



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

Iowa Printing Industry Economic & Fiscal Contribution

The printing industry in Iowa contributes value to the state economy in many ways. The industry generates and supports many jobs, economic output, and government programs. The industry contributes nearly \$2 billion in output, 11,051 jobs, \$434 million in labor income, and more than \$37.5 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 Iowa 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 Iowa economy. We will gain a clear understanding of how much economic activity is being cycled through the Iowa economy due to the printing

The Economic Contribution Model

$$\begin{aligned} &\text{Direct Contribution} \\ &+ \\ &\text{Indirect Contribution} \\ &+ \\ &\text{Induced Contribution} \\ &= \\ &\text{Total Economic Contribution} \end{aligned}$$

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

Iowa 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 \$1.2 billion in output, 6,192 jobs, and \$248.7 million in labor income to Iowa's economy. After calculating backward-linked supply chain effects (i.e., indirect economic contributions) and household spending generated by labor income by labor income (i.e., induced economic contributions), these values increased significantly. Total economic contributions for the Iowa economy amounted to \$2.0 billion in output, \$884.9 million in value-added (GDP), 11,051 jobs, and \$434.4 million in labor income.

Backward-linked supply chain effects or indirect contributions accounted for 23.1% or \$461.5 million of total economic contributions, 21% of employment contributions or 2,324 jobs, and 23.3% of labor income contributions or \$101.2 million. Household spending generated by labor income or induced economic contributions accounted for \$381.4 million or 19.1% of total economic contributions, 22.9% of employment contributions or 2,536 jobs, and 19.4% of labor income contributions or \$84.5 million.

The printing industry in Iowa generates \$884.9 million in value-added (GDP) annually through its direct economic impact and indirect/induced effects or approximately 0.50% of the state's \$175.8 billion total economic output. Compared to the overall national figures, the Iowa

PRINTING INDUSTRY ECONOMIC CONTRIBUTION IN IOWA

	Direct Contribution	Indirect Contribution	Induced Contribution	Total Economic Contribution
Output (\$1,000s)	\$1,152,330.8	\$461,508.5	\$381,421.5	\$1,995,260.8
Employment	6,192	2,324	2,536	11,051
Labor Income (\$1,000s)	\$248,700.0	\$101,220.9	\$84,483.4	\$434,404.2
Value-Added (GDP) (\$1,000s)	\$541,595.5	\$115,233.1	\$228,046.3	\$884,874.8

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

Figure 1

printing industry drives a slightly larger percentage of GDP than other states. The national average is 0.49% of GDP.

The printing industry has a moderately strong relationship with other sectors of the economy in Iowa, leading to significant multipliers. For every additional \$1 in output, the printing industry generates an additional \$0.73 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 \$0.40 in backward-linked industries and \$0.33 in additional household spending.

In Iowa, the backward-linked industries that have the strongest relationship with the printing industry include manufacturing, wholesale trade, finance and insurance, transportation and warehousing, and administrative and waste management services. 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; and retail trade. The industries that are most interconnected to the printing industry through the combination of indirect and induced contribution include: manufacturing; finance and insurance; real estate, rental, and leasing; wholesale trade; and health care and social assistance (Figure 2).

Every additional job in the Iowa printing industry supports an additional 0.38 non-print jobs due to inter-industry effects and 0.41 jobs due to additional household spending or an additional 0.78 jobs. The printing

industry has a strong inter-industry relationship with other manufacturers—52.0% of print's inter-industry effect is with other manufacturing industries. Since, on average, manufacturing pays higher average salaries than the service sector, the labor income per additional job is high.

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 real estate and other services (Figure 3).

The Iowa economy generated \$175.8 billion in gross domestic product (GDP) in 2015 or approximately 0.98% of total U.S. output and 24.4% of PIM total output. The largest industries in terms of percent of GDP in Iowa are manufacturing (18.8%); finance and insurance (12.2%); real estate, rental, and leasing (10.1%); and healthcare and social assistance (6.8%). We do not include government in the list above (11.5% of output) because it is considered a final use of GDP in the input-output models. The industries that drove the most growth in 2015 include finance and insurance (increased 10.8% adding 1.2% to total Iowa output or 35% share of growth); manufacturing (increased 3.3% adding 0.6% to total Iowa output or 17.8% share of growth); and real estate, rental, and leasing (increased 5.4% adding 0.5% to total Iowa output or 15.3% 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,

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

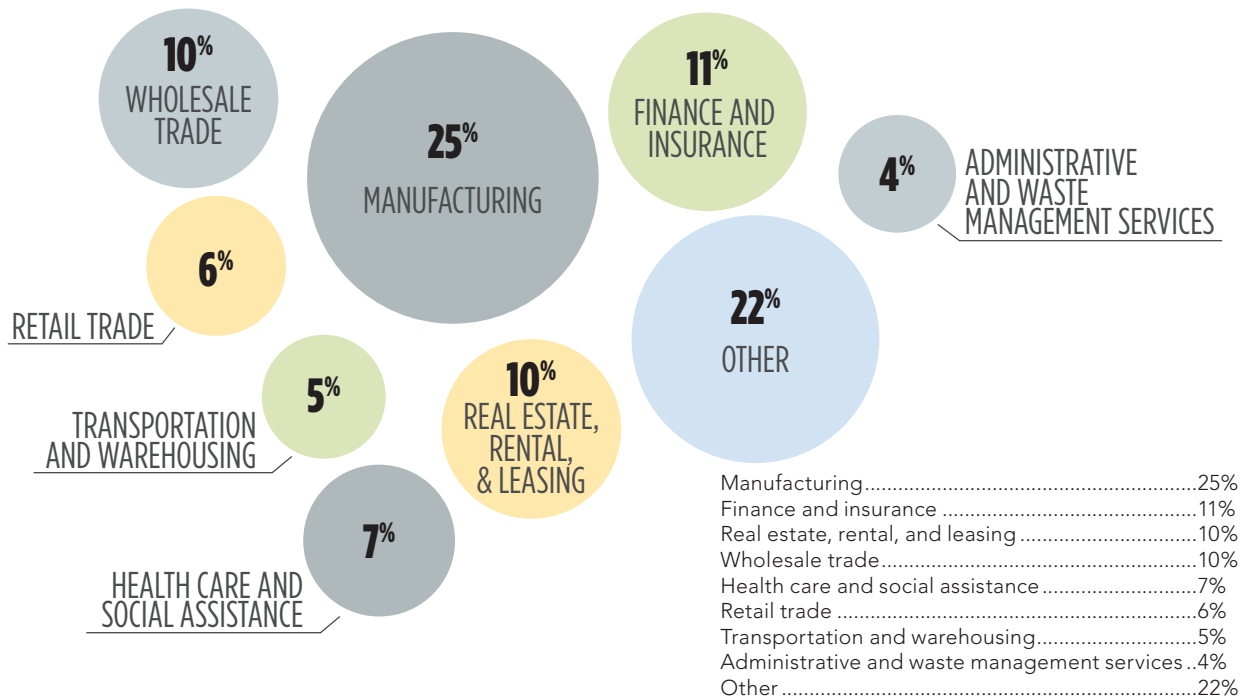


Figure 2

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



Figure 3

GROSS DOMESTIC PRODUCT BY INDUSTRY IN IOWA

(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	31,908	32,971	3.3%	17.8%	0.6%	18.8%	18.8%
Finance and insurance	19,343	21,423	10.8%	34.9%	1.2%	11.4%	12.2%
Real estate, rental, and leasing	16,903	17,815	5.4%	15.3%	0.5%	10.0%	10.1%
Health care and social assistance	11,324	11,881	4.9%	9.3%	0.3%	6.7%	6.8%
Wholesale trade	9,999	10,169	1.7%	2.8%	0.1%	5.9%	5.8%
Retail trade	9,145	9,545	4.4%	6.7%	0.2%	5.4%	5.4%
Agriculture, forestry, fishing, and hunting	11,464	9,537	-16.8%	-32.3%	-1.1%	6.7%	5.4%
Construction	7,209	7,787	8.0%	9.7%	0.3%	4.2%	4.4%
Transportation and warehousing	5,663	5,838	3.1%	2.9%	0.1%	3.3%	3.3%
Professional, scientific, and technical services	5,069	5,433	7.2%	6.1%	0.2%	3.0%	3.1%
Information	4,011	4,143	3.3%	2.2%	0.1%	2.4%	2.4%
Accommodation and food services	3,579	3,893	8.8%	5.3%	0.2%	2.1%	2.2%
Other services, except government	3,429	3,672	7.1%	4.1%	0.1%	2.0%	2.1%
Administrative and waste management services	3,529	3,666	3.9%	2.3%	0.1%	2.1%	2.1%
Utilities	2,785	2,785	0.0%	0.0%	0.0%	1.6%	1.6%
Management of companies and enterprises	2,009	2,206	9.8%	3.3%	0.1%	1.2%	1.3%
Educational services	1,399	1,433	2.4%	0.6%	0.0%	0.8%	0.8%
Arts, entertainment, and recreation	1,106	1,128	2.0%	0.4%	0.0%	0.7%	0.6%
Mining	395	325	-17.7%	-1.2%	0.0%	0.2%	0.2%
Government	19,576	20,161	3.0%	9.8%	0.3%	11.5%	11.5%
All industry total	169,843	175,810	3.5%	100.0%	3.5%	100.0%	100.0%

Figure 4

the larger the industry the more interconnected it is with various industries within a region.

For example, similar to past years, manufacturing accounts for 18.8% of total economic output in the Iowa economy and it is the largest industry. Almost 25% of the printing industry’s indirect and induced contributions to the regional economy are circulated through the manufacturing industry. In fact, the three highest industries in Iowa are also the three highest ranked in terms of percentage of printing industry indirect and induced contribution to the regional economy.

Yet again, the fourth largest industry in the region—agriculture, forestry, fishing, and hunting—breaks this trend. It is a large industry in the region (6.8% of total regional output) but has little inter-relationship with the printing industry (1.5% of indirect/induced economic contribution). The printing industry does not have much in terms of backward-linked supply chain effects or indirect economic contributions or household spending generated by labor income with agriculture, forestry, fishing, and hunting. See the figure above for the complete list of industry output as a percentage of total regional output compared to indirect and induced printing industry economic contributions by industry (Figure 5).

SIZE OF IOWA 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	18.8%	24.7%
Finance and insurance	2	2	12.2%	10.7%
Real estate, rental, and leasing	3	3	10.1%	9.8%
Agriculture, forestry, fishing, and hunting	4	15	6.8%	1.5%
Health care and social assistance	5	5	5.8%	6.9%
Wholesale trade	6	4	5.4%	9.5%
Retail trade	7	6	5.4%	5.6%
Construction	8	16	4.4%	1.3%
Transportation and warehousing	9	7	3.3%	5.5%
Professional, scientific, and technical services	10	10	3.1%	3.6%
Information	11	9	2.4%	3.7%
Accommodation and food services	12	11	2.2%	3.3%
Other services, except government	13	13	2.1%	2.7%
Administrative and waste management services	14	8	2.1%	4.2%
Utilities	15	12	1.6%	3.1%
Management of companies and enterprises	16	14	1.3%	2.2%
Educational services	17	17	0.8%	1.2%
Arts, entertainment, and recreation	18	18	0.6%	0.5%
Mining	19	19	0.2%	0.0%

Figure 5

Fiscal Contributions

Federal, state, and local tax revenues generated by the Iowa printing industry totaled \$136.7 million. The printing industry added almost \$541.6 million in direct value-added output to Iowa's GDP, and 17.1% 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. Almost 6% of Iowa printing industry revenues or \$37.5 million were collected to help fund the state and local governments. Property taxes (40.3%) and individual income taxes (27.4%) were the two main sources of revenue for state and local governments (Figure 6).

Conclusions

The printing industry in Iowa is a large and significantly interconnected industry. Each additional dollar generated by the printing industry in Iowa leads to an additional \$0.73 in backward-linked supply chain spending and additional household spending. Each print job supports 0.78 jobs in the Iowa labor market due to spending of labor income in the backward-linked supply chain industries and household spending. Print industry output in Iowa is most interconnected with other manufacturers, financial and insurance companies, and real estate. Print Industry employment in Iowa 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 support of government programs. In Iowa, over 7% the printing industry's \$541.6 million in direct value-added output generated 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 IOWA

Type of Tax	Taxes Collected (\$ Millions)
Federal Taxes	
Individual income tax	\$45.59
Corporate income tax	\$13.35
Social security taxes	\$31.38
Excise taxes	\$3.29
Other taxes	\$5.53
Total Federal Taxes	\$99.13

Type of Tax	Taxes Collected (\$ Millions)
State and Local Taxes	
Individual income tax	\$9.67
Corporate income tax	\$1.32
Sales or use tax	\$5.89
Excise taxes	\$2.66
Property taxes	\$15.43
Other taxes	\$1.65
License taxes	\$1.65
Total State and Local Taxes	\$37.53
Total Fiscal Contribution	\$136.66

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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