feed facilities were compiled from the NGFA member lists, Data Axle, and data from the federal government. Direct employment for these facilities is based on data provided to JDA by NGFA and Data Axle as of February 2025.

These data are gathered at the facility level; therefore, a company with a grain elevator, feed lot, and corporate office would have three facilities, each with separate employment counts. Since the Data Axle data is adjusted on a continual basis, JDA staff verified the data. Multiple stages of cleaning were then performed on these data, including removing duplicate records, removing defunct facilities and companies, and correcting inaccurate information. The data from Data Axle was then merged with those from other sources, including member data provided by NGFA. The database was checked against company websites and addresses were confirmed to ensure companies were legitimate, operated within the definition, and were still in business. Employment estimates were generally taken directly from the Data Axle data. Where no data was available, employment at each location was estimated to be equal to the median value for similar sites in the same state. For the grain and feed industry, transportation of raw and primary commodities is considered an integral piece of the direct industry. For transportation, a facility list of all potential transporters of grain, feed, and related products is not feasible; instead, impacts are generated from within the model based on an estimation of the amount of transportation needed to support activities in the grain and feed processing and production roles.

Once the initial direct employment figures have been established, they are entered into a model linked to the IMPLAN database.[8] The IMPLAN data are used to generate estimates of direct wages and output. Wages are derived from data from the U.S. Department of Labor's ES-202 reports that are used by IMPLAN to provide annual average wage and salary establishment counts, employment counts and payrolls at the county level. Since this data only covers payroll employees, it is modified to add information on independent workers, agricultural employees, construction workers, and certain government employees. Data are then adjusted to account for counties where non-disclosure rules apply.

Wage data includes not only cash wages, but health and life insurance payments, retirement payments and other non-cash compensation. It includes all income paid to workers by employers. Distribution income and exercised stock options received by proprietors including sole proprietors, and distributions to partners of LLCs are also included in wage figures.

Total output is the value of production by industry in a given state. It is estimated by IMPLAN from sources similar to those used by the BEA in its RIMS II series. Where no Census or government surveys are available, IMPLAN uses models such as the Bureau of Labor Statistics Growth model to estimate the missing output.

The model also includes information on income received by the federal, state and local governments, and produces estimates for the following taxes at the federal level: Corporate income; payroll, personal income, estate and gift, excise taxes, customs duties; and fines, fees, etc. State and local tax revenues include estimates of: Corporate profits, property, sales, severance, estate and gift and personal income taxes; licenses and fees and certain payroll taxes.

While IMPLAN is used to calculate the state level impacts, Data Axle data provide the basis for congressional district estimates. Publicly available data at the county and congressional district level is limited by disclosure restrictions. Therefore, this model uses actual physical location data provided by Data Axle to allocate – and the resulting economic activity – by county. For counties entirely contained in a single congressional district, jobs are allocated based on the


percentage of total sector jobs in each county. For counties broken by congressional districts, allocations are based on the percentage of total grain and feed jobs physically located in each segment of the county. Physical locations are based on either the actual address of the facility, or the zip code of the facility, with facilities placed randomly throughout the zip code area. Zip code areas are broken across other geographies based on the percentage of road-weighted physical areas, thereby accounting for both business activity and geographic factors. All supplier and induced jobs are allocated based on the percentage of a state's employment in that sector in each of the counties. Again, Data Axle data are the basis for these percentages.

## IMPLAN Methodology[9]

Francoise Quesnay, one of the fathers of modern economics, first developed the analytical concept of inter-industry relationships in 1758. The concept was actualized into input-output analysis by Wassily Leontief during the Second World War, an accomplishment for which he received the 1973 Nobel Prize in Economics.

Input-Output analysis is an econometric technique used to examine the relationships within an economy. It captures all monetary market transactions for consumption in a given period and for a specific geography. The IMPLAN model uses data from many different sources – as published government data series, unpublished data, sets of relationships, ratios, or as estimates. The IMPLAN Group LLC gathers this data, converts it into a consistent format, and estimates the missing components.

There are three different levels of data generally available in the United States: Federal, state and county. Most of the detailed data is available at the county level, and as such there are many issues with disclosure, especially in the case of smaller industries. IMPLAN overcomes these disclosure problems by combining a large number of datasets and by estimating those variables that are not found from any of them. The data is then converted into national input-output matrices (Use, Make, By-products, Absorption and Market Shares) as well as national tables for deflators, regional purchase coefficients and margins.

The IMPLAN Make matrix represents the production of commodities by industry. The Bureau of Economic Analysis (BEA) Benchmark I/O Study of the US Make Table forms the bases of the IMPLAN model. The Benchmark Make Table is updated to current year prices and rearranged into the IMPLAN sector format. The IMPLAN Use matrix is based on estimates of final demand, value-added by sector and total industry and commodity output data as provided by government statistics or estimated by IMPLAN. The BEA Benchmark Use Table is then bridged to the IMPLAN sectors. Once the re-sectoring is complete, the Use Tables can be updated based on the other data and model calculations of interstate and international trade.

In the IMPLAN model, as with any input-output framework, all expenditures are in terms of producer prices. This allocates all expenditures to the industries that produce goods and services. As a result, all data not received in producer prices is converted using margins which are derived from the BEA Input- Output model. Margins represent the difference between producer and consumer prices. As such, the margins for any good add to one.

If, for example, 10 percent of the consumer price of grain and feed is from the purchase of trucking services, then the trucking margin would be 0.1. Deflators, which account for relative price changes during different time periods, are derived from the Bureau of Labor Statistics (BLS) Growth Model. The 224 sector BLS model is mapped to the 528 sectors of the IMPLAN model. Where data is missing, deflators from BEA's Survey of Current Businesses are used.

Finally, one of the most important parts of the IMPLAN model, the Regional Purchase Coefficients (RPCs) must be derived. IMPLAN is derived from a national model, which represents the "average" condition for a particular industry. Since national production functions do not necessarily represent particular regional differences, adjustments need to be made. Regional trade flows are estimated based on the Multi-Regional Input-Output Accounts, a cross-sectional database with consistent cross interstate trade flows first developed in 1977. These data are updated and bridged to the 528 sector IMPLAN model.

Once the databases and matrices are created, they go through an extensive validation process. IMPLAN builds separate state and county models and evaluates them, checking to ensure that no ratios are outside of recognized bounds. The final datasets and matrices are not released before extensive testing takes place.

## About John Dunham & Associates

John Dunham & Associates (JDA) is a leading economic consulting firm specializing in the economics of fast-moving issues. JDA is an expert at translating complex economic concepts into clear, easily understandable messages for a wide range of audiences. JDA's clients have included a wide variety of businesses and organizations, including some of the largest companies in America, such as:

- **Altria**
- **Diageo**
- **Feld Entertainment**
- **Forbes Media**
- **MolsonCoors**
- **Verizon**
- **Wegmans Stores**


John Dunham is a professional economist with nearly 40 years of experience. He holds a Master of Arts degree in Economics from the New School for Social Research as well as a Master of Business Administration from Columbia University. He also has a professional certificate in Logistics from New York University. Mr. Dunham has worked as a manager and an analyst in both the public and private sectors. He has experience in conducting cost-benefit modeling, industry analysis, transportation analysis, economic research, and tax and fiscal analysis. As a senior economist for Philip Morris, he developed tax analysis programs, increased cost-center productivity, and created economic research operations. He has presented testimony on economic and technical issues in federal court and before federal and state agencies.

Prior to Philip Morris, John was an economist with the Port Authority of New York and New Jersey, the Philadelphia Regional Port Authority, and the City of New York's Department of Ports & Trade.

# References

[1] IMPLAN® model, 2023 Data, using inputs provided by the user and IMPLAN Group LLC, IMPLAN System (2025), 16905 Northcross Dr., Suite 120, Huntersville, NC 28078, www.IMPLAN.com

[2] Based on GDP of $29.978 trillion. See: Gross Domestic Product: First Quarter 2025, US Department of Commerce, Bureau of Economic Analysis.

[3] Economic sectors based on 2023 IMPLAN sectors.

[4] These firms would more appropriately be considered as part of the supplier firms' industries.

[5] Often, economic impact studies present results with very large multipliers – as high as 4 or 5. These studies invariably include the firms supplying the supplier industries as part of the induced impact. John Dunhan & Associates believes that this is not an appropriate definition of the induced impact and as such limits this calculation to only the defect of spending by direct and supplier employees.

[6] Op. cit. Footnote 1.

[7] RIMS II is a product developed by the U.S. Department of Commerce, Bureau of Economic Analysis as a policy and economic decision analysis tool. IMPLAN was originally developed by the U.S. Forest Service, the Federal Emergency Management Agency and the Bureau of Land Management. It was converted to a user-friendly model by the Minnesota IMPLAN Group in 1993.

[8] IMPLAN® model, 2023 Data, using inputs provided by the user and IMPLAN Group LLC, IMPLAN System (2025), 16905 Northcross Dr., Suite 120, Huntersville, NC 28078, www.IMPLAN.com

[9] This section is paraphrased from IMPLAN Professional: Users Guide, Analysis Guide, Data Guide, Version 2.0, MIG, Inc., June 2000.