



PRINTING INDUSTRY
midwest

*Demonstrating the Importance of the
Printing Industry to the Nebraska State and Local Governments*

Nebraska Printing Industry Economic & Fiscal Contribution

The printing industry in Nebraska contributes value to the state economy in many ways. The industry generates and supports many jobs, economic output, and government programs. The industry contributes over \$827 million in output, 4,752 jobs, \$183.1 million in labor income, and more than \$17.49 million in state and local tax revenues.

The U.S. Printing Industry

America's commercial printing industry has a significant economic footprint. It employs almost 450,000 people in more than 25,000 establishments with annual shipments of over \$83 billion. It is one of America's oldest manufacturing industries having been established long before the founding of the United States. Today, it continues to evolve as a high-tech, innovative communication and advertising media and also includes non-media elements such as packaging and wrappers. It is also America's most geographically dispersed manufacturing industry with a significant presence in every state.

Definition

For this report "printing" is defined as North American Industrial Classification System Code 323—Printing and Related Support Activities. This sector encompasses many segments: general commercial printing, quick printing, digital imaging, magazines, newspapers, book and display graphics, financial and legal printing, screen printing, forms printing, label and tag printing, packaging, greeting cards, and trade and finishing services.

Due to the rapid technological changes and broadening of the scope of services provided by many printing companies today, it is commonly referred to as the graphic communications industry.

Companies in the printing industry have expanded services to include creative design, retail display design, e-commerce, webpage design and hosting, mailing, fulfillment, and a host of other ancillary services that provide horizontal marketing well beyond the core printing model. This is a description that accurately represents the broad range of what printers do today.

What is an Economic & Fiscal Contribution Study?

The aim of this study is to establish the economic importance of the printing industry to the Nebraska economy. We define "importance" as the total contribution to the regional economy in terms of shipments, employment, labor income, and value-added (GDP).

The results from our economic and fiscal contribution study will show the interconnectedness of the printing industry with the Nebraska economy. We will gain a clear understanding of how much economic activity is being cycled through the Nebraska economy due to the printing

The Economic Contribution Model

$$\begin{array}{r} \text{Direct Contribution} \\ + \\ \text{Indirect Contribution} \\ + \\ \text{Induced Contribution} \\ = \\ \text{Total Economic Contribution} \end{array}$$

industry. We will also calculate how much economic activity was associated with the printing industry.

Nebraska print industry fiscal contributions include federal, state, and local taxes. We estimated these fiscal contributions using data from the PIA Ratios financial benchmarking database, Fiscal Year 2015 Analytical Perspectives Budget of the U.S. government from the Office of Management and Budget (OMB), and the Tax Foundation. *See Appendix for definitions.*

Economic Contributions

In 2015 the printing industry directly contributed \$504.70 million in output, 2,712 jobs, and \$107.83 million in labor income to Nebraska's economy. After calculating backward-linked supply chain effects (i.e., indirect economic contributions) and household spending generated by labor income (i.e., induced economic contributions), these values increased significantly. Total economic contributions for the Nebraska economy amounted to \$827.86 million in output, \$371.21 million in value-added (GDP), 4,752 jobs, and \$183.14 million in labor income.

Backward-linked supply chain effects or indirect contributions accounted for 20.8% or \$172.2 million of total economic contribution, 20.3% of employment contribution or 964 jobs, and 22.5% of labor income contribution or \$41.3 million. Household spending generated by labor income or induced economic contributions accounted for \$151.0 million or 18.2% of total economic contribution, 22.6% of employment contribution or 1,076 jobs, and 18.6% of labor income contributions or \$34.0 million.

The printing industry in Nebraska generates \$371.2 million in value-added (GDP) annually through its direct economic impact and indirect/induced effects or approximately 0.33% of the state's \$113.5 billion total

PRINTING INDUSTRY ECONOMIC CONTRIBUTION IN NEBRASKA

	Direct Contribution	Indirect Contribution	Induced Contribution	Total Economic Contribution
Output (\$1,000s)	\$504,703.0	\$172,154.2	\$151,007.1	\$827,864.4
Employment	2,712	964	1,076	4,752
Labor Income (\$1,000s)	\$107,826.2	\$41,275.9	\$34,040.7	\$183,142.7
Value Added (GDP) (\$1,000s)	\$237,210.4	\$52,585.0	\$91,654.1	\$371,209.1

Source: RIMS II multipliers and Census Bureau County Business Patterns Database

Figure 1

economic output. Compared to the overall national figures, the Nebraska printing industry drives a smaller percentage of GDP than other states. The national average is 0.49% of GDP.

For every additional \$1 in output, the printing industry generates an additional \$0.64 in backward-linked, non-printing industry spending and household spending. To break that down further, every additional \$1 of output generated by the printing industry leads to an additional \$0.34 in backward-linked industries and \$0.29 in additional household spending.

In Nebraska, the backward-linked industries by labor income (i.e., induced economic contributions), these values include manufacturing; wholesale trade; professional, scientific, and technical services; finance and insurance; management of companies and enterprises; and transportation and warehousing. The industries most affected by induced household spending generated by the printing industry include real estate, rental, and leasing; health care and social assistance; finance and insurance; retail trade; and manufacturing. See Figure 2 for the combined effect.

Every additional job in the Nebraska printing industry supports an additional 0.75 non-print jobs, inter-industry effects support 0.35 jobs, and additional household spending 0.40 jobs. The printing industry has a strong inter-industry relationship with other manufacturers—44.9% of print's inter-industry effect is with other manufacturing industries.

Induced employment contributions are based on additional household spending cycling through the economy. The sectors of the Nebraska economy that are most affected by the induced employment contribution include health care and social assistance (20.4%); retail trade (18.4%); and real estate, rental, and leasing (9.4%). Each job directly generated by the printing industry results in 0.40 being supported through induced employment contributions. The induced jobs are lower-paying on average because they are in industries with lower wages on average. The industries that are most interconnected to the printing industry through the combination of indirect and induced employment contributions include manufacturing, health care and social assistance, retail trade, administrative and waste management services, and finance and insurance (Figure 3).

The Nebraska economy generated \$113.5 billion of gross domestic product (GDP) in 2015 or approximately 0.63% of total U.S. output and 15.8% of PIM total output. While several industries in the area had large amounts of growth, GDP from agriculture, forestry, fishing, and hunting took a tremendous hit (-18.9% change from 2014). The largest industries in terms of percent of GDP in Nebraska are manufacturing (11.7%); finance and insurance (9.5%); real estate, rental, and leasing (9.3%); transportation and warehousing (8.2%); and agriculture, forestry, fishing, and hunting (6.6%). We do not include government in the list above (12.6% of output) because it is considered a final use of GDP in the input-output models.

INDUSTRIES MOST INTERCONNECTED WITH THE PRINTING INDUSTRY IN NEBRASKA (Percent of Indirect and Induced Output Generated by Print Economic Activity)

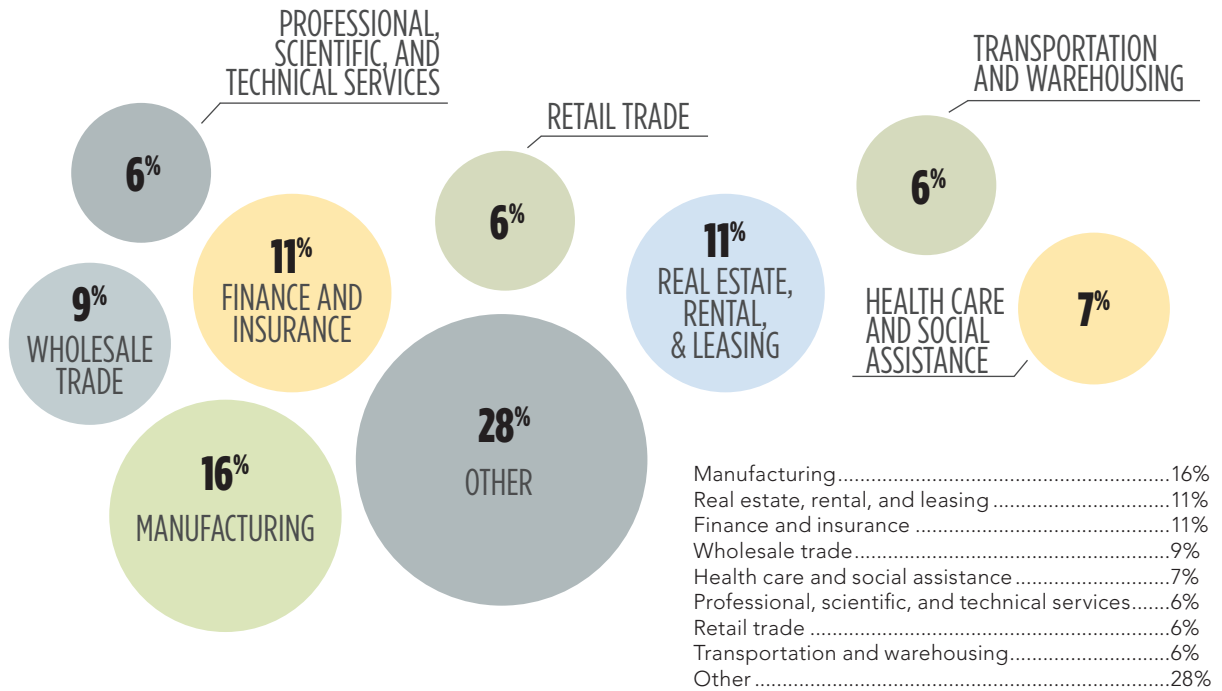


Figure 2

INDUSTRIES MOST INTERCONNECTED WITH THE PRINTING INDUSTRY IN NEBRASKA (Percent of Indirect and Induced Employment Generated by Print Economic Activity)

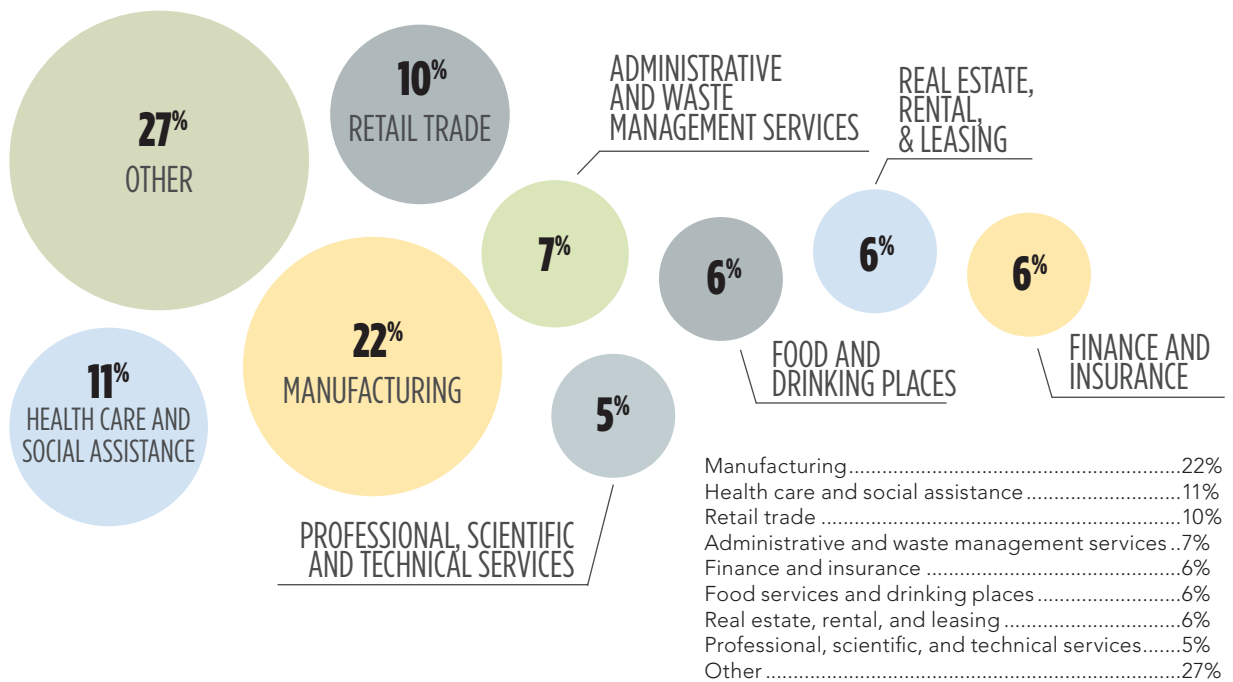


Figure 3

GROSS DOMESTIC PRODUCT BY INDUSTRY IN NEBRASKA

(millions of current dollars)

Industry	GDP (millions of current dollars)		Percent Change 2014 to 2015	Share of Growth	Contribution to Change in Output	Percent Share of State Output	
	2014	2015				2014	2015
Manufacturing	13,453	13,294	-1.2%	-11.6%	-0.1%	12.0%	11.7%
Finance and insurance	10,197	10,764	5.6%	41.4%	0.5%	9.1%	9.5%
Real estate, rental, and leasing	10,035	10,543	5.1%	37.1%	0.5%	9.0%	9.3%
Transportation and warehousing	9,560	9,308	-2.6%	-18.4%	-0.2%	8.5%	8.2%
Health care and social assistance	7,739	8,104	4.7%	26.6%	0.3%	6.9%	7.1%
Wholesale trade	7,146	7,643	7.0%	36.3%	0.4%	6.4%	6.7%
Agriculture, forestry, fishing, and hunting	9,163	7,434	-18.9%	-126.2%	-1.5%	8.2%	6.6%
Retail trade	6,080	6,152	1.2%	5.3%	0.1%	5.4%	5.4%
Professional, scientific, and technical services	4,483	4,639	3.5%	11.4%	0.1%	4.0%	4.1%
Construction	3,763	3,933	4.5%	12.3%	0.2%	3.4%	3.5%
Management of companies and enterprises	2,698	3,017	11.8%	23.3%	0.3%	2.4%	2.7%
Administrative and waste management services	2,737	2,947	7.7%	15.3%	0.2%	2.4%	2.6%
Information	2,630	2,754	4.7%	9.0%	0.1%	2.3%	2.4%
Accommodation and food services	2,203	2,352	6.8%	10.9%	0.1%	2.0%	2.1%
Other services, except government	2,248	2,317	3.0%	5.0%	0.1%	2.0%	2.0%
Utilities	2,383	2,255	-5.4%	-9.3%	-0.1%	2.1%	2.0%
Educational services	779	809	3.9%	2.2%	0.0%	0.7%	0.7%
Arts, entertainment, and recreation	596	613	2.8%	1.2%	0.0%	0.5%	0.5%
Mining	277	239	-13.7%	-2.8%	0.0%	0.2%	0.2%
Government	13,918	14,343	3.1%	31.0%	0.4%	12.4%	12.6%
All industry total	112,088	113,459	1.2%	100.0%	1.2%	100.0%	100.0%

Figure 4

As you can see in the “Share of Growth” and “Percent Contribution to Change in Output” columns in the preceding table, the industries that are driving the most growth in 2015 include finance and insurance (increased 5.6% adding 0.5% to total Nebraska output or 41.4% share of growth), real estate, rental, and leasing (increased 5.1% adding 0.5% to total output or 37.1% share of growth), and wholesale trade (increased 7.0% adding 0.4% to total output or 36.3% share of growth).

The size of the industry in the region has an effect on the indirect and induced impact the printing industry has on the regional economy. In other words, on average, the larger the industry the more interconnected it is with various industries within a region.

For example, manufacturing accounts for 11.7% of total economic output in Nebraska and it is the largest industry. Almost 16% of the printing industry’s indirect and induced contributions to the regional economy are circulated through the manufacturing industry. This trend of the larger the industry the greater the inter-relationship with the printing industry is consistent with most industries in the state, except agriculture, forestry, fishing, and hunting (seventh largest industry in the state but ranked 16th in terms of strength of relationship with the printing industry). See the chart above for the complete list of industry output as a percent of total regional output compared to indirect and induced printing industry economic contributions by industry (Figure 5).

SIZE OF NEBRASKA INDUSTRIES COMPARED TO INDUSTRIES’ INDIRECT AND INDUCED RELATIONSHIP WITH THE PRINTING INDUSTRY

Industry	Rank		Percent of	
	By Size of Industry (\$ Output)	By Interconnectedness with the Printing Industry	Total Iowa Regional GDP	Printing Industry Indirect and Induced Output
Manufacturing	1	1	11.7%	15.6%
Finance and insurance	2	2	9.5%	11.3%
Real estate, rental, and leasing	3	3	9.3%	11.0%
Transportation and warehousing	4	8	8.2%	5.6%
Health care and social assistance	5	5	7.1%	7.3%
Wholesale trade	6	4	6.7%	9.2%
Agriculture, forestry, fishing, and hunting	7	16	6.6%	1.2%
Retail trade	8	7	5.4%	5.7%
Professional, scientific, and technical services	9	6	4.1%	6.5%
Construction	10	15	3.5%	1.3%
Management of companies and enterprises	11	9	2.7%	5.0%
Administrative and waste management services	12	11	2.6%	4.1%
Information	13	12	2.4%	3.7%
Accommodation and food services	14	14	2.1%	3.4%
Other services, except government	15	13	2.0%	3.4%
Utilities	16	10	2.0%	4.2%
Educational services	17	17	0.7%	1.2%
Arts, entertainment, and recreation	18	18	0.5%	0.5%
Mining	19	19	0.2%	0.0%

Figure 5

Fiscal Contributions

Federal, state, and local tax revenues generated by the Nebraska printing industry totaled \$60.9 million. The printing industry added \$237.2 million in direct value-added output to Nebraska's gross domestic product and 25.7% of this output was collected by the federal, state, and local governments in taxes. The main sources of federal tax revenues were individual income taxes and social security taxes. Nebraska's printing industry revenues generated \$17.5 million in revenue for the state and local governments. Property taxes (42.2% of state and local collections) and individual income taxes (25.5%) were the two main sources of revenue for state and local governments. (Figure 6).

Conclusions

The printing industry in Nebraska is a large and interconnected industry. Each additional dollar generated by the printing industry in Nebraska leads to an additional \$0.64 in backward-linked supply chain spending and additional household spending. Each print job supports 0.75 jobs in the Nebraska labor market due to spending of labor income in the backward-linked supply chain industries and household spending. Print industry output in Nebraska is most interconnected with other manufactures, real estate and rental and leasing, and finance and insurance. Print industry employment in Nebraska is most interconnected with the following industries: manufacturing, health care, and social assistance, and retail trade. The effects of an industry on the local economy add to total output, employment, wages, and also support of government programs. In Nebraska over 7% of the printing industry's \$237.2 million in value-added output went to support state and local governments. Data used in this study are based on many sources, including BEA RIMS II multipliers, the Tax Foundation, County Business Patterns Database, PIA *Print Market Atlas*, and the PIA *Ratios* financial database for the printing industry.

2015 FEDERAL, STATE, AND LOCAL TAXES GENERATED BY THE PRINTING INDUSTRY IN NEBRASKA

Type of Tax	Taxes Collected (\$ Millions)
Federal Taxes	
Individual income tax	\$19.97
Corporate income tax	\$5.84
Social security taxes	\$13.74
Excise taxes	\$1.44
Other taxes	\$2.42
Total Federal Taxes	\$43.42

Type of Tax	Taxes Collected (\$ Millions)
State and Local Taxes	
Individual income tax	\$4.46
Corporate income tax	\$0.58
Sales or Use tax	\$3.04
Excise taxes	\$0.91
Property taxes	\$7.39
Other taxes	\$0.72
License taxes	\$0.72
Total State and Local Taxes	\$17.49
Total Fiscal Contribution	\$60.91

Sources: U.S. Census, Office of Management and Budget, and Tax Foundation Figure 6



Definitions

Direct Contribution or Final-Demand Industry:

The “Direct” contribution relates to the first round of inputs purchased from the final-demand industry or the figure we calculate in the *Print Market Atlas*. It is the portion of print shipments that are purchased for consumption by the final user. It includes the consumption of the goods and services that are produced and distributed in the economy. In the input-output accounts, final-use transactions consist of transactions that make up the final-expenditure components of GDP: personal consumption expenditures, private fixed investment, change in private inventories, exports of goods and services, imports of goods and services, federal, state, and local government consumption expenditures, and gross investment.

Indirect Contribution: Relates to the subsequent rounds of inputs purchased by supporting industries. Some of the supporting industries include: mining, utilities, construction, manufacturing, wholesale trade, retail trade, information, educational services, healthcare and social services, arts, entertainment, and recreation, etc. The sum of the “direct” and “indirect” contributions is called the inter-industry effect or inter-industry total. This takes into account the spending the printing industry generates in other industries—the impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy, either through imports or by payments to value-added.

Induced Contributions: RIMS Type II multipliers not only account for the inter-industry effect but also account for the induced economic contribution to final demand. The induced contribution relates to spending of workers whose earnings or labor income are affected by the final-demand contribution. This contribution is called the household-spending contribution. We use the multipliers to measure the total contribution to the state economy.

Total Economic Contribution: Includes the final demand generated by the printing industry, the inter-industry contributions or indirect effects, and the induced contribution from household spending that the printing industry supports.



For more information on how Input-Output multipliers are developed by the Bureau of Economic Analysis (BEA) we recommend reading the RIMS II handbook, “An essential tool for regional developers and planners.”

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