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Agribusiness and Applied Economics Report No. 747 ● January 2016

## Economic Effects of the Air National Guard on the Fargo-Moorhead Metropolitan Area

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## **Acknowledgments**

The research team wishes to recognize the contributions of the following individuals:

Craig Whitney, President and CEO, Fargo-Moorhead-West Fargo Chamber of Commerce  
Kent Olson, Colonel and Commander, 119<sup>th</sup> Wing, Air National Guard  
Dawn Erdmann, 1<sup>st</sup> Lieutenant and Budget Officer, 119<sup>th</sup> Wing, Air National Guard  
David Lipp, Senior Master Sergeant, 119<sup>th</sup> Wing, Air National Guard  
Kathy Strombeck, Director of Research, Office of State Tax Commissioner  
Edie Nelson, Department of Agribusiness and Applied Economics

Funding for the study was provided by the Fargo Moorhead West Fargo Air National Guard Support Group.

The authors assume responsibility for any errors of omission, logic, or otherwise. Any opinions, findings, and conclusions expressed in this publication are those of the authors and do not necessarily reflect the view of the Department of Agribusiness and Applied Economics, North Dakota State University, or the study sponsors.

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## **Executive Summary**

Military bases, facilities, training centers, and programs are viewed as having positive economic benefits to the host community and surrounding regions. Economic assessments of those effects are quite common, and range in context from examining the economic effects at a state level down to an individual trade center. Military operations provide an influx of new money in the form of Federal appropriations analogous to a business receiving financial compensation for selling a good or service to entities outside of a region.

Fargo, North Dakota is home to the 119<sup>th</sup> Wing of the Air National Guard. The 119<sup>th</sup> Wing's primary mission has changed over the past decade from one of flying fighter jets to primarily the remote operation of unmanned aircraft. While the change in the 119<sup>th</sup> Wing's mission may have diminished its visibility to the general public, its current mission continues to impact the Fargo-Moorhead metro area through the acquisition of local goods and services and from personal spending associated with military and civilian personnel.

The 119<sup>th</sup> Wing of the Air National Guard spent about \$51.9 million in the Fargo-Moorhead region using an average of fiscal years 2014 and 2015, and including a 10-year inflation-adjusted average of expenditures associated with military construction; sustainment, restoration, and modernization funds; base realignment and closure funds; and procurement funds. Of the \$51.9 million, \$46.6 million was for payroll (wages, salaries, benefits) and \$5.3 million was for procurement of locally supplied goods and services.

The Fargo-Moorhead Metropolitan Statistical Area (MSA) was chosen to represent the geographic area of study using the IMPLAN modeling system. IMPLAN is an input-output model that traces linkages among sectors of an economy and calculates various forms of business activity resulting from a direct impact in an economic sector.

The overall economic impact of the Air National Guard on the Fargo-Moorhead metro area is a combination of the impacts created from purchases of locally supplied goods and services and payroll compensation for military personnel. The presence of the Air National Guard in Fargo supports 764 FTE jobs (425 FTE direct jobs and an additional 339 secondary FTE jobs), creates \$63.3 million in personal income, contributes \$97.1 million in value-added economic activity, and generates \$93.4 million in gross business volume in the Fargo-Moorhead MSA. The Air National Guard was estimated to be responsible for \$600,000 annually in property tax and local option sales tax collections.

Based on wage and salary compensation, gross state product, and the total number of wage and salary jobs supported, the Air National Guard was responsible for nearly 1 percent of the Fargo-Moorhead MSA's economic output.

The economic impacts of the 119<sup>th</sup> Wing of the Air National Guard are primarily driven by personal consumption, and not sensitive to the 119<sup>th</sup> Wing purchasing locally supplied goods and services. Therefore, changes to the number of personnel or associated payroll compensation will have the largest potential for affecting economic output in the Fargo-Moorhead area economy.

# **Economic Effects of the Air National Guard on the Fargo-Moorhead Metropolitan Area**

Dean A. Bangsund and Nancy M. Hodur\*

## **Introduction**

Military bases, facilities, training centers, and programs are viewed as having positive economic benefits to the host community and surrounding regions. Economic assessments of those effects are quite common, and range in context from examining the economic effects at a state level down to an individual trade center. Most economic assessments view military bases and operations much the same as a local business or economic sector (e.g., National Council of State Legislatures 2015, Irani and Grimm 2015, Cowan 2012). Military operations provide an influx of new money in the form of Federal appropriations analogous to a business receiving financial compensation for selling a good or service to entities outside of the region.

Fargo, North Dakota is home to the 119<sup>th</sup> Wing of the Air National Guard. The 119<sup>th</sup> Wing's primary mission has changed over the past decade from one of flying fighter jets to primarily the remote operation of unmanned aircraft. While the change in the 119<sup>th</sup> Wing's mission may have diminished its visibility to the general public, its current mission continues to impact the FM metro area through the acquisition of local goods and services and from personal spending associated with military and civilian personnel.

This economic assessment measures the dollar volume of local injections of money into the Fargo-Moorhead metro region by examining the spending patterns of the 119<sup>th</sup> Wing. In addition to local procurement for goods and services, military and civilian personnel live and reside in the area and create economic effects through personal consumption of goods and services. The scope of this project is to measure the economic activity created by the presence of the Air National Guard on the Fargo-Moorhead metro area.

## **Modeling Economic Impacts**

Economic impact assessments measure the economic activity from a project, program, policy, or activity. Economic activity is categorized into direct and secondary impacts. Direct impacts are those changes in output, employment, or income that represent the initial or first-round effects of a project, program, event, or activity. Secondary impacts result from subsequent rounds of spending and re-spending within an economy that are linked to the direct economic effects.

Direct impacts represent the key inputs into the IMPLAN modeling system. IMPLAN is an input-output model that traces linkages among sectors of an economy and calculates various forms of business activity resulting from a direct impact in an economic sector (IMPLAN Group, LLC 2013). Input-output (I-O) models are the primary tool used to generate estimates of

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economic impact and fiscal impact assessments. The basic premise to input-output modeling can be traced to economic base theory, or the understanding that a given economy is comprised of both 1) economic sectors or industries which produce goods/services for export outside the economy (basic sectors) and economic sectors which produce goods/services within the economy for use by those exporting industries (non-basic sector). The basis for the interdependence (linkages) between these two types of economic sectors forms the foundation for development of multiplier effects. Multiplier effects can then be used to estimate how initial changes in economic activity result in economy-wide changes in a given area and represent the core component of input-output models.

IMPLAN allows the geographic study area to be customized to suit a particular analysis. The Fargo-Moorhead Metropolitan Statistical Area (MSA) was chosen to represent the geographic area of study. Within the IMPLAN modeling system, Cass County, North Dakota and Clay County, Minnesota comprise the Fargo-Moorhead MSA. A multi-regional analysis is possible within the IMPLAN modeling system, and would involve evaluating how expenditures for goods and services outside of the Fargo-Moorhead MSA would influence secondary business activity in the Fargo-Moorhead MSA. However, a multi-regional analysis was not conducted as it was a primary assumption that if the Air Guard relocated within the state expenditures outside of the FM MSA would remain unchanged, and therefore would not represent a change in economic activity to the FM MSA.

## **Types of Economic Assessments**

Input-Output analysis provides a tool for economists to perform economic *impact* and economic *contribution* analyses. These analyses can be applied to programs, projects, developments, industries, and other economic activities. Key macro-economic indicators such as retail trade activity, economy-wide personal income, total business activity, secondary economic business activity (indirect and induced), selected state tax collections, and secondary (indirect and induced) employment can be estimated using input-output analysis.

Economic impact analysis estimates the change in key economic indicators resulting from the ‘new’ dollars a specific project or development would generate in the state (or local economy). An economic *impact* analysis measures the net effect of two possible situations—often these situations would be the presence or absence of some type of economic activity, development, or program. Measures of the business activity generated in secondary industries are included in economic impact figures (Crompton 1993, Leistritz 1994, 1998; Watson et al. 2007).

Economic contribution analysis differs in that it includes all relevant expenditures and other revenue streams in the generation of the amount of economic activity created in an economic unit. Typically an economic *contribution* analysis will estimate more economic activity than an economic *impact* study for the same industry or activity. Economic *contribution* analyses attempt to capture all economic activity without regard to the net change or value of alternative economic activities; therefore, *economic contribution* assessments provide measures of the gross effects. Measures of the business activity generated in secondary industries are



included in economic contribution figures (Crompton 1993, Leistritz 1994, 1998; Watson et al. 2007).

When comparing these economic analyses, it is important to know what type of study was conducted so proper comparisons can be made. For a detailed discussion of these types of analyses, see Leistritz (1994, 1998) and Watson et al. (2007).

### **Direct Economic Effects**

Direct economic impacts can be an increase or addition to existing economic output or an absence or removal of economic activity. In the case of the Air National Guard in the FM metro area, the direct impacts would be the dollar volume of local expenditures for goods and services, payroll and benefits, and expenditures for construction of military facilities.

### **Indirect and Induced Economic Effects**

Secondary economic impacts arise from subsequent rounds of spending and purchases within an economy that result from the direct effects. Input-output (I-O) analysis traces linkages (i.e., the amount of goods and services) among sectors of an economy. An economic sector is a group of similar economic units (e.g., communications and public utilities, retail trade, construction). The change in demand for goods and services produced by one sector translates into a change in demand for goods and services in other sectors.

IMPLAN estimates the indirect and induced economic effects associated with a change in the goods and services demanded by an economic sector. The *indirect* economic effects arise from the additional consumption of goods and services triggered by businesses that supply inputs to firms in the affected sector as they need to acquire additional goods and services to meet the change in demand. As an example, a firm selling and installing HVAC equipment will purchase business inputs (labor, utilities, inventory, services, and so on) from other businesses, which in turn also purchase additional inputs to meet the change in demand for their products and services. That cycle of business purchases continues until purchases are made for inputs that result in those dollars leaving a specified economy.

The *induced* economic effects arise from the additional spending by households due to changes in personal income associated with the direct effects and indirect effects. Changes in personal income can come from payrolls of businesses that are directly impacted, changes in payroll from businesses that supply goods and services to the impacted sector, and proprietor income resulting from a change in business volume. The induced effect measures the additional business activity that is triggered as changes in personal income are translated into the purchase of goods and services for personal consumption. As an example, economic sector A expands and adds employment. The expansion of Sector A creates enough demand in Sector B that employment in Sector B also expands. The additional employment in Sector A and Sector B result in an increase in consumption of groceries, vehicles, repairs, medical treatment, clothing, recreation, and so on. Those purchases comprise the indirect economic effects.

## **Value-added and Total Economic Output**

Another form of output from IMPLAN is a measure of value-added economic effects. Value-added economic activity is a measure of the payment to labor and capital, and includes labor income, indirect business taxes, and business/proprietor income. This economic effect is sometimes referred to a measure of the value that is added to inputs purchased by a business or industry.

Total output is a measure of the business volume created by summing direct economic effects, indirect economic effects, and induced economic effects. This economic measure also is sometimes called gross business volume and represents gross receipts of all transactions in all economic sectors.

## **Personal Income and Employment**

Employment effects in IMPLAN are based on job-months, and do not necessarily represent full-time equivalent (FTE) positions. Job numbers reported by IMPLAN represent full-time, part-time, and temporary positions. However, conversion factors allow IMPLAN employment estimates to be converted to FTEs. Employment change within the model is measured for direct, indirect, and induced economic effects.

Economy-wide personal income is another economic measure frequently produced by input-output models. IMPLAN estimates a change in personal income by measuring changes in employment income (wages/salaries and benefits) and proprietor income.

## **Government Revenue**

Changes in public revenues to state and local governments are another important measure in describing the economic effects of a project, program, or activity. As part of the evaluation of a change in economic activity, IMPLAN estimates the change in state and local government revenues stemming from a change in economic activity. The categories of government revenues include payroll taxes, personal income, sales and use, and corporate income taxes, property taxes, and a variety of miscellaneous revenues such as permits, fees, licenses, and dividends.

The methodology used by IMPLAN relates collections of taxes to levels of business output and income, and then estimates the anticipated changes in taxes as business activity changes or as income changes. However, local taxes, such as local option sales tax in Fargo, are not accurately measured using this approach. To more accurately measure the potential change in local option sales taxes and local lodging taxes, data on taxable sales and net tax collections were obtained from the Office of the State Tax Commissioner (2015) and used in conjunction with IMPLAN model output.

## **Direct Economic Impacts**

The Air National Guard requires goods and services to fulfill its mission analogous to a private business requiring labor, inputs, services, utilities, and facilities to supply, produce or manufacture a product. As with most business operations, seldom are all components of production, marketing, and transportation acquired from local sources. As dollars leave a local area to purchase goods and services, they no longer circulate and contribute to the local economy. For this reason, expenditures for operations of the Air National Guard in Fargo in fiscal years (FY) 2014 and 2015 were evaluated to determine what amount was spent within the Fargo-Moorhead metro area. Expenditures for FY 2014 were adjusted for inflation to reflect 2015 dollars using the Gross Domestic Product Implicit Price Deflator. Fiscal years 2014 and 2015 were averaged for purposes of estimating local economic impacts.

The 119<sup>th</sup> Wing of the Air National Guard in Fargo had an average budget of \$67.1 million in Federal disbursements over FYs 2014 and 2015. After removing expenses for construction and facility upgrades, total Federal expenditures were \$64.6 million (Table 1). The state of North Dakota contributed an additional \$265,100 in annual expenditures (non-reimbursed) for salaries over FYs 2014 and 2015. Federal expenditures (i.e., direct spending and reimbursements to expenses paid by the state of North Dakota) and state direct spending (i.e., expenses not reimbursed from Federal funds) averaged \$64.8 million (excluding expenditures for construction and facility upgrades).

Expenditures related to construction, remodeling, and updating Air National Guard facilities occur on an infrequent basis. The study used a 10-year period to evaluate expenditures associated with military construction; sustainment, restoration, and modernization (SRM) funds; base realignment and closure (BRAC) funds; and procurement funds. Prior year expenditures were adjusted to reflect 2015 dollars using the Gross Domestic Product Implicit Price Deflator. The 10-year average of expenditures for construction and facility upgrades were estimated at \$2.5 million. Therefore, total estimated annual expenditures from state and Federal sources were estimated at \$67.3 million.

Input provided by Colonel Olson and Lieutenant Erdmann of the 119<sup>th</sup> Wing of the Air National Guard further refined the budget to estimate the dollar amount of local expenditures. Of the \$64.8 million of state and Federal expenditures (excluding expenditures for construction and facility upgrades), \$49.6 million was spent in the Fargo-Moorhead area economy. Of the estimated \$2.5 million in average annual expenditures for construction and facility upgrades, \$2.3 million was spent locally. Total local expenditures were estimated at \$51.9 million.

The Air National Guard was responsible for \$51.9 million of direct impacts to the Fargo-Moorhead area economy. Of the \$51.9 million, \$46.6 million was for payroll (wages, salaries, benefits) and \$5.3 million was for procurement of locally supplied goods and services (Table 1). The majority of the \$15 million of expenditures outside the FM metro area accrued in Minot, North Dakota (North Dakota Air National Guard 2015). Adjusting expenditures for local purchases and local salaries revealed that 77 percent of all budget expenditures were made within the FM Area economy.

**Table 1. Operational Expenditures, 119<sup>th</sup> Wing, Air National Guard, Fargo, North Dakota, Fiscal Years 2014 and 2015**

Expenditure	Total Expenditures		Local Expenditures	
	Fiscal Year 2014	Fiscal Year 2015	Fiscal Year 2014	Fiscal Year 2015
	----- 000s 2015 \$ -----		----- 000s 2015 \$ -----	
Salaries and Benefits <sup>a</sup>				
Federal Technicians	15,408.8	16,398.5	15,408.8	16,398.5
Officers and Enlisted Personnel	16,978.1	17,511.2	12,135.5	12,609.6
Fire Protection	1,460.9	0	1,460.9	0
Facility Security	644.1	631.0	644.1	631.0
Regional Training Site Engineers	1,456.1	1,656.0	1,456.1	1,656.0
Other Civilian Personnel	15,562.7	16,617.6	14,843.0	15,909.7
Operations				
Transportation	59.3	40.1	59.3	40.1
Vehicle Lease	39.9	32.2	31.9	25.8
Basic Operating Cost				
Travel	186.8	144.5	186.8	144.5
Supplies and Equipment	226.2	125.0	226.2	125.0
IMPAC	471.7	343.4	471.7	343.4
Contract Services	390.7	232.3	118.6	107.2
Fuel	154.0	126.8	154.0	126.8
Contract Lodging	103.0	87.2	103.0	87.2
Other	339.7	129.8	169.9	64.9
Contingency Funds	163.0	203.5	113.0	153.5
MIP Operations <sup>b</sup>	241.4	678.1	241.4	678.1
ISRG Operations <sup>b</sup>	609.3	420.9	609.3	420.9
Recruiting	83.8	98.3	41.9	49.2
Medical Supplies	55.9	83.2	0.0	0.0
Office Supplies	103.3	41.6	103.3	41.6
Business Services	4.1	5.0	4.1	5.0
Minot Fund	9,456.2	6,363.5	0.0	0.0
Family Readiness	9.0	35.3	9.0	35.3
Retail Purchases	0.0	7.1	0.0	7.1
SAPR Disbursements <sup>b</sup>	9.1	0.6	2.3	0.1
JFHQ Programs <sup>b</sup>	12.1	2.3	3.0	0.6
Military Personnel				
Food and Meals	40.5	51.1	40.5	51.1
Clothing	69.4	41.8	0.0	0.0
Annual Training – Travel	305.8	412.5	152.9	206.3
Basic Training – Travel	118.7	134.7	118.7	134.7
Special Training – Travel	119.3	111.3	29.8	27.8
Moving and Relocating	55.4	33.8	55.4	33.8
School Training – Travel	982.4	954.3	0.0	0.0
Construction and Maintenance	-Avg FY06 - FY15 (000s 2015\$)-		-Avg FY06 - FY15 (000s 2015\$)-	
General Procurement		220.2		99.6
Military Facility Construction		910.2		910.2
Sustainment, Restoration and Modernization (SRM)		1,248.8		1,197.5
BRAC Funds		131.6		131.6
Totals	67,772.9	65,809.2	50,751.1	52,453.6

<sup>a</sup> Includes state and federal funds.

<sup>b</sup> MIP and ISRG represent day-to-day expenditures for military personnel working on various local operations. SAPR represents Sexual Assault Prevention Response. JFHQ stands for Joint Force Headquarters.

IMPLAN can be structured to evaluate economic effects through a number of different economic approaches. Those primary operations include Industry Change, Commodity Change, Household Income Change, Labor Income Change, Institutional Spending Patterns, and Industrial Spending Patterns. The model was structured to evaluate the impacts of the 119<sup>th</sup> Wing of the Air National Guard using Institutional Spending and Industry Change in government employment (Table 2).

Detailed expenditure information was obtained from the 119<sup>th</sup> Wing of the Air National Guard, and used to allocate the procurement of locally supplied goods and services into 39 economic sectors (North Dakota Air National Guard 2015) (Table 2). Financial records from the 119<sup>th</sup> Wing revealed approximately 150 different companies and firms were used as local suppliers of goods and services in FYs 2014 and 2015. The economic sectors with the highest dollar volumes were retail trade, wholesale trade, lodging accommodations, restaurants and dining, engineering and architectural services, and air transportation (Table 2). Air National Guard payroll was allocated as Federal military (Table 2).

### **Impacts by Economic Sector**

Economic impacts often are not equally distributed among all economic sectors. The economic impacts of the Air National Guard in the Fargo-Moorhead metro area are primarily driven by personal spending. As a result, the economic sectors that experience the greatest impact are the sectors most responsive to changes in personal income (Table 3).

Government is most affected by changes in employment, labor income, and gross business volume. The next most affected economic sectors are business and personal services, professional and social services, and retail trade. Because the direct impacts on the Fargo-Moorhead economy are primarily based on labor income, the biggest impacts to the regional economy are driven by the economic sectors affected by personal spending. Examples of activities that would represent business and personal services include repairs, couriers, accounting and bookkeeping, advertising, travel arrangements, restaurants and lodging. Examples of activities that would represent professional and social services include dental, medical, legal, childcare, vocational training, and pharmaceutical. A few examples of purchases that would represent retail trade include household goods, clothing, food, fuel, vehicles, tools, furniture, consumer electronics, yard and garden supplies, and recreational equipment.

**Table 2. Economic Inputs for IMPLAN, 119<sup>th</sup> Wing, Air National Guard Operations, Fargo-Moorhead Metro Area, Average of Fiscal Years 2014 and 2015**

<b>IMPLAN Setup and Economic Sectors</b>	<b>Expenditures</b>
	----- 2015 \$ -----
<u>Institutional Spending Pattern</u> (acquisition of private goods and services):	
3041 Electricity	34,891
3057 Construction of Commercial Structures <sup>a</sup>	1,147,136
3151 Stationery products	3,679
3154 Printed materials	1,290
3240 Metal windows and doors	6,424
3395 Wholesale trade distribution services	223,400
3396 Retail services - Motor vehicle and parts dealers	16,741
3398 Retail services - Electronics and appliance stores	7,188
3399 Retail services - Building material and garden equipment and supplies stores	54,710
3400 Retail services - Food and beverage stores	59,406
3404 Retail services - Sporting goods, hobby, musical instrument and book stores	2,389
3405 Retail services - General merchandise stores	122,800
3406 Retail services - Miscellaneous store retailers	249,674
3407 Retail services - Non-store retailers	82
3408 Air transportation services	306,257
3411 Truck transportation services	210,260
3415 Couriers and messengers services	49,696
3427 Wired telecommunications	21,349
3437 Insurance	13,773
3440 Real estate buying and selling, leasing, managing, and related services	45,534
3442 Automotive equipment rental and leasing services	28,839
3445 Commercial machinery and equipment rental and leasing services	4,756
3449 Architectural, engineering, and related services <sup>a</sup>	1,210,199
3465 Business support services	1,251
3467 Investigation and security services	28,249
3468 Services to buildings	602
3471 Waste management and remediation services	4,571
3473 Junior colleges, colleges, universities, and professional schools	119
3481 Other ambulatory health care services	1,899
3485 Individual and family services	1,211
3499 Hotels and motel services, including casino hotels	363,446
3501 Full-service restaurant services	998,797
3502 Limited-service restaurant services	1,553
3503 All other food and drinking place services	14,491
3504 Automotive repair and maintenance, except car washes	29,972
3506 Electronic and precision equipment repair and maintenance	866
3508 Personal and household goods repair and maintenance	18,459
3511 Dry-cleaning and laundry services	9,431
<u>Institutional Spending Pattern</u> (acquisition of public services):	
Local Government (non-education)	14,444
<u>Industry Change:</u>	
536 Employment and payroll of federal government (military)	46,576,616
<u>Total Local Expenditures and Payroll</u>	51,886,452

<sup>a</sup> Represents average annual local expenditures from fiscal years 2006 through 2015.

Table 3. Economic Impacts from Procurement and Payroll, by General Economic Sector, 119<sup>th</sup> Wing, Air National Guard Operations, Fargo-Moorhead Metro Area, Average of Fiscal Years 2014 and 2015

Economic Metric and General Economic Sectors	Type of Economic Effect			Total
	Direct	Indirect	Induced	
<u>Employment</u>	----- number of FTE jobs -----			
Government	425.0	0.2	1.5	426.7
Retail Trade	27.4	1.5	78.1	107.0
Business and Personal Services	14.5	5.6	78.2	98.3
Professional and Social Services	0.0	0.1	57.1	57.3
Finance, Insurance, and Real Estate	0.3	1.6	33.6	35.5
Wholesale Trade	0.9	0.7	8.4	10.0
Construction	6.8	0.2	2.5	9.4
All Others <sup>a</sup>	<u>1.9</u>	<u>0.9</u>	<u>17.4</u>	<u>20.3</u>
Totals	476.8	10.8	276.9	764.4
<u>Labor Income</u>	----- 000s 2015 \$ -----			
Government	47,472.6	18.5	111.7	47,602.8
Business and Personal Services	953.0	308.5	2,797.8	4,059.3
Professional and Social Services	0.9	10.8	3,534.6	3,546.3
Retail Trade	701.3	43.0	2,438.0	3,182.2
Finance, Insurance, and Real Estate	17.5	110.2	2,021.2	2,149.0
Wholesale Trade	75.3	57.5	721.0	853.8
Construction	531.2	12.6	198.0	741.8
All Others <sup>a</sup>	<u>121.8</u>	<u>61.0</u>	<u>945.5</u>	<u>1,128.3</u>
Totals	49,873.6	622.1	12,767.8	63,263.5
<u>Gross Business Volume</u>				
Government	47,475.1	27.9	250.6	47,753.5
Business and Personal Services	1,770.1	683.3	11,291.5	13,744.9
Finance, Insurance, and Real Estate	73.4	458.2	8,272.6	8,804.2
Retail Trade	1,546.9	116.4	6,033.1	7,696.3
Professional and Social Services	1.8	18.7	6,633.4	6,653.9
Wholesale Trade	225.0	172.4	2,156.7	2,554.0
Construction	1,175.2	32.7	530.1	1,738.1
All Others <sup>a</sup>	<u>594.7</u>	<u>264.2</u>	<u>3,607.6</u>	<u>4,466.5</u>
Totals	52,862.2	1,773.8	38,775.5	93,411.5

<sup>a</sup> Includes a mix of Agriculture, Communications, Education, Energy, Manufacturing, Mining, Transportation, and Utilities Sectors. However, the least affected economic sectors vary across the three economic metrics.

## **Total Economic Impacts**

The direct impacts of the Air National Guard in Fargo averaged \$51.6 million annually over the FY 2014 and 2015 periods. The results were separated into impacts from procurement of goods and services and employment compensation. The Air National Guard acquires \$5.3 million in locally supplied goods and services, which generates a gross business volume in the Fargo-Moorhead metro area of \$9.5 million (Table 4). Procurement of goods and services supports nearly 80 full-time equivalent jobs, creates \$3.8 million in labor income, and contributes \$5.2 million in value-added economic activity (i.e., contribution to gross state product) to the region's economy.

The combination of officers and enlisted military, Active Guard Reserve, and civilian Federal Technicians and State Employees represented an average of \$46.6 million in payroll compensation (i.e., wages, salaries, benefits) in FYs 2014 and 2015. The total economic impact from payroll compensation creates a gross business volume of \$83.9 million (Table 4). Payroll for personnel associated with the Air National Guard supports 260 full-time equivalent jobs in the area economy in addition to directly employing 425 full-time equivalent jobs. The total economic impact from payroll also creates nearly \$59.5 million in labor income and contributes \$91.9 million in value-added economic activity (i.e., contribution to gross state product) to the region's economy.

The overall economic impact of the Air National Guard on the Fargo-Moorhead metro area is a combination of the impacts created from purchases of locally supplied goods and services and payroll compensation (Table 4). The presence of the Air National Guard in Fargo supports 764 FTE jobs, creates \$63.3 million in personal income, contributes \$97.1 million in value-added economic activity, and generates \$93.4 million in gross business volume.

The 119<sup>th</sup> Wing of the Air National Guard supports 425 FTE direct jobs and an additional 339 secondary FTE jobs in the regional economy. Secondary jobs would be defined as those jobs that are sustained by the economic activity generated by the Air National Guard, but would not represent jobs not included in the Air National Guard payroll.



Table 4. Summary of Economic Effects, 119<sup>th</sup> Wing, Air National Guard Operations, Fargo-Moorhead Metro Economy, Average of Fiscal Years 2014 and 2015

	IMPLAN Analysis			
Economic Effects	Employment <sup>a</sup>	Labor Income	Value Added	Total Output
	-- No. of Jobs --	----- 000s 2015 \$ -----		
<u>Economic Effects of Local Purchases of Goods and Services</u>				
Direct Impact	51.8	2,406.5	2,831.1	5,395.0
Indirect Impact	10.8	622.1	1,016.5	1,773.8
Induced Impact	16.5	761.0	1,348.8	2,311.4
Total Impacts	79.1	3,789.5	5,196.4	9,480.2
<u>Economic Effects of Government Employment and Compensation</u>				
Direct Impact	425.0	47,467.1	70,607.7	47,467.1
Indirect Impact	0.0	0.0	0	0.0
Induced Impact	260.4	12,006.8	21,285.6	36,464.1
Total Impacts	685.4	59,474.0	91,893.3	83,931.2
<u>Combined Total</u>				
Direct Impact	476.8	49,873.6	73,438.8	52,862.2
Indirect Impact	10.8	622.1	1,016.5	1,773.8
Induced Impact	276.9	12,767.8	22,634.4	38,775.5
Total Impacts	764.4	63,263.5	97,089.7	93,411.5

<sup>a</sup> Full-time equivalent employment.

## Government Revenues

Changes in public revenues to state and local governments are another important measure in describing the economic effects of a project, program, or activity. As part of the evaluation of a change in economic activity, IMPLAN estimates the change in state and local government revenues stemming from a change in economic activity. However, state government revenues were not included in the estimate of local tax collections.

Local government revenues were estimated for property taxes, local option sales taxes, and lodging and restaurant taxes. Foregone local option sales taxes were estimated for Fargo, West Fargo, and Cass County using data from the Office of State Tax Commissioner (2015) in conjunction with output from IMPLAN. Clay County and Moorhead, Minnesota do not have local option sales taxes. Changes in property taxes are an internal component of the IMPLAN modeling system, and would include property tax impacts for the Fargo-Moorhead MSA for both residential and commercial properties. Fargo and West Fargo have a local lodging tax of 3 percent and 2 percent, respectively. West Fargo also has a 1 percent lodging and restaurant tax.

Local tax collections associated with the 119<sup>th</sup> Wing of the Air National Guard were estimated at \$600,000 annually (Table 5). About 64 percent of the local tax collections come from property taxes.

Table 5. Local Tax Collections Associated with Operations of the 119<sup>th</sup> Wing, Air National Guard, Fargo-Moorhead Metro Economy, Average of Fiscal Years 2014 and 2015

Tax	--- 000s 2015 \$ ---
Property	381.8
Local Option Sales	205.5
Lodging and Restaurant	13.0
Total	600.3

## Employment

The Air National Guard is responsible for 492.5 full-time equivalent (FTE) jobs in North Dakota. The number of FTEs in the Fargo/Moorhead metro area was estimated at 425 FTE jobs (Table 6).

The number of FTE jobs in the Fargo/Moorhead metro area associated with the Air National Guard will increase to 443 in fiscal year 2016. The total number of personnel associated with operations in Fargo will remain at 860 as 22 Traditional Guardsmen, currently considered as part-time positions, will be transitioned to Federal Technicians with full-time employment (Table 6). The reclassification of personnel will result in an increase in payroll in the Fargo-Moorhead area economy of \$1,454,000.

**Table 6. Number of Personnel Employed, 119<sup>th</sup> Wing, Air National Guard, Fargo, Fiscal Years 2014 and 2015**

Location and Classification	Personnel <sup>a</sup>	Full-time Equivalents	Average Annual Payroll <sup>b</sup>
All Personnel in North Dakota Covered by Fargo Air National Guard			
			-- 000s 2015 \$ --
Federal Technicians	207	207.0	15,903.7
Active Guard and Reserve	187	187.0	17,244.7
Traditional Guardsmen	591	98.5	19,014.1
Totals	985	492.5	52,162.5
Personnel Operating in Minot			
Active Guard and Reserve	56	56.0	4,872.1
Traditional Guardsmen	69	11.5	713.8
Totals	125	67.5	5,585.9
Personnel Operating in Fargo			
Federal Technicians	207	207.0	15,903.7
Active Guard and Reserve	131	131.0	12,372.6
Traditional Guardsmen	522	87.0	18,300.3
Totals	860	425.0	46,576.6
Personnel Operating in Fargo, FY 2016 <sup>c</sup>			
Federal Technicians	229	229.0	17,852.6
Active Guard and Reserve	131	131.0	12,609.6
Traditional Guardsmen	500	83.0	18,196.6
Totals	860	443.0	48,658.8

<sup>a</sup> Represents the number of individuals within each classification. Individuals may be counted in more than one classification.

<sup>b</sup> Includes wages, salaries, and benefits.

<sup>c</sup> Based on retaining all FY2015 salaries and adding an additional \$1,454,092 in salaries due to moving 22 individuals from being classified as part-time Traditional Guardsmen to being classified as full-time Federal Technicians. The 22 individuals would retain their FY2015 salaries as Traditional Guardsmen.

Based on full-time employment in FY 2015, the 119<sup>th</sup> Wing, Air National Guard, would represent the 32<sup>nd</sup> largest employer in the Fargo/Moorhead metro area (Table 7). The ranking of employers was based on FTE positions for all employers.

Table 7. Ranking of Selected Employers, by Full-time Employment, Fargo/Moorhead Metro Area, 2015

Employer	Full-time Employment	Individual Rank
Scheels All Sports, Inc.	492	28
YMCA of Cass and Clay Counties	483	29
Community Options for Residential & Employment Services, Inc.	450	30
BTD Manufacturing <sup>a</sup>	450	30
Discovery Benefits, Inc.	444	31
<b>119<sup>th</sup> Wing, Air National Guard</b>	<b>425</b>	<b>32</b>
Cass County Commission and Department Heads	422	33
American Crystal Sugar Company	419	34
Dakota Magic Casino and Hotel <sup>b</sup>	414	35
Eide Bailly, LLP	385	36
Bell State Bank and Trust	378	37

<sup>a</sup> Includes employment in Detroit Lakes, Minnesota.

<sup>b</sup> The Dakota Magic Casino and Hotel are located in Richland County, and would be outside of the Fargo-Moorhead Metropolitan Statistical Area.

Source: Fargo/Moorhead/West Fargo Chamber of Commerce (2015).

### Share of Regional Economy

The overall economic contribution of the 119<sup>th</sup> Wing of the Air National Guard was estimated to represent nearly 1 percent of the regional economy based on the overall economic activity generated from the local acquisition of goods and services and payroll of those employed at the Fargo base. Using data from the Bureau of Economic Analysis, the Fargo/Moorhead Metropolitan Statistical Area had \$7 billion in total compensation for employees in 2013 (latest year available) (Bureau of Labor Statistics 2015). The 119<sup>th</sup> Wing of the Air National Guard was responsible for \$63.3 million in labor income representing 0.9 percent of all labor income. Wage and salary employment in 2013 for the Fargo/Moorhead Metropolitan Statistical Area was 137,748 jobs. The total number of wage and salary jobs supported by the 119<sup>th</sup> Wing of the Air National Guard was 1,230 jobs (total 'jobs' are not equivalent to FTE positions), representing 0.9 percent of all jobs. Gross state product was estimated at \$13.1 billion in 2013 for the Fargo/Moorhead Metropolitan Statistical Area. The 119<sup>th</sup> Wing of the Air National Guard was responsible for generating \$97.1 million in value-added economic activity, which is synonymous with gross state product, and represents 0.7 percent of gross state product for the region.

## Summary and Conclusions

This study examined the economic contribution of the 119<sup>th</sup> Wing of the Air National Guard on the Fargo/Moorhead Metropolitan Statistical Area economy. The area economy consists of Clay County, Minnesota and Cass County, North Dakota.

The spending patterns of the 119<sup>th</sup> Wing of the Air National Guard in fiscal years 2014 and 2015 were examined to determine expenditures for acquisition of locally supplied goods and services, and for wages, salaries, and benefits of individuals directly employed by the Air National Guard in Fargo. In addition to budget expenditures in FYs 2014 and 2015, outlays for construction projects, major building renovations, and facility upgrades were examined from fiscal year 2006 through fiscal year 2015. Those expenditures were adjusted to reflect 2015 dollars, averaged over the 10-year period, and evaluated for local and nonlocal spending. The 2006 to 2015 average of dollars spent for major construction projects was used in the analysis to more accurately assess those economic effects since construction expenditures vary substantially among fiscal years.

IMPLAN modeling system was used to estimate the secondary economic effects associated with the 119<sup>th</sup> Wing of the Air National Guard. Local expenditures were allocated to various economic sectors of the FM economy, along with outlays for wages, salaries and benefits. The modeling system was structured to only measure economic activity within the Fargo/Moorhead metro area.

The 119<sup>th</sup> Wing of the Air National Guard in Fargo had an average budget of \$64.8 million in FYs 2014 and 2015 after removing expenses for construction and facility upgrades. The largest share of the budget was for payroll compensation, which represented 77 percent of the budget. The remaining 23 percent of the budget represented a combination of pass-through dollars and procurement of goods and services from sources outside of the Fargo/Moorhead metro area. Using a 10-year average of expenditures for construction and facility upgrades, the average total expenditures in FYs 2014 and 2015 for the 119<sup>th</sup> Wing was \$67.3 million. Adjusting all expenditures for local purchases and local salaries revealed that about 77 percent of all budget expenditures were made within the FM Area economy.

The Air National Guard was responsible for \$51.9 million of direct impacts to the Fargo-Moorhead area economy. Of the \$51.9 million, \$46.6 million was for payroll (wages, salaries, benefits) and \$5.3 million was for procurement of locally supplied goods and services. The following points highlight the economic contribution of the 119<sup>th</sup> Wing of the Air National Guard to the Fargo/Moorhead metro area:

- A total of \$51.9 million in annual direct economic impacts.
- \$93.4 million in business activity (sum of direct, indirect and induced business activity).
- \$97.1 million in value-added economic activity.

- Direct employment equal to 425 full-time positions with a local payroll of \$46.6 million, which would place the Air National Guard as the 32<sup>nd</sup> largest employer in the area economy.
- Indirectly support 339 full-time equivalent positions in other economic sectors.
- A total of 764 full-time equivalent positions exist in the FM area as a result of the Air National Guard.
- Responsible for \$62.3 million in labor income in the FM area.
- The Air National Guard was estimated to be responsible for \$600,000 in property taxes and local option sales taxes.
- Based on wage and salary compensation, gross state product, and total wage and salary jobs supported, the Air National Guard was responsible for nearly 1 percent of the region's economic output.
- The economic impacts of the 119<sup>th</sup> Wing of the Air National Guard are primarily driven by personal consumption, and not sensitive to the 119<sup>th</sup> Wing purchasing locally supplied goods and services. Therefore, changes to the number of personnel or associated payroll compensation will have the largest potential for affecting economic output in the FM area economy.

## References

- Bureau of Economic Analysis. 2015. Regional Economic Accounts. <http://www.bea.gov/regional/index.htm> (accessed November 2015). Bureau of Economic Analysis, U.S. Department of Commerce, Washington, D.C.
- Cowan, T. 2012. *Military Base Closures: Socioeconomic Impacts*. Congressional Research Service, Washington, D.C.
- Fargo/Moorhead/West Fargo Chamber of Commerce. 2015. [http://www.fmwfchamber.com/community\\_work\\_metroareaemployers.php](http://www.fmwfchamber.com/community_work_metroareaemployers.php) (accessed December 2015). Moorhead, MN.
- IMPLAN Group, Inc. 2013. IMPLAN Software, version 3.1. IMPLAN Group, LLC, Huntsville, North Carolina.
- Irani, D. and J. Grimm. 2015. *Maryland Military Installation Economic Impact Study*. Regional Economic Studies Institute, Towson University, Towson, MD.
- Leistritz, F. Larry. 1998. *Economic and Fiscal Impact Assessment*. Book Chapter 26 from *Environmental Methods Review: Retooling Impact Assessment for the New Century*, A. Porter and J. Fittipaldi, editors. International Association for Impact Assessment and Army Environmental Policy Institute, Georgia Institute of Technology. Fargo, ND: The Press Club Publishers.
- Leistritz, F. Larry. 1994. *Economic and Fiscal Impact Assessment*. AE94004. Fargo: North Dakota State University, Department of Agricultural Economics.
- National Council of State Legislatures. 2015. *Military's Impact on State Economies*. National Council of State Legislatures, Washington, D.C.
- North Dakota Air National Guard. 2015. Unpublished information on Air Base expenditures. 119<sup>th</sup> Wing, Air National Guard, Fargo, North Dakota.
- Office of State Tax Commissioner. 2015. Unpublished information on sales and use tax statistics. Research and Communications Division, Office of State Tax Commissioner, Bismarck, North Dakota.
- Watson, P., J. Wilson, D. Thilmany, and S. Winter. 2007. "Determining Economic Contributions and Impacts: What is the difference and why do we care?" *Journal of Regional Analysis and Policy* 37(2):1-15.