



# The Economic Contribution of the Aviation Industry to Alaska's Economy

March 2009

Prepared for  
Alaska Department  
of Transportation and  
Public Facilities



A Component of the

**ALASKA**  
**Aviation System Plan**

With a Grant from  
Federal Aviation  
Administration



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**LIST OF ACRONYMS**

AAB.....	Alaska Aviation Advisory Board
AASP .....	Alaska Aviation System Plan
ADOT&PF .....	Alaska Department of Transportation & Public Facilities
ANC .....	Ted Stevens Anchorage International Airport
FAA.....	Federal Aviation Administration
FAI .....	Fairbanks International Airport
GSP .....	Gross State Product
ISER .....	Institute of Social and Economic Research
NAC .....	Northern Air Cargo
UAA .....	University of Alaska Anchorage

## **EXECUTIVE SUMMARY**

### **Introduction**

This report provides an assessment of the economic contribution of Alaska's aviation industry to the state's economy in 2007, and a discussion of the importance of the industry to the state and to rural Alaska in particular.<sup>1</sup> The estimate is based on a large survey and interview effort conducted in the fall of 2008 as part of the Alaska Aviation System Plan (AASP), which is being prepared by the Alaska Department of Transportation & Public Facilities (ADOT&PF), Aviation Division; Federal Aviation Administration (FAA); and a consultant team led by DOWL HKM. This economic analysis was prepared by Northern Economics, Inc. as a subcontractor to DOWL HKM.

One of the early phases of the AASP focused on identifying issues and concerns facing the aviation industry in Alaska. The governor-appointed Alaska Aviation Advisory Board (AAB) and others knowledgeable about the industry saw a need for additional state capital investment and operational funding for airports since these facilities are a critical transportation link for most Alaska communities. However, research documenting the importance of the statewide aviation industry—especially for rural Alaska—is very sparse. Prior studies exist for a few airports, such as economic impact reports prepared for the Ted Stevens Anchorage International Airport by the Institute of Social and Economic Research (ISER) at the University of Alaska Anchorage (UAA). We have incorporated data from these prior reports into this analysis to the extent that such information is available and timely.

The AAB and other stakeholders have suggested that this report could be used to enhance the understanding of local, state, and federal decision makers both within and outside of Alaska on the social and economic importance of the Alaska aviation industry. For the aviation industry and aviation-related businesses, this report

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<sup>1</sup> The Alaska Aviation System Plan was conducted in accordance with FAA Advisory Circular 150/5070-7: The Airport System Planning Process. The economic analysis described in this report was conducted pursuant to Section 101.a (3) of that document.

provides documentation that was previously not available, and supports the position that state planning efforts, capital, and operational investment for a healthy aviation system and industry in Alaska are justified.

The aviation industry, as defined in this statewide analysis, includes all the businesses and organizations located at an airport. They are referred to in this report as “on-site entities.” Spending by these firms and organizations results in other jobs and income—the “multiplier effect”—for businesses located elsewhere (i.e., “off-site”). Information for on-site and off-site economic activity is presented in this executive summary. Subsequent studies may expand the definition of “aviation industry” to include other aviation-related businesses not located at airports (e.g., off-site air freight companies or off-site aircraft parts manufacturing companies) and some portion of expenditures by visitors and other persons traveling on air transportation services and through airports.

The following subsections provide information on the contribution of the aviation industry to Alaska’s economy, describe the importance of Alaska’s airports and the aviation industry to its citizens and communities, and compare the importance of airports in Alaska with similar remote airports in the western United States. The information presented in the following sub-sections is based primarily on a survey effort that targeted all public airports managed by ADOT&PF, cities, municipalities, and other public entities, private airports throughout the state, leaseholders located on ADOT&PF airports, and 600 residents in Alaska who have flown within the last 12 months. Telephone interviews with airport managers, city officials, and other community leaders in 18 selected communities in Alaska and in 4 western states were undertaken to evaluate the importance of airports to remote communities.

### **Contributions to the State of Alaska’s Economy**

The businesses, agencies, and organizations that are located on airports and comprise Alaska’s aviation industry are a crucial component of Alaska’s economy. They are drawn from the primary sectors of the economy such as government, trade, transportation and utilities, and hospitality and leisure. In fact, nearly every

primary economic sector in the state is represented within the aviation industry as defined by this report (i.e., on-site).

*Economic Activity*

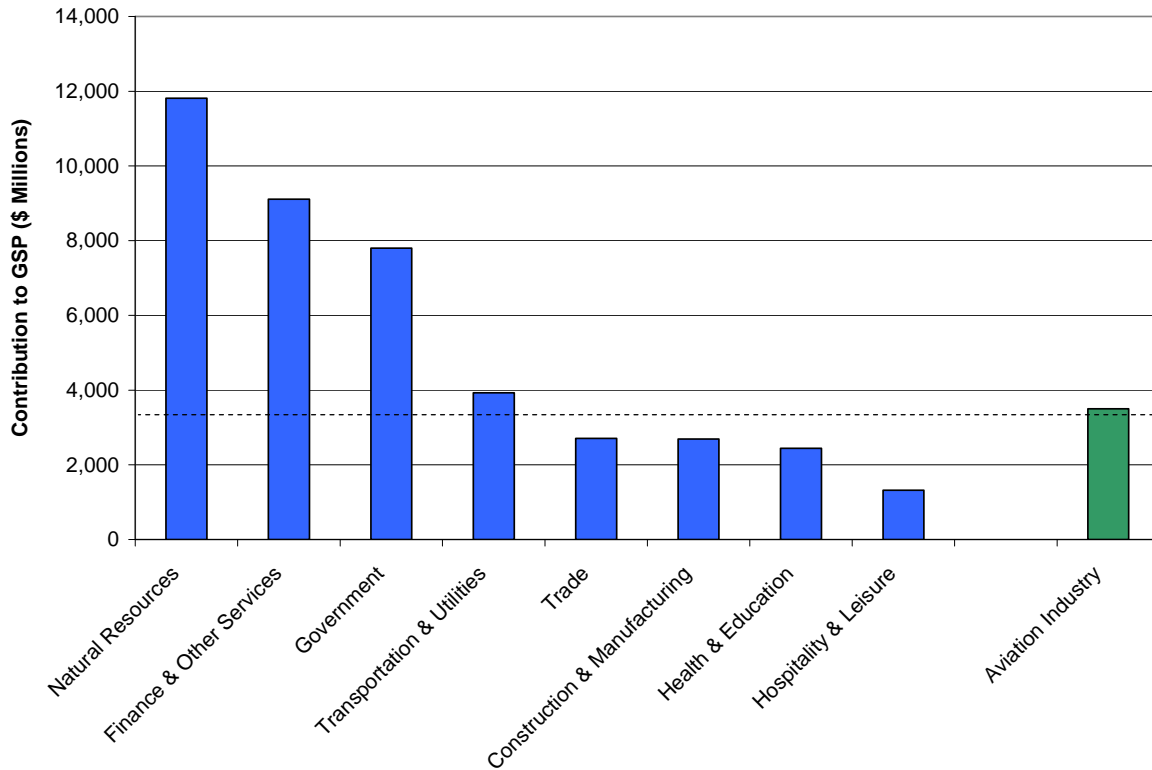
The aviation industry contributes \$3.5 billion to the state's economy by supporting local businesses and employing Alaskans for its year-round operations. Local spending generates economic activity and creates multiplier effects in other sectors of the economy. The industry's in-state spending includes payroll, capital expenditures, and other operating and maintenance expenditures. Total on-site spending in fiscal year 2007 amounted to \$2.1 billion—this is the value of the economic activity generated by operations of airports and the businesses and agencies operating within the airport premises. The economic activity generated by these on-site operations is referred to as the direct economic effects. Direct spending by airports, businesses located on the airports, and their employees in turn creates additional employment and income in other sectors of the economy. The economic contribution of the aviation industry through its multiplier effects is estimated to be more than \$1.4 billion in FY2007, resulting in a total of almost \$3.5 billion in economic activity throughout Alaska—an amount equal to approximately eight percent of the State's \$42 billion gross state product (GSP).<sup>2</sup> The aviation industry accounted for 5.6 percent of national gross domestic product in 2006. The fact that the aviation industry in Alaska is almost 40 percent larger than the industry's role in the national economy further demonstrates the importance of the aviation industry in Alaska's economy.

If the aviation industry were a primary economic sector it would be the fifth largest economic sector in terms of contribution to gross state product (GSP) after natural resources, finance and other services, government, and transportation and utilities

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<sup>2</sup> GSP is the value of all of the goods and services produced by the economy.

sectors.<sup>3</sup> The aviation industry is larger than the trade, construction and manufacturing, health and education, and hospitality and leisure sectors (Figure 1).



**Figure 1. The Aviation Industry’s Contribution to GSP Compared to Primary Economic Sectors, 2007**

Sources: Northern Economics, Inc. estimates, 2008 derived from Bureau of Economic Analysis data.

### Employment

In 2007, the aviation industry provided over 47,000 on-site and off-site jobs across the state,<sup>4</sup> with the highest concentration of jobs located at the international airports

<sup>3</sup> Many of the firms included in the aviation industry are part of the transportation and utilities sector; however, many firms in other primary economic sectors are represented in the aviation industry as defined in this report. For example, airport fuel suppliers would be traditionally listed in wholesale or retail trade. Transportation Security Agency staff would be classified as federal government. The fact that the aggregate aviation industry is made up of entities already accounted for in the individual primary economic sectors makes it challenging to compare the contribution of the primary economic sectors and the aviation industry. Subtracting the aviation industry from each primary economic sector would provide a better comparison, but data collected for the aviation industry are not sufficient to reliably assign persons and firms to industrial sectors.

in Anchorage (ANC)<sup>5</sup> and Fairbanks (FAI), as well as at the state's larger regional hub airports. Aviation industry jobs are found around the state and also in the smallest communities, with smaller village airports typically having one or more part-time or full-time representatives for air carriers serving the community. More than 27,000 on-site jobs and almost 20,000 off-site jobs are created by the aviation industry.

The on-site jobs include over 2,000 full-time and part-time jobs directly related to the daily operation and maintenance of public and private airports in Alaska. The on-site total also includes over 25,000 jobs created by on-site businesses, organizations, and government agencies operating at the airports in 2007. These businesses include commercial air carriers, fixed-base operators, fuel distributors, ground handlers, caterers, air taxis, charter operations, general aviation services, state agencies, and other public agencies such as the U.S. Post Office and Kulis Air National Guard Base operating at ANC. The number of on-site jobs underscores the value of airport infrastructure in creating jobs in various businesses and communities across the entire state.

Off-site jobs are created when goods and services are purchased from other businesses in the state to support the operations and maintenance of airports and businesses located at airports, and when direct and indirect airport employees spend their wages on goods and services within the state. Spending by aviation suppliers and users created almost 20,000 off-site jobs across the state in 2007 based on an input-output analysis of the survey data using the IMPLAN software program which is typically used for economic impact analyses.

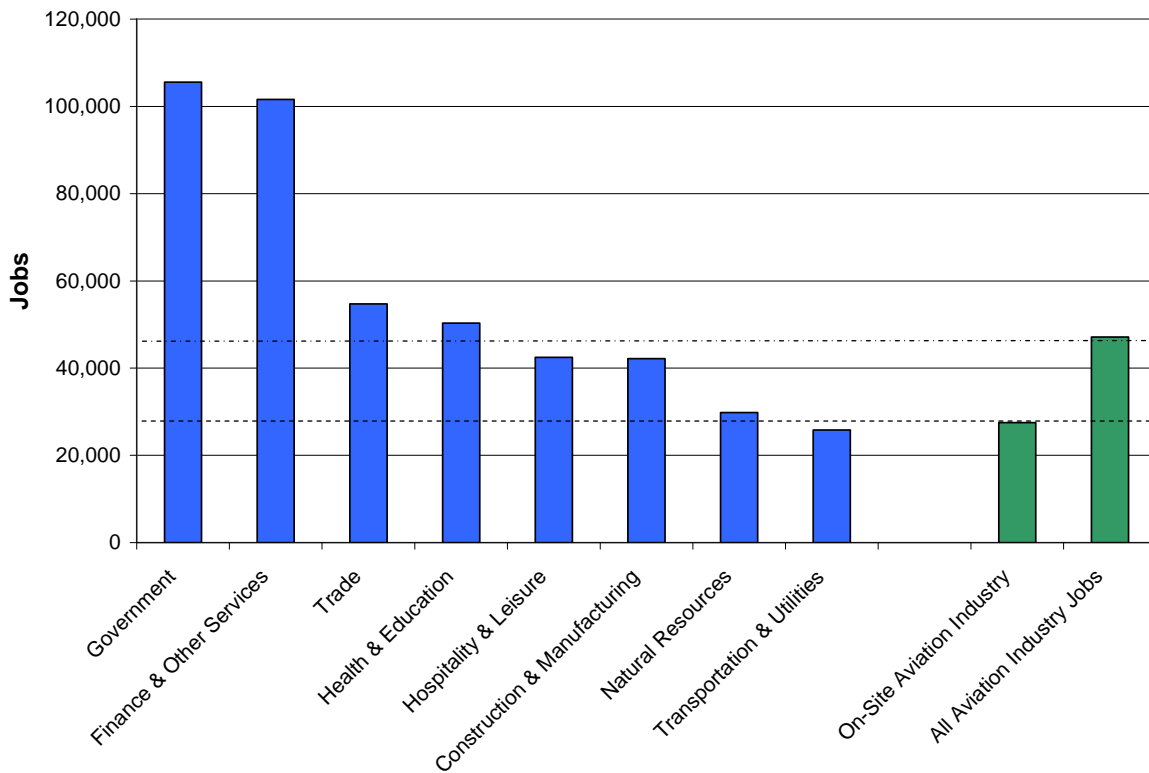
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<sup>4</sup> In this case off-site jobs includes induced and indirect jobs associated with direct expenditures by firms, agencies, and organizations included in the aviation industry as defined on Page 2.

<sup>5</sup> Employment data reported for ANC are expressed as full-time equivalent employees and not full- and part-time jobs as collected for the other airports in the state. The employment numbers for the aviation industry would be greater if employment data for ANC were expressed in full- and part-time jobs.

The 47,000 jobs generated by the firms, agencies, and businesses that make up the aviation industry provided approximately 10 percent of the total jobs in Alaska’s economy in 2007, including the self-employed and the military. As shown in Figure 2, the on-site and off-site employment generated by the aviation industry was smaller than employment for the government, finance and other services, trade, and health and education sectors, but larger than employment for the hospitality and leisure, construction and manufacturing, natural resources, and transportation and utilities sectors.

In 2006 the national aviation industry created about 11 million full-time and part-time jobs (Federal Aviation Administration, 2008), or about 7 percent of the nation’s annual average employment, including the self-employed in that year. The much larger share of employment generated by Alaska’s aviation industry (10 percent) in comparison to the national estimates is further evidence of the importance of the aviation industry to Alaska’s communities and residents.



**Figure 2. The Aviation Industry’s Contribution to Available Jobs Compared to Primary Economic Sectors, 2007**

Sources: Northern Economics, Inc. estimates, 2008 derived from Bureau of Economic Analysis data.

Future Challenges for the Aviation Industry in Alaska

The survey asked firms, agencies, and organizations operating on airports to provide their views on challenges facing their business and aviation-related businesses in Alaska in the coming years. Nearly half of the respondents (49 percent) identified fuel and energy

**“Nationwide economic slowdown. High price of energy costs....leading to increased airfare.... leading to decreased travel.”**

prices as one of the main challenges. Fuel price was the concern most often mentioned, but was often just one of several concerns for respondents. Increasing lease rates (32 percent), government restrictions/mandates (19 percent), finding and retaining quality labor (15 percent) and operating costs and general economic conditions were also mentioned as challenges (both 10 percent). About a third of the respondents mentioned increasing lease rates as a challenge to their business. A number of these respondents felt that Anchorage prices were being charged for small airport leases.

**“Increased lease rates from the State, increased property taxes and restrictions on lease usage, as well as higher energy prices for heating, electrical and operations.”**

The increasing cost of living and the current economic situation of the nation were also mentioned as challenges for the future. Respondents’ concern is that this situation may decrease money spent on travel, and increasing airfares would result in a smaller market base of both local travelers and tourists.

**“...In addition, finding and retaining quality labor is and continues to be a concern that will likely increase if high costs force shifts in population to larger metropolitan areas.”**

Finding and retaining quality labor is seen as a challenge by respondents. Some respondents linked this challenge to another issue: namely, migration out of the rural communities to larger metropolitan areas.

Several respondents mentioned concerns about government interventions and policies, and other issues with municipal, state, and federal governments.



### **The Importance of Airports to Alaska's Communities**

To evaluate the importance of Alaska's airports to state residents, the study team conducted a telephone survey of 500 households in 18 selected communities throughout the state and 100 households within the Railbelt stretching from Fairbanks to the Kenai Peninsula, and also conducted interviews of airport managers, community officials, and other leaders in these communities. The 18 off-road system communities were: Juneau, Sitka, Bethel, Dillingham, Nome, Barrow, Wrangell, Petersburg, McGrath, Iliamna, Unalakleet, Galena, Haines, Angoon, King Cove, Mekoryuk, Noatak, and Arctic Village. The 18 communities were divided equally among regional hubs, sub-regional hubs, and community airports in the three ADOT&PF regions: Southeast, Central, and Northern.

To illustrate the importance of Alaska's airports in comparison to remote airports in other western U.S. states, the study team conducted similar interviews with airport managers and community officials for airports in Idaho, Montana, Oregon, and Wyoming. The team also made a comparison of enplanements and freight volumes per capita between the 18 case study airports in Alaska and the airports in the western U.S. The results of these case studies are discussed below.

Air transportation is an efficient means for moving people, goods, and materials in and out of off-road communities in Alaska and improves the quality of life in those communities. There are three basic size groupings of airports as defined in this report: 1) large or regional hub airports; 2) sub-regional airports, and 3) community airports. A large or hub airport allows a community to provide goods and services more efficiently to a larger or broader area, and enhances its role as a government or economic center. Sub-regional hubs are typically smaller in population and have smaller economies than regional hubs with fewer routes connecting to outlying villages and fewer flights to major urban centers. Community airports are typically in the smallest communities, and these airports generally only support one local community.

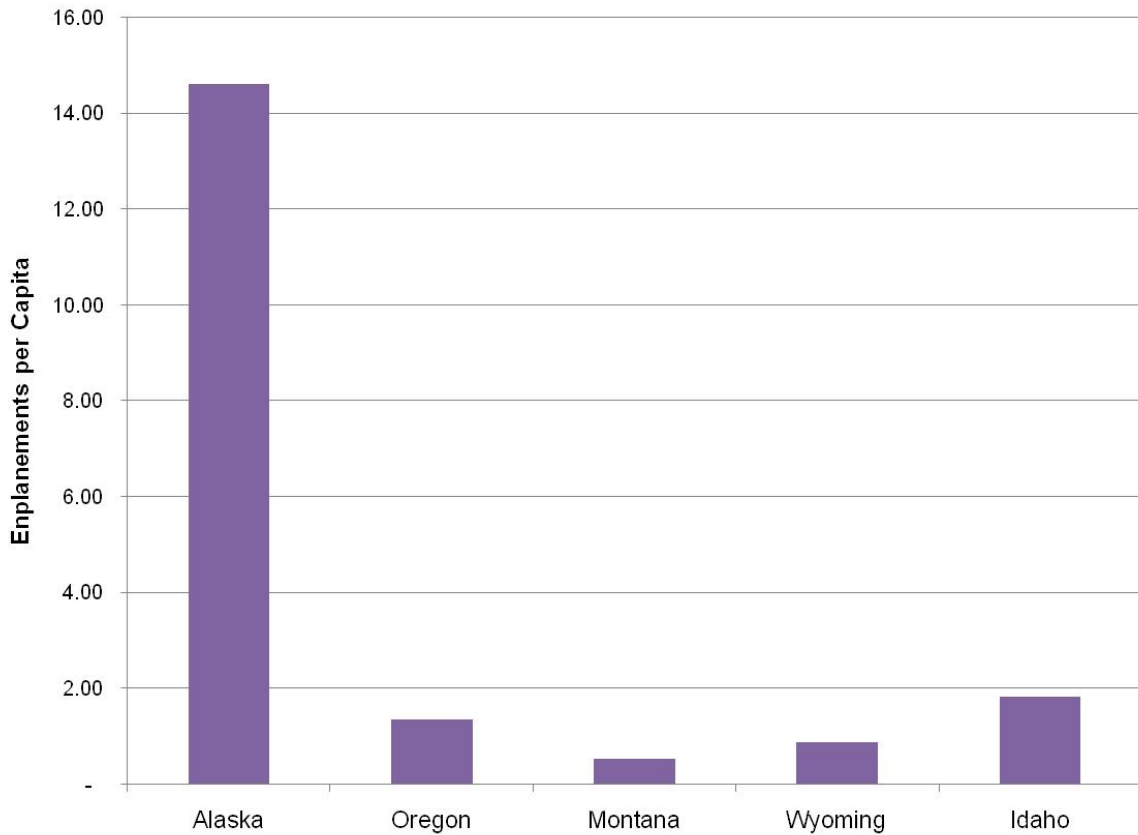
Off-Road Alaska's Aviation Lifeline

Communities in Alaska that are not connected to the national highway system depend on the aviation industry for movement of goods and people in ways that Lower 48 communities depend on a road system. The study compared enplanements and freight deliveries per capita for the 18 case study communities in Alaska with Lower 48 case study communities. The average number of annual enplanements per capita for off-road communities in Alaska was found to be 14.6 enplanements per person per year. This number is eight times higher than the number of enplanements per capita for even the next highest state (i.e., Idaho at 1.8 enplanements per year), and more than 30 times higher than the lowest comparison group (i.e., Montana at 0.5 enplanements per person per year) (see Table 1 and Figure 3). The difference in freight pounds per capita is even more startling for Alaska as compared to the western U.S. The per capita freight loads for the 18 case study communities in Alaska is 39 times higher than the freight load for rural communities in the next highest surveyed state (see Table 1 and Figure 4). Alaska communities in the study averaged 1,096 pounds of air freight per capita in 2007 while rural communities in Oregon averaged 28 pounds. Rural communities in Montana averaged just 2 pounds of air freight per person in 2007.

**Table 1. Community Enplanements and Freight, 2007**

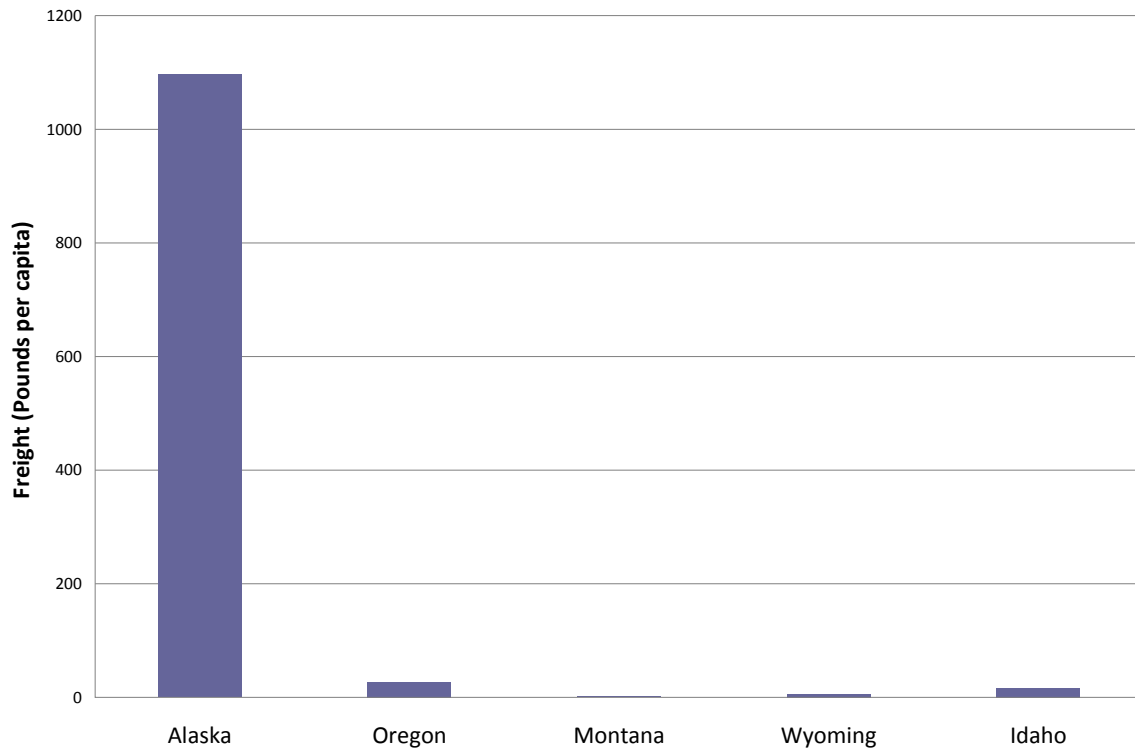
State	Per Capita Measure	
	Enplanements (Number)	Freight (Pounds)
Alaska	14.6	1,096
Oregon	1.4	28
Montana	0.5	2
Wyoming	0.9	6
Idaho	1.8	17

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008 and the U.S. Census, 2008.



**Figure 3. Comparison of Enplanements per Capita for Selected Community Airports, 2007**

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008 and the U.S. Census, 2008.



**Figure 4. 2007 Freight per Capita 2007**

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008 and the U.S. Census, 2008.

Passenger Survey Responses

Off-road community respondents emphasized the importance of air travel in Alaska. For 169 Alaska communities, especially in Alaska’s Northern and Western regions, air travel is the only means of getting in and out of communities, which have no roads or ferry service. These 169 villages and towns rely on air travel for emergencies, bringing medical personnel and other specialists to rural parts of Alaska, family visits, work-related travel, social and vacation trips, and transportation of food, materials and supplies, and mail. Some communities do not offer medical services, and residents need to travel for all medical visits. The need to travel for medical care is especially common

"How do [airports] affect my life? That question is good I guess, because they affect every single aspect of my life. We live off the road-system, we live in Galena and the air travel is everything to us, I mean when there is not barges available we are getting all the foods, the supplies. Air travel and the importance of it is just, it's just everything to us."

in small communities. Survey responses indicate that small community respondents made more than twice as many family or personal business-related and medical trips than larger communities (See Table 2). They also make more family and personal business trips, but fewer trips that may be for more discretionary travel such as social or vacation.

**Table 2. Mean Number of Trips During Past 12 Months by Trip Purpose and Airport Type**

Trip Purpose	Airport Type		
	Regional Hub	Sub-regional Hub	Community
Work trips	5.4	4.5	4.0
Family and personal business trips	2.4	2.2	4.5
School or church trips	1.0	1.1	0.7
Social or vacation trips	2.6	1.9	1.4
Medical trips	1.0	1.5	3.8
<b>Total</b>	<b>12.5</b>	<b>11.3</b>	<b>14.5</b>

Source: Northern Economics, Inc. estimates, 2008.

Households residing in ADOT&PF’s Northern Region are more dependent on air travel than the other ADOT&PF regions and they had a higher number of aviation medical trips than the other regions, and a higher total number of trips (See Table 3). Southeast Alaska communities typically have an option of travel by the ferries of the Alaska Marine Highway System and are not as dependent on air travel as communities in the Northern Region.

**Table 3. Mean Number of Trips During Past 12 Months by Trip Purpose and ADOT&PF Region**

Trip Purpose	ADOT&PF Region		
	Southeast	Central	Northern
Work trips	4.2	6.6	8.8
Family and personal business trips	2.0	4.0	3.8
School or church trips	1.0	0.5	1.3
Social or vacation trips	2.3	2.7	2.5
Medical trips	1.2	1.3	2.0
<b>Total</b>	<b>10.7</b>	<b>15.0</b>	<b>18.4</b>

Source: Northern Economics, Inc. estimates, 2008.

The case studies confirm the results of the passenger survey that airports play a vital role for Alaska off-road communities. Several interview respondents compared the role of the airports to the role of highways and the road system in the lower 48 states. Most community members said it would be difficult for their community to maintain or sustain itself without air transportation. Many

**“If we didn’t have the airport we wouldn’t have anything. The airport is a fact of life for living out here in the villages. The airport is our roads, highway, ocean—our lifeline.”**

communities in Northern and Western Alaska would be completely isolated in the winter without their airports. In parts of Central and Southeast Alaska, ferry or road transportation may exist as alternatives, but communities still rely heavily on their airports for swift and reliable travel.

As noted previously, the regional hub airports are generally located in larger communities with diverse economies and higher per capita incomes, such as Bethel or Kotzebue. Alaska’s community airports are typically located in the smallest communities and residents there have lower average incomes. The increasing cost of air travel affects all Alaska residents, but especially those living in the smallest communities with lower incomes. The survey data indicate that small community airport residents make fewer trips for social or vacation purposes—approximately 1.4 trips per household per year in community-level airports as compared to 1.9 trips for sub-regional hub households and 2.6 trips for regional hub households.

Households in all off-road communities make about the same number of annual trips by air per household as households in the Railbelt. Railbelt community households make more work-related trips than rural community households, but for all other trip categories (i.e., social or vacation, family or personal business, school or church, medical), off-road households have a higher average number of trips. (See Table 4.)

**Table 4. Mean Number of Trips During Past 12 Months for Off-road and Railbelt Communities**

<b>Trip Purpose</b>	<b>Off-Road</b>	<b>Railbelt</b>
Work trips	5.2	8.6
Family and personal business trips	2.5	1.9
School or church trips	1.0	0.3
Social or vacation trips	2.4	1.4
Medical trips	1.3	0.3
<b>Total</b>	<b>12.5</b>	<b>12.6</b>

Source: Northern Economics, Inc. estimates, 2008.

*Alaska Residents' Concerns for the Future*

The greatest concern expressed by residents of off-road communities is the increasing cost of air travel. These residents are finding it more difficult to travel as air transportation costs increase and personal income remains low. Increasing air cargo rates also raise the cost of groceries and other supplies while increased baggage fees can significantly affect travelers from off-road communities, who generally take advantage of the lower prices in Alaska urban centers to stock up on food and supplies before traveling back home where costs are higher.

“... [costs are] getting pretty outrageous not just from Kotzebue to Anchorage but also to the rural villages. I think that’s our greatest fear is cost. Thank you for doing the survey, thank you for serving the state. I hope we can all make a difference.”

Residents of Alaska are greatly concerned by the increasing cost of energy, particularly in those communities that rely upon air delivery of fuel supplies. Fuel must be flown in to these communities at much greater cost as they are not accessible by road, ferry, or barge. In addition, the aircraft currently used for fuel deliveries are nearing the end of their useful life, and newer large fuel delivery aircraft cannot operate at airports with shorter runway lengths. Many of the smaller communities that rely on air transport of fuel have airports with shorter runway lengths. Using smaller aircraft, which could land at these shorter runways, for fuel deliveries would increase fuel prices above their current levels.

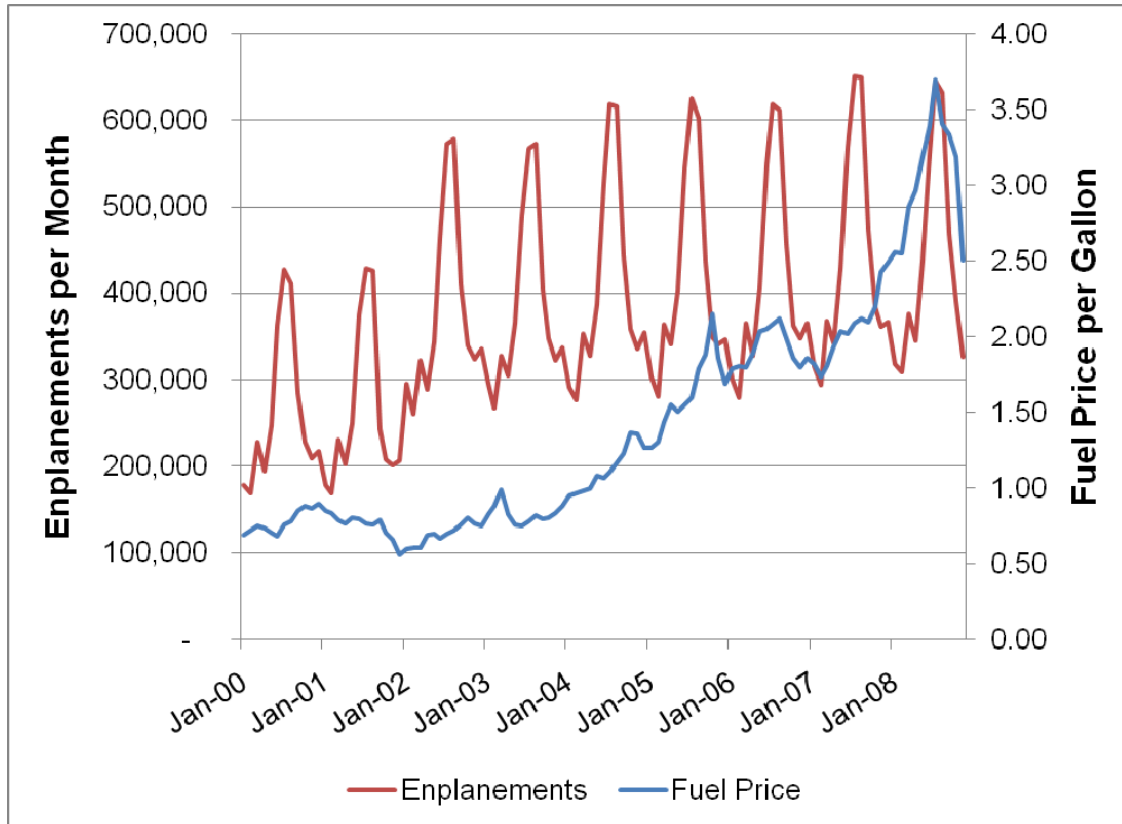
Both Railbelt and off-road households indicate in survey responses that they will travel less by air in the next 12 months (November 2008 through October 2009), with

a reduction of about 5 to 10 percent in the total number of trips. It is thought that this reduction is due to the cost concerns expressed above. In Southeast Alaska, of the households that indicated they would use less air transportation, about a third said they would increase the number of trips made on other public transportation providers such as the Alaska Marine Highway System, which can be less expensive than air travel.

The recent 2008 spike in jet fuel and aviation gasoline has had an adverse impact on the aviation users and industry in Alaska. Figure 5 shows monthly passenger enplanements at all Alaska airports from January 2000 through November 2008, compared to the average monthly fuel price reported by all domestic carriers. Fuel prices for Alaska carriers were only available through September, so prices for all domestic carriers were used to have similar time periods for the both data series. Fuel prices in Alaska experienced a similar spike with the price exceeding \$4.00 in the summer of 2008. The enplanement data are for large certificated air carriers subject to the Federal Aviation Act of 1958. As such, the enplanement data do not include a number of smaller air carriers and operators in Alaska and thus underestimate total enplanements in the state. The enplanement data are considered to be representative of overall trends in enplanements for the state.

Summer 2008 peak enplanements throughout Alaska were slightly less than what would have been expected in a normal year. Enplanements through November have continued to decline and are now near levels experienced in 2003 and 2004. Even though fuel prices have dropped in the past few months, prices are still at historically high levels compared to fuel prices in recent years.





**Figure 5. Alaska Enplanements and Domestic Fuel Price for all U.S. Carriers, January 2000 – November 2008**

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008.  
 Note: Enplanement data are for large certificated air carriers subject to the Federal Aviation Act of 1958.

The importance of airports in the case study communities compared to rural airports in the Lower 48 states is emphasized by the responses of participants to questions regarding whether or not they believe their community could maintain itself without its airport. Rural communities in the Lower 48 often commented their community would be less attractive for people visiting or doing business, but they could likely deal with not having an airport. In general, rural airports in the Lower 48 states are important to their communities, but tend not to play as vital a role in terms of transportation of people and goods, since travel can also occur by road and sometimes rail to and from these rural towns.

**“Yes, [our Lower 48 community could maintain itself] but we couldn’t attract the level of tourists and recreationists.... Without the airport we would have a really difficult time getting people to visit especially in the wintertime.”**

## **1.0 INTRODUCTION**

Aviation is more important in Alaska than perhaps anywhere else in the United States. Alaska's unique mix of airports, seaplane bases, and heliports spread over remote geographic regions are a vital lifeline within the state, to destinations in the Lower 48 states, and to destinations around the globe. Alaska's aviation system plan is likewise more important in Alaska because of aviation's role in Alaska and because the State of Alaska Department of Transportation and Public Facilities (ADOT&PF) owns most of the public airports and is able to directly implement plan recommendations. The statewide aviation system plan must recognize Alaska's dependence on aviation, the unique operating environment, lack of basic infrastructure, financial constraints, and regional diversity.

This report is a component of the continuing Alaska Aviation System Plan (AASP), which is being prepared by the Aviation Division of the ADOT&PF; Federal Aviation Administration (FAA); and a consultant team led by DOWL HKM. This economic analysis was prepared by Northern Economics, Inc. as a subcontractor to DOWL HKM.

The primary purpose of the airport system planning process is to examine the existing aviation system, analyze future trends, evaluate policy issues, and determine the type, extent, and location of airport improvements needed in the state. Earlier in the planning process members of the consultant team reviewed existing documents and studies and conducted extensive outreach within ADOT&PF and with external stakeholders to determine what aviation issues needed to be considered or addressed in the AASP. The absence of information on the economic effects of the aviation industry on the state's economy, and the importance of the industry to state residents and their communities were identified as issues that needed to be addressed; this report was prepared to address these issues.

This AASP document was conducted in accordance with FAA Advisory Circular 150/5070-7: The Airport System Planning Process. The economic analysis

described in this report was conducted pursuant to Section 101.a(3) of that document.

This report provides an estimate of the economic contribution of Alaska's aviation industry to the state's economy in 2007, and a discussion of the importance of the industry to the state and to rural Alaska in particular. The estimate is based on a large survey and interview effort conducted in the fall of 2008.

One of the early phases of the AASP focused on identifying issues and concerns facing the aviation industry in Alaska. The governor-appointed Alaska Aviation Advisory Board (AAB) and others knowledgeable about the industry saw a need for additional state capital investment in and operational funding for airports since these facilities are a necessary part of the aviation network and a critical transportation link for most Alaska communities. However, research documenting the importance of the statewide aviation industry—especially for communities not connected to the road system—is very sparse. Prior studies exist for a few airports, such as economic impact reports prepared for the Ted Stevens Anchorage International Airport by the Institute of Social and Economic Research (ISER) at the University of Alaska Anchorage (UAA). We have incorporated data from these prior reports into this analysis to the extent that such information is available and timely.

The AAB and other stakeholders have suggested that this report could be used to enhance the understanding of local, state, and federal decision makers both within and outside of Alaska on the social and economic importance of the Alaska aviation industry. For the aviation industry and aviation-related businesses, this report provides documentation that was previously not available, and supports the position that state planning efforts, capital, and operational investment for a healthy aviation system and industry in Alaska are justified.

The aviation industry, as defined in this first statewide economic impact analysis, includes all the businesses and organizations located at an airport. They are referred to in this report as “on-site entities.” Spending by these firms and organizations results in other jobs and income—the “multiplier effect”—for businesses located

elsewhere (i.e., “off-site”). Information for on-site and off-site economic activity is presented in this report. Subsequent studies may expand the definition of “aviation industry” to include other aviation-related businesses not located at airports (e.g., off-site air freight companies or off-site aircraft parts manufacturing companies) and some portion of expenditures by visitors and other persons traveling on air transportation services and through airports.

The following sections of this report provide information on the contribution of the aviation industry to Alaska’s economy, describe the importance of Alaska’s airports and the aviation industry to its citizens and communities, and compare the importance of airports in Alaska with similar remote airports in the western United States. The information presented in the following sections is based primarily on a survey effort that targeted all public airports managed by ADOT&PF, public airports managed by other entities, private airports throughout the state, leaseholders located on ADOT&PF airports, and 600 residents in Alaska who have flown within the last 12 months. Telephone interviews with airport managers, city officials, and other community leaders in 18 selected communities in Alaska and in 4 western states were undertaken to evaluate the importance of airports to remote communities. More detailed information on the survey and analytical methods employed in this project and summaries of interviews are presented in the appendices.

## **2.0 ECONOMIC CONTRIBUTION TO THE STATE OF ALASKA’S ECONOMY**

This section discusses the economic contribution of Alaska’s aviation industry to the state economy. The economic contribution of the aviation industry is measured in terms of the value of economic activity (or output) and the number of jobs generated from the industry’s operations, covering fiscal year (FY) 2007. This study shows that the Alaska aviation industry contributed \$3.5 billion in economic output and supported over 47,000 jobs statewide in FY2007.

The *aviation industry*, as defined in this statewide study, includes all the businesses and organizations located at public and private airports in Alaska. These entities,

which include the airlines, airport concessions, air freight companies, and even government and civic organizations, are collectively referred to in this report as “on-site entities.” Not included in this study’s definition of the aviation industry are the other aviation-related businesses that are not located at airports (e.g., off-site air freight companies or off-site aircraft parts manufacturing companies).

The measure of the total economic contribution is comprised of the direct (or on-site) effects and the multiplier effects. The *direct effects* result from the aviation expenditures injected into the state economy through payroll, maintenance and operations, and capital spending by on-site entities. Not included in this study’s direct spending measure is the portion of expenditures by visitors and other persons traveling on air transportation services and through airports. The *multiplier effects* result from the spin-off spending as aviation employees and other businesses that support the on-site entities buy goods and services from the local vendors. For example, if an airport employee spends his wages on food, utilities, and clothing, this second round of spending creates the multiplier or induced effects on the economy.

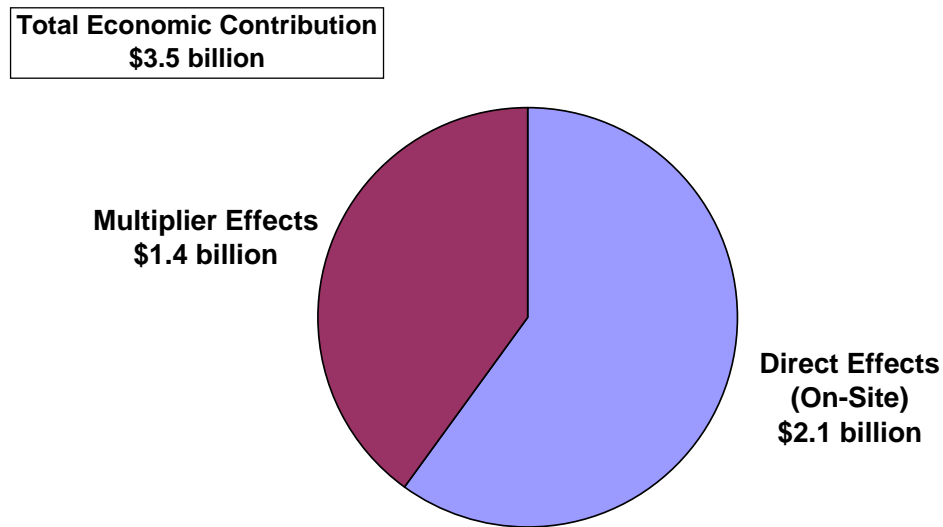
Direct spending and direct employment by the aviation industry were estimated using primary data from a survey conducted by the study team of all public airports managed by ADOT&PF, public airports managed by other entities, private airports throughout the state, and leaseholders located on ADOT&PF airports. Secondary data were used to supplement information not available from the survey data. Also, since a study of the economic impacts of the Anchorage International Airport is done every year and was already available; the survey effort did not include the Anchorage airport. The results of the latest study entitled, *Ted Stevens Anchorage International Airport: Economic Significance 2007*, which was conducted by the Institute of Social and Economic Research (ISER), were incorporated in this statewide study.

The multiplier effects were based on an input-output analysis of the survey and secondary data using the IMPLAN software program and database.

The methodology used in this study is discussed in more detail in the appendices (see Appendix A for Survey Methods and Appendix B for the Input-Output Analysis).

## 2.1 Economic Activity

Local spending generates economic activity and creates multiplier effects in other sectors of the economy. The industry's in-state spending includes payroll, capital expenditures, and other operating and maintenance expenditures. Total spending by on-site entities in fiscal year 2007 amounted to \$2.1 billion—this is the value of the economic activity generated by operations of airports and the businesses and agencies operating within the airport premises. The economic activity generated by these on-site operations is referred to as the direct economic effects. Direct spending by the airports and businesses located at the airports, in turn creates additional economic activity or multiplier effects in other sectors of the economy. The economic contribution of the aviation industry through its multiplier effects is estimated to be \$1.4 billion in FY2007. Figure 6 shows the breakdown of the direct/on-site and multiplier effects of the aviation industry on the state economy.



**Figure 6. Alaska Aviation Industry's Estimated Economic Contribution to Statewide Economic Activity, FY2007**

Table 5 and Table 6 show the breakdown by airport category of the estimated direct in-state spending on maintenance and operating (M&O) expenditures (including

payroll), and capital expenditures by airports and by on-site businesses and organizations, respectively.

In-state spending for airport operations in Alaska contributed about \$265 million to the state's economy (Table 5). Spending by the businesses and agencies that are located at the different airports across the state also generated direct economic effects valued at \$1.8 billion (Table 6). Combined, total direct aviation spending in fiscal year 2007 amounted to over \$2.1 billion; again, this is the value of the economic activity generated by operations of on-site entities—the airports and the businesses and agencies operating within the airport premises.

**Table 5. Direct Economic Contribution of Airport Operations, FY2007 (in Millions of \$)**

<b>Category</b>	<b>M&amp;O Expenditures</b>	<b>Capital Expenditures</b>	<b>Total</b>
DOT Managed Airports	86	152	238
Non-DOT Managed Airports	8	15	23
Private Airports	4	1	5
<b>Total</b>	<b>98</b>	<b>167.22</b>	<b>265.12</b>

Source: Estimates are based on survey results conducted by NEI. Estimates for the Ted Stevens Anchorage International Airport (TSAIA) expenditures are based on operating and financial summary information (Form 127) submitted to the Federal Aviation Administration as part of the Airport Financial Reporting Program.

Note: Totals may not add due to rounding.

**Table 6. Direct Economic Contribution of Operations of Businesses, Agencies, and Organizations Located at Alaska Airports, FY2007 (in Millions of \$)**

<b>Category</b>	<b>M&amp;O Expenditures</b>	<b>Capital Expenditures</b>	<b>Total</b>
DOT Managed Airports	1,565	136	1,701
Non-DOT Managed Airports	99	18	118
Private Airports	15	4	19
<b>Total</b>	<b>1,680</b>	<b>158</b>	<b>1,838</b>

Source: Estimates are based on survey results conducted by NEI. Estimates for TSAIA leaseholder expenditures are based on estimates from 2007 Economic Significance Report conducted by the Institute of Social and Economic Research (ISER); the estimates do not include capital expenditures of TSAIA leaseholders.

Table 7 shows the estimated multiplier effects of the aviation industry spending in 2007. The results indicate that the industry generated an additional \$1.4 billion in economic activity in other sectors of the economy.

**Table 7. Estimated Multiplier Effects of Alaska’s Aviation Industry, FY2007  
(in Millions of \$)**

<b>Category</b>	<b>Amount</b>
DOT Managed Airports	1,289
Non-DOT Managed Airports	94
Private Airports	19
<b>Total</b>	<b>1,401</b>

Source: Multiplier effects are based on industry multipliers provided by IMPLAN. Direct inputs to the model are based on expenditure estimates derived from the surveys, ISER results, and TSAIA financial statements.

Note: Totals may not add due to rounding.

Table 8 summarizes the direct and multiplier effects of the aviation industry to the state economy in FY2007.

**Table 8. Estimated Direct and Multiplier Effects of Alaska’s Aviation Industry,  
FY2007 (in Millions of \$)**

<b>Category</b>	<b>Amount</b>
<b>Direct Effects</b>	
On-site Airport Operations	265
On-Site Airport Businesses	1,838
<b>Subtotal</b>	<b>2,103</b>
<b>Multiplier Effects</b>	<b>1,401</b>
<b>Total:</b>	<b>3,504</b>

Source: Multiplier effects are based on industry multipliers provided by IMPLAN. Direct inputs to the model are based on expenditure estimates derived from the surveys, ISER results, and ANC financial statements.

Note: Totals may not add due to rounding.

In total, the aviation industry generated over \$3.5 billion in economic activity throughout Alaska—an amount equal to nearly eight percent of the State’s \$44.5 billion gross state product (GSP).<sup>6</sup> The aviation industry accounted for 5.6 percent of national gross domestic product in 2006 (Federal Aviation Administration, 2008). The fact that the aviation industry in Alaska is almost 40 percent larger than the

<sup>6</sup> GSP is the value of all of the goods and services produced by the economy, less the cost of goods used in production.



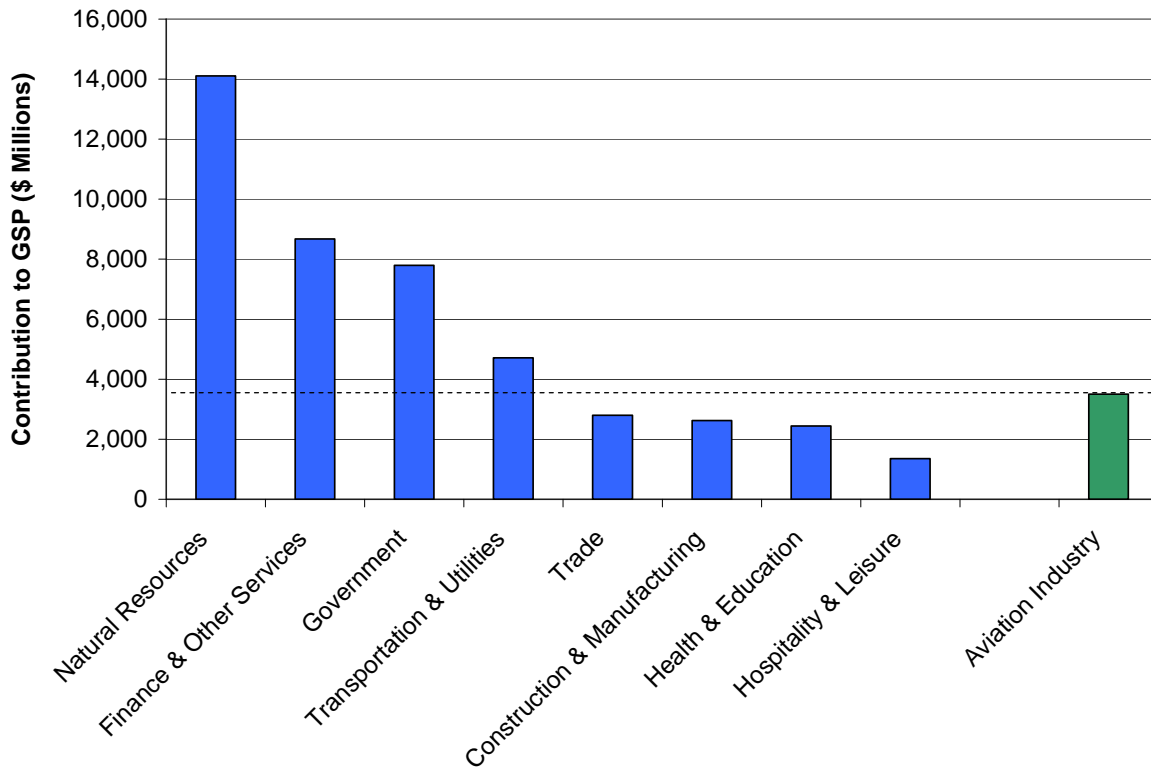
industry's role in the national economy further demonstrates the importance of the aviation industry in Alaska's economy.

The businesses, agencies, and organizations that are located on airports and comprise Alaska's aviation industry are a crucial component of Alaska's economy. They are drawn from the primary sectors of the economy (i.e., those sectors that are reported by governmental agencies) such as government, trade, transportation and utilities, and hospitality and leisure.

If the aviation industry were a primary economic sector, it would be the fifth largest economic sector in terms of contribution to gross state product (GSP) after natural resources, finance and other services, government, and transportation and utilities sectors.<sup>7</sup> The aviation industry is larger than the trade, construction and manufacturing, health and education, and hospitality and leisure sectors (See Figure 1).

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<sup>7</sup> Many of the firms included in the aviation industry are part of the transportation and utilities sector; however, most economic sectors are represented in the aviation industry. The fact that the aggregate aviation industry is made up of entities already accounted for in the individual primary economic sectors makes it challenging to compare the contribution of the aviation industry to those sectors.



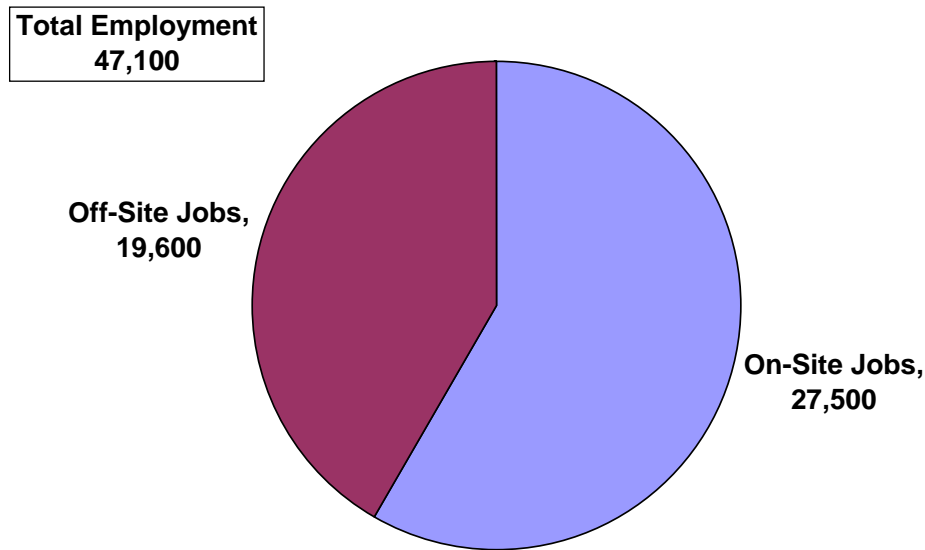
**Figure 7. The Aviation Industry’s Contribution to GSP Compared to Primary Economic Sectors, 2007**

Sources: Northern Economics, Inc. estimates, 2008 derived from Bureau of Economic Analysis data.

## 2.2 Employment

In FY2007, the aviation industry supported over 47,000 on-site and off-site jobs across the state, with the highest concentration of jobs located at the international airports in Anchorage and Fairbanks, as well as at the state’s larger regional hub airports. In this case, “off-site jobs” are the jobs created in other sectors of the economy generated from the spin-off spending by firm, agencies, and organizations located at Alaska airports.

Aviation industry jobs are found around the state and also in the smallest communities, with smaller village airports typically having one or more part-time or full-time representatives for air carriers serving the community. More than 27,000 on-site jobs and almost 20,000 off-site jobs were created by the aviation industry during FY2007 (see Figure 8).



**Figure 8. Direct (on-site) and Multiplier (off-site) Employment Effects Associated with Alaska's Aviation Industry, FY2007**

Source: Northern Economics, Inc. estimates, 2008.

The on-site jobs include over 2,000 full-time and part-time jobs directly related to the daily operation and maintenance of public and private airports in Alaska. Table 9 shows the breakdown of direct employment by airport category.

**Table 9. Number of Direct Full-Time and Part-Time Jobs Associated with Airport Operations, FY2007**

Category	Full-Time	Part-Time
DOT Managed Airports	1,285	92
Non-DOT Managed Airports	147	73
Private Airports	245	256
<b>Total:</b>	<b>1,676</b>	<b>421</b>

Source: Direct employment estimates are based on information provided by DOT staff and information provided by airport managers from the survey effort. Estimates for the Anchorage International Airport are from the 2007 Economic Significance study conducted by the Institute of Social and Economic Research (ISER).

Note: The jobs in the ISER study are expressed as annual average full-time equivalent jobs. Totals may not add due to rounding.

The on-site total also includes over 25,000 jobs created by on-site businesses, organizations, and government agencies operating at the airports in 2007 (see Table 10). These businesses include commercial air carriers, fixed-base operators, fuel distributors, caterers, air taxis, charter operations, general aviation services, state

agencies, and other public agencies such as the U.S. Post Office and Kulis Air National Guard Base operating at the Anchorage International Airport. The results shown here underscore the value of airport infrastructure in creating jobs in various businesses and communities across the entire state.

**Table 10. Number of Full-Time and Part-Time Jobs Associated with Businesses Located in Alaska Airports in 2007**

Category	Business Employees		Contractors	
	Full-time	Part-Time	Full-Time	Part-Time
DOT Managed Airports	14,911	6,805	1,208	654
Non-DOT Managed Airports	872	523	242	54
Private Airports	61	65	4	12
<b>Total</b>	<b>15,844</b>	<b>7,393</b>	<b>1,453</b>	<b>721</b>

Source: NEI estimates based on information provided by airport leaseholders on the survey.

Note: Estimates for the Anchorage International Airport (included in the DOT Managed Airports category) are from the 2007 Economic Significance study conducted by the Institute of Social and Economic Research. Totals may not add due to rounding.

Table 11 shows the off-site jobs (or the multiplier jobs) generated by the aviation industry in FY2007. These jobs are created when goods and services are purchased from other businesses in the state to support the operations and maintenance of airports and businesses located at airports, and when employees of the on-site entities spend their wages on goods and services within the state. Spending by employees and aviation suppliers and vendors created over 19,600 multiplier jobs across the state in FY2007.

**Table 11. Total Number of Induced Jobs Associated with Direct and Indirect Aviation Spending in Alaska in 2007**

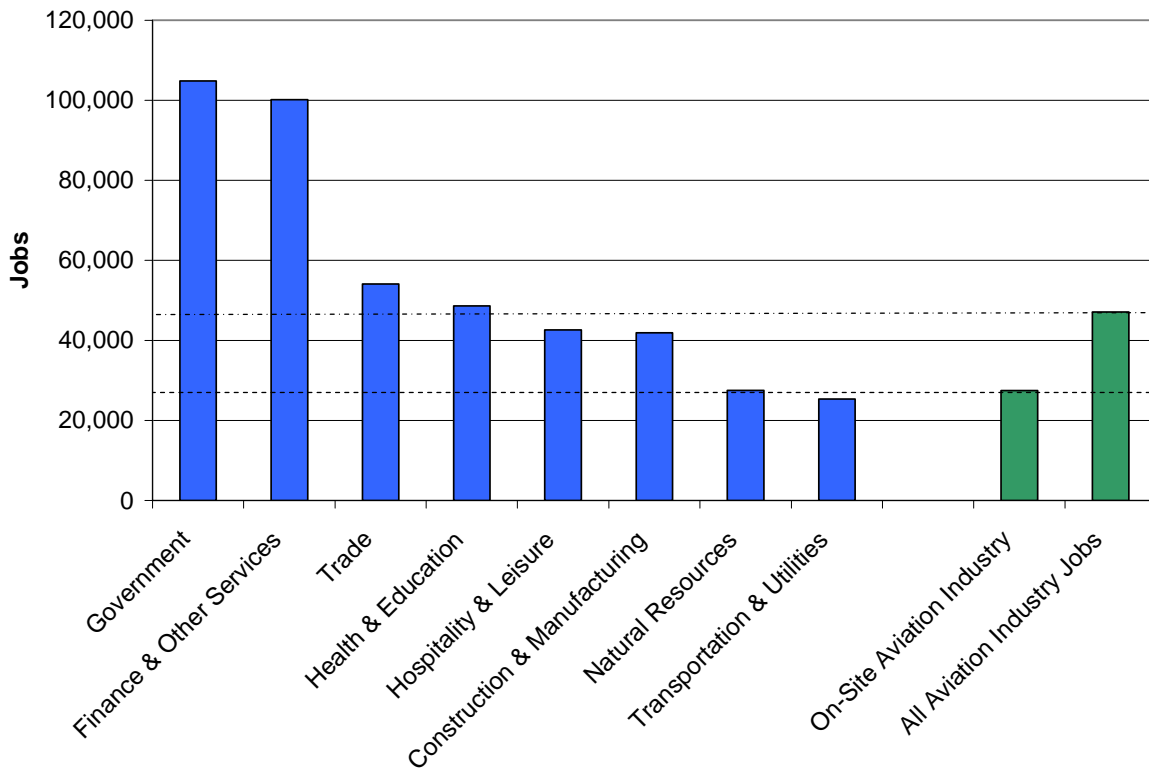
Category	Total Induced Output
DOT Managed Airports	18,145
Non-DOT Managed Airports	1,249
Private Airports	213
<b>Total</b>	<b>19,607</b>

Source: Multiplier effects are based on industry multipliers provided by IMPLAN. Direct inputs to the model are based on expenditure estimates derived from the surveys, ISER results, and TSAIA financial statements.

In total, the 47,000 jobs generated by the firms, agencies, and businesses that make up the aviation industry provided approximately 10 percent of the total jobs in Alaska's economy in 2007, including the self-employed and the military. As shown in

Figure 2, the on-site and off-site employment generated by the aviation industry was smaller than employment for the government, finance and other services, trade, and health and education sectors, but larger than employment for the hospitality and leisure, construction and manufacturing, natural resources, and transportation and utilities sectors.

In 2006 the national aviation industry contributed to the employment of 11 million people, or about 7 percent of the nation’s annual average employment, including the self-employed in that year (Federal Aviation Administration, 2008). The much larger share of employment generated by Alaska’s aviation industry (10 percent) in comparison to the national estimates is further evidence of the importance of the aviation industry to Alaska’s communities and residents.



**Figure 9. The Aviation Industry’s Contribution to Available Jobs Compared to Primary Economic Sectors, 2007**

Sources: Northern Economics, Inc. estimates, 2008 derived from Bureau of Economic Analysis data.

### **3.0 THE IMPORTANCE OF AIRPORTS TO ALASKA'S COMMUNITIES**

#### **3.1 Alaska's Aviation Lifeline**

Air transportation is an efficient means for moving people, goods, and materials into and out of remote communities in Alaska and improves the quality of life in those communities. The study data show that airports are a critical component of the social, economic, and cultural welfare of Alaska's communities. The study documented the importance of airports to Alaska's communities through multiple methods including:

- Administering a telephone survey on travel habits and future concerns to 500 households in 18 off-road system communities throughout the state and 100 households within the Railbelt stretching from Fairbanks to the Kenai Peninsula.<sup>8</sup>
- Conducting interviews with airport managers, community officials, and other leaders in the 18 off-road system communities and similar interviews with airport managers and community officials for selected airports in Idaho, Montana, Oregon, and Wyoming.
- Comparing enplanements and freight volumes per capita between the 18 off-road system communities airports in Alaska and the comparison group airports in the western U.S states mentioned above. The results of these case studies are discussed below.

The study data show that off-road system communities in Alaska depend on the aviation industry for movement of goods and people in ways that Lower 48 communities depend on a road system. The study compared enplanements and freight deliveries per capita for the 18 off-road case study communities in Alaska with Lower 48 comparison group communities and found that on a per capita basis

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<sup>8</sup> The 18 off-road system communities are: Juneau, Sitka, Bethel, Dillingham, Nome, Barrow, Wrangell, Petersburg, McGrath, Iliamna, Unalakleet, Galena, Haines, Angoon, King Cove, Mekoryuk, Noatak, and Arctic Village. These communities were equally split between the three ADOTP&F regions (i.e., southeast, central, and northern) and the three basic size groupings of airports as defined in this report: 1) large or regional hub airports; 2) sub-regional airports, and 3) community airports.

communities in Alaska have annual enplanements at least eight times higher than the number of enplanements per capita in the comparison group and that freight per capita was at least 39 times higher than the next highest state. The study data also show that Alaska's off-road system communities depend on air travel in ways that are different from the Railbelt communities. For example, while off-road system and Railbelt households indicated they traveled on airplanes roughly the same number of times in the past twelve months, the reasons for those trips were very different. Railbelt households were more likely to travel for work-related reasons while off-road system households were traveling to obtain services that they could not acquire in their own communities (e.g., medical travel). The results of this part of the study are explained in the following subsections, which outline the results of the 600-household passenger survey, and provide the comparisons of travel and freight usage through case study comparisons.

### **3.2 Air Travel by Trip and Purpose**

To evaluate the importance of Alaska's airports to state residents, the study team conducted a telephone survey of 500 households in 18 selected communities throughout the state and 100 households within the Railbelt stretching from Fairbanks to the Kenai Peninsula. The telephone survey respondents were asked about their air travel by number of trips and purposes of their trips the last 12 months, as well as how much they will travel in the future.

Table 12 shows the differences in number of trips by air and trip purposes between the off-road and Railbelt communities. Table 13 shows the difference in number of travelers per households on all the trips combined between off-road and Railbelt communities. The tables indicate that households in off-road communities make about the same number of annual trips by air as households in the Railbelt, but overall more persons are traveling on all the trips combined in the off-road communities than in the Railbelt communities. For all the trips combined there were 24.3 trips per household in the off-road communities compared to 17.3 in the Railbelt communities

Even though they made about the same number of trips, the purposes of their airplane travel differed greatly. Most of the trips both groups of households made were in the category of work-related trips. Railbelt community households made more work-related trips than off-road community households during the last 12 months, but for all the other trip categories the off-road households had a higher average number of trips.

**Table 12. Mean number of Trips by Air During Past 12 Months, by Trip Purpose for Off-road and Railbelt Communities**

<b>Trip purpose</b>	<b>Off-road</b>	<b>Railbelt</b>
Work trips	5.2	8.6
Family and personal business trips	2.5	1.9
School or church trips	1.0	0.3
Social or vacation trips	2.4	1.4
Medical trips	1.3	0.3
<b>Total</b>	<b>12.5</b>	<b>12.6</b>

Source: Northern Economics, Inc. estimates, 2008.

The same is true for the number of passengers on the trips combined. There were more travelers on the work trips combined in the Railbelt communities than in the off-road communities. For all other trip categories the off-road community households had a higher mean number of travelers.

Households off the road system made more air trips to obtain services they could not acquire in their own communities; off-road households surveyed made more than four times as many medical trips as the Railbelt households. For a lot of the households off the road system, air travel is their only alternative to travel to and from their communities, while the households on the Railbelt have other alternatives for traveling in and out of their communities.



**Table 13. Mean number Trips per Household by Air Combined During Past 12 Months by Trip Purpose for Off-road and Railbelt Communities**

<b>Trip Purpose</b>	<b>Off-road</b>	<b>Railbelt</b>
Work trips	6.4	9.2
Family and personal business trips	6.6	3.6
School or church trips	2.3	0.4
Social or vacation trips	6.6	3.6
Medical trips	2.4	0.5
<b>Total</b>	<b>24.3</b>	<b>17.3</b>

Source: Northern Economics, Inc. estimates, 2008.

The 18 selected communities in the off-road system sample were divided equally among regional hubs, sub-regional hubs, and community airports in the three ADOT&PF regions: Southeast, Central, and Northern. A regional hub airport is larger and allows a community to provide goods and services more efficiently to a larger or broader area, and enhances its role as a government or economic center. Sub-regional hubs are typically smaller in population and have smaller economies than regional hubs with fewer routes connecting to outlying villages and fewer flights to major urban centers. Community airports are typically in the smallest communities, and these airports generally only support one local community. The increasing cost of air travel affects all Alaska residents, but especially those living in the smallest communities with lower incomes.

Table 14 shows the mean number of trips by trip purpose for the different airport type communities. Survey responses indicate that small community respondents made more than twice as many family or personal business-related and medical trips by air as the larger communities. They also made more family and personal business trips, but fewer trips that may be for more discretionary travel such as social or vacation.

**Table 14. Mean Number of Trips by Air During Past 12 Months by Trip Purpose and Airport Type**

Trip Purpose	Airport Type		
	Regional Hub	Sub-regional Hub	Community
Work trips	5.4	4.5	4.0
Family and personal business trips	2.4	2.2	4.5
School or church trips	1.0	1.1	0.7
Social or vacation trips	2.6	1.9	1.4
Medical trips	1.0	1.5	3.8
<b>Total</b>	<b>12.5</b>	<b>11.3</b>	<b>14.5</b>

Source: Northern Economics, Inc. estimates, 2008.

Table 15 shows the number of travelers on all air trips combined divided into trip purposes by airport type community. The number of travelers on the trips tells the same story as above. In total, there are more travelers on all trips combined in the households in small communities than in the larger communities. For medical trips the number of travelers is more than four times what it is in the regional hub communities, and more than twice as many as in the sub-regional hub communities. Typically the smaller communities have very limited medical service, if any at all, and residents have to travel for all medical services. As the size of the community grows, the number of medical services expands and residents do not need to travel as frequently.

In the smaller communities there were also more travelers on family and personal business trips; more than twice as many as in the larger communities and fewer travelers on social or vacation trips and on work trips than in the regional hub communities.

**Table 15. Mean Number of Travelers on all Trips by Air Combined During Past 12 Months by Trip Purpose and Airport Type**

Mean Number of travelers	Airport Type		
	Regional Hub	Sub-regional Hub	Community
Work trips	6.7	5.4	5.2
Family and personal business trips	6.1	5.3	13.5
School or church trips	2.5	1.5	1.4
Social or vacation trips	7.1	4.8	3.2
Medical trips	1.8	2.9	7.7
<b>Total</b>	<b>24.2</b>	<b>20.0</b>	<b>31.0</b>

Source: Northern Economics, Inc. estimates, 2008.

Off-road survey respondents emphasized the importance of air travel in Alaska. For 169 Alaska communities, especially in Alaska’s Interior, air travel is the only means of getting in and out of communities, which have no roads or ferry service. These 169 villages and towns rely on air travel for emergencies, bringing medical personnel and other

"How do [airports] affect my life? That question is good I guess, because they affect every single aspect of my life. We live off the road-system, we live in Galena and the air travel is everything to us, I mean when there is not barges available we are getting all the foods, the supplies. Air travel and the importance of it is just, it's just everything to us."

specialists to remote parts of Alaska, family visits, work-related travel, social and vacation trips, and transportation of food, materials, supplies, and mail.

The differences between the three ADOT&PF regions in travel modes and habits are shown in Table 16 and Table 17. Table 16 shows the number of air trips per household in the three different regions, while Table 17 shows the number of passengers traveling on the trips combined.

The Northern region households made the most trips by air, a total of 18.4 trips compared to 15 in the Central region and 10.7 in the Southeast region. The majority of the trips were work-related for all regions. The Northern region households made more work-related trips, school or church trips and medical trips than the two other regions. For the other categories, family and business trips, and social or vacation trips the central region households made the most trips.

**Table 16. Mean Number of Trips by Air During Past 12 Months by Trip Purpose and ADOT&PF Region**

Trip Purpose	ADOT&PF Region		
	Southeast	Central	Northern
Work trips	4.2	6.6	8.8
Family and personal business trips	2.0	4.0	3.8
School or church trips	1.0	0.5	1.3
Social or vacation trips	2.3	2.7	2.5
Medical trips	1.2	1.3	2.0
<b>Total</b>	<b>10.7</b>	<b>15.0</b>	<b>18.4</b>

Source: Northern Economics, Inc. estimates, 2008.

The highest mean number of passengers on air trips combined was for family and personal business trips. The Northern region had the highest mean number of travelers for all trip categories. The Southeast communities typically have more options for traveling in and out of their communities, such as the state ferry system, and are not as dependent on air travel as communities in the Northern region. The communities in the Northern region are all reliant on air travel and transportation of goods and supplies through all or parts of the year. None of the communities in the Northern region are on the ferry system. The Central region includes both communities on the ferry system and communities that can only be reached by air.

As seen in Table 17 there were more than twice as many travelers in all trip categories in the Northern region as in the Southeast region, 45.3 compared to 18.8. The Central region had a mean number of 31.2 passengers per household on all trips combined. Northern Region households had more than twice as many trips in every trip purpose category compared to Southeast households, with almost a 3:1 ratio in some cases. Northern Region households also had more trips than Central Region households across all trip purpose categories, with five times as many trips for school or church trips.

**Table 17. Mean number of Passengers on all Trips by Air Combined During Past 12 Months by Trip Purpose and ADOT&PF Region**

Mean Number of travelers	ADOT&PF Region		
	Southeast	Central	Northern
Work trips	5.0	8.4	11.5
Family and personal business trips	4.4	11.9	12.5
School or church trips	2.1	1.0	5.0
Social or vacation trips	5.5	7.3	11.5
Medical trips	1.8	2.7	4.8
<b>Total</b>	<b>18.8</b>	<b>31.2</b>	<b>45.3</b>

Source: Northern Economics, Inc. estimates, 2008.

### 3.3 Comparison with Western United States Airports

To illustrate the importance of Alaska’s airports in comparison to remote airports in other western U.S. states, the study team conducted interviews with airport managers, community officials and other leaders in communities in Alaska, Idaho, Montana, Oregon, and Wyoming. The team also made a comparison of enplanements and freight volumes per capita between the 18 case study airports in Alaska and the airports in the western U.S. A major focus of the case studies was contacting local experts that could provide local insights about the airport located in their community. Interviews were completed with airport managers, community officials, and other community managers.

**If we didn’t have the airport we wouldn’t have anything. The airport is a fact of life for living out here in the villages. The airport is our roads, highway, ocean, our lifeline.**

Several attempts were made to contact local experts from all the case study communities; thirteen of the eighteen communities were reached. Case study airports contacted include: Dillingham, Haines, Iliamna, Juneau, Petersburg, Sitka, Wrangell, Mekoryuk, Nome, Unalakleet, Galena, Noatak, and Arctic Village.

**In Galena, “the airport is a hub [for] five surrounding communities (Ruby, Huslia, Koyukuk, Unalakleet, Kaltag). They have smaller gravel strips that are daylight-only strips, so if they need to get out in case of an emergency they must use our airport. Also all of their freight, mail, and healthcare providers come through the Galena airport”.**

Topics covered during the interviews included:

- The role of the airport in the community

- The effect of the airport on the community's economic development
- The effect of the airport on the community's health and safety
- And the effect of the airport on nearby communities

### Alaska Airports

Air transportation is an efficient means for moving people, goods, and materials in and out of off-road communities in Alaska and it improves the quality of life in those communities. The case studies confirmed the results from the passenger survey that airports play a vital role for most Alaska off-road communities. Many off-road communities in Northern and Western Alaska would be completely isolated in the winter without their airports. In parts of Central and Southeast Alaska, ferry or road transportation may be alternatives, but communities still rely heavily on their airports for swift and reliable travel.

**In Wrangell, "it (the airport) has been very important. Even just the fact of getting people in and out of the community, like visitors, government, contractors, consultants, anyone that needs to travel to the community".**

The interviewees emphasized that without their airport, population and business activities would drop dramatically. Most community members contacted stated it would be difficult for their community to maintain itself without an airport.

**In Sitka, "Sitka only has 15 miles of road and limited ferry service, so the airport is our lifeline. Without the airport we would reduce by half (in population size)".**

The role of airports in rural Alaska was often compared to the role of highways and the road system in the lower 48 states. A large or hub airport allows a community to provide goods and services to an area much larger than itself, and even to maintain itself as a government or economic center.

**In Sitka "we are a regional healthcare center, so it helps us serve the surrounding communities and people that need healthcare. Sitka has two medevac companies that bring people in from outside the area and these same two medevac services can fly people down to Seattle too".**

For many communities in Alaska, having an airport helps them attract tourists. For example, many off-road communities attract visitors through having

charter services so visitors can fly in and go fishing or hunting. Airports also play a vital role for the fresh fish and seafood industry—without air service from rural communities, this industry would not be able to provide fresh fish and seafood to distant markets in Alaska or outside of the state.

Airports are essential for providing emergency response services in many rural Alaska communities. Airports are used to bring medical personnel like doctors or specialists to remote parts of Alaska, or to enable people to travel to a hospital or clinic to see a doctor or specialist. For larger communities, such as Juneau or Sitka, their airports allow them to provide medical services to a larger area.

**In Wrangell “health and safety is probably the main thing (provided to nearby communities). People living rurally can give us a call and we can send emergency help to them”.**

**In Iliamna, “they (people from nearby communities) come to pick up freight, so the airport is a hub for the seven Iliamna Lake villages”.**

The effect airports have on nearby communities (that do not have their own airport) is similar to the effect the airport has on the community in which it is located. It may act as a hub for people traveling from a regional or sub-regional hub airport to a community

airport, and it may provide access to goods and services that would otherwise not be provided. For example, an airport in a slightly larger off-road village may act as an economic center for providing freight to businesses and people located in nearby smaller villages or in non-incorporated parts of remote Alaska. Freight includes mail, food, and other essential supplies.

**In Nome, “No one in rural Alaska could maintain themselves without airports. I don’t think this question is a realistic question to us, because living out here without airports just couldn’t happen”.**

### Lower 48 Communities

With the purpose of better understanding the role of off-road Alaska airports, case studies of rural airports in the lower 48 states were completed. The results of these cases studies were compared to results from off-road Alaska airport case studies, allowing the identification of similarities and differences between the airports.

Rural airports contacted in the lower 48 states include Hailey, Idaho; Pendleton, Oregon; Glasgow, Montana; Wolf Point, Montana; Lander, Wyoming; and Riverton, Wyoming. These communities were chosen due to their remote locations and comparable size of operations to Alaska airports. Similar to Alaska off-road communities, the case studies of other rural U.S. airports involved interviews with airport managers, community officials, and other community managers.

Topics covered in the interviews with communities included:

- The role of the airport in the community
- The effect of the airport on the community's economic development
- The effect of the airport on the community's health and safety
- And the effect of the airport on nearby communities

In general, rural airports in the Lower 48 States are important to their communities but tend to not play as vital a role in terms of overall travel to and from the communities, or for the transportation of cargo, since travel can occur by road and sometimes rail to and from these rural communities. Instead, rural airports play other critical roles, attracting tourists or other visitors like government staff or business people. Having airports helps rural communities attract businesses or industries that would not consider locating in the rural community without the airport. The airports help communities function and provide services like FedEx and UPS.

**In Hailey, Idaho “we couldn’t attract the level of tourists and recreationists that [we] currently [do] (without our airport). Having the airport allows travelers to easily come to Hailey, so without the airport we would have a really difficult time getting people to visit especially in the wintertime”.**

Passenger travel to and from rural airports in Western States in the Lower 48 is often associated with a high number of tourists or recreational travel. Tourism is an important component of many rural Western economies, and having the convenience of airport access is important for attracting tourists that want convenient access to nearby tourist destinations or recreational pursuits.



Air service is important for the communities for the provision of medical and emergency services. Patients travel by air for medical services not available in their communities, and sometimes doctors or other medical specialists are under contract with a rural hospital to travel to the rural community and meet with patients at the local hospitals.

In the Western U.S. rural airports are critical for fighting fires, and especially forest fires.

**In Pendleton, Oregon “in the summertime the airport is critical for fighting forest fires. Pendleton is a staging point for these operations”.**

When asked whether or not they believe their community could maintain itself without the airport, rural

**In Riverton, Wyoming “we would get by, but it wouldn’t be as convenient for people to travel in, but we would likely still get through”.**

communities in the Lower 48 commented that their community could deal with not having an airport, but that it would make them much less attractive for people considering visiting the area or doing business in the area. The population would likely decline.

Not having an airport is an inconvenience for rural communities in the Lower 48, but it is something they can potentially work around.

For example, a few of the rural airports contacted in the Lower 48 had recently lost commercial air service (Glasgow and Wolf Point, Montana). Although they are expecting commercial air service to be restored in the next year as the air carrier Great Lakes Airlines begins service, they have had first-hand experience about what it is like to not have passenger air service in their local communities.

**In Riverton, Wyoming “it is the only airport in a larger area, so being ready for an emergency situation is really important. Also we are right next to an Indian Reservation, so having the airport allows us to respond quickly to any emergency they might have. Fortunately, we haven’t had fires near us recently, but the airport would likely be very important if there is one”.**

In Glasgow the community had a grant to provide bus service. The grant recently expired so the community helps coordinate car pools for people that need to travel for medical or other needs (Brandt, D., 2008).

Air freight transportation, including air mail, is a vital service provided through Alaska airports. Although many off-road communities in Alaska supplement their food supply with subsistence activities, they receive food and supplies from outside sources. Air freight and air mail shipments could include essential supplies such as food, medicine, or materials needed to survive in Alaska's cold and long winter season.

Off-road communities in Alaska depend on the aviation industry for movement of goods and people in ways that Lower 48 communities depend on a road system. The study compared enplanements and air freight deliveries per capita for the 18 case study communities in Alaska with Lower 48 case study communities. The average number of annual enplanements per capita for communities in Alaska was found to be 14.6 enplanements per person per year. This number is eight times higher than the number of enplanements per capita for even the next highest state (i.e., Idaho at 1.8 enplanements per year), and more than 30 times higher than the lowest comparison group (i.e., Montana at 0.5 enplanements per person per year) (see Table 18 and Figure 10).

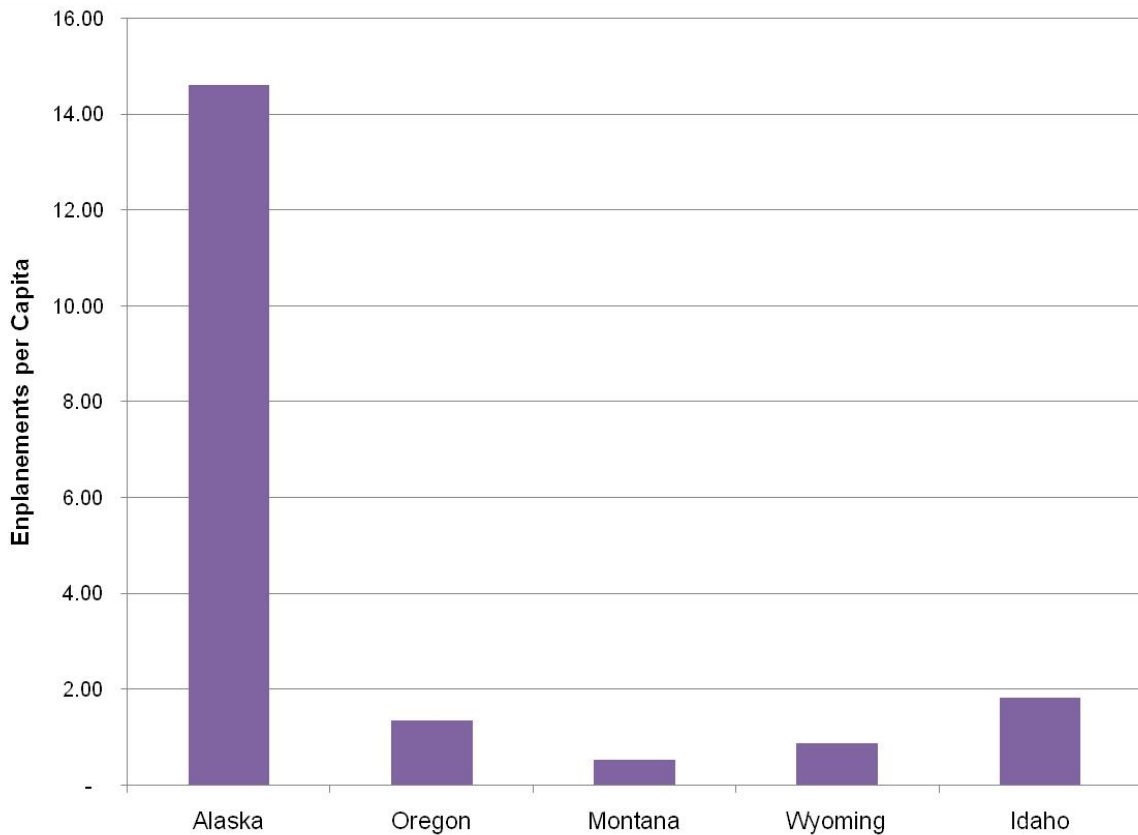
The difference in air freight pounds per capita is even more startling for Alaska as compared to the western U.S. The per capita air freight loads for communities in Alaska is 39 times higher than the air freight load for rural communities in the next highest surveyed state (see Table 18 and Figure 11). Alaska communities in the study averaged 1,096 pounds of air freight per capita in 2007 while rural communities in Oregon averaged 28 pounds. Rural communities in Montana averaged just 2 pounds of air freight per person in 2007.

For many communities in Alaska, almost all mail is delivered by air transport. In contrast, few rural communities in the Western U.S. have mail delivered by air service. A comparison of mail volumes delivered to Alaska communities and similar information for rural communities in the Western U.S. cannot be made, but information for Alaska is presented later in this section.

**Table 18. Community Enplanements and Air Freight per Capita, 2007**

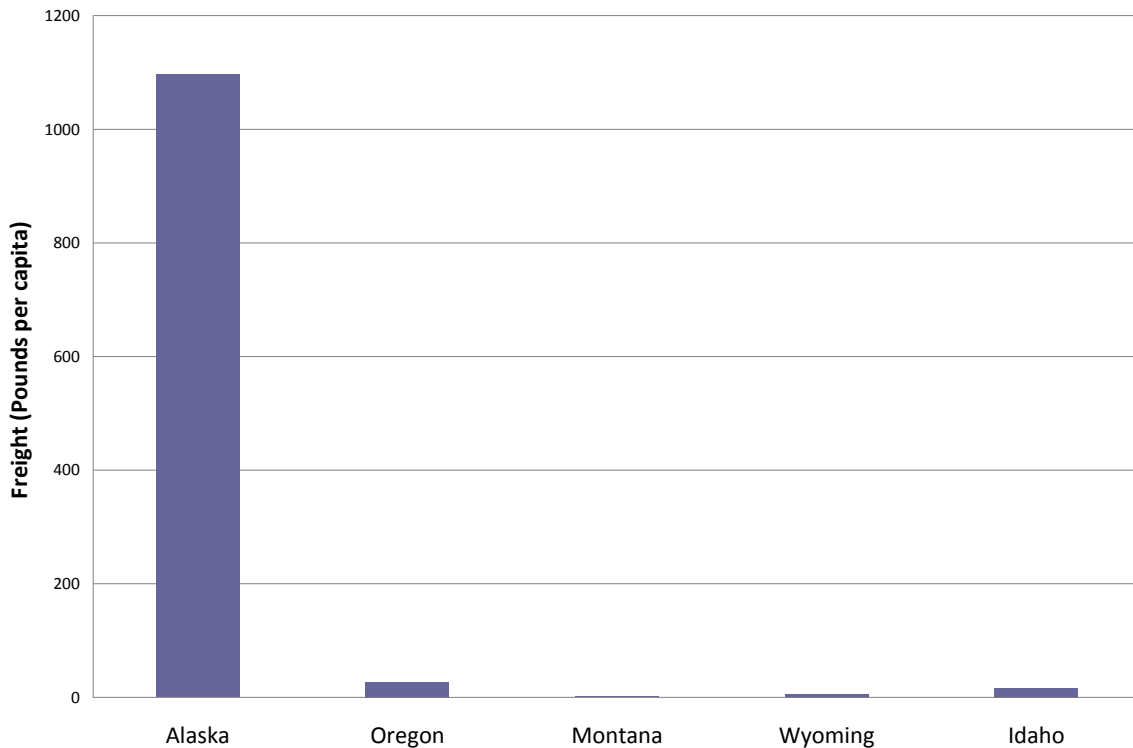
State	Per Capita Measure	
	Enplanements (Number)	Air Freight (Pounds)
Alaska	14.6	1,096
Oregon	1.4	28
Montana	0.5	2
Wyoming	0.9	6
Idaho	1.8	17

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008 and the U.S. Census, 2008.



**Figure 10. Comparison of Enplanements per Capita for Selected Community Airports, 2007**

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008 and the U.S. Census, 2008.

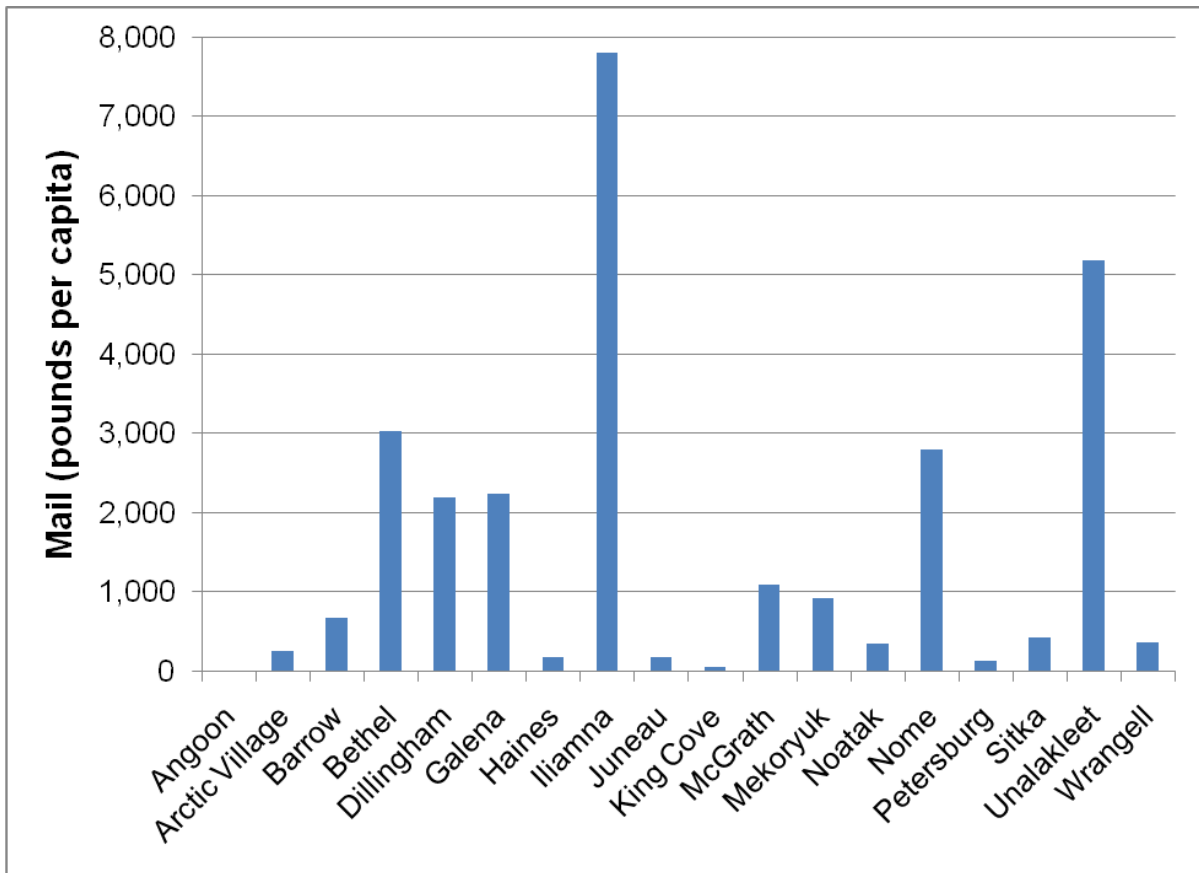


**Figure 11. 2007 Air Freight per Capita**

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008 and the U.S. Census, 2008.

As noted earlier, few of the rural communities in the western U.S. evaluated for this study receive air mail. Therefore, air mail data are only presented for Alaska communities. Figure 12 shows the volume of mail per capita that was delivered by air service in 2007 to each of the Alaska non-road communities. Iliamna has very high mail volumes per capita, due largely to the exploration activities associated with the Pebble copper-gold deposit, which is the largest such deposit in North America. The other airports with high volumes of mail are hubs for the U.S. Postal Service's mail program in Alaska.

Several of the communities in Southeast Alaska have very low levels of mail delivery by air because year-round ferry service is available to these communities. King Cove mail is transported by air to Cold Bay and then mostly shuttled by hovercraft to King Cove, with some mail moving by air service when the hovercraft is not available.



**Figure 12. 2007 Mail per Capita**

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008 and the U.S. Census, 2008.

#### 4.0 LOOKING AHEAD

In addition to obtaining information for determining the economic impact of the aviation industry on Alaska’s economy, the surveys and interviews conducted for this report attempted to identify the perceived challenges for the aviation industry from the perspective of those firms and individuals operating in the industry, and from the perspective of passengers and users of aviation services. The following subsections describe the major findings from these survey questions and interviews. Survey respondents were told their responses would be kept confidential.

##### 4.1 Future Challenges for the Aviation Industry

The survey asked firms, agencies, and organizations operating on airports to provide their views on challenges facing their business and aviation-related businesses in

Alaska in the coming years. Nearly half of the respondents (49 percent) identified fuel and energy prices as one of the main challenges. Fuel price was the concern most often mentioned, but was just one of several concerns for respondents. Increasing lease rates (32 percent), government restrictions/mandates (19 percent), finding and retaining quality labor (15 percent) and operating costs and general economic conditions were mentioned as challenges (both 10 percent). About a third of the respondents mentioned increasing lease rates in 2008 as a challenge to their business. A number of these respondents felt that Anchorage prices were being charged for smaller airport leases.

**“Nationwide economic slowdown. High price of energy costs....leading to increased airfare.... leading to decreased travel.”**

**“Increased lease rates from the state, increased property taxes and restrictions on lease usage, as well as higher energy prices for heating, electrical and operations.”**

The increasing cost of living and the current economic situation of the nation were also mentioned as challenges for the future. Respondents’ concern is that this situation may decrease money spent on travel, and increasing airfares would result in a smaller market base of both local travelers and tourists.

Finding and retaining quality labor is seen as a challenge by respondents. Some respondents linked this challenge to another issue: namely, migration out of the smaller communities to larger metropolitan areas.

**“...In addition, finding and retaining quality labor is and continues to be a concern that will likely increase if high costs force shifts in population to larger metropolitan areas.”**

Several respondents mentioned concerns about government interventions and policies, and other issues with municipal, state, and federal governments.

#### **4.2 Alaska Residents’ Concerns for the Future**

At the end of the passenger survey the respondents were asked about their air travel experiences; the effect of Alaska air travel and air travel facilities on the quality of life, and their concerns about the future for air travel in Alaska.

Most respondents were satisfied with air travel and the facilities in Alaska, and many praised newer upgrades to runways and airports. A few of the respondents were not satisfied with air travel and the facilities in Alaska finding them unsafe and unreliable.

The respondents emphasized the importance of air travel in off-road Alaska. For many communities it is the only means of passenger travel. These villages rely on air travel for medical services and emergencies, family visits, work-related travel, social and vacation trips, and transportation of supplies. Some communities do not offer medical services, and residents need to travel for all medical visits. This is especially common in small communities.

The greatest concern expressed by residents is the increasing cost of air travel. Many find it harder to travel as prices have increased more than income. Increasing air cargo rates also raise the cost of groceries and other supplies while increased baggage fees can

**“...[costs are] getting pretty outrageous not just from Kotzebue to Anchorage but also to the rural villages. I think that’s our greatest fear is cost. Thank you for doing the survey, thank you for serving the state. I hope we can all make a difference.”**

significantly affect travelers from off-road communities who generally take advantage of the lower prices in Alaska urban centers to stock up on food and supplies before traveling back home where costs are higher.

Residents are greatly concerned by the increasing cost of energy, particularly in those communities that rely upon air delivery of fuel supplies. Fuel must be flown in to these communities at much greater cost as they are not accessible by road, ferry, or barge. In addition, the older aircraft currently used for fuel deliveries are nearing the end of their useful life, and newer large fuel delivery aircraft cannot operate at airports with shorter runway lengths. Many of the smaller communities that rely on air transport for fuel have airports with shorter runway lengths. Using smaller aircraft, which can land at these shorter runways, for fuel deliveries increases fuel prices above their current levels.

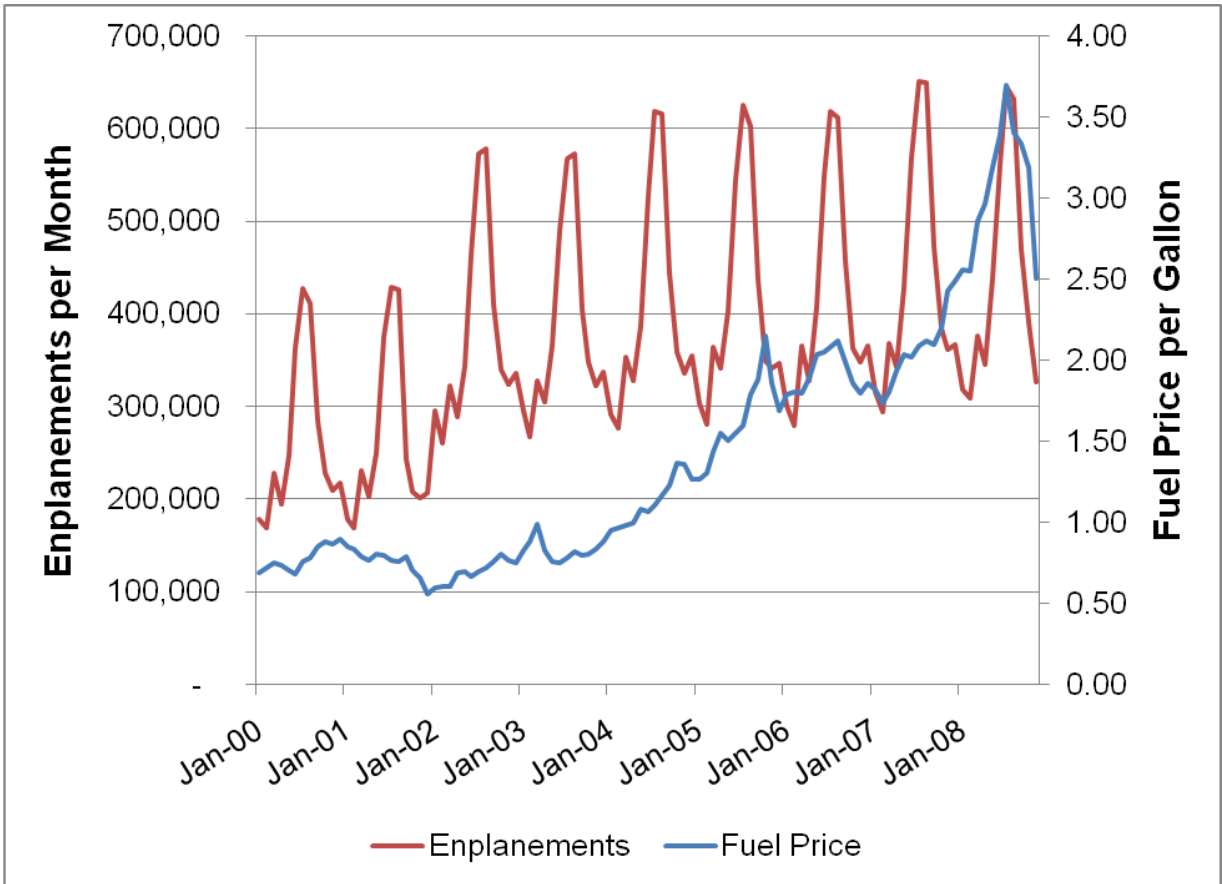
The recent 2008 spike in jet fuel and aviation gasoline has had an adverse impact on both aviation users and industry in Alaska. Figure 13 shows monthly passenger

enplanements at all Alaska airports from January 2000 through November 2008, compared to the average monthly fuel price reported by all domestic carriers. Fuel prices for Alaska carriers were only available through September so prices for all domestic carriers were used to have similar time periods for the both data series. Fuel prices in Alaska experienced a similar spike with the price exceeding \$4.00 in the summer of 2008.

The enplanement data used are for the large certificated air carriers subject to the Federal Aviation Act of 1958. As such, the enplanement data do not include a number of smaller air carriers and operators in Alaska and thus underestimate total enplanements in the state. However, the enplanement data are considered to be representative of overall trends in enplanements for the state.

Summer 2008 peak enplanements throughout Alaska were slightly less than what would have been expected in a normal year. Enplanements through November have continued to decline and are now at levels experienced in 2003-2004. Even though fuel prices have dropped in the last few months of 2008, they are still at historically high levels compared to fuel prices in recent years.

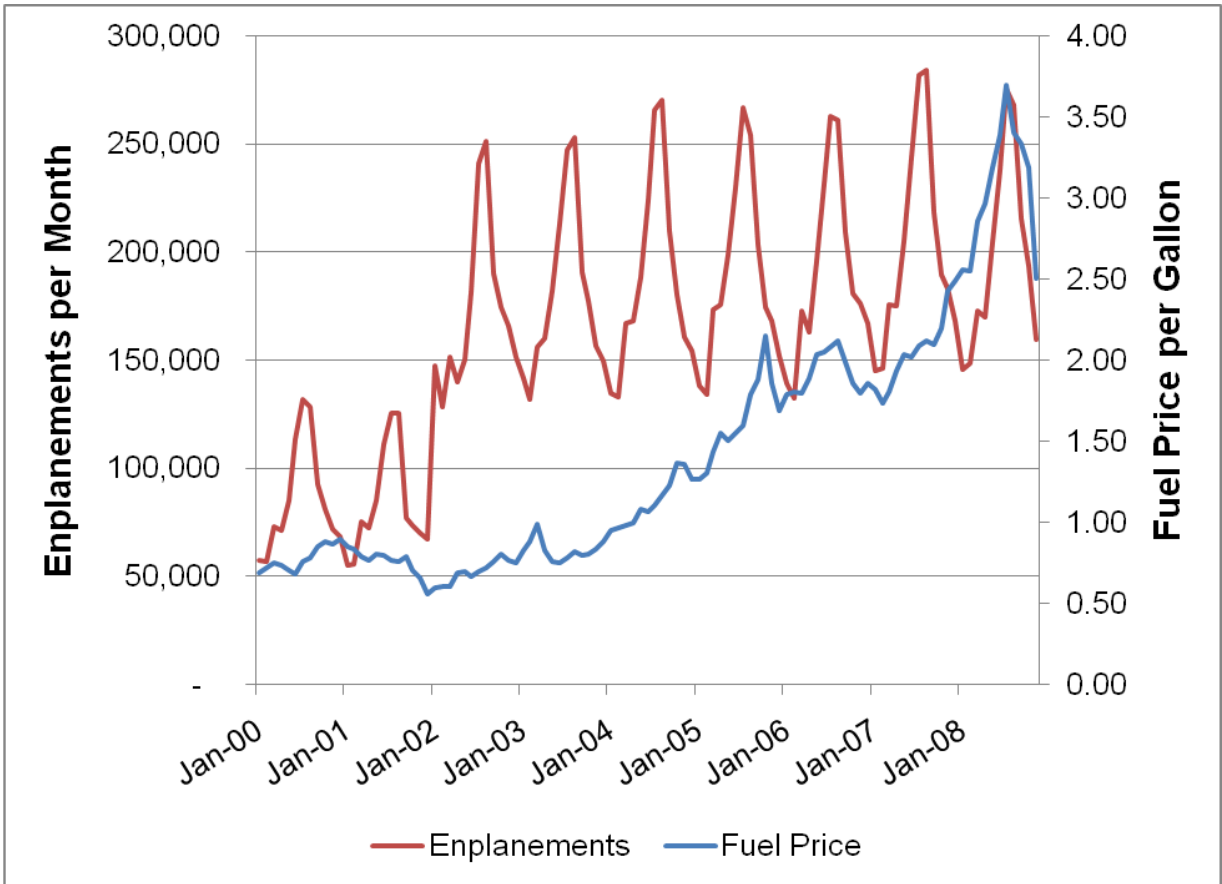




**Figure 13. Alaska Enplanements and Fuel Prices for All Domestic Carriers January 2000 – November 2008**

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008.  
 Note: Enplanement data are for large certificated air carriers subject to the Federal Aviation Act of 1958.

ANC and FAI are the two largest airports in the state and their levels of activity make it difficult to discern the trends at the other airports in the state when all airports are aggregated. Figure 14 shows the enplanements at all airports in the state, excluding ANC and FAI, with the same fuel price information as discussed above. Recent trends at the smaller airports in the state are very similar to the trends presented earlier with ANC and FAI included. In November 2008 enplanements dropped to about 2004 levels and looked poised to decline further, even though fuel prices had decreased.



**Figure 14. Alaska Enplanements, Excluding ANC and FAI, and Fuel Prices for All Domestic Carriers, January 2000 – November 2008**

Sources: Northern Economics, Inc. estimates derived from Bureau of Transportation Statistics, 2008.  
 Note: Enplanement data are for large certificated air carriers subject to the Federal Aviation Act of 1958.

Another concern respondents expressed is that the airlines will cut services for the smaller villages. This impact has been seen smaller communities in the Lower 48 states; however, in those communities there are alternative means of transportation for access and supplies. Respondents fear that the current economic situation will force airlines to make cuts, and that small villages will be the first to lose services. This could completely isolate communities with no other options for travel. A cut in services could lead to more monopoly situations with only one carrier and merging of airlines in their communities. Respondents from villages with limited air service are concerned that prices will rise further with no or less competition.

Several respondents mentioned that air travel is not always dependable in Alaska, due to weather, or sometimes just bad service from carriers. Some respondents mention that air carriers sometimes cancel without any apparent reason, and that makes it hard to plan for connecting flights etc. At other times, bad weather can delay or cancel parts or all of the travel.

Many respondents in the Southeast region mentioned that the ferry system is their preferred travel method. However, recent cuts in ferry services make air travel even more important.

Many travelers mentioned new TSA regulations as an annoyance with unreasonable security rules, and several pointed out that in Alaska the extra safety measures are unnecessary.

### **4.3 Future Travel**

Survey respondents were asked how much they think they will travel by air in the next 12 months and into the future. The respondents that answered they would travel less by air in the future were asked if they thought they would travel more using public transportation, more with private transportation, or travel less altogether.

Railbelt and off-road households indicated that they will travel less by air in the next 12 months (November 2008 through October 2009), with a reduction of about 5 to 10 percent in the total number of air trips. In the off-road communities about 14 percent will travel more and 18 percent will travel less, while in the Railbelt communities almost 15 percent will travel more and 20 percent will travel less.

Table 19 shows the differences in future travel between the three ADOT&PF regions and between the different airport type communities. A larger percentage of the respondents in the Central region answered they would travel less, 23 percent compared to just over 17 percent in the other regions. Only 10 percent in the Central region said they will travel more compared to 20 percent in the Northern region and 13 percent in the Southeast region. Sixty-two percent in the Northern region and 70

percent in the Southeast region said they will travel the same amount; in the Central region 66 percent will travel the same amount.

Within the off-road communities, just over 21 percent of the community airport respondents said they would travel less in the future, compared to 19 percent in the regional hubs and 11 percent in the sub-regional hubs. Twelve percent in the sub-regional hubs and 14 percent in the community airport communities will travel more. The remaining 77 percent in the sub-regional hubs, 67 percent in the regional hubs and 65 percent in the community airport communities will travel the same as before.

**Table 19. Future travel by ADOT&PF Regions and by Airport Type**

Travel by air - more or less next 12 months	ADOT&PF Region			Airport Type		
	Southeast	Central	Northern	Regional Hub	Sub- regional Hub	Community Airport
Travel more	13	11	20	14	12	14
Travel less	17	23	18	19	11	21
Travel same	70	66	62	67	77	65

Source: Northern Economics, Inc. estimates, 2008.

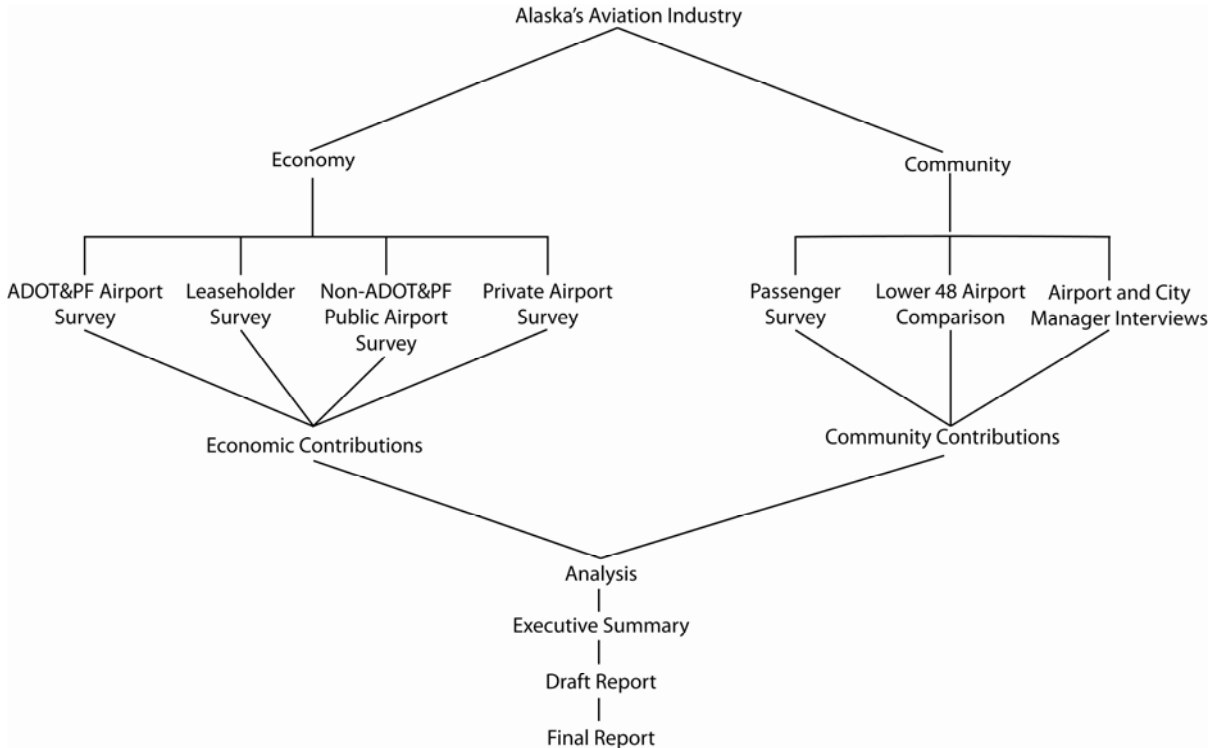
## 5.0 METHODOLOGY

This section describes the two major analytical techniques used to estimate the economic contribution of Alaska’s aviation industry. These include an extensive survey effort to obtain data that were not available from secondary sources, and the use of an input-output analysis to estimate the multiplier effects of the industry.

### 5.1 Survey Methodology

The study developed a comprehensive survey methodology to explore the various parts of Alaska’s aviation industry. In total, the study developed and administered five different surveys to gather the data required to assess the contribution of Alaska’s airports to the state’s economy and to provide insight on the importance of the state’s airport system to Alaska residents. The analysis surveyed public airports managed by ADOT&PF, public airports managed by entities other than ADOT&PF,

leaseholders located on ADOT&PF properties, managers/owners of private airports, and 600 Alaska residents who have flown within the last 12 months. Each of these surveys collected specific pieces of data required to generate both a quantitative and qualitative picture of the contribution of the State's airports to the economy and local communities. Figure 15 illustrates the role each survey plays in the overall scheme of the project.



**Figure 15. Surveys in the Context of the Project Outline**

The following sub-sections briefly describe each survey effort and provide, where applicable, examples of the survey instrument.

#### 5.1.1 Public Airports Managed by ADOT&PF

The study surveyed the ADOT&PF maintenance and operations (M&O) managers in each of ADOT&PF's three districts. The managers provided data on the more than

250 airports around the state that ADOT&PF manages.<sup>9</sup> For each airport, the survey asked managers about:

- The number of full-time and part-time positions filled in an average month in 2007
- The total amount spent on maintenance and operations in FY 2007
- The percentage of maintenance and operations expenditures that were spent in-state
- The total amount spent on capital expenditures in FY 2007

#### 5.1.2 Public Airports Managed by Entities Other than ADOT&PF

Using data from the Federal Aviation Administration, the study team identified nearly 140 public airports in the state that are operated by entities other than ADOT&PF. The non-ADOT&PF public airports range from dirt or field strips on public lands to large municipally-owned airports such as the Kenai Municipal Airport, Merrill Field, or Juneau International Airport. The study team called every airport manager or owner for whom we could find contact information and successfully interviewed 73 percent of the managers and owners targeted by the survey. The survey instrument asked each manager the same four questions that were asked of the ADOT&PF M&O managers about:

- The number of full-time and part-time positions filled in an average month in 2007
- The total amount spent on maintenance and operations in FY 2007
- The percentage of maintenance and operations expenditures that were spent in-state
- The total amount spent on capital expenditures in FY 2007

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<sup>9</sup> We also sent the same survey to Fairbanks International Airport as part of the International Airport System. FAI's data are included with the airports managed by ADOT&PF.

In addition, the survey asked each manager to estimate the total number of businesses operating on airport property and to estimate the number of businesses by business type. The instrument matched the business type categories to the categories established for the ADOT&PF Business/Leaseholder Survey.

### 5.1.3 ADOT&PF Business/Leaseholder Survey

The study conducted a mail/internet survey of ADOT&PF leaseholders. The team acquired ADOT&PF's leaseholder database from ADOT&PF. The team then removed all of the leases at Ted Stevens Anchorage International Airport (AIA) as the University of Alaska-Anchorage's Institute of Social and Economic Research (ISER) estimates the economic contribution of AIA on a yearly basis. From within the remaining leases, the study identified approximately 760 unique leaseholders or leaseholder contacts. We received a raw response rate of 105 responses. This amount equals a raw response rate of 13.8 percent while the functionally complete response rate was 10.2 percent. These response rates are at or above the normal response rates expected for a mail survey conducted without an incentive. The survey generated enough responses from the population to perform the analysis. However, the study team augmented and checked the survey results against publicly available information to validate the accuracy of the data we collected. For example, salary data were corroborated by comparing the respondents' NAICS codes against the BLS average salary data for companies in that same category in Alaska.

Each leaseholder received a letter and a follow-up postcard asking them to participate in an internet based survey. The survey asked the leaseholders to:

- Identify their business type within a pre-identified group of categories
- Estimate the number of full-time and part-time positions held in an average month in 2007 by direct and contract employees
- Estimate the amount spent on direct and contract employee salaries in 2007
- Estimate their capital and operating expenditures, including the in-state portion, in 2007

In addition, the survey asked respondents an open-ended question about the challenges they felt that their business and aviation-related business in general currently faced and would face in the future. The analysis uses the data from this particular survey to directly estimate the employment at state-owned and operated airports as well as to provide a vehicle for scaling up the business estimates from the private and non-ADOT&PF airport surveys into estimates of employment and payroll benefits.

5.1.4 Private Airports

The study team administered a survey instrument to owners and managers of Alaska’s private airports. The team used the same survey instrument and administration methodology as was used for the survey of non-ADOT&PF public airports (see Appendix B). The study team identified more than 300 private airports in the state that are recognized by the FAA. The team found contact information for 194 airports and successfully interviewed 119 airport managers and owners. This number is equivalent to 61 percent of the owners with valid telephone contact information.

5.1.5 Alaska Resident Passenger Survey

The study conducted a phone survey of 600 Alaska residents about their travel patterns in the last 12 months. The sample frame included 500 residents in 18 communities. The 18 communities were divided evenly between the three ADOT&PF regions (Northern, Central, and Southeast) as well as dividing between regional hub communities, sub-regional hub communities, and community airport communities (Table 20).

**Table 20. Selected Off-Road System Communities**

Airport Size	ADOT&PF Region		
	Southeast	Central	Northern
Regional Hub	Juneau, Sitka	Bethel, Dillingham	Nome, Barrow
Sub-Regional	Wrangell, Petersburg	McGrath, Iliamna	Unalakleet, Galena
Community	Haines, Angoon	King Cove, Mekoryuk	Noatak, Arctic Village

Source: Northern Economics, Inc. 2008.



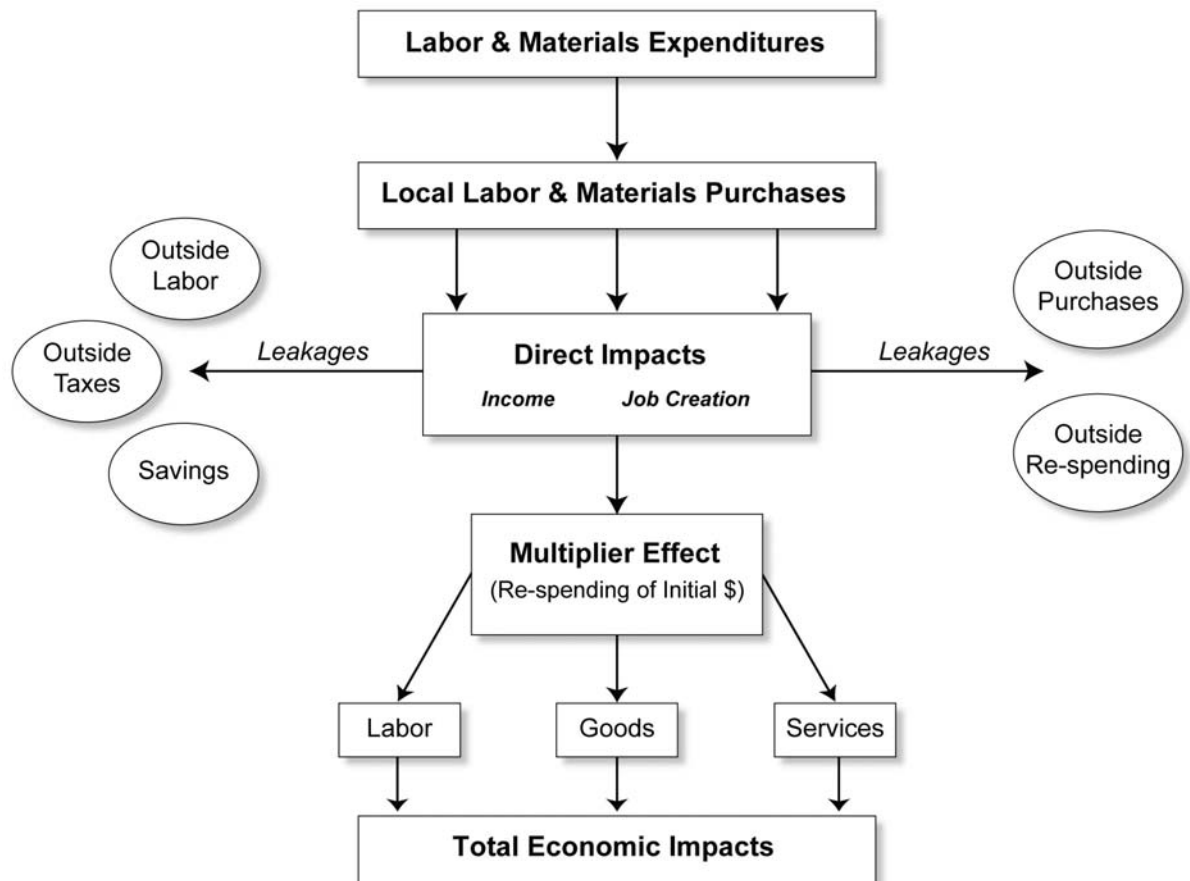
The sample frame also included 100 residents from the Railbelt communities stretching from Fairbanks to the Kenai Peninsula Borough. This extra sample was provided to allow a contrast between off-road and road-connected aviation system users. The resident passenger survey collected quantitative information on the number and type of trips and allowed residents to provide verbal comments on what the aviation system means to them and their communities. The comments were captured using a voice-mail system and are recorded on CD. See Section 3.0 for the summarized results of this survey. Appendix C contains the Passenger Opinion Survey Instrument.

## **5.2 Input-Output Analysis**

The economic impacts of the aviation industry to the state economy were quantified using input-output (I-O) analysis. I-O analysis is an economic tool used to measure the effects or impacts of an economic activity and is typically used to evaluate the benefits of a project, an entity, or an industry to the local, regional, and state economy. The analysis is based on a model of the inter-industry transactions within a community, a region, or a state. The I-O model is a matrix that tracks the dollar flow between the industries within a specified economic region of interest. The model can measure how many times a dollar is re-spent in, or “ripples” through, a community (or a larger economic region) before it leaks out.

The I-O model yields multipliers that are used to calculate the indirect and induced effects on jobs, income, and business sales/output generated per dollar of spending on various types of goods and services in the study area. To evaluate the economic effects to the state or a particular region, only the “local” (i.e., within the state or within the region) expenditures are used in the model; the rest are considered leakages. More leakages mean smaller multipliers; and the larger the local expenditures, the greater the multiplier effects. The multipliers for any given industry in any given location are unique, based on industry composition and geographic area.

IMPLAN software was used to develop the I-O model for the Alaska economy. IMPLAN is a widely used software package used for economic impact assessments, and Northern Economics has used the software for a decade in Alaska. IMPLAN uses specific data on what inputs are needed to produce the goods or services for over 500 industries. IMPLAN also has borough-specific data on what industries are available locally from which to purchase those inputs. The most recent IMPLAN data (2007 data) on multipliers for all the economic sectors in the Alaska I-O model were applied. Figure 1 illustrates conceptually how the total economic impacts or benefits are determined.



**Figure 16. Framework in Evaluating the Total Economic Effects of Local Spending**

The *aviation industry*, as defined in this statewide study, includes all the businesses and organizations located at public and private airports in Alaska. These entities, which include the airlines, airport concessions, air freight companies, airline support

services, and even government and civic organizations, are collectively referred to in this report as “on-site entities.” Not included in this study’s definition of the aviation industry are the other aviation-related businesses that are not located at airports (e.g., off-site air freight companies or off-site aircraft parts manufacturing companies).

The measure of the total economic contribution is comprised of the direct (or on-site) effects and the induced (or multiplier/off-site effects). The *direct effects* result from the aviation expenditures injected into the state economy through payroll, maintenance and operations, and capital spending by on-site entities. Not included in this study’s direct spending measure is the portion of expenditures by visitors and other persons traveling on air transportation services and through airports. The *induced effects*, which are also referred to as multiplier effects, result from the spin-off spending as aviation employees and other businesses that support the on-site entities buy goods and services from the local vendors.

Direct spending and direct employment by the aviation industry were estimated using primary data from a survey conducted by the study team, of all public airports managed by ADOT&PF, public airports managed by other entities, private airports throughout the state, and leaseholders located on ADOT&PF airports. Secondary data were also used to supplement information not available from the survey data such as wages and salaries by occupation.

The following is the list of data that were obtained from the survey and used as inputs to the I-O model:

- Direct full-time and part-time employment
- Total payroll
- Annual maintenance and operating (M&O) expenditures
- Share of maintenance and operating expenditures spent in-state
- Capital expenditures
- Share of capital expenditures spent in-state

Since a study of the economic impacts of the Anchorage International Airport is done every year and was already available, the survey effort did not include the Anchorage airport. The results of the latest study entitled, *Ted Stevens Anchorage International Airport: Economic Significance 2007*, conducted by the Institute of Social and Economic Research (ISER), were adopted in this statewide study.

The operating expenditures for ANC were obtained from the operating and financial summary information (*Form 127*) submitted to the Federal Aviation Administration as part of the Airport Financial Reporting Program; available at <http://cats.airports.faa.gov/reports/reports.cfm>.

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## **APPENDICES**

**APPENDIX A:**

**ADOT&PF Leaseholder Survey Instrument**



## 1. Introduction

Welcome to the 2008 Alaska Aviation System Plan Leaseholder Survey!

The Alaska Department of Transportation and Public Facilities and the Alaska Aviation Advisory Board have teamed together to update the Alaska Aviation System Plan. A key component of the updated plan will be a quantitative estimate of the state's public and private airports' combined contributions to Alaska's economy. In order to generate this estimate, Northern Economics, Inc. of Anchorage is conducting this web survey of businesses and government agencies with leases located at the state's DOT-operated airports. The survey should take approximately 15 minutes to complete. The answers to these questions will allow the consultant team to estimate the number of direct and indirect jobs attributable to businesses located at Alaska's airports.

All responses will be confidential and aggregated together.

If you have business operations or leases located at multiple airports, you can report for the entirety of your operations statewide. Simply make sure to select "Statewide Operations excl Anchorage" in Question 3. Please be sure to remove Anchorage from any statewide calculations as the University of Alaska Anchorage's Institute for Social and Economic Research (ISER) has already estimated AIA's contribution to the economy.

Thank you for participating in the survey. We appreciate your efforts on behalf of this project.

If you have questions or comments about the survey, please contact Jonathan King at Northern Economics (907-274-5600).

- \* 1. Please enter the Survey ID code contained in your invitation letter. (The code is located approximately half-way down the page and is a four or five digit number. e.g., 56789)**

SurveyID Code


- \* 2. Please enter the name of your business or government agency as it appears on your ADOT&PF lease. If you are unsure about how it appears on your lease, please enter the name your business or agency uses in its daily course of business (e.g., Northern Economics, Inc.)**

## 2. About Your Business, Organization, or Government Agency

In the following questions, please tell us about which operation(s) you are reporting for in this survey and what category best describes your lease operations.

**1. Please tell us the airport where this lease is located by selecting one airport from the drop-down box below. If you have leases or operations at more than one airport (excluding Anchorage International Airport) please select "Statewide Operations excl. AIA" from top of the list.**

Public Airport Name

Select the airport where the business is located  

**2. Please select the category that best describes the primary business type of your lease(s).**

- |  |  |
|--|--|
| <input type="radio"/> Federal Government Agency                      | <input type="radio"/> Passenger Concession: Rental Car |
| <input type="radio"/> State Government Agency                        | <input type="radio"/> Passenger Concession: Restaurant |
| <input type="radio"/> Aircraft Services (e.g., fueling, maintenance) | <input type="radio"/> Passenger Concession: Retail     |
| <input type="radio"/> Airline, Passenger                             | <input type="radio"/> Passenger Concession: Other      |
| <input type="radio"/> Airline, Cargo or Freight                      | <input type="radio"/> Other Not Specified              |
| <input type="radio"/> Passenger Concession: Non-Air Tour Operator    |  |

### 3. Direct Employment

In the following questions, please describe the average monthly number of direct-employment positions that you employed in 2007 by answering the following questions.

Please do not include contract positions or employees. They are covered in the next section of the survey.

**1. In 2007, what was the average monthly number of persons you employed directly in full-time positions in your business at this one airport? If you are reporting for multiple leases, please enter the total for all of your leases excluding Anchorage International Airport.**

Average Monthly Full-Time Positions in 2007

**2. In 2007, what was the average monthly number of persons you employed directly in part-time or seasonal positions in your business at this one airport? If you are reporting for multiple leases, please enter the total for all of your leases excluding Anchorage International Airport.**

Average Monthly Part-Time or Seasonal Positions in 2007

#### 4. Contract Hires

In the following questions, please describe the average monthly number of persons hired by you at your on-airport operation in contract positions in 2007 by answering the following questions. Contractors would be persons directly employed by another firm but working in your on-airport lease operations through a contract arrangement.

Please do not include individuals you have already reported under the direct hire section of the survey.

**1. In 2007, what was the average monthly number of contractors you employed in full-time positions in your business at this one airport? If you are reporting for multiple leases, please enter the total for all of your leases excluding Anchorage International Airport.**

Average Monthly Full-Time Contract Employees in 2007

**2. In 2007, what was the average monthly number of contractors you employed in part-time or seasonal positions in your business at this one airport? If you are reporting for multiple leases, please enter the total for all of your leases excluding Anchorage International Airport.**

Average Monthly Part-Time Contract Positions in 2007

## 5. Gross Expenditures and Sales

In the following questions please tell us about your expenditures for the lease operations you are reporting on in this survey.

THE SURVEY FORM DOES NOT ACCEPT COMMAS, \$ signs, OR % symbols. Please enter whole numbers only.

**1. Approximately how much money did your business at this airport spend in each of the following categories in 2007? If you are reporting for multiple leases or airports, please enter the total for all of your leases excluding Anchorage International Airport.**

**Please enter a positive number without a comma, decimal, or \$ sign.**

Direct Employment Salaries and Benefits	<input type="text"/>
Contract Employment Salaries and Benefits	<input type="text"/>
Capital Project Expenditures	<input type="text"/>
All Other Operating Expenditures	<input type="text"/>

**2. Approximately what percentage of your expenditures in the following categories was purchased from vendors located in the State of Alaska?**

**Please enter a positive number without the % sign.**

Capital Project Expenditures	<input type="text"/>
All Other Operating Expenditures	<input type="text"/>

**3. Approximately how much did this business or businesses generate in gross sales in 2007? Please exclude figures from Anchorage International Airport.**

**Please enter a positive number without a decimal, comma, or \$ sign.**

2007 Gross Sales	<input type="text"/>
------------------	----------------------

## 6. Future Challenges

**1. What do you see as the greatest challenges in the coming years for your business and for aviation-related businesses in Alaska? (e.g. finding quality labor, business conditions, changing fuel or input prices, etc.)**



## 7. Thank You

Thank you for completing this survey. All of the individual information you provided will be held in confidence by Northern Economics and will not be shared with anyone. We will aggregate the data across all of the survey respondents so that no single respondent is identifiable.

**APPENDIX B:**

**Private/Non-ADOT&PF Public Airport Survey**



**Private/Non-ADOT&PF Public Airport Survey Questions**

- Q1: In an average month in FY 2007, how many persons were employed, or contracted, in full-time jobs by this airport?
- Q2: In an average month in FY 2007, how many persons were employed, or contracted, in part-time or seasonal jobs by this airport?
- Q3: How much was spent on maintenance and operations at this airport in FY 2007?
- Q4: How much was spent on capital expenditures at this airport in FY 2007?
- Q5: Roughly what percentage of the expenditures in Question 3 were spent in-state?
- Q6: How many on-airport/tenant businesses operate at this airport (on airport land only)?
- Q7: How many of the on-airport businesses rent cars or trucks to passengers?
- Q8: How many of the on-airport businesses focus primarily on retail passenger concessions?
- Q9: How many of the on-airport businesses are restaurants?
- Q10: How many of the on-airport businesses are non-air tour operations?
- Q11: How many of the on-airport businesses focus primarily on other types of passenger concessions?
- Q12: How many of the on-airport businesses focus primarily on air freight, air cargo, or fuel cargo?
- Q13: How many of the on-airport businesses focus primarily on providing aircraft services (e.g., repair, refueling)?
- Q14: How many of the on-airport businesses are primarily passenger airlines?
- Q15: How many of the on-airport businesses provide primarily other types of services?

**APPENDIX C:**  
**Passenger Opinion Survey**

**ALASKA PUBLIC OPINION SURVEY**

**IVAN MOORE RESEARCH**

**TEL: 278-4600**

Hello, my name is \_\_\_\_\_ and I'm calling for Ivan Moore Research, an Alaska marketing research firm. We are conducting a public opinion survey today in communities around Alaska, that should take no more than a few minutes. We are not selling anything, just looking for your opinions. We randomly generated your phone number and don't know your name. Your opinions are important to us, and will be treated with complete confidentiality, and we'd very much appreciate your participation if that's OK with you. (PAUSE)

S1. Is this a residential telephone?  
IF "YES", CONTINUE...

S2. Have any members of your households travelled by air out of your community in the last 12 months?  
IF "YES", CONTINUE...

1. First of all, how many total people live in your household, including both adults and children?

NUMBER \_\_\_\_\_ 30-31-  
DON'T KNOW.....98  
REFUSED.....99

2A. OK, we'd like to add up the number of trips you or members of your household have taken by air in the last 12 months. Can you think back to last year and tell me how many trips that would be? Include not only trips that you made yourself, but also trips made by other household members.

TRIPS \_\_\_\_\_ 30-31-  
DON'T KNOW.....98  
REFUSED.....99

2B. I'd like you to now break this total number of trips down into five categories, as follows: Work related travel, Family or Personal business travel, School or Church related travel, Social or recreational vacation travel, and Medical. Of your \_\_\_\_\_ total trips your household made, how many were \_\_\_\_\_ (RUN THROUGH FIVE OPTIONS)?

Work related travel.....20-  
Family or Personal business.....21-  
School or Church.....22-  
Social or recreational vacation.....23-  
Medical.....24-

2C. OK, now I'd like you to consider each of these five categories and tell me how many people traveled in all the trips combined. First of all, your \_\_\_\_\_ travel. How many total people traveled on these trips?

Work related travel.....20-  
 Family or Personal business.....21-  
 School or Church.....22-  
 Social or recreational vacation.....23-  
 Medical.....24-

2D. How much do you think you will travel by air in the next 12 months and into the future? Do you think you will probably travel by air more, travel less by air, or do you think you will travel by air just the same?

TRAVEL MORE.....1  
 TRAVEL LESS.....2  
 TRAVEL THE SAME.....3  
 DON'T KNOW.....8  
 REFUSED.....9

103-

2E. (IF LESS, THEN ASK...) If you travel less by air, do you think you will travel more using public transportation like the Marine Highway System, do you think you will travel more using private transportation like snowmachine or private plane or boat, or do you think you will travel less altogether?

MORE PUBLIC.....1  
 MORE PRIVATE.....2  
 LESS ALTOGETHER.....3  
 DON'T KNOW.....8  
 REFUSED.....9

103-

3. GENDER...

MALE.....1  
 FEMALE.....2  
 REFUSED.....9

103-

OK, that completes the question part of this survey, but there's one more thing I'd like to ask you to do. This survey is being conducted for the State of Alaska Department of Transportation. They are gathering information about Alaskans' use of Alaska's airports, and are interested in knowing what your experiences have been.

We'd like you to tell us your air travel experiences and opinions. If it is okay with you, the way we'd like to do that is to put you into a voicemail recording system to record your answer. Your reasons, along with those of hundreds of other people, will be given to the State of Alaska to listen to, and will give them important guidance on how to improve airports and aviation service around the state. Your identity will be kept completely confidential. When you get into the voicemail, you will hear a detailed question. After you've left your answer on the voicemail, the survey will be done and you can just hang up. Is that OK with you? Alright, thanks so much for your help. Here we go...

"Hi, this is Ivan Moore. We'd like to know your thoughts on two aspects of air travel in Alaska. First, how do air travel and Alaska's air travel facilities affect the quality of your life and second what concerns do you have about the future of air travel in Alaska. You may be as detailed or as brief as you like. Ready? Here we go. Give us your answers after the beep."

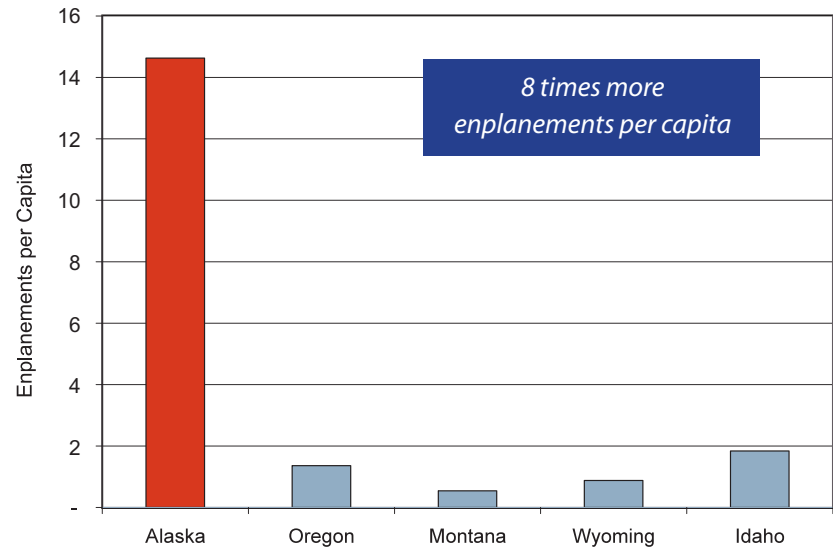
## **Appendix D Brochure**

## Alaska Aviation System Plan

Rural survey respondents emphasized the importance of air travel in rural Alaska. For many communities, especially in Alaska's West and Interior, air travel is the only means to get in and out of the communities; there are no roads or ferry service. These villages rely on air travel for emergencies, family visits, work-related travel, social and vacation trips, and transportation of supplies. Some communities do not offer medical services and residents need to travel for all medical visits. This situation is especially common in small communities and the survey data indicate that community airport respondents made more than twice as many family or personal business related and medical trips than those in larger communities.

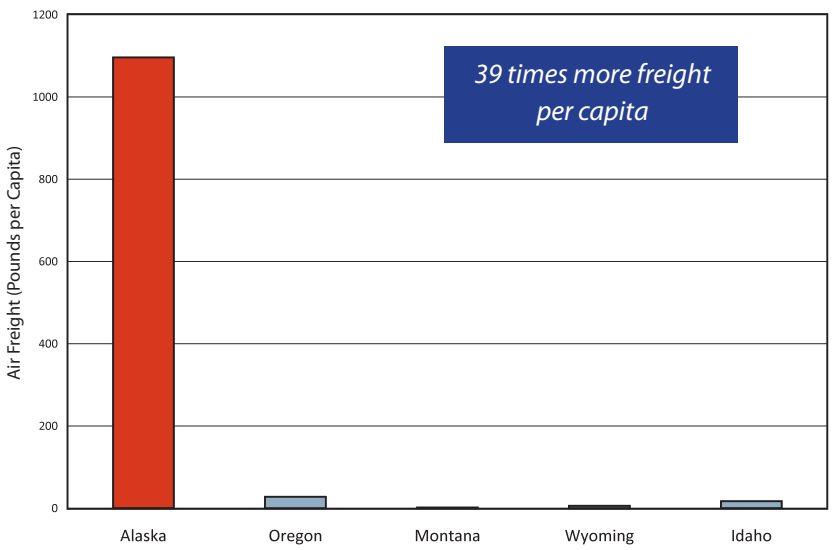
Some rural communities in Western and Interior Alaska would be completely isolated in the winter without their rural airports. In parts of Central and Southeast Alaska, ferry or road transportation may be alternatives, but communities still rely heavily on their airports for swift and reliable travel and cargo transport.

By contrast, rural communities in the Lower 48 more often commented that their community would be less attractive for people visiting or doing business but that they could likely live without an airport.



**Figure 4 Comparison of Enplanements per 1,000 Persons for Selected Community Airports, 2007**

Sources: Bureau of Transportation Statistics, 2008. U.S. Census Bureau, 2008.



**Figure 5 Air Freight per Capita for Selected Community Airports, 2007**

Sources: Bureau of Transportation Statistics, 2008. U.S. Census Bureau, 2008.



# The Economic Contribution of the Aviation Industry to Alaska's Economy

## Alaska Aviation System Plan

### Introduction

As an economic engine for the State of Alaska, Alaska's aviation industry contributes \$3.5 billion dollars and over 47,000 jobs to the state's economy. Aviation is a critical component of the state's economy and the vitality of Alaska's communities. The Alaska Department of Transportation & Public Facilities (ADOT&PF), Aviation Division recently embarked on updating the Alaska Aviation System Plan. An important part of that update is determining the value and contribution of Alaska's aviation industry to the state's economy. This determination was accomplished through an extensive survey effort targeting all public airports managed by ADOT&PF, public airports managed by other entities, private airports throughout the state, leaseholders located on ADOT&PF airports, and 600 residents in rural Alaska and the Railbelt who have flown within the last 12 months. The study included interviews with airport managers, city officials and other community leaders in 18 selected communities in Alaska, and four western states to evaluate the importance of airports to remote, rural communities.

### Contributions to Alaska's State Economy

Airports and aviation-related businesses create significant economic value within the State of Alaska. In fiscal year (FY) 2007, the Alaska aviation industry contributed \$3.5 billion to the state economy and supported over 47,000 jobs statewide. The aviation industry contributed about 8 percent of Alaska's gross state product of \$44 billion in 2007 and supported almost 10 percent of 2007 statewide annual average employment. If compared to the primary economic sectors the aviation industry would be the fifth largest employer in Alaska.



### Economic Activity

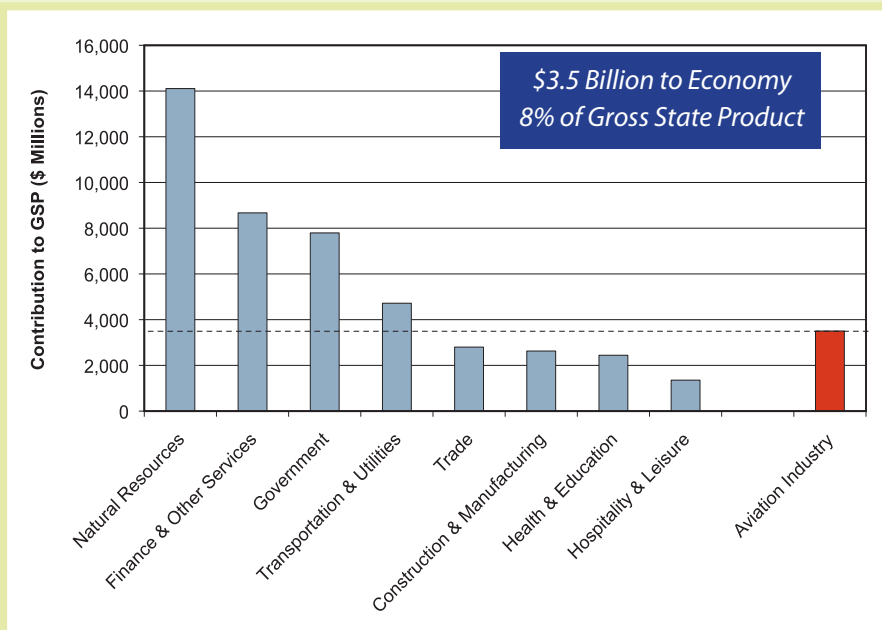
The aviation industry contributes to Alaska's economy by supporting local businesses and employing citizens in year round operations. The value of the economic activity generated by the operation of the airports, the businesses, and agencies operating within the airport premises in FY2007 amounted to more than \$2.1 billion.

This direct spending by airports, businesses located on the airports and their employees in turn creates additional employment and income in other sectors of the economy. The economic contribution of the aviation industry through those secondary (multiplier) expenditures is estimated to be \$1.4 billion in FY2007 resulting in a total of \$3.5 billion in economic activity. (See Figure 1)

This report was prepared by Northern Economics, Inc. For more information please call ADOT&PF Aviation Division at (907) 267-0730. [www.dot.state.ak.us](http://www.dot.state.ak.us)

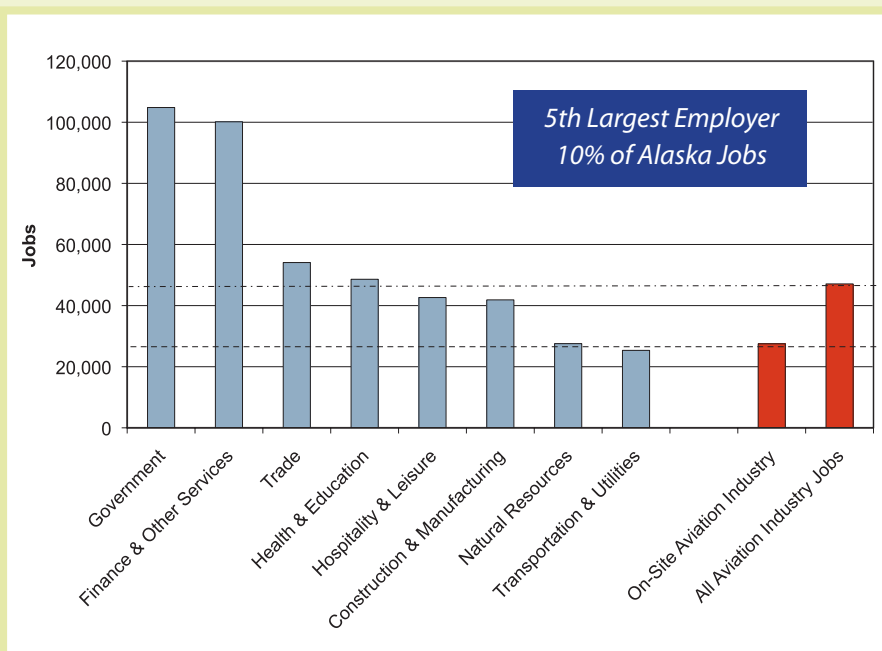


This Alaska Aviation System Plan was conducted in accordance with FAA Advisory Circular 150/5070-7: The Airport System Planning Process. The economic analysis described in this brochure was conducted pursuant to Section 101.a(3) of that document.



**Figure 1** The Aviation Industry's Contribution to GSP Compared to Primary Economic Sectors, 2007

Source: Northern Economics estimates, 2008



**Figure 2** The Aviation Industry's Contribution to Available Jobs Compared to Primary Economic Sectors, 2007

Source: Northern Economics estimates, 2008

**Employment**

In 2007, the aviation industry provided over 47,000 on-site and off-site jobs across the state. The highest concentration of jobs are located at the international airports in Anchorage, Fairbanks, and the state's regional hubs. These jobs include more than 27,000 on-site jobs and nearly 20,000 off-site jobs created by this industry. (See Figure 2) The on-site jobs include more than 2,000 full-time and part-time jobs directly related to the operation and maintenance of public and private airports in Alaska as well as more than 25,000 jobs created by on-site businesses, organizations, and government agencies operating out of the airports. These businesses include commercial air carriers, fixed-base operators, fuel distributors, caterers, air taxis, charter operations, general aviation services, state agencies and other public agencies. The number of on-site jobs underscores the value of airport infrastructure in creating jobs in various businesses and communities across the state.

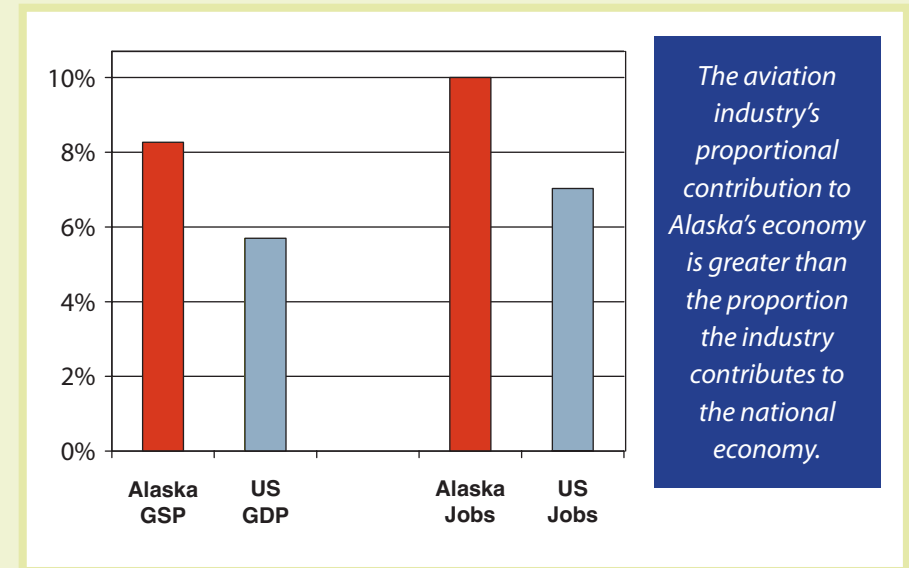
The nearly 20,000 off-site jobs are created when goods and services are purchased from other businesses in

the state to support the operations and maintenance of airports and businesses located at airports, and when on-site employees spend their wages on goods and services within the state.

Over 47,000 jobs generated by the firms, agencies and businesses that make up the industry provided approximately 10 percent of the total jobs in Alaska's economy in 2007, including the self-employed and the military. The aggregate aviation industry was smaller than the government, finance and other services, trade, and health & education sectors, but larger than the hospitality & leisure, construction & manufacturing, natural resources, and transportation & utilities sectors.

Figure 3 shows that the aviation industry's proportional contribution to Alaska's economy is greater than the proportion the industry contributes to the national economy. In actuality, the figure underestimates the relative importance of the aviation industry to Alaska as the true difference is even greater than shown; the national data include the expenditure of visitors and this study

**Figure 3** Economy and Jobs: Importance in Alaska vs. the US



The aviation industry's proportional contribution to Alaska's economy is greater than the proportion the industry contributes to the national economy.

does not include this factor in the estimates for Alaska's economy.

**Importance of Alaska's Airports to Alaska's Communities**

Telephone surveys of 500 households were conducted in 18 selected communities throughout the state, 100 households within the Railbelt stretching from Fairbanks to the Kenai Peninsula, and also

with airport managers, community officials, and other leaders in these communities to evaluate the importance of Alaska's airports to state residents.

The study compared the importance of Alaska's airports to remote airports in other rural, western states. Interviews were made with airport managers and community officials for airports in Idaho, Montana, Oregon and Wyoming, for a comparison of enplanements and freight volumes per capita for the 18 airports in Alaska and the airports in the western U.S. Figures 4 and 5 show that enplanements and air freight loads are much higher per capita in Alaska than for airports in the western U.S. Enplanements for Alaska communities can exceed enplanements of other rural U.S. communities by eight times per person while air freight loads can be more than 39 times higher per person.

**EMPLOYMENT**

*Jobs related to aviation:*

- 2,000 jobs** to operate airports statewide, full and part time
- 25,000 jobs** due to on-site business, organizations and agencies
- 20,000 jobs** created due to multiplier effect from aviation jobs
- 47,000 total jobs** attributed to aviation in Alaska in 2007

This represents about **10% of all jobs** in Alaska



*"If we didn't have the airport we wouldn't have anything. The airport is a fact of life for living out here in the villages. The airport is our roads, highway, ocean, our lifeline."*