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Economic Contribution of Federal, State, and Local Government Contracts Leveraged in Minnesota with Support from the Minnesota Procurement Technical Assistance Center of the Metropolitan Economic Development Association: 2003-2015

A Report of the Economic Impact Analysis Program

In collaboration with the Minnesota Procurement Technical Assistance Center of the Metropolitan Economic Development Association

Economic Contribution of Federal, State, and Local Government Contracts Leveraged in Minnesota with Support from the Minnesota Procurement Technical Assistance Center of the Metropolitan Economic Development Association: 2003-2015

A REPORT OF THE ECONOMIC IMPACT ANALYSIS PROGRAM

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EXECUTIVE SUMMARY: ECONOMIC CONTRIBUTION OF FEDERAL, STATE, AND LOCAL GOVERNMENT CONTRACTS LEVERAGED IN MINNESOTA WITH ASSISTANCE FROM MINNESOTA PROCUREMENT TECHNICAL ASSISTANCE CENTER OF THE METROPLITAN ECONOMIC DEVELOPMENT ASSOCIATION (MN PTAC), 2003-2015

In 1985, Congress authorized the Procurement Technical Assistance Center (PTAC) legislation. In 1991, the Minnesota PTAC (MN PTAC) began operation. MN PTAC provides tools necessary for Minnesota businesses to compete for federal, state, and local government contracting opportunities. MN PTAC is a service of the Metropolitan Economic Development Association.

The following is a summary of the economic contribution of government contracts awarded to businesses assisted by MN PTAC between 2003 and 2015.

- *Direct Contribution:* The direct effect of government contracts leveraged in Minnesota with PTAC assistance is equal to the value of government contracts received. Between 2003 and 2015, Minnesota businesses received $5.3 billion (in 2016 dollars) of government contracts through 6,297 awards (Table 1). According to the model, the government contracts directly created an estimated 34,305 jobs. These jobs paid an estimated $1.9 billion (in 2016 dollars) of labor income. Since these are direct effects, they are the jobs and income created *at the businesses* receiving government contracts. The effects of each award year are annual for that particular year, so while they can be summed, the total effect is spread over time.

- *Total Contribution:* Between 2003 and 2015, government contracts won by businesses with the assistance of MN PTAC generated an estimated $9.8 billion (in 2016 dollars) of economic activity in Minnesota. This includes an estimated $3.5 billion (in 2016 dollars) in labor income. In addition, the funding supported employment for an estimated 62,957 Minnesotans.

- *Total Effects by Industry*: Between 2003 and 2015, the manufacturing industry received the largest portion of government contracts. During this period, Minnesota manufacturing businesses received $2.8 billion of government contracts with assistance from MN PTAC.

- *Benefiting Industries*: Beyond understanding the total contribution of Minnesota government contracts secured with MN PTAC assistance, knowing which industries benefited the most from ripple effects can also be useful information. The highest ripple effects are in the health care and social assistance, retail trade, and professional services industries.

- This is a conservative analysis, focused primarily on government contracts won by Minnesota companies that received support from MN PTAC. The economic activity spurred by the success of the businesses (for example, private investment or additional growth due to success) are not included in this analysis.

PROJECT OVERVIEW

In 1985, Congress authorized the Procurement Technical Assistance Center (PTAC) legislation. Its design was to increase the number of businesses in the government marketplace. Over time, a network of PTACs across the United States developed. In 1991, the Minnesota PTAC (MN PTAC) began operation. MN PTAC provides tools necessary for Minnesota businesses to compete for federal, state, and local government contracting opportunities. MN PTAC is a service of the Metropolitan Economic Development Association.

MN PTAC provides a range of services to Minnesota businesses. Prior to a successful award, MN PTAC assists with interpretation of solicitations, registration and certification, understanding specifications, reviewing of bid packages, and marketing. Post-award assistance includes accounting requirements, contraction payments, and ensuring quality systems and production.

Each year, Minnesota businesses receive government contracts with assistance from MN PTAC. With these contracts, businesses create economic activity in the state. Activity includes additional output (or sales), jobs, and wages paid to employees. This new activity created in the economy, in turn, results in additional economic activity for supporting businesses and industries. Input-output models capture the "ripple" effects generated by the businesses that receive contracts.

MN PTAC is interested in quantifying the effects generated by businesses that have received contracts with MN PTAC assistance. To do so, MN PTAC contracted with University of Minnesota Extension for an economic contribution analysis. This report provides the results of the analysis.

Extension used the input-output model IMPLAN (MIG, Inc.) to conduct the analysis, specifically model version 3 with type SAM multipliers.

This report presents the results of the analysis in two ways. First, it reports the economic contribution of government contracts received by year. Since the analysis covers a span of several years, Extension adjusted the dollar figures to a single year. This allows for proper interpretation and comparison. Extension also adjusted the dollar figures to 2016 values using the Bureau of Labor Statistic's Consumer Price Index (CPI).

Second, the report details the economic contribution by the direct industry affected. Extension categorized each of the awards based on information provided by MN PTAC, but since they did not provide categories for all awards, Extension assigned a category based on the best information available.

ECONOMIC CONTRIBUTION

Total economic contribution is comprised of direct, indirect, and induced effects. The following sections explain the calculations of these effects.

Direct Effect

The direct effect of government contracts leveraged in Minnesota with PTAC assistance between 2003 and 2015 is equal to the value of government contracts received. Between 2003 and 2015, Minnesota businesses received $5.3 billion (in 2016 dollars) of government contracts through 6,297 awards (Table 1). According to the IMPLAN model, the government contracts directly created an estimated 34,305 jobs. These jobs paid an estimated $1.9 billion (in 2016 dollars) of labor income. Since these are direct effects, they are the jobs and income created *at the businesses* receiving government contracts. The effects of each award year are annual for that particular year, so while they can be summed, the total effect is spread over time.

The next section of this report details the ripple effects created from the government contracts.

Table 1: Direct Effect of Government Contracts Earned by Minnesota Businesses Receiving Assistance From the Minnesota Procurement Technical Assistance Center (MN PTAC), 2003 to 2015

Year	Output	Employment	Labor Income	Number of Awards
	Millions of 2016 dollars		Millions of 2016 dollars	
Total	**$5,285.4**	**34,305**	**$1,929.7**	**6,297**
2003	$196.0	1,924	$112.0	221
2004	$435.1	7,588	$219.0	261
2005	$243.3	1,624	$89.0	342
2006	$263.1	2,006	$98.0	466
2007	$528.1	2,379	$162.0	808
2008	$817.0	2,857	$251.0	874
2009	$611.8	4,074	$262.5	692
2010	$396.6	2,153	$134.0	579
2011	$450.6	2,396	$146.1	585
2012	$355.7	1,859	$123.8	498
2013	$433.5	2,138	$122.4	491
2014	$291.8	1,906	$123.0	371
2015	$262.8	1,401	$86.9	109

*Columns may not sum due to rounding

Output data provided to Extension by MN PTAC;
employment and labor income estimated with IMPLAN model

Indirect and Induced Effects

With the direct effects quantified, Extension entered the data into an input-output model. Input-output models trace the flow of dollars throughout a local economy and estimate the indirect and induced, or ripple effects of an economic activity.

Indirect effects are those associated with a change in economic activity due to spending for goods and services directly tied to the businesses receiving government contracts. In this case, these are the changes in the local economy occurring because the businesses need to purchase inputs (raw goods) and related services (training and accounting, for example). These are business-to-business effects.

Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. Primarily, in this study, these are economic

changes related to spending by the employees of the businesses receiving government contracts. It also includes household spending related to indirect effects. These are business-to-consumer effects.

Total Effects

The sum of the direct, indirect, and induced effects equals total effect. Table 2 shows the total effect of government contracts received by Minnesota businesses with the assistance of MN PTAC. Between 2003 and 2015, government contracts generated an estimated $9.8 billion (in 2016 dollars) of economic activity in Minnesota, including an estimated $3.5 billion (in 2016 dollars) in labor income. In addition, the contracts supported employment for an estimated 62,957 Minnesotans. The total impact is the summation of the annual impacts. Please note the impacts of awards are considered to be annual.

Table 2: Total Economic Contribution of Government Contracts Earned by Minnesota Businesses Receiving Assistance From the Minnesota Procurement Technical Assistance Center (MN PTAC), 2003 to 2015

Year	Output Millions of 2016 dollars	Employment	Labor Income Millions of 2016 dollars	Average per Employee 2016 dollars (rounded)
Total	**$9,761.3**	**62,957**	**$3,485.4**	**$155,000**
2003	$403.3	3,336	$186.0	$120,900
2004	$882.4	10,555	$371.8	$83,600
2005	$472.6	3,105	$170.1	$152,200
2006	$493.3	3,490	$178.5	$141,300
2007	$940.6	4,849	$302.1	$194,000
2008	$1,371.0	6,266	$440.9	$218,800
2009	$1,169.0	7,698	$457.6	$151,900
2010	$724.6	4,265	$249.6	$169,900
2011	$799.8	4,640	$269.0	$172,400
2012	$639.3	3,632	$221.2	$176,000
2013	$800.9	4,488	$248.3	$178,500
2014	$576.2	3,816	$226.0	$151,000
2015	$488.3	2,817	$164.3	$173,300

*Columns may not sum due to rounding, Estimates by University of Minnesota Extension

Total Effects by Industry

Analyzing the data by year provides one view of the contribution of government contracts secured with assistance from MN PTAC. The industry receiving the funding is another basis for analysis. Between 2003 and 2015, the manufacturing industry received the largest portion of government contracts. During this period, the industry received $2.8 billion of contracts with assistance from MN PTAC (Table 3). Table 3 shows the direct effect and does not include the indirect and induced effects. University of Minnesota Extension classified the projects by industry.

Table 3: Direct Effect of Top Five Industries Receiving Government Contracts Earned by Minnesota Businesses Receiving Assistance From the Minnesota Procurement Technical Assistance Center (MN PTAC), 2003-2015, Sorted by Output

Industry	Output Millions of 2016 dollars	Employment	Labor Income Millions of 2016 dollars
Manufacturing	$2,826.0	7,450	$646.0
Construction	$753.7	4,370	$253.8
Professional, Scientific, and Technical Services	$727.5	6,120	$462.1
Educational Services	$282.8	7,120	$173.6
Administrative and Waste Services	$267.3	3,580	$147.8

Estimates by University of Minnesota Extension

TOP INDUSTRIES AFFECTED

Beyond understanding the total contribution of government contracts in Minnesota secured with assistance from MN PTAC, knowing which industries benefited the most from ripple effects can also be useful information. The highest employment ripple effects are in the health care and social assistance, retail trade, and professional services industries (Chart 1).

Chart 1: Top Industries Affected by Government Contracts Earned by Minnesota Businesses Receiving Assistance from the Minnesota Procurement Technial Assistance Center (MN PTAC), 2003-2015, Sorted by Employment

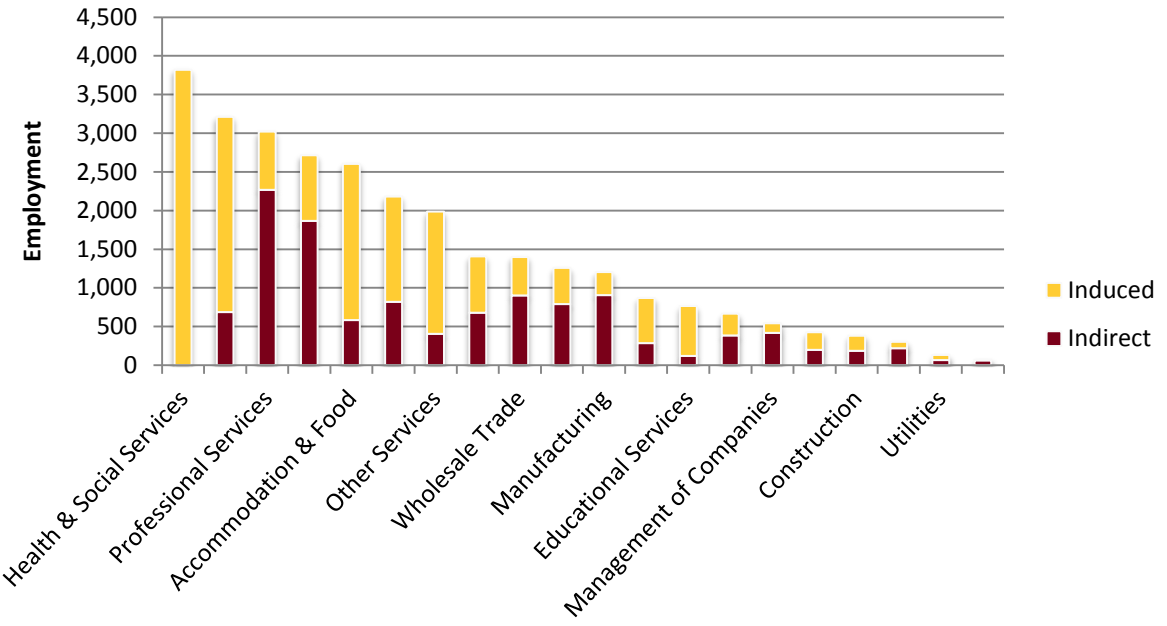


Chart 1 differs from Table 3. Table 3 highlights the industries receiving the highest *direct* effect (industries receiving government contracts). Chart 1 highlights the industries with the highest *secondary* or ripple effects (no direct government contracts).

PROFILE OF THE STUDY AREA ECONOMY

The study area for this analysis is the state of Minnesota. It is the study area because businesses in any community in Minnesota are eligible to access MN PTAC services. The MN PTAC impacts detailed in this report can be compared to a total of $614.9 billion of output generated by all sectors of Minnesota's economy in 2014.[1] There were 3.6 million jobs in all sectors of the state.

Chart 2 shows total output in Minnesota by industry category. The manufacturing sector contributes 24 percent of total output to the state's economy. The service sectors, in total, contribute 45 percent of output to the state's economy. Of the service sector categories, the professional and business services sector (33 percent) comprises the largest component. Interestingly, these industries were also in the top five industries receiving government contracts as a result of MN PTAC assistance.

[1] Output and employment figures for Minnesota retrieved from the IMPLAN database. IMPLAN measures output (or total sales in the economy). This is not the same as GDP. The most recent IMPLAN dataset available is 2014.

Chart 2: Output by Industry, Minnesota 2014

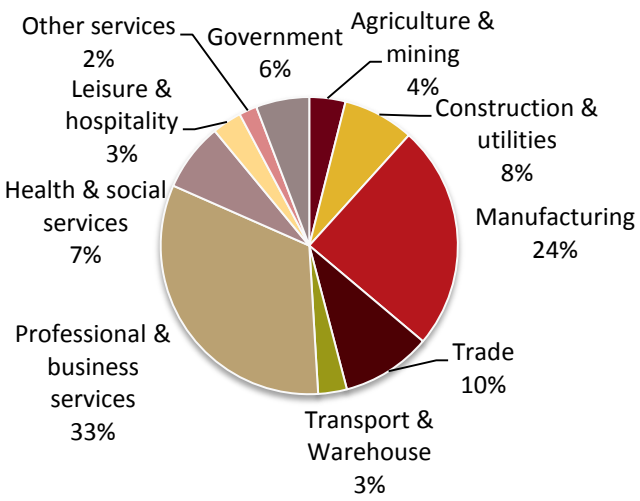
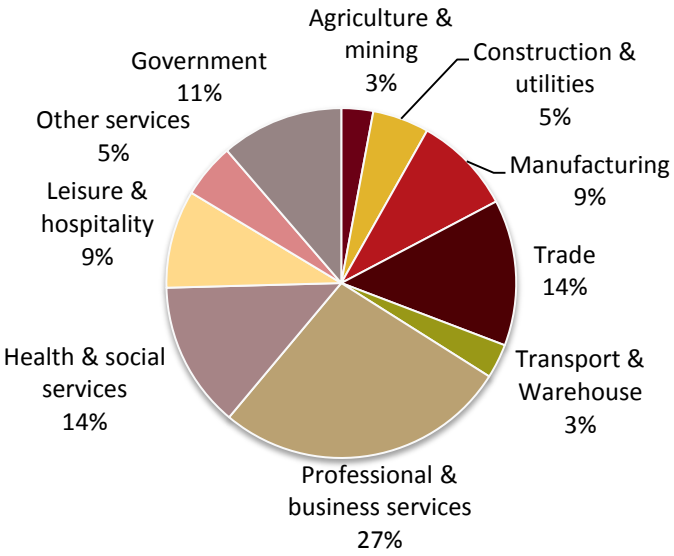


Chart 3 shows employment by industry category. The service sectors have the largest share of employees in Minnesota (55 percent).

While manufacturing creates 24 percent of output, it only employs 9 percent of all workers. There are two possible reasons for this observation. First, in the database, one job is one job, regardless of its status as part-time, full-time, or seasonal. Since the service sectors tend to employ more part-time employees while manufacturing tends to employ more full-time, manufacturing's share of employment may appear lower. Second, manufacturing workers can produce more output per employee in comparison to workers in many other industries.

Chart 3: Employment by Industry, Minnesota 2014



APPENDIX: METHODS AND TERMS

Special models, called input-output models, exist to conduct economic contribution analysis. There are several input-output models available. IMPLAN (IMpact Analysis for PLANning, MIG) is one such model. Many economists use IMPLAN for economic contribution analysis because it can measure output and employment impacts, is available on a county-by-county basis, and is flexible for the user. IMPLAN has some limitations and qualifications, but it is one of the best tools available to economists for input-output modeling. Understanding the IMPLAN tool, its capabilities, and its limitations helps ensure the best results from the model.

One of the most critical aspects of understanding economic contribution analysis is the distinction between the "local" and "non-local" economy. The local economy is identified as part of the model-building process. Either the group requesting the study or the analyst defines the local area. Typically, the study area (the local economy) is a county or a group of counties that share economic linkages. In this study, the study area is the entire state of Minnesota.

A few definitions are essential in order to properly read the results of an IMPLAN analysis. The terms and their definitions are provided below.

Output

Output is measured in dollars and is equivalent to total sales. The output measure can include significant "double counting." Think of corn, for example. The value of corn is counted when it is sold to the mill, again when it is sold to the dairy farmer, again as part of the price of fluid milk, and yet again when it is sold as cheese. The value of the corn is built into the price of each of these items, and then the sales of each of these items are added up to get total sales (or output).

Employment

Employment includes full- and part-time workers, as well as seasonal workers. Employment is measured in annual average jobs, not full-time equivalents (FTE's). IMPLAN includes total wage and salaried employees, as well as the self-employed, in employment estimates. Because employment is measured in jobs and not in dollar values, it tends to be a very stable metric.

Labor Income

Labor income measures the value added to the product by the labor component. So, in the corn example, when the corn is sold to the mill, a certain percentage of the sale goes to the farmer for his/her labor. Then when the mill sells the corn as feed to the dairy farmer, it includes some markup for its labor costs in the price. When the dairy farmer sells the milk to the cheese manufacturer, he/she includes a value for his/her labor. These individual value increments for labor can be measured, which amounts to labor income. Labor income does *not* include double counting. Labor income includes wages, benefits, and salaries. Both employee compensation and proprietor income are part of labor income.

Direct Impact

Direct impact is equivalent to the initial activity in the economy. In this study, it is the expenditures of businesses receiving government contracts with support from MN PTAC.

Indirect Impact

The indirect impact is the summation of changes in the local economy that occur due to spending for inputs (goods and services) by the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, this implies a corresponding increase in output by the plant. As the plant increases output, it must also purchase more inputs, such as electricity, steel, and equipment. As the plant increases purchases of these items, its suppliers must also increase production, and so forth. As these ripples move through the economy, they can be captured and measured. Ripples related to the purchase of goods and services are indirect impacts.

Induced Impact

The induced impact is the summation of changes in the local economy that occur due to spending by labor; that is, spending by employees in the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, the new employees will have more money to spend to purchase housing, buy groceries, and go out to dinner. As they spend their new income, more activity occurs in the local economy. This can be quantified and is called the induced impact.