

MINNESOTA PRINTING INDUSTRY ECONOMIC & FISCAL CONTRIBUTION



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

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The Printing Industry in Minnesota 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 \$9.4 billion in output, 55,186 jobs, \$2.5 billion in labor income, and \$166 million in state and local tax revenues.

The U.S. Printing Industry

Call it printing. Or call it graphic arts or graphic communications. Whatever you call it, you're referring to one of the largest industries in the United States in terms of not only employees but also annual shipments.

It is very hard to overlook an industry that employs more than 460,000 people in more than 27,500 establishments with annual shipments above \$84 billion.

Definition

What has traditionally been referred to as the printing industry encompasses many segments: general commercial printing, quick printing, digital imaging, magazine, newspaper, book and display graphics, financial

and legal printing, screen printing, forms printing, label and tag printing, packaging, greeting card, and trade and finishing services.

(These are encompassed by NAICS code group 323)

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

Companies in the business have expanded services to include creative design, retail display design, e-commerce, webpage design and hosting, mailing, fulfillment, and a host of 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.

Why Conduct an Economic & Fiscal Contribution Study?

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

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

The Economic Contribution Model

Direct Contribution
+
Indirect Contribution
+
Induced Contribution

Total Economic Contribution

Minnesota 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 2013 Analytical Perspectives Budget of the U.S. government from the OMB, and the Tax Foundation. See Appendix for definitions.

Economic Contributions

In 2013 the printing industry directly contributed \$4.14 billion in output, 22,771 jobs, and \$1.09 billion in labor income to Minnesota's economy. After calculating backward-linked supply chain effects or indirect economic contributions and household spending generated by labor income or induced economic contributions, these values increased significantly. Total economic contributions for the Minnesota economy amounted to \$9.4 billion in output, \$4.4 billion in value-added (GDP), 55,186 jobs, and \$2.47 billion in labor income.

Backward-linked supply chain effects or indirect contributions accounted for 30.4% or \$2.86 billion of total economic contribution, 25.9% of employment contribution or 14,312 jobs, and 29.7% of labor income contribution or \$732.4 million. Household spending generated by labor income or induced economic contributions accounted for \$2.41 billion or 25.6% of total economic contribution, 32.8% of employment contribution or 18,103 jobs, and 26.1% of labor income contributions or \$645.6 million.

The printing industry in Minnesota generates \$4.39 billion in value-added, or GDP, annually through its direct economic impact and indirect/induced effects or approximately 1.41% of the state's \$312.1 billion total economic output. Compared to the overall national figures, the Minnesota printing industry drives a slightly larger percent of GDP than other states. The national average is 0.51% of GDP.

PRINTING INDUSTRY ECONOMIC CONTRIBUTION IN MINNESOTA

	Direct Contribution	Indirect Contribution	Induced Contribution	Total Economic Contribution
Output (\$1000s)	\$4,136,395.00	\$2,860,317.10	\$2,409,036.40	\$9,405,748.50
Employment	22,771	14,312	18,103	55,186
Labor Income (\$1000s)	\$1,091,018.40	\$732,400.70	\$645,555.60	\$2,468,974.70
Value-Added or GDP (\$1000s)	\$1,944,105.60	\$1,030,789.60	\$1,419,610.80	\$4,394,506.00

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

Figure 1.



The printing industry has a strong relationship with other sectors of the economy in Minnesota, leading to significant multipliers. For every additional \$1 in output, the printing industry generates an additional \$1.27 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 \$0.69 in backward-linked industries and \$0.58 in additional household spending. In Minnesota, the backward-linked industries the printing industry has the strongest relationship with include manufacturing; wholesale trade; professional, scientific, and technical services; real estate and rental and leasing; and finance and insurance. 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 manufacturing (Figure 2).

Every additional job in the Minnesota printing industry supports an additional 1.42 non-print jobs due to inter-industry effects and additional household spending. The printing industry has a strong inter-industry relationship with other manufactures—32.3% 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. For each job directly supported by the printing industry in Minnesota, the average labor income per job is \$47,912, and the indirect labor income per job is \$51,175.

INDUSTRIES MOST INTERCONNECTED WITH THE PRINTING INDUSTRY IN MINNESOTA

Percent of Indirect and Induced Output Generated by Print Economic Activity

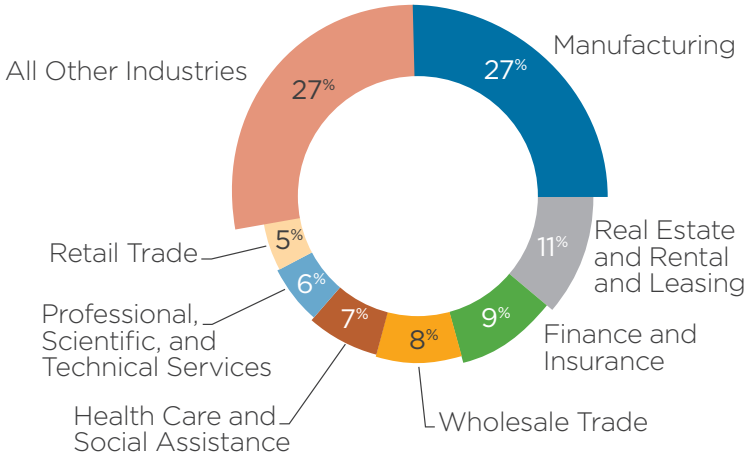


Figure 2.

Induced employment contributions are based on additional household spending cycling through the economy. The sectors of the Minnesota economy that are most affected by the induced employment contribution include health care and social assistance (18.5%); retail trade (16.0%); and real estate, rental, and leasing (10.9%). Each job directly generated by the printing industry results in 0.80 being supported through induced employment contributions. The induced jobs are lower paying on average because they are in industries with lower wages. The average labor income for these jobs is \$35,660 in Minnesota. The industries that are most interconnected to the printing industry through the combination of indirect and induced employment contribution include: manufacturing; health care and social assistance; retail trade; administrative and waste management services; and real estate and rental and leasing (Figure 3).

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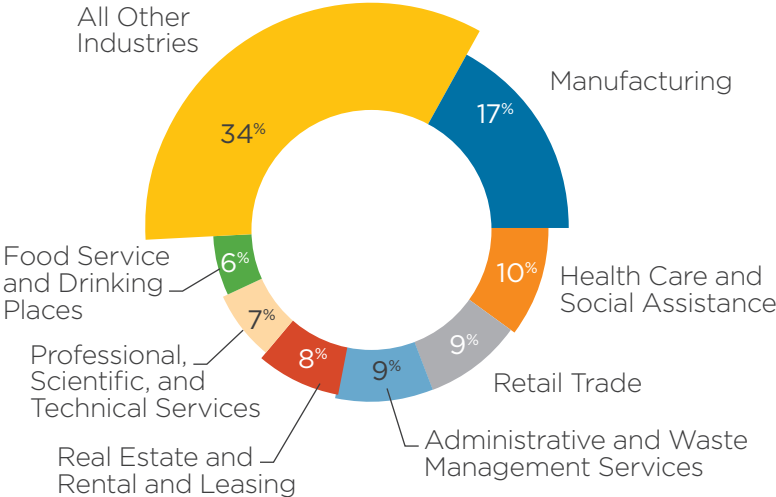


Figure 3.

The Minnesota economy generated \$312.08 billion Gross Domestic Product (GDP) in 2013 or approximately 1.79% of total U.S. output and 45.2% PIM total output. The largest industries in terms of percent of GDP in Minnesota are manufacturing (14.0%); real estate, rental, and leasing (12.7%); health care and social assistance (8.6%); finance and insurance (7.1%); and wholesale trade (6.9%). We do not include government in the list above (9.8% of output) because it is considered a final use of GDP in the input-

output models. The industries that are driving the most growth in 2013 include agriculture, forestry, fishing, and hunting (increased 36.5% adding 1.3% to total Minnesota output or 27.2% share of growth); real estate and rental and leasing (increased 4.8% adding 0.6% to total output or 13.3% share of growth); and health care and social assistance (increased 3.8% adding 0.3% to total output or 7.2% share of growth).

GROSS DOMESTIC PRODUCT BY INDUSTRY IN MINNESOTA

(millions of current dollars)

Industry	GDP (millions of current dollars)		Percent change 2012 to 2013	Share of Growth	Contribution to Change in Output	Percent Share of State Output	
	2012	2013				2012	2013
Manufacturing	42,796	43,743	2.2%	6.9%	0.3%	14.3%	14.0%
Real Estate and Rental and Leasing	37,909	39,745	4.8%	13.3%	0.6%	12.7%	12.7%
Health Care and Social Assistance	25,867	26,857	3.8%	7.2%	0.3%	8.7%	8.6%
Finance and Insurance	21,249	22,227	4.6%	7.1%	0.3%	7.1%	7.1%
Wholesale Trade	20,741	21,680	4.5%	6.8%	0.3%	7.0%	6.9%
Professional, Scientific, and Technical Services	17,390	18,154	4.4%	5.5%	0.3%	5.8%	5.8%
Retail Trade	15,642	16,249	3.9%	4.4%	0.2%	5.2%	5.2%
Agriculture, Forestry, Fishing, and Hunting	10,305	14,066	36.5%	27.2%	1.3%	3.5%	4.5%
Construction	11,515	12,357	7.3%	6.1%	0.3%	3.9%	4.0%
Management of Companies and Enterprises	11,490	12,168	5.9%	4.9%	0.2%	3.9%	3.9%
Information	10,814	10,847	0.3%	0.2%	0.0%	3.6%	3.5%
Transportation and Warehousing	8,185	8,413	2.8%	1.7%	0.1%	2.7%	2.7%
Administrative and Waste Management Services	7,335	7,333	0.0%	0.0%	0.0%	2.5%	2.3%
Accommodation and Food Services	6,657	6,903	3.7%	1.8%	0.1%	2.5%	2.2%
Other Services, Except Government	6,165	6,323	2.6%	1.1%	0.1%	2.1%	2.0%
Utilities	5,346	5,771	7.9%	3.1%	0.1%	1.8%	1.8%
Educational Services	3,001	3,037	1.2%	0.3%	0.0%	1.0%	1.0%
Arts, Entertainment, and Recreation	2,826	2,907	2.9%	0.6%	0.0%	0.9%	0.9%
Mining	2,704	2,701	-0.1%	0.0%	0.0%	0.9%	0.9%
Government	30,335	30,600	0.9%	1.9%	0.1%	10.2%	9.8%
All Industry Total	298,272	312,081	4.6%	100.0%	4.6%	100.0%	100.0%

Figure 4.

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 14.2% of total economic output in Minnesota or it is the largest industry. Over 27% of the printing industry's indirect and induced contributions to the regional economy are circulated through the manufacturing industry. In fact, the seven largest industries in Minnesota are also the highest

ranked in terms of percent of printing industry indirect and induced contribution to the regional economy. There is some variation in the top seven industries for example, healthcare and social assistance is the third largest industry in Minnesota but the fifth largest in terms of indirect and induced output generated via print contributions. See the figure below 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 MINNESOTA 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 Minnesota Regional GDP	Printing Industry Indirect and Induced Output
Manufacturing	1	1	14.02%	27.2%
Real Estate and Rental and Leasing	2	2	12.74%	11.3%
Health Care and Social Assistance	3	5	8.61%	6.6%
Finance and Insurance	4	3	7.12%	9.2%
Wholesale Trade	5	4	6.95%	8.2%
Professional, Scientific, and Technical Services	6	6	5.82%	6.2%
Retail Trade	7	7	5.21%	4.4%
Agriculture, Forestry, Fishing, and Hunting	8	15	4.51%	1.2%
Construction	9	16	3.96%	0.9%
Management of Companies and Enterprises	10	9	3.90%	3.7%
Information	11	10	3.48%	3.5%
Transportation and Warehousing	12	8	2.70%	4.4%
Administrative and Waste Management Services	13	11	2.35%	3.4%
Accommodation and Food Services	14	12	2.21%	3.1%
Other Services, Except Government	15	14	2.03%	2.5%
Utilities	16	13	1.85%	2.5%
Educational Services	17	17	0.97%	0.8%
Arts, Entertainment, and Recreation	18	18	0.93%	0.8%
Mining	19	19	0.87%	0.1%

Figure 5.

Fiscal Contributions

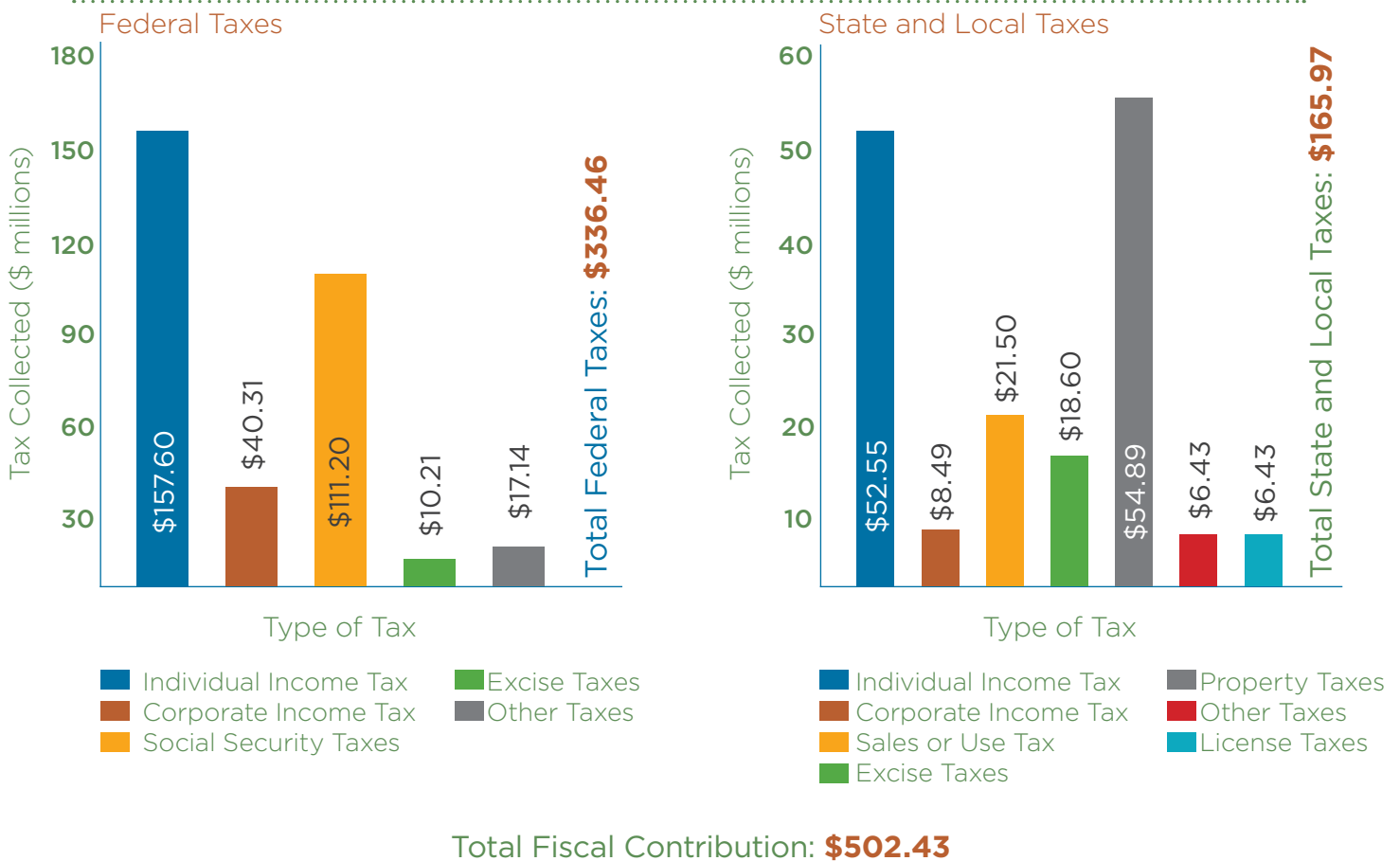
Federal, State, and Local Tax revenues generated by the Minnesota printing industry totaled over \$500 million. The printing industry added \$1.94 billion in direct value-added output to Minnesota's gross domestic product, and 25.8% of this output was collected by the federal, state, and local governments in taxes. The main source of federal tax revenues was individual income taxes (47%) and social security taxes (33%). Almost 9% of Minnesota's printing industry revenues or \$165.97 million were collected to help fund the state and local governments. Property taxes (33%) and individual income taxes (32%) were the two main sources of revenue for state and local governments. (Figure 6).

Conclusions

The printing industry in Minnesota is large and a significantly interconnected industry. Each additional dollar generated by the printing industry in Minnesota

leads to an additional \$1.27 spent in backward-linked supply chain spending and additional household spending. Each print job supports 1.42 jobs in the Minnesota labor market due to spending of labor income in the backward-linked supply chain industries and household spending. Print industry output in Minnesota is most interconnected with other manufactures; real estate and rental and leasing; and finance and insurance. Print industry employment in Minnesota 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 Minnesota almost 9% of the printing industry's \$1.94 billion 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.

2013 FEDERAL, STATE, AND LOCAL TAXES GENERATED BY THE PRINTING INDUSTRY IN MINNESOTA



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 BEA we recommend reading the RIMS II handbook, “An essential tool for regional developers and planners.”



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