11-1-2014

Impact Washington:An Economic Impact Analysis

Mike Paruszkiewicz
Portland State University

Jeff Renfro
Portland State University

Impact Washington:

An Economic Impact Analysis

NeRC

Northwest Economic Research Center

College of Urban and Public Affairs

FINAL REPORT

November 2014

WESTERN WASHINGTON UNIVERSITY

Portland State UNIVERSITY

ACKNOWLEDGEMENTS

This report was researched and produced by the Northwest Economic Research Center (NERC) with support from Impact Washington.

Impact Washington (formerly Washington Manufacturing Services) is a non-profit organization that strengthens Washington manufacturers to make them more globally competitive. Impact Washington's mission is to improve manufacturing performance in Washington, and they do that by helping companies identify opportunities to increase a company's value. As a Manufacturing Extension Partnership affiliate, Impact Washington is part of a national network with over 1,300 technical and business experts deployed nationwide. For over 15 years, they have been serving the small and midsized manufacturers of the state of Washington, helping them with bottom-line improvements and top-line growth.

The Center for Economic and Business Research (CEBR) works in partnership with businesses, government entities and non-profits to bridge the resources of Western students, faculty and staff and creating solutions to challenges. Their work includes a variety of analysis documents, internship programs, class projects and faculty projects. Benjamin Buhler of CEBR ran the IMPLAN model on this project.

NERC is based at Portland State University in the College of Urban and Public Affairs. The Center focuses on economic research that supports public-policy decision-making, and relates to issues important to Oregon and the Portland Metropolitan Area. NERC serves the public, nonprofit, and private sector community with high quality, unbiased, and credible economic analysis. Dr. Tom Potiowsky is the Director of NERC, and also serves as the Chair of the Department of Economics at Portland State University. Dr. Jenny H. Liu is NERC's Assistant Director and Assistant Professor in the Toulan School of Urban Studies and Planning. The report was researched and written by Mike Paruszkiewicz, NERC Economist and Jeff Renfro, NERC Senior Economist. Research support was provided by Marisol Cáceres.

Northwest Economic Research Center

Portland State University
College of Urban and Public Affairs
PO Box 751
Portland, OR 97207-0751
503-725-8167
nerc@pdx.edu

www.pdx.edu/NERC
@nercpdx

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

Washington's manufacturing sector has long been a vital arm of its economy. It contributes one of the largest annual outputs in the state, and employs a large share of its workforce. Across the US, manufacturing businesses have faced growing pressure from changes in export, financial, and domestic goods markets, and Washington's experience has generally followed this trend. The National Institute of Standards and Technology's Hollings Manufacturing Extension Partnership (MEP) supports manufacturing businesses as they navigate this dynamic global context. NIST's national network of local extension centers provides consulting and access to public and private resources in order to improve the capacity, productivity, and competitiveness of US manufacturers. Impact Washington has provided these services to the state's businesses since 1996.

Impact Washington asked the Northwest Economic Research Center (NERC) to conduct an analysis of the economic impact of the organization's work with Washington manufacturers. To carry out the analysis, NERC used data from a survey of businesses that received extension services from 2002 to the second quarter of 2013. Survey responses included the outcomes of Impact Washington partnerships with firms – jobs either created or retained, increases in sales and output, and changes in investments – that would not have occurred without the organization's services. These outcomes provided high-quality inputs for NERC's macroeconomic impact analysis using the IMPLAN model, a popular tool used by government agencies, universities, and independent researchers to estimate the total economic effects of new activity.

The results of this study confirm the significance of Impact Washington's services to the state's manufacturing industries. *Figures 1 and 2* below summarize the direct (i.e., firm level) and total (i.e., aggregate macro-level) employment and output effects of these services between 2002 and 2012. There was a visible uptick in employment effects during the economic recovery of 2009-2012, and data for the twelve months ending in June 2013 suggest that this trend has remained high. *Table 1* presents these figures numerically and includes the labor income associated with increased employment and output. Between 2002 and 2012, Impact Washington's activities directly or indirectly led to over $2.3 Billion in additional output in the state.

Table 2 apportions the total impacts in the most recent 24 months of the study period into rural and urban regions. A concentration of activity in urban regions is apparent; however, given the relative size of the rural economy and workforce, the $23.6 million in additional output and 218 additional jobs in these two years should not be overlooked.

Figure 1: Washington Employment Impacts, 2002-2012[1]

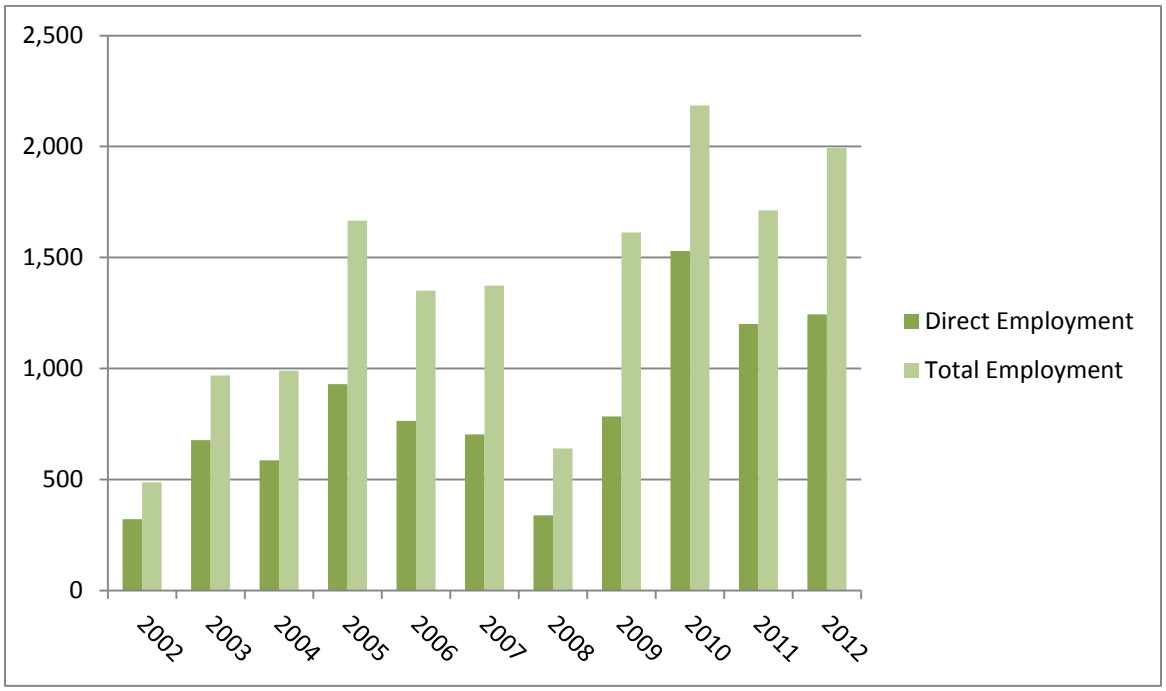
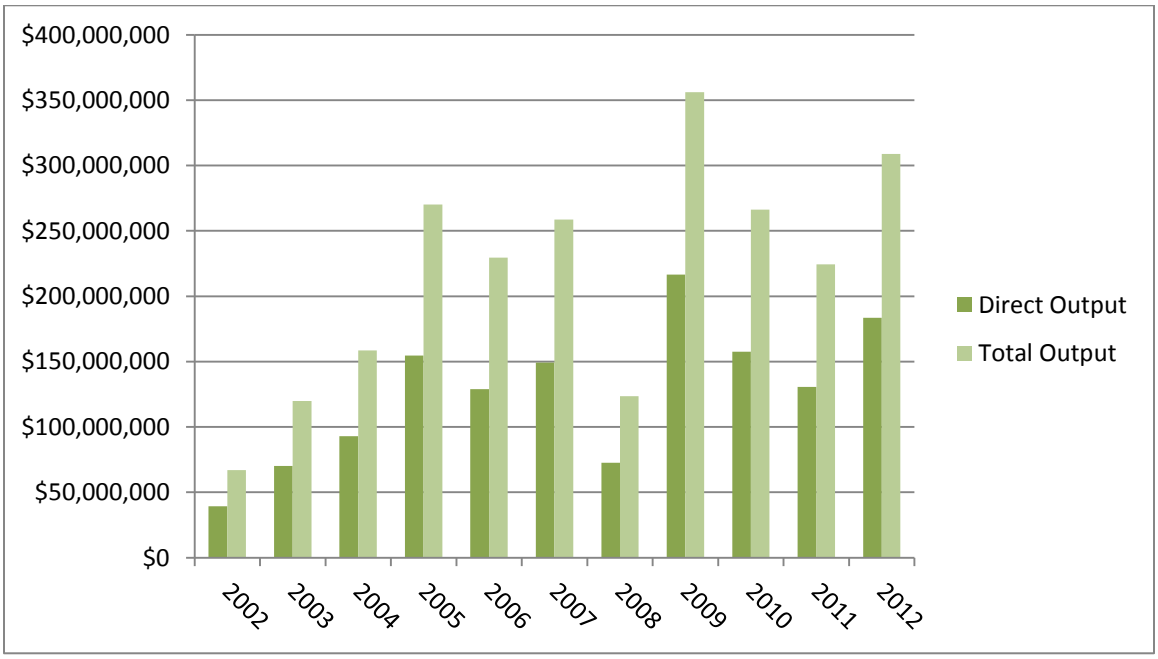


Figure 2[2]: Washington Output Impacts, 2002-2012



[1] All monetary amounts are reported in 2013 dollars
[2] Output, as defined here, refers to the a gross measure used by IMPLAN that is typically larger than traditional GDP

Table 1: Total Economic Impacts (2002-2012)

Year	Employment	Labor Income	Total Value Added	Output
2002	486	$20,207,452	$31,520,542	$67,006,817
2003	969	$35,019,821	$56,926,288	$119,827,130
2004	990	$52,846,213	$84,977,814	$158,473,208
2005	1,665	$82,920,513	$123,690,142	$270,064,622
2006	1,350	$64,905,087	$102,223,490	$229,480,001
2007	1,373	$78,766,990	$125,222,823	$258,750,803
2008	639	$34,699,979	$57,645,499	$123,396,492
2009	1,612	$97,439,956	$164,061,090	$356,153,176
2010	2,184	$77,336,759	$124,046,558	$266,157,499
2011	1,712	$55,347,575	$88,543,032	$224,303,480
2012	1,993	$85,215,643	$138,890,558	$308,871,422
Total	**14,976**	**$684,705,988**	**$1,097,747,837**	**$2,382,484,650**

Table 2: Total Economic Impacts[3]

	Employment	Labor Income	Total Value Added	Output
2012-2013				
Washington	1,671	$60,478,742	$97,124,510	$212,481,874
Rural Washington	130	$5,463,374	$11,090,677	$19,521,335
Urban Washington	1,495	$53,086,125	$81,869,402	$183,467,421
2011-2012				
Washington	1,671	$82,058,124	$132,630,245	$324,259,182
Rural Washington	88	$1,325,849	$2,270,115	$7,126,200
Urban Washington	1,537	$80,795,510	$127,746,728	$307,081,346

Section IV includes detailed employment, income, and output estimates for the 2011-2012 and 2012-2013 periods, as well as summaries of the industries that especially benefitted from extension partnerships. The new earning and spending brought on by these changes of course benefits local and state government ledgers. Estimates of the new federal, state, and local tax revenue they generate are included as well. That section also provides a brief discussion of business investment impacts that were not included in NERC's impact analysis.

Following the report's conclusion, *Appendix A* provides a summary of total impacts in each Washington county. *Appendix B* shows statewide summaries for each year of the study period.

[3] See footnote on page 17 regarding the discrepancy between the sum of rural and urban figures and the state total.

II. INTRODUCTION

The unique challenges facing the US manufacturing sector are widely understood within the industry and in public discourse. Domestic manufacturers enjoy unrivaled access to the amenities of the world's most developed economy, but those advantages exist in the context of a rapidly evolving global market. Strict regulatory and tax environments, a highly skilled (and thus relatively expensive) labor force, pro-cyclical demand, and increasingly competitive export markets each continuously raise the bar for the firms operating domestically. Since 1996, the sector has lost approximately 5 million jobs, a large portion of its share of US output, and close to ten percent of its share of world manufacturing exports.

Despite these challenges, US manufacturers comprise 13 percent of national output (the nation's third largest private-sector contribution), and employ more than eight percent of the non-government domestic labor force. Domestic manufacturing's 2013 output of $2.03 trillion would rank between the GDPs of Brazil and Russia among the world's largest economies. While the sector's employment recovery has lagged behind others since the end of the recession, that lag is by no means homogenous across regions of the country or type of manufacturing. Manufacturing remains a key component of the national and state economies in the US[4].

Washington State is no exception: the sector is the state's fourth largest in terms of employment (approximately 280,000 on average in 2013)[5], and third largest in terms of private contribution to state GDP. In contrast to the national trend, Washington's manufacturers have regained 75 percent of jobs lost during the latest recession, led by especially strong recovery in aerospace manufacturing, and total manufacturing job gains have been close to thirteen percent since the recession's trough. The sector employed close to one tenth of the state's workforce in 2011, and that share has been projected to remain stable through 2016. One third of the state's economic growth since 2006 is attributable to manufacturing[6].

Washington's manufacturing industries nevertheless face the same significant pressures as those in the rest of the country. Impact Washington, a non-profit manufacturing extension partnership (MEP) founded in 1996, addresses these pressures as its central mission. As the state-level representative of the National Institute of Standards and Technology's MEP network, Impact Washington offers low or no-cost consulting services to Washington businesses in order to strengthen the state's manufacturing sector and enhance its competitiveness in the global economy. NIST's national MEP network includes offices in every

[4]

[5] At the 2-digit NAICS level (WA ESD Report 2013)

[6] Washington State Employment Security Department, 2014

US state and partnerships with businesses, non-profit organizations, research centers, and every level of government therein. Services provided by MEP offices include planning and implementation assistance for workplace productivity improvement initiatives, strategic supply chain development, technology transfers, and support for export market growth.

Impact Washington offers these services with the expressed purposes of strengthening and improving the competitiveness of Washington businesses. Key outcomes targeted by this work are cost reduction, expansion into new markets, job creation (or retention), and improved (or retained) sales. NERC's impact analysis focused on the latter two outcomes, which have particularly strong macroeconomic effects and are easily measured.

III. DATA DESCRIPTION AND SURVEY METHODOLOGY

NERC's analysis required data on the experiences of businesses that have partnered with Impact Washington. The goal of any impact analysis is to differentiate changes in economic activity due to some intervention (such as the assistance of a MEP) from baseline changes that would have occurred otherwise – say, due to an existing trend or activity. In this case, this was accomplished with a survey of firms that have partnered with Impact Washington since 2002. The client survey, consisting of a mix of fill-in-the-blank and multiple choice questions, was administered by a third-party organization. Respondents reported general firm information (business name, location, industry, and overall sales and employment size) as well as the detailed effects of the services they received from Impact Washington. If a partnership with Impact Washington led to an increase or retention in sales or employment, respondents reported those amounts.

Before beginning the analysis, NERC reviewed the survey questions and forms and concluded that they were clear and easy to follow. That being said, misinterpretation and data entry error remain possibilities. NERC also reviewed survey responses to make sure that they were reasonable. We compared the reported impacts to the reported size of each firm to check that the magnitude of impacts fell in a reasonable range.

IV. DESCRIPTION OF IMPLAN

NERC used the survey data on employment and output changes as inputs for IMPLAN, an input-output (I/O) based economic model that estimates the total macroeconomic impacts resulting from changes at a detailed geographic and economic level. For instance, if a manufacturing firm in Washington achieves increased sales due to services provided by Impact Washington, it will require additional labor and additional intermediate inputs to meet the higher demand for its output. A portion of the new wages paid to the firm's employees will be spent on the output of other firms. Likewise, a portion of the new intermediate materials purchased by the expanding business will increase the sales of other firms, which will hire additional workers, who will spend some of their additional income, and so on. As noted, it is critical to isolate new economic activity due to Impact Washington's intervention from activity it may have replaced as well as activity that would have occurred without the intervention. The client survey was designed to achieve this distinction – respondents report changes in their sales and employment arising from Impact Washington's services separately from their overall business numbers. These direct impacts of the organization's work became NERC's primary inputs to IMPLAN.

IMPLAN models a region's economy as a highly interconnected network of firms and households spread across the state. It is constructed from Social Accounting Matrices (SAMs), which are based on the input-output tables of purchases and sales across industries available from the Bureau of Economic Analysis (BEA) and supplementary data from other publicly available sources. IMPLAN's matrices reflect the actual industry interactions within and between regions, and include the government sector which is often omitted from this type of analysis. Put simply, they present a map of the economy that illustrates the flow of money, resources, and employment through the sectors of a

IMPLAN Impacts

The impact summary results are given in terms of employment, labor income, total value added, and output:

Employment represents the number of annual, 1.0 FTE jobs. These job estimates are derived from industry wage averages.

Labor Income is made up of total employee compensation (wages and benefits) as well as proprietor income. Proprietor income is profits earned by self-employed individuals.

Total Value Added is made up of labor income, property type income, and indirect business taxes collected on behalf of local government. This measure is comparable to familiar net measurements of output like gross domestic product.

Output is a gross measure of production. It includes the value of both intermediate and final goods. Because of this, some double counting will occur. Output is presented as a gross measure because IMPLAN is capable of analyzing custom economic zones. Producers may be creating goods that would be considered intermediate from the perspective of the greater national economy, but may leave the custom economic zone, making them a local final good.

geographic area. IMPLAN thus simulates the wave of spending and hiring spurred by changes in one or more industries. In addition to results in the private sector, the model estimates impacts to disposable income and tax revenue.

The magnitude of these simulated changes relies on estimations of the historical relationships between households, industries, and the government sector. In the model, a production function for each industry describes the numerous resources from other industries and households each industry requires to produce its output. For example, the durable manufacturing industry requires both labor and intermediate goods produced by other industry to produce its own output. When the industry's sales increase, the specific number of additional employees it will hire and the amount of additional material inputs it purchases in IMPLAN's simulations are based on the past hiring and purchasing activity in that industry and region.

Ultimately, IMPLAN's analysis produces results of three types: direct, indirect, and induced.

- **Direct Impacts**: These are defined by the modeler, and placed in the appropriate industry. They are not subject to multipliers. In this case, revenue and employment were collected from the survey described above and allocated to the appropriate industries.

- **Indirect Impacts**: These impacts are estimated based on national purchasing and sales data that model the interactions between industries. This category reflects the economic activity necessary to support the direct impacts of other firms in the supply chain – the "ripples" in the economy resulting from an initial direct impact.

- **Induced Impacts**: These impacts are created by the change in wages and employee compensation. Employees change purchasing decisions based on changes in their income and wealth.

V. IMPLAN RESULTS

Figures 1 and 2 illustrate the direct and total employment and output impacts attributable to Impact Washington's services since 2002. That work appears to have lent significant support during the state's 2009-2013 economic recovery, when jobs directly created or retained exceeded 1,500 per year, and total economic impacts exceeded $200 million per year (in 2009 and 2012, this total exceeded $300 million). In recent years, services to the aircraft and plastics product manufacturing industries have driven large gains in statewide output and employment. Other standout benefits include those in the fruit and vegetable processing and wholesale trade sectors, which are consistently the highest across urban and rural areas of the state.

The series of tables that follow provide a detailed breakdown of the most recent annual effects of Impact Washington's partnerships. The survey period used for these data ended in June 2013, so the two periods detailed here are July 2011 to June 2012, and July 2012 to June 2013. Statewide results are explored first, followed by separate results for rural and urban areas. Additionally, a discussion of economic benefits not appearing in these tables summarizes improvements to business investments stemming from Impact Washington's services.

Figure 1: Washington Employment Impacts, 2002-2012

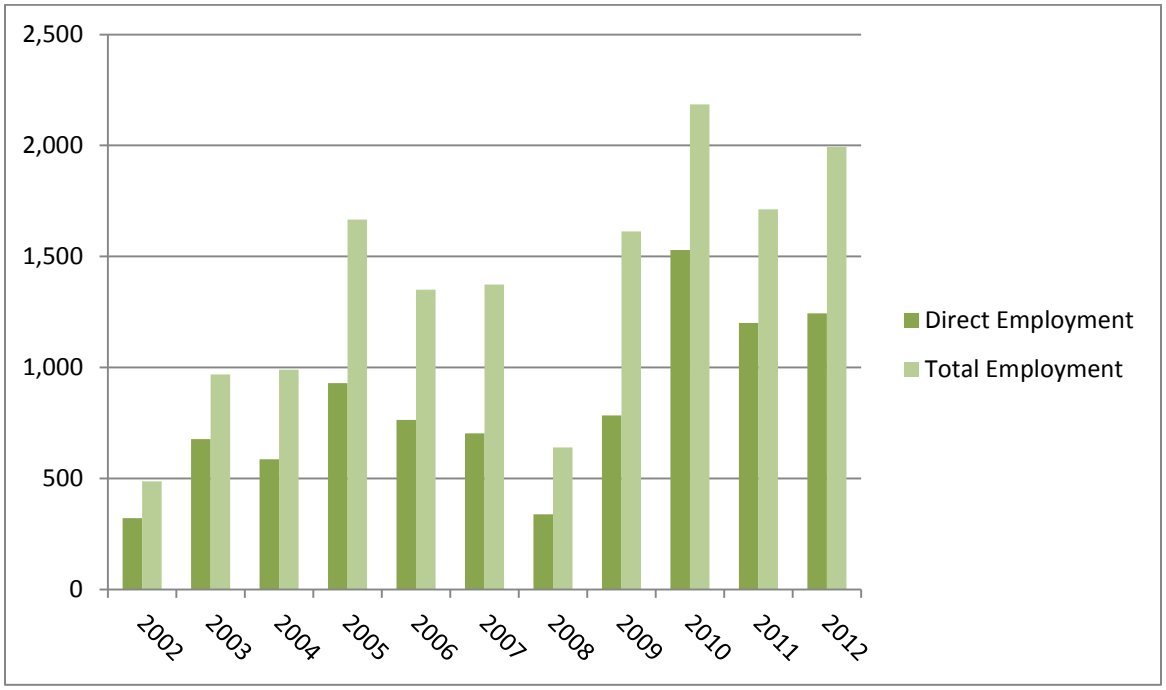
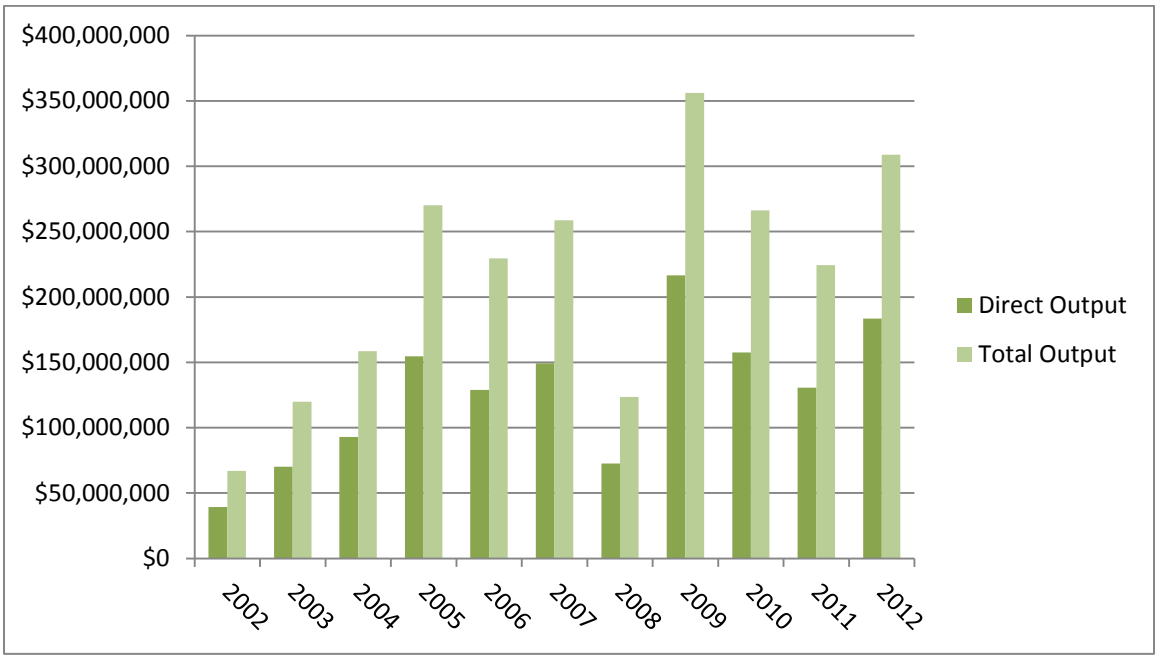


Figure 2: Washington Output Impacts, 2002-2012



WASHINGTON

Tables 3 through *5* show the total economic effects of Impact Washington's partnerships at the state level. In the July 2012- June 2013 period, over 1,100 jobs were directly gained or retained through these activities, which indirectly supported an additional 529. These 1,671 total jobs generated over $60 million in labor income and over $212 million in output in the state. The totals for 2012 were the second highest of the study period – close to two thousand jobs and over $300 million in output in that year alone. Summaries for each year appear in *Appendix B*.

Table 3: Washington Impacts, 2012-2013

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	1,142	$29,665,889	$44,464,471	$123,641,495
Indirect Effect	269	$18,097,656	$28,588,259	$51,289,616
Induced Effect	260	$12,715,198	$24,071,779	$37,550,764
Total Effect	**1,671**	**$60,478,742**	**$97,124,509**	**$212,481,874**

As noted, some industries consistently experienced the largest benefits over the decade. These include plastic product and aircraft manufacturing, which had particularly large employment gains attributable to extension services in 2012-2013, as well as wholesale trade. Other industries experiencing large impacts vary by year, but benefits appear to generally favor many of the state's key industry clusters.

Table 4: Industries Affected, Statewide 2012-2013

Industry Code	Description	Total Employment
149	Plastics product manufacturing	502
286	Aircraft parts and auxiliary equipment manufacturing	330
105	Paper mills	60
54	Fruit and vegetable canning, pickling, and drying	60
291	Boat building	59
253	Electricity and signal testing instruments manufacturing	48
319	Wholesale trade	48

Impact Washington's partnerships similarly generate substantial tax revenue at the local, state, and national level through increased output and employment. In the 2012-2013 period, this translated to roughly $8 million in revenues for government within the state and over $13,600,000 for federal taxes.

Table 5: Statewide Tax Impact, 2012-2013

	Total
Washington	
State Personal and Corporate Income Taxes	$10,264.00
Other State Taxes, fees, and licenses	$5,611,496.00
Total	**$5,621,760.00**
Local Governments	
Property Taxes	$2,327,434.00
Other Local Taxes, Fees, and Licenses	$26,188.00
Total	**$2,353,622.00**
Federal Government	
Federal Personal and Corporate Income Taxes	$6,146,780
Social Insurance and Excise Taxes	$7,491,466
Total	**$13,638,246**
TOTAL	**$21,613,628.00**

2011-2012

Employment impacts for July 2011 – June 2012 generally mirror those in the following twelve months. *Table 6* presents these totals, and *tables 7* and *8* illustrate the industry-level and tax revenue impacts for 2011 – 2012.

Table 6: Washington Impacts, 2011-2012

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	929	$38,637,291	$57,954,260	$191,531,686
Indirect Effect	389	$26,172,782	$42,022,824	$81,790,208
Induced Effect	353	$17,248,051	$32,653,161	$50,937,287
Total Effect	**1,671**	**$82,058,124**	**$132,630,245**	**$324,259,182**

Table 7: Industries Affected, Statewide 2011-2012

Industry Code	Description	Total Employment
149	Plastics product manufacturing	302
286	Aircraft parts and auxiliary equipment manufacturing	142
291	Boat building	75
206	Mining and oil and gas field machinery manufacturing	70
253	Electricity and signal testing instruments manufacturing	66
319	Wholesale trade	65
54	Fruit and vegetable canning, pickling, and drying	39
243	Semiconductor and related device manufacturing	37

Once again, plastics and aircraft parts manufacturing businesses posted strong employment gains from their partnerships with Impact Washington in 2011-2012. In fact, many of the other industries listed in Table 7 continued to add or retain jobs due to these services in the following twelve month period (*Table 4*, above).

Table 8: Statewide Tax Impact, 2011-2012

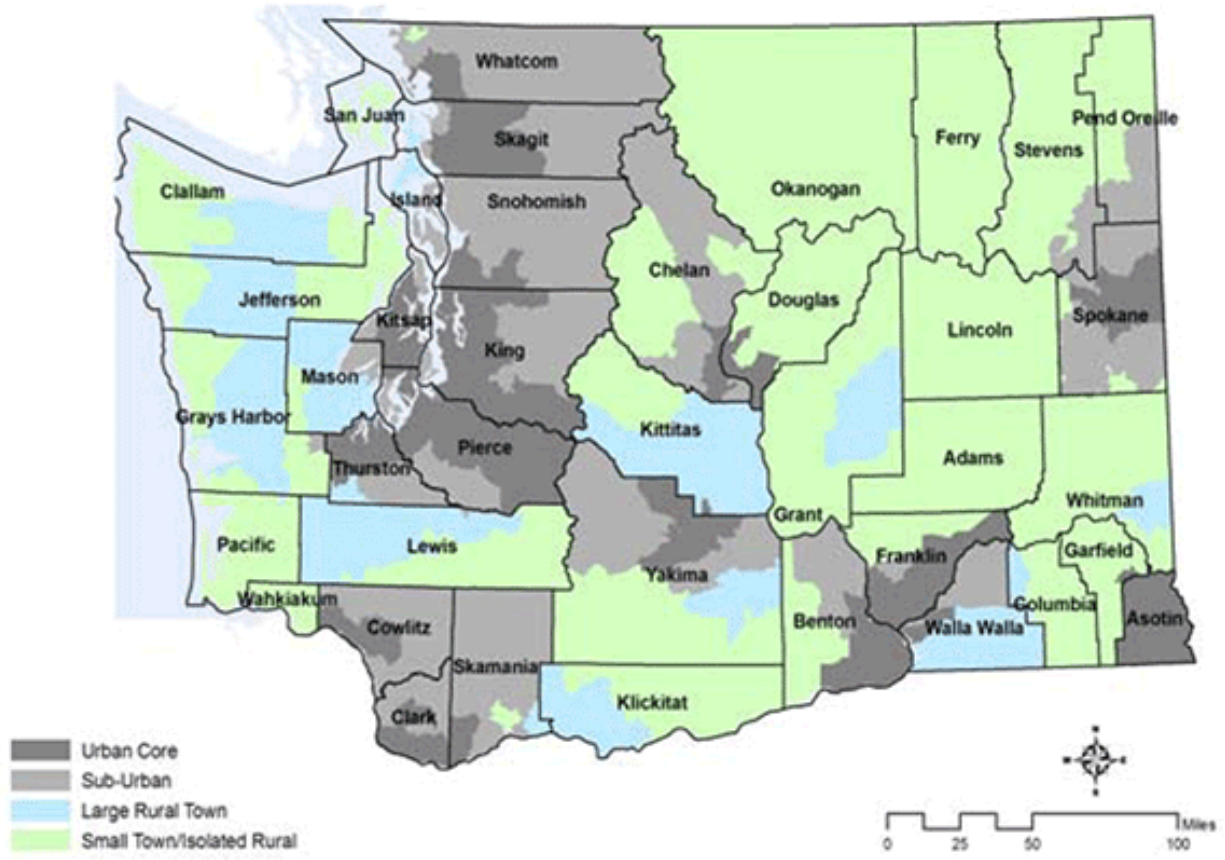
	Total
Washington	
State Personal and Corporate Income Taxes	$14,973.00
Other State Taxes, fees, and licenses	$6,369,608.00
Total	**$6,384,581.00**
Local Governments	
Property Taxes	$2,618,274.00
Other Local Taxes, Fees, and Licenses	$35,531.00
Total	**$2,653,805.00**
Federal Government	
Federal Personal and Corporate Income Taxes	$8,528,029
Social Insurance and Excise Taxes	$9,941,169
Total	**$18,469,198**
TOTAL	**$27,507,584.00**

Table 8 summarizes the tax revenues attributable to the employment and output spurred by Impact Washington's services in 2011-2012. Total federal, state, and local revenues generated were over $5 million higher than in 2012-2013.

RURAL/URBAN BREAKDOWN

The following tables separate the effects described above into urban and rural areas of the state as defined by the Rural-Urban Commuting Area (RUCA) system. RUCA classifications are based on data from the 2010 decennial census and 2006-2010 American Community Survey, and are aggregated into four broad categories: Urban Core, Sub-Urban, Large Rural Town, and Small Town/Isolated Rural. For the purposes of this study, the first two categories were considered "urban" and the latter two "rural". *Figure 3* below shows the areas of Washington defined as such.

Figure 3. Urban and rural areas by RUCA classification.



Source: Western Washington Area Health Education Center (http://www.wwahec.org)

Figure 3 illustrates that urban areas are geographically dispersed throughout the state. The 2012-2013 employment and output impacts in these areas (including the Seattle-Tacoma Metro region, Vancouver, Spokane, and Lewiston/Clarkston) were tenfold higher than those in rural areas, and were further concentrated in the urban core surrounding Seattle-Tacoma. *Appendix A* includes county-level breakdowns of employment and output impacts for most recent years of the study period[7].

[7] Careful readers will note that the sum of the Total Impacts for the urban and rural areas does not equal the Washington total. This is because there is "leakage" in the smaller models; activity in rural areas leads to some increase in activity in the urban areas, and vice versa. In the rural and urban models, this leakage is not captured by either model. All of this activity is captured by the full Washington model, leading to higher indirect and induced impacts

RURAL WASHINGTON

The comparatively smaller size of the impacts in rural Washington discussed in tables 9 through 11 below should not obfuscate their magnitude relative to the size of the communities where they occur. In 2012-2013, Impact Washington supported over one hundred jobs in rural areas (the vast majority of these were direct impacts), and led to over $5 million and $19.5 million in additional labor income and output, respectively.

2012-2013 Impacts

Table 9: Rural Impacts, 2012-2013

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	87	$3,572,853	$7,641,503	$13,891,531
Indirect Effect	23	$1,037,889	$1,763,872	$3,008,351
Induced Effect	21	$852,633	$1,685,302	$2,621,453
Total Effect	**130**	**$5,463,374**	**$11,090,677**	**$19,521,335**

Table 10: Rural Industries Affected, 2012-2013

Industry Code	Description	Total Employment
54	Fruit and vegetable canning, pickling, and drying	60
187	Ornamental and architectural metal products manufacturing	13
230	General purpose machinery manufacturing	8
319	Wholesale trade	6
71	Breweries	2

Sizeable employment impacts occurred in the vegetable and fruit processing sector in both years, arising from partnerships with two large firms in central Washington. Although the employment, labor income, and output effects were very similar year-to-year, the total tax revenues generated in 2012-2013 were more than double those in the previous twelve months. The largest portion of the discrepancy occurred at the state and local level.

Table 11: Rural Tax Impact, 2012-2013

	Total
Washington	
State Personal and Corporate Income Taxes	$1,073.00
Other State Taxes, fees, and licenses	$1,693,793.00
Total	**$1,694,866.00**
Local Governments	
Property Taxes	$724,574.00
Other Local Taxes, Fees, and Licenses	$2,216.00
Total	**$726,790.00**
Federal Government	
Federal Personal and Corporate Income Taxes	$556,907
Social Insurance and Excise Taxes	$901,449
Total	**$1,458,356**
TOTAL	**$3,880,012.00**

2011-2012 Impacts

Table 12: Rural Impacts, 2011-2012

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	74	$674,105	$1,136,024	$5,063,806
Indirect Effect	8	$445,031	$725,503	$1,426,835
Induced Effect	5	$206,713	$408,588	$635,559
Total Effect	**88**	**$1,325,849**	**$2,270,115**	**$7,126,200**

Table 13: Rural Industries Affected, 2011-2012

Industry Code	Description	Total Employment
54	Fruit and vegetable canning, pickling, and drying	39
187	Ornamental and architectural metal products manufacturing	18
71	Breweries	10
319	Wholesale trade businesses	5
62	Bread and bakery product manufacturing	3

Table 14: Rural Tax Impact, 2011-2012

	Total
Washington	
State Personal and Corporate Income Taxes	$235
Other State Taxes, fees, and licenses	$193,413
Total	**$193,648**
Local Governments	
Property Taxes	$81,464
Other Local Taxes, Fees, and Licenses	$539
Total	**$82,003**
Federal Government	
Federal Personal and Corporate Income Taxes	$130,731
Social Insurance and Excise Taxes	$177,368
Total	**$308,099**
TOTAL	**$583,750**

URBAN WASHINGTON

2012-2013 Impacts

Table 15: Urban Impacts, 2012-2013

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	1,051	$25,569,032	$36,481,992	$108,741,778
Indirect Effect	230	$16,514,649	$25,201,677	$44,015,624
Induced Effect	214	$11,002,444	$20,185,733	$30,710,019
Total Effect	**1,495**	**$53,086,125**	**$81,869,402**	**$183,467,421**

Table 16: Urban Industries Affected, 2012-2013

Industry Code	Description	Total Employment
149	Plastics product manufacturing	1,002
286	Aircraft parts and auxiliary equipment manufacturing	659
105	Paper mills	120
291	Boat building	117
253	Electricity and signal testing instruments manufacturing	94
319	Wholesale trade	88

Table 17: Urban Tax Impact, 2012 - 2013

	Total
Washington	
State Personal and Corporate Income Taxes	$8,475
Other State Taxes, fees, and licenses	$3,730,140
Total	**$3,738,615**
Local Governments	
Property Taxes	$1,528,014
Other Local Taxes, Fees, and Licenses	$23,249
Total	**$1,551,263**
Federal Government	
Federal Personal and Corporate Income Taxes	$5,342,397
Social Insurance and Excise Taxes	$6,311,124
Total	**$11,653,521**
TOTAL	**$16,943,399**

2011-2012 Impacts

Table 18: Urban Impacts 2011-2012

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	853	$38,542,827	$57,277,799	$186,470,148
Indirect Effect	358	$25,512,288	$39,756,550	$73,885,913
Induced Effect	325	$16,740,395	$30,712,379	$46,725,285
Total Effect	**1,537**	**$80,795,510**	**$127,746,728**	**$307,081,346**

Table 19: Urban Industries Affected, 2011-2012

Industry Code	Description	Total Employment
149	Plastics product manufacturing	301
286	Aircraft parts and auxiliary equipment manufacturing	142
291	Boat building	75
206	Mining and oil and gas field machinery manufacturing	70
253	Electricity and signal testing instruments manufacturing	66
319	Wholesale trade	56
243	Semiconductor and related device manufacturing	37

Table 20: Urban Tax Impact, 2011 – 2012

	Total
Washington	
State Personal and Corporate Income Taxes	$27,901
Other State Taxes, fees, and licenses	$11,701,099
Total	**$11,729,000**
Local Governments	
Property Taxes	$4,801,891
Other Local Taxes, Fees, and Licenses	$70,808.00
Total	**$4,872,699**
Federal Government	
Federal Personal and Corporate Income Taxes	$16,646,457
Social Insurance and Excise Taxes	$19,230,408
Total	**$35,876,865**
TOTAL	**$52,478,564**

Other Manufacturing Benefits

In addition to the employment, income, and output effects examined above, Impact Washington's services include assistance in implementing investment strategies for plant and equipment, information systems, and best practices that are key determinants of a firm's long run performance and competitiveness. The impacts of these types of strategic investments are beyond the scope of IMPLAN's short-run analysis; in light of their importance, we have included summaries in *Tables 21 and 22.*

The first four columns of each table indicate expenditures on the indicated investment types. The figures in the final column are avoided expenditures – spending that would be necessary without Impact Washington's services. This type of saving is as direct as possible; by addressing imperfections in the production process or in investment patterns, firms can leverage savings stemming from an Impact Washington partnership for additional gains in employment and profitability. The full effects of investments likely rival the short-run effects described in this report, but capturing them will require additional survey data and analysis.

Table 21: Other Benefits, 2012-2013

	Plant and Equipment	Information Systems	Workforce Practices	Other Areas	Saved Investments
Washington	$89,507,501	$1,243,736	$2,143,481	$575,686	$3,716,001
Rural	$5,778,000	$644,947	$250,500	$40,000	$315,000
Urban	$83,729,501	$598,789	$1,892,981	$535,686	$3,401,001

Table 22: Other Benefits, 2011-2012

	Plant and Equipment	Information Systems	Workforce Practices	Other Areas	Saved Investments
Washington	$7,332,382	$1,559,993	$3,713,639	$10,908,340	$3,363,500
Rural	$3,475,000	$533,000	$339,501	$10,060,000	$725,000
Urban	$3,857,382	$1,026,993	$3,374,138	$848,340	$2,638,500

VI. CONCLUSION

We found that Impact Washington's work has had a wide range of employment, income, and output effects across years and regions of the state. Several key facts, however, remain constant throughout our results. First is that manufacturing extension partnerships have played a large role in Washington's industrial output in each of the last ten years. That role likely grew during the economic recovery of 2009 – 2012, but even the smallest annual increase in output due to the organization's services was over $67 million (in 2002). Jobs created or retained as a result of these activities similarly never fell below 480 in a year. Second, the benefits of partnerships are quite large relative to the size of the economies they occur in. The aggregate employment and output gains of such services in urban Washington counties dwarfs those in rural areas, but rural effects – often the addition of more than a hundred jobs in a small area - should not be dismissed. Finally, the total effects of Impact Washington work far exceed the directly observable effects that often appear in simple performance analyses of this type of program. Every job or dollar directly added to a business's ledger as a result of services supports other jobs and spurs additional spending across the state [and national] economy. Full analysis, such as that performed by the IMPLAN model, reveals that a basic count of either direct outcome would significantly understate the total impacts of such an activity.

There are, of course, limitations to our analysis that should be kept in mind when interpreting its results. Survey data is necessarily subject to the accuracy of self-reporting; while NERC reviewed the survey design and responses for quality and feasibility, their precision cannot be confirmed without supporting data. It should also be noted that our macroeconomic analysis cannot control for every variable that influences the organization's effectiveness. For example, Impact Washington's activities are a function of the consultants it has available to take on new projects. Some year-to-year variation in the effects estimated here thus arises from capacity constraints. In a similar manner, the study period bracketed an especially tumultuous time for Washington's economy – some variation is certainly attributable to the nuanced fluctuations that occurred during the decade.

A final limitation, noted earlier, warrants particular attention. The direct employment and output effects of partnerships – as well as the indirect effects they trigger – are relatively easy to identify with the type of macroeconomic impact analysis used here. However, changes to firms' long-term investment patterns have dynamic effects that the client survey and static IMPLAN model miss. Investments have *trajectory* effects as opposed to the *level* effects we have estimated. A full accounting of the organization's effectiveness will require deeper research and additional modeling, but may reveal that these types of effects are equally important to individual firms and the larger economy.

Acknowledging these limitations, our analysis focused on rigorously isolating Impact Washington's results from the background noise of the economy. Those results are unambiguously significant in both rural and urban areas, and for both large and small firms. Naturally, support for these activities should be consistent with state and federal economic priorities, but our estimations suggest strong, and potentially unmet, demand for extension services in Washington's manufacturing sector.

VII. APPENDIX A: 2012-2013 COUNTY RESULTS

The following tables show the summary impacts for each county included in the analysis for 2012-2013.

Asotin

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	7	$47,628	$66,689	$265,000
Indirect Effect	0	$10,854	$24,157	$39,749
Induced Effect	0	$7,586	$16,526	$25,757
Total Effect	**8**	**$66,069**	**$107,372**	**$330,506**

Clark

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	52	$8,660,639	$11,996,635	$30,180,000
Indirect Effect	53	$2,679,022	$4,361,424	$7,110,935
Induced Effect	48	$2,182,285	$4,271,575	$6,410,340
Total Effect	**154**	**$13,521,946**	**$20,629,634**	**$43,701,276**

Franklin

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	8	$9,147	$17,967	$64,000
Indirect Effect	0	$1,888	$3,309	$6,184
Induced Effect	0	$1,155	$2,556	$3,802
Total Effect	**8**	**$12,190**	**$23,832**	**$73,986**

King

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	824	$8,976,585	$13,756,452	$37,978,240
Indirect Effect	64	$5,360,252	$7,842,320	$12,100,102
Induced Effect	48	$2,771,455	$4,832,369	$7,048,817
Total Effect	**936**	**$17,108,292**	**$26,431,141**	**$57,127,160**

Snohomish

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	166	$10,289,504	$14,276,090	$40,312,999
Indirect Effect	36	$1,675,573	$2,721,009	$4,530,919
Induced Effect	40	$1,614,499	$3,414,585	$4,966,884
Total Effect	**242**	**$13,579,576**	**$20,411,683**	**$49,810,802**

Spokane

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	2	$4,957	$6,147	$15,000
Indirect Effect	0	$1,664	$2,967	$5,155
Induced Effect	0	$1,782	$3,563	$5,491
Total Effect	**2**	**$8,404**	**$12,677**	**$25,646**

Yakima

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	79	$3,675,856	$7,975,759	$14,820,091
Indirect Effect	20	$852,739	$1,492,281	$2,523,168
Induced Effect	20	$791,540	$1,532,269	$2,356,498
Total Effect	**119**	**$5,320,134**	**$11,000,308**	**$19,699,758**

VIII. APPENDIX B: 2002-2012 WASHINGTON RESULTS

The following tables show the total annual Statewide impacts from 2002-2012

2002

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	320	$10,864,420	$15,144,132	$39,215,369
Indirect Effect	79	$5,097,233	$8,338,769	$15,252,988
Induced Effect	87	$4,245,799	$8,037,642	$12,538,459
Total Effect	**486**	**$20,207,452**	**$31,520,542**	**$67,006,817**

2003

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	677	$18,491,792	$28,028,344	$70,138,693
Indirect Effect	141	$9,164,791	$14,961,249	$27,946,491
Induced Effect	151	$7,363,237	$13,936,696	$21,741,946
Total Effect	**969**	**$35,019,821**	**$56,926,288**	**$119,827,130**

2004

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	586	$30,386,244	$45,336,677	$92,973,740
Indirect Effect	177	$11,341,945	$18,594,415	$32,667,024
Induced Effect	228	$11,118,024	$21,046,722	$32,832,444
Total Effect	**990**	**$52,846,213**	**$84,977,814**	**$158,473,208**

2005

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	930	$46,939,201	$60,194,232	$154,481,514
Indirect Effect	379	$18,587,350	$30,575,881	$64,225,101
Induced Effect	356	$17,393,962	$32,920,029	$51,358,007
Total Effect	**1,665**	**$82,920,513**	**$123,690,142**	**$270,064,622**

2006

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	763	$30,919,914	$43,060,003	$128,887,285
Indirect Effect	306	$20,261,993	$33,184,291	$60,066,204
Induced Effect	281	$13,723,180	$25,979,197	$40,526,512
Total Effect	**1,350**	**$64,905,087**	**$102,223,490**	**$229,480,001**

2007

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	702	$41,725,872	$60,749,178	$149,151,635
Indirect Effect	333	$20,530,987	$33,229,020	$60,853,687
Induced Effect	338	$16,510,130	$31,244,625	$48,745,482
Total Effect	**1,373**	**$78,766,990**	**$125,222,823**	**$258,750,803**

2008

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	339	$17,361,259	$27,474,235	$72,496,763
Indirect Effect	151	$10,028,248	$16,332,041	$29,310,988
Induced Effect	150	$7,310,472	$13,839,223	$21,588,742
Total Effect	**639**	**$34,699,979**	**$57,645,499**	**$123,396,492**

2009

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	784	$48,661,484	$80,646,050	$216,427,470
Indirect Effect	409	$28,295,834	$44,638,111	$79,235,749
Induced Effect	419	$20,482,638	$38,776,929	$60,489,958
Total Effect	**1,612**	**$97,439,956**	**$164,061,090**	**$356,153,176**

2010

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	1,529	$38,673,739	$58,655,784	$157,574,830
Indirect Effect	331	$22,647,726	$35,248,592	$62,017,172
Induced Effect	324	$16,015,294	$30,142,183	$46,565,498
Total Effect	**2,184**	**$77,336,759**	**$124,046,558**	**$266,157,499**

2011

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	1,201	$25,228,065	$37,117,857	$130,667,026
Indirect Effect	273	$18,488,359	$29,406,194	$59,287,693
Induced Effect	238	$11,631,152	$22,018,981	$34,348,761
Total Effect	**1,712**	**$55,347,575**	**$88,543,032**	**$224,303,480**

2012

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	1,244	$41,728,383	$64,388,965	$183,432,489
Indirect Effect	382	$25,573,037	$40,586,857	$72,533,851
Induced Effect	367	$17,914,223	$33,914,736	$52,905,082
Total Effect	**1,993**	**$85,215,643**	**$138,890,558**	**$308,871,422**