Economic Impacts of Pittsburgh International Airport and Allegheny County Airport

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Chapter One
Findings Summary

In 2008, the Allegheny County Airport Authority (ACAA) conducted an Airport Economic Impact Study to estimate the economic benefits generated by on-airport businesses and visitors to the Pittsburgh region.

Pittsburgh International Airport and Allegheny County Airport serve as focal points for air transportation in a multi-state area. In addition to being major transportation facilities, Pittsburgh International Airport and Allegheny County Airport also serve as primary catalysts for economic growth in the region. The Airport Economic Impact Study demonstrates the important roles played by both Pittsburgh International Airport and Allegheny County Airport in providing and supporting vital air transportation links, economic development, and jobs in the Pittsburgh region.

Pittsburgh International Airport

Pittsburgh International Airport is a global gateway serving western Pennsylvania and portions of eastern Ohio, northern West Virginia, and western Maryland. In 2007, the airport transported nearly 9.6 million passengers and accommodated over 84,500 metric tons of cargo to meet the needs of regional businesses and consumers.

The ACAA sponsored a study to quantify the economic benefits generated by the Airport. First-round impacts, which are those supported on-airport and by visitor expenditures, generated 41,300 jobs earning $1.18 billion, and generating $3.0 billion in economic output[1]. Second-round activity, which is generated as on-airport impacts circulate through the regional economy, were estimated at 29,900 jobs, $948.9 million in payroll, and $2.72 billion in output. When all 2007 impacts are summed, Pittsburgh International Airport was responsible for:

- Supporting approximately 71,160 jobs
- Generating nearly $2.13 billion in annual payroll
- Producing over $5.73 billion in annual economic activity

The current economic impact includes expenditures by over 100 on-airport businesses and government agencies and over 1.7 million visitors to the Pittsburgh region that arrive via Pittsburgh International Airport, as well as the multiplier effect associated with this spending. Other important findings from this analysis are highlighted below:

- Approximately 71,160 residents of the Pittsburgh region are employed, directly or indirectly, as a result of Pittsburgh International Airport. These employees represent 5.9 percent of all the employees in the Pittsburgh Metropolitan Statistical Area (MSA).

[1] Findings combine aviation related impacts identified in Chapter Three of this report and non-aviation impacts identified in Chapter Four.

- Pittsburgh International Airport's total economic impact comprises 5.1 percent of the estimated Gross Metropolitan Product (GMP) for the Pittsburgh MSA.

- The aggregate of all on-airport jobs means Pittsburgh International Airport has the 5th highest number of employees in the Pittsburgh MSA.

Allegheny County Airport

Allegheny County Airport is a general aviation (GA) reliever airport. The facility serves primarily corporate aircraft and medium to light personal aircraft. The economic benefits generated by Allegheny County Airport include:

- Approximately 1,690 jobs
- $66.6 million in annual payroll
- $322.9 million in annual economic activity

In 2007, the aviation-related businesses, government agencies and construction activity on the Airport supported 592 employees. These businesses' first-round employment, annual payroll, and annual output impacts were derived from survey data. First-round annual output from all on-airport aviation-related tenants is estimated at $152.0 million annually. The estimated direct annual payroll of these tenants is nearly $30.0 million. Operational data indicated that nearly 37,350 visitors used the Airport. This visitor-related annual output supported an additional 204 full-time equivalent employees earning $4.5 million annually. First-round annual output from general aviation visitors is estimated at $9.0 million.

For 2007, the total annual output (including first-round and second-round impacts) generated by all on-airport tenants and general aviation visitors to Allegheny County Airport was approximately $322.9 million. Total full-time equivalent employment related to airport tenants and general aviation visitors, including all second round impacts, is estimated at approximately 1,690 persons, with a total annual payroll (first-round and second-round) of approximately $66.6 million associated with these jobs.

Combined Economic Impact of Both Airports

Pittsburgh International Airport and Allegheny County Airport, when combined, generate billions of dollars of economic activity and create thousands of quality jobs in Pittsburgh, as shown in **Table 1-1**. When all factors are combined, the airports:

- Support approximately 72,850 jobs
- Generate nearly $2.2 billion in payroll
- Produce nearly $6.1 billion in economic activity
- Serve as vital transportation links to the business community

Table 1-1
Combined Economic Impacts of Pittsburgh International and Allegheny County Airports

Airport	Employment*	Payroll	Output
Pittsburgh International	71,160	$2.13 billion	$5.73 billion
Allegheny County	1,690	$66.6 million	$322.9 million
ACAA Airports Total	**72,850**	**$2.2 billion**	**$6.1 billion**

Source: Wilbur Smith Associates. *Full-time equivalent.

A survey of regional businesses indicates that many depend on commercial air service and general aviation airports in metropolitan Pittsburgh. Without access to the ACAA airports, companies would cut employment or possibly relocate outside the area. It is estimated that at least 354,500 jobs in the Pittsburgh region are jobs that are in some way reliant on the air transportation services provided by ACAA airports.

Chapter Two
Introduction and Approach

The Allegheny County Airport Authority (ACAA) Airport Economic Impact Study estimates the economic benefits generated by on-airport businesses and agencies and by the use of airports by visitors to metropolitan Pittsburgh. This study examines the benefits of Pittsburgh International Airport and Allegheny County Airport. This report summarizes the economic impact analysis and highlights the substantial economic benefit these two ACAA-operated airports provide to the region.

Chapter Two contains the overview of the market area of ACAA airports and a description of the study's methodology. Included are a socioeconomic analysis of metropolitan Pittsburgh, details of the data collection efforts, and a description of the impact modeling process.

Chapter Three provides the details and findings of the Economic Impact of ACAA airports. These findings include:

- Airport Overviews
- Economic Impacts of Pittsburgh's Airports
- Local Tax Benefits
- Business Use of Commercial Service Airports
- Qualitative Benefits

Both airports in the study serve a variety of area companies in addition to on-airport tenants and the visitor industry. Nearly all companies in the metropolitan area rely on airports for the transport of people and materials. Quantifying any airport's contribution to the growth of non-aviation businesses is less precise than measuring on-airport economic activity. Nevertheless, when the benefits of an airport system are reviewed, these additional economic contributions must also be considered. As businesses respond to the cost savings and accessibility benefits of air transportation, they become more competitive and the benefits circulate throughout the entire economy.

The direct economic effects of air transportation include improved access to labor and specialized skills; area-wide business attraction, expansion, and retention; reduced logistics costs; and greater tourism activity. Almost every employment sector in the region, even those that never directly use the airports or their various services, obtain some economic benefit from the daily operation of Pittsburgh International Airport and Allegheny County Airport.

Pittsburgh Market Area Overview

The primary market area for Pittsburgh International Airport consists of the Pittsburgh Metropolitan Statistical Area (MSA). The secondary market area includes outlying counties in western Pennsylvania, eastern Ohio, northern West Virginia, and western Maryland that provide significant levels of passenger traffic for Pittsburgh International Airport. Passenger surveys conducted at Pittsburgh International during June 2008 provide the data necessary to identify these market areas.

Primary Market

The airport's primary market area is the region from which the majority of air passengers and air cargo originate and is the geographic focus of the economic impact study. Pittsburgh International Airport's primary market area, illustrated in **Exhibit 2-1,** includes the following seven counties within the Pittsburgh metropolitan statistical area (MSA) in Southwestern Pennsylvania: Allegheny County, Armstrong County, Beaver County, Butler County, Fayette County, Washington County, and Westmoreland County.

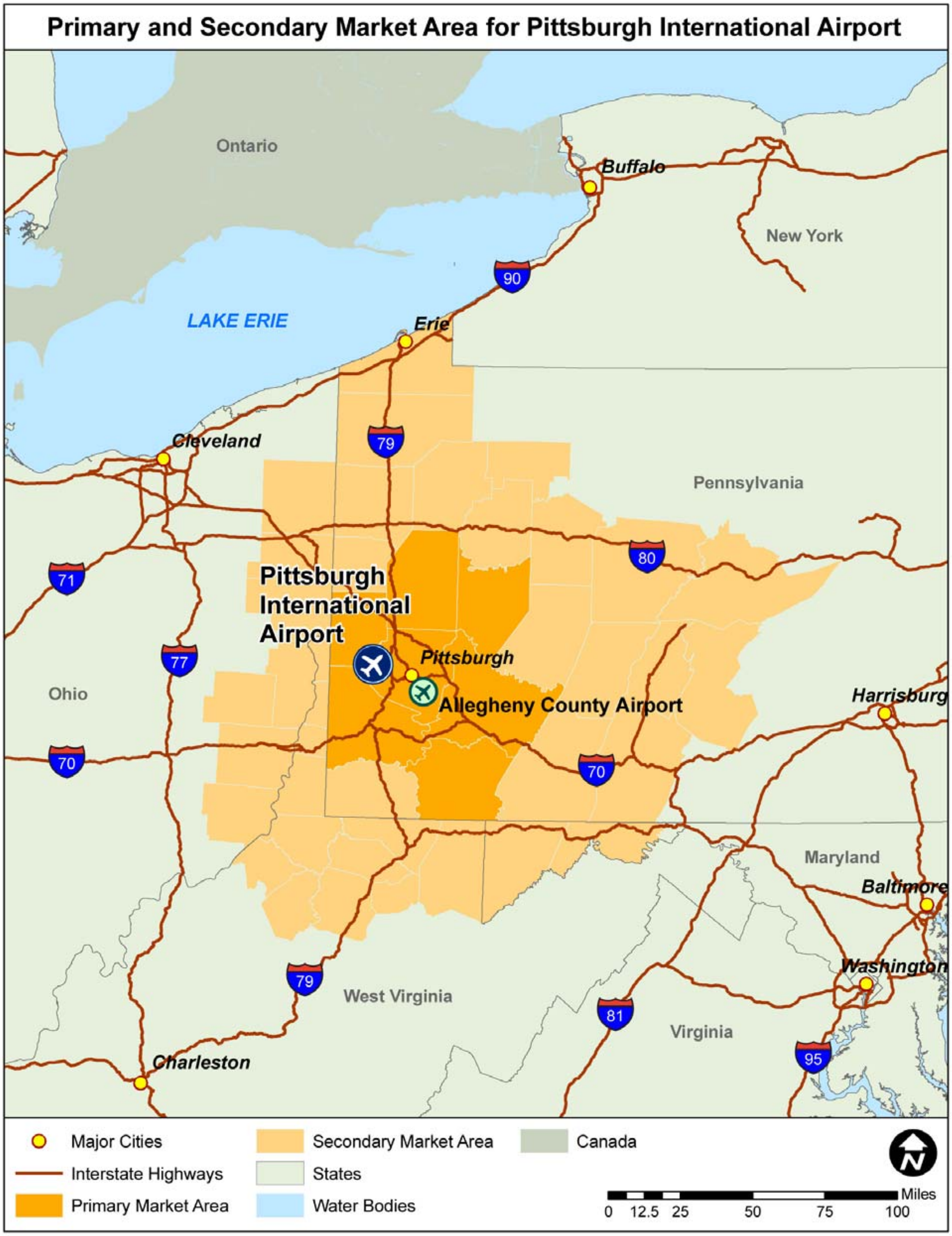
The primary market area is the only market area for Allegheny County Airport. This is due to the airport's primary role as a corporate aviation/general aviation facility that serves the Pittsburgh area, as well as a number of other general aviation airports in the region that compete with Allegheny County Airport.

Secondary Market

The secondary market area is a 36-county region surrounding the primary market area for Pittsburgh International Airport. The boundaries of this region extend into northern and central Pennsylvania, eastern Ohio, and northern West Virginia. Exhibit 2-1 shows the secondary market area and primary market area. Consumers who live or work in the outlying counties in the secondary market area may have a choice of airports to use for their air travel or shipping needs. Smaller regional and international airports in the secondary market compete with each other, Pittsburgh, and airports outside the secondary market for these consumers. Examples of these smaller commercial service airports include Erie International Airport, John Murtha Johnstown-Cambria County Airport, Altoona-Blair County Airport, and Morgantown Municipal Airport.

Consumers in the secondary market will choose which airport to use based on airfare costs and distance from the airport. Business travelers are generally less "fare sensitive" and will likely choose an airport closer to work or home due to convenience. Non-business travelers, however, are more "fare sensitive" and may be willing to drive a greater distance to an airport via automobile to save airfare costs. This is particularly true for airports, such as Pittsburgh International, that have low-cost carriers such as Southwest Airlines, AirTran Airways, JetBlue Airways, and USA3000. Automobile license plate surveys in airport parking lots have confirmed the "drive-fly" phenomenon for airports with low-cost carriers. Such surveys at

Exhibit 2-1


Primary and Secondary Market Area for Pittsburgh International Airport
Ontario
Buffalo
New York
90
LAKE ERIE
Erie
79
Cleveland
Pennsylvania
80
71
Pittsburgh International Airport
77
Pittsburgh
Ohio
Allegheny County Airport
Harrisburg
70
70
Maryland
Baltimore
Washington
79
West Virginia
81
Virginia
95
Charleston
Major Cities
Interstate Highways
Primary Market Area
Secondary Market Area
States
Water Bodies
Canada
Miles
0 12.5 25 50 75 100

airports served by Southwest Airlines have shown that passengers travel from as far away as three hours via automobile to begin the air portion of their trip. This is known as the "Southwest effect." Pittsburgh International Airport may be drawing passengers from such distances, as it is served by four low-cost carriers: AirTran Airways (began service in 2000), USA3000 (began service in 2003), Southwest Airlines (began service in 2005), and JetBlue Airways (began service in 2006).

Study Approach

Aviation is an important factor influencing the continued growth and development of the Pittsburgh region. The regional economic impact, or contribution, of Pittsburgh International and Allegheny County Airports is quantified in this study in terms of employment, annual payroll, and annual output. The impacts generated by three aviation-dependent groups were measured as part of this study. These aviation-dependent groups are:

- On-airport tenants
- Visitors traveling to the Pittsburgh region via commercial service airlines
- Visitors traveling to the Pittsburgh region via general aviation aircraft

On-airport tenants and visitors who arrive in the Pittsburgh region via the airports are directly responsible for a significant percentage of the economic activity associated with the study airports. Through a separate survey of more than 1,000 area businesses, the study also identified the importance of aviation to the region's employers.

The following two sections describe the study approach.

The Economic Modeling Process

This study uses three categories to assess economic benefits: first-round impacts, second-round impacts and total impacts.

1. **First-Round Impacts** – First-round impacts are the initial point where monetary expenditures occur. In the case of an airport, money initially flows into the regional economy by on-airport businesses (direct impacts) and by visitors who arrive by air (indirect impacts). Direct impacts are economic benefits generated by companies, businesses, and government entities located directly on an airport[2]. These businesses provide aviation services at the airport and expend money in the regional economy for labor, products and services. These businesses include airlines, concessionaires, rental car companies, food and beverage service, government agencies, fixed base operators (FBOs), and others.

[2] Some aviation-related facilities are located off-airport but were included in this analysis.

Spending by commercial service visitors who arrive in the region via an airport comprise indirect impacts. Indirect impacts are typically generated off-airport in service-related industries such as hotels/motels, restaurants, transportation, retail, recreation and entertainment. Visitors arriving via general aviation aircraft are also included.

Direct and indirect impacts in this study were identified through survey efforts. In addition, all direct and indirect impacts associated with the airports are measured by employment, annual payroll, and annual output. This study's specific survey efforts are discussed in a subsequent section of this report.

2. **Second-Round Impacts** – Second-round impacts are the result of the re-circulation, or re-spending, of direct and indirect first-round impacts within the regional economy. This re-circulation of impacts is frequently referred to as the multiplier effect. For example, as an airport employee spends his or her income for housing, food, or services, that initial spending then circulates through the economy. Similarly, as on-airport businesses purchase goods from local suppliers in the region, that initial spending also then circulates through the economy. This re-circulation supports employees at off-airport businesses. This leads to increases in associated economic output, payroll, and employment throughout the Pittsburgh region.

   For each wave of monetary spending beyond the first-round, a portion takes place outside the economic area being modeled (in this case, the Pittsburgh MSA). These economic activities that take place outside the study region are considered "economic leakage."

3. **Total Impacts** – Total impacts or benefits are the sum of all first-round and second-round economic activities.

As noted, first-round and second-round impacts are combined to provide an estimate of total economic impact. Because second-round impacts are not as easy to measure as first-round impacts, it is important to employ a reliable method of estimating second-round impacts. A leading method used to estimate second-round impacts is the input-output model.

The Impact Analysis for Planning (IMPLAN) input/output model measures the multiplier effect and was used to quantify second-round impacts in this study. An input-output model, in its most basic form, is a linear model that estimates purchases and sales between the various sectors of the economy. This modeling process is considered one of the leading methods currently available for estimating the total economic impact of an industry (in this case, ACAA airports). The U.S. Forest Service, in cooperation with several other government agencies, initially developed the IMPLAN system. IMPLAN is considered one of the standard methods

for evaluating the economic contribution of public facilities and has been used to estimate economic impacts for individual airports and systems of airports throughout the country.
The IMPLAN model contains a large economic database used to generate input-output tables. It includes data from sources such as Dun and Bradstreet, the U.S. Department of Commerce, and the U.S. Census Bureau. IMPLAN multipliers and data tables specific to Metropolitan Pittsburgh's industrial sectors were obtained and used in this analysis. The IMPLAN input-output model used for this analysis requires direct impact estimates for three separate components of the economy. These categories are:

- **Employment** – Employment based on full-time equivalent (FTE) positions. For example, two part-time workers are assumed to equal one full-time position.

- **Payroll** – Payroll is the annual total of salary and benefits paid to all workers.

- **Output (Spending)** – Output for on-airport tenants is typically assumed to be the sum of annual gross sales and average annual capital expenditures. While this assumption works well for profit-oriented tenants, it must be modified for calculating government agency, airline, and visitor impacts. Government entities typically do not generate sales. While airlines do generate sales, the ticket revenue is usually transferred outside the region being modeled. In order to estimate the impact of these two important tenant-related activities, government and airline output is equated with the sum of annual payroll, annual operating expenditures, and average annual capital improvement outlays. For visitors using the airports, output is assumed to equal annual visitor expenditures.

It is important to note that payroll and output should not be combined because elements of economic benefit related to payroll are also contained, to some extent, in the output estimate[3]. Each of the three impact components (employment, payroll, and output) stand alone as a measure of an airport's total economic impact.

Data Required for the Economic Modeling Process

A number of data collection efforts were undertaken to gather information related to actual economic activity occurring at both airports in the study. Data collected were used as inputs in the modeling process that identified the total economic impact of the study airports. On-airport activity is associated with three groups that typically account for a majority of an airport's first-round economic impacts. Data contained in this study is based on actual and estimated 2007 and 2008 airport activity, employment, and spending levels[4].

[3] For example, if an airport's total output is $10.0 million and its total payroll is $4.5 million, the airport's impact is not $14.5 million. Payroll is a portion of output, as are capital expenditures, operating expenses, sales and taxes.
[4] Many tenants provided data related to July 2007 through June 2008 activity.

- **On-Airport Tenants** – This category includes airport tenants with employees, such as airlines, the fixed base operators (FBOs), concessionaires, and governmental agencies. Governmental agencies include the Allegheny County Airport Authority, Pennsylvania Air National Guard, the US Air Force, the Federal Aviation Administration (FAA), U.S. Customs, U.S. Department of Homeland Security and U.S. Department of Agriculture.

- **Commercial Service Visitors** – This category includes estimated non-local passengers (visitors) using commercial airlines at Pittsburgh International Airport. Average expenditures for this group were identified through passenger interviews conducted in all terminal concourses.

- **General Aviation Visitors** – Non-local passengers arriving via private or corporate aircraft generate general aviation visitor impacts. General aviation visitors are associated with the portion of each airport's itinerant general aviation activity that is transient (or visiting) in nature. First-round impacts for this group were identified using data collected from general aviation visitor surveys conducted in cooperation with the managers of the FBOs at both ACAA airports.

All first-round impacts presented in this analysis were identified through survey efforts conducted at both study airports. IMPLAN multipliers were then applied to the first-round impacts to estimate all subsequent second-round economic impacts.

Data Collection

First-round impacts for each type of aviation user, including tenants, commercial service visitors, and non-aviation businesses were identified through survey efforts. This aspect of the analysis is important to ensure that final economic impact estimates are valid, since estimates of second-round impacts are driven by estimates of first-round impacts. The methods used to collect information related to each group sampled in this analysis are discussed in the following sections.

Airport Tenants

All airport tenants having employees were contacted to collect information regarding their economic activity. Airport staff provided names, mailing addresses, and telephone numbers for each tenant. Surveys were then sent to each, and follow-up calls, emails, and visits were made where necessary to obtain responses and verify information. Airport tenants were grouped into several categories to aid in applying study multipliers. These categories include:

- Government (airport management, federal employees, etc.)
- Military
- Airlines and Aviation-Related Support (ground handling, skycaps, etc.)
- Concessions
- Terminal Services (custodians, maintenance, grounds keeping, etc.)

- Automobile Rental
- Ground Transport (taxis, limousines, shuttle buses)
- Parking
- Cargo (air cargo and freight forwarders)
- Construction

Surveys sent to each airport tenant requested the following data:

- Type of activity conducted by the tenant
- Number of full-time and part-time on-airport employees
- Total annual wages and benefits paid to on-airport employees
- Property taxes paid
- Total capital improvement expenditures on the airport for 2005 through 2008
- Total operating expenses (excluding payroll and capital improvements previously identified)
- Total gross sales (where applicable)

Each tenant was grouped by their North American Industry Classification System (NAICS) code based on the primary service or good they provide. This was done to facilitate subsequent IMPLAN modeling to estimate second-round impacts. The NAICS is a sector-specific list used to describe industry types. For this analysis, airlines, aircraft maintenance, FBOs, air cargo, and corporate flight departments were combined in the air transportation NAICS code. Construction impacts were divided among various construction-related NAICS codes. Concessions were distributed among retail, food and beverage, and auto rental NAICS codes.

Commercial Service Visitors

Airline flights to and from Pittsburgh International Airport provide access for millions of business and leisure visitors. Visitors using commercial airline service as a gateway to the Pittsburgh region contribute to the economy through expenditures for food, lodging, entertainment, transportation, retail sales, and other goods and services. Numerous service industries also benefit from the multiplier effects resulting from visitor spending. The spending patterns of commercial service visitors to the Pittsburgh region were estimated based on the results of departing passenger surveys conducted at Pittsburgh International Airport.

During the third week of June 2008, a passenger survey was conducted at Pittsburgh International Airport, during which nearly 600 passengers were surveyed. An estimated 20,000 visiting passengers enplaned at Pittsburgh International Airport during the survey period.

Table 2-1 lists the population size of the passenger survey, the confidence interval, the confidence level, and the sample size needed. A confidence interval of four and a confidence level of 95 percent were selected as appropriate for a study of this nature.

Table 2-1
Sample Size Determination

Confidence Interval	1	2	3	4	5
Population (visitors)*	20,000	20,000	20,000	**20,000**	20,000
Confidence Level	95%	95%	95%	**95%**	95%
Sample Size Needed	6,480	2,144	1,013	**593**	377

Source: Wilbur Smith Associates. *Estimated enplanements during survey period.

The confidence interval is the plus-or-minus percentage figure usually reported in newspaper or television opinion poll results. For example, if one uses a confidence interval of 2 and 47 percent of your sample picks an answer, one can be "sure" that if you had asked the question of the entire relevant population between 45 percent (47-2) and 49 percent (47+2) would have picked that answer.

The confidence level is a description of how reliable the estimate is. It is expressed as a percentage and represents how often the true percentage of the population picking an answer lies within the confidence interval. Most researchers use the 95 percent confidence level. Combined, a 95 percent confidence level and a confidence interval of four indicates that the reader may be 95 percent sure the true value lies within four percent of the sample result.

During the passenger surveys at Pittsburgh International Airport, departing passengers were approached at boarding gates and asked several questions. These passengers were first asked to indicate whether they were a resident of the region, a connecting passenger, or a visitor. Those passengers that indicated that they were visitors to the region were then asked several questions to determine the following:

- The purpose of their trip to the area (business, personal/pleasure, other)
- Duration of their stay in the region
- Total expenditures during their stay in each of the following categories: lodging, food and beverage, ground transportation, entertainment, retail, and other
- The total number of people that accounted for the expenditure estimates

The following methodology was used to estimate commercial service visitor impacts:

- Enplanement data for 2007 was obtained for Pittsburgh International Airport. The breakdown of local, visitor, and connecting passengers was then applied to the annual enplanement data to determine the number of annual visitors using the airport.

- Average length of stay and average daily expenditure for visitors to the region were determined from the survey results. These estimates were applied to the estimate of annual commercial service visitors. This produced an estimate of the total annual economic activity (or output) generated by commercial service visitors using the airport.

- In order to estimate the employment associated with those commercial service visitor expenditures, Pennsylvania-specific ratios of employment per million dollars of visitor output were developed using the IMPLAN model. Approximately 21 jobs in the Pittsburgh region result from every $1 million in commercial service visitor spending.

- In order to estimate the payroll impacts associated with employment generated by commercial service visitors, average state wages for appropriate industry sectors were applied to the estimated number of employees. Most of the direct visitor expenditures take place in the hotel/motel, food/beverage, entertainment, retail, and transportation sectors. Based on data obtained from the U.S. Bureau of Labor Statistics, an average annual payroll of $22,000 per employee in Pittsburgh was assumed for these job categories.

General Aviation Visitors

The economic activity generated by general aviation visitors at study airports was identified through a transient pilot survey effort. Surveys were left with FBOs at each airport. The surveys were then distributed to arriving transient pilots and visitors. The survey requested information related to the following:

- Number of travelers in the aircraft
- Type of aircraft operated
- Purpose of the trip
- Length of stay in the airport area
- Estimated expenditures during trip
- The total number of people that accounted for the expenditures

This transient pilot survey effort, which lasted approximately two months, was used to estimate general aviation visitors and their associated economic activity. The FBOs at Allegheny County Airport indicated an estimated 35 percent of all itinerant aircraft operations at Allegheny County Airport are true transient while itinerant aircraft activity at Pittsburgh International is estimated to be 75 percent. By definition, true transient operations are business or pleasure flights conducted by aircraft not based locally and are equated with that portion of each airport's general aviation activity that brings in visitors. Itinerant operations, on the other hand, are defined as non-training flights or aircraft that enter or leave an airport's airspace.

An example of how overall general aviation visitor impacts were calculated at Allegheny County Airport is as follows:

- The number of itinerant general aviation arrivals was estimated using data obtained from FAA tower counts and FAA 5010 forms. The FAA estimates that approximately 57,690 operations were itinerant at Allegheny County Airport. Half of these operations are arrivals, which yields 28,845 itinerant arrivals.

- FBO estimates indicate that approximately 35 percent of itinerant general aviation arrivals at Allegheny County Airport are true transient. Multiplying the figure shown above by 35 percent yields 10,096 true transient arrivals at Allegheny County Airport.

- The findings from the transient pilot survey regarding average number of aircraft occupants and average trip length were then applied to estimates of true transient arrivals to determine total general aviation visitor days at each airport. The average number of aircraft occupants at Allegheny County was 3.7 persons, including the pilot. The average trip length was 2.2 days. (It is important to note that while some visitors will stay in the airport area for several days, many visitors using general aviation may stay for only a few hours.)

- To calculate the impact these visitors have on the economy, it was necessary to estimate average expenditures per visitor, per day. The typical visitor expenditure of $110 per day derived from surveys was then applied to the estimated number of visitor days to produce direct general aviation visitor expenditures (output). The resulting calculation for visitor spending at Allegheny County Airport is shown in **Table 2-2**. This final general aviation visitor expenditure figure equates to direct visitor output.

Table 2-2
General Aviation Visitor Spending

Airport Name	True Transient Arrivals	Estimated GA Visitors	Total Annual Number of Days Stayed	Annual GA Visitor Expenditures
Allegheny County	10,096	37,355	82,200	$9,039,900
Pittsburgh International	5,850	21,060	39,000	$5,844,200

Source: Wilbur Smith Associates.

- The determination of direct payroll and employment impacts employed a calculation using ratios obtained from the IMPLAN model. These ratios express the relationship between jobs per $1 million of output. In metropolitan Pittsburgh, every $1 million of direct general aviation visitor output supports approximately 23 full-time positions[5] in service/retail (visitor) industries. Thus, for our example, visitors using general aviation at Allegheny County support approximately 204 full-time jobs. Applying the average annual salary for service/retail industries ($22,000) in the Pittsburgh MSA to the estimate of employment yields direct payroll impacts associated with these 204 jobs.

An example of how overall general aviation visitor impacts were calculated at Pittsburgh International Airport is as follows:

[5] Expenditures in the visitor industry related to commercial service visitors generates 21 jobs per million dollars of output while visitor expenditures related to general aviation visitors generates 23 jobs per million dollars. General aviation visitors expend less money in the hotel sector, which affects the number of jobs per million dollar output.

- The number of itinerant general aviation arrivals was estimated using data obtained from airport management. Airport management data shows that approximately 15,600 operations were itinerant at Pittsburgh International Airport. Half of these operations are arrivals, which yields 7,800 itinerant arrivals.

- FBO estimates indicate that approximately 75 percent of itinerant general aviation arrivals at Pittsburgh International Airport are true transient. Multiplying the figure shown above by 75 percent yields 5,850 true transient arrivals at Pittsburgh International Airport.

- The findings from the transient pilot survey regarding average number of aircraft occupants and average trip length were then applied to estimates of true transient arrivals to determine total general aviation visitor days at each airport. The average number of aircraft occupants at Pittsburgh International was 3.6 persons, including the pilot. The average trip length was 1.9 days. (It is important to note that while some visitors will stay in the airport area for several days, many visitors using general aviation may stay for only a few hours.)

- To calculate the impact these visitors have on the economy, it was necessary to estimate average expenditures per visitor, per day. The typical visitor expenditure of $150 per day derived from surveys was then applied to the estimated number of visitor days to produce direct general aviation visitor expenditures (output). The resulting calculation for visitor spending at Pittsburgh International Airport is shown in Table 2-2. This final general aviation visitor expenditure figure equates to direct visitor output.

- The determination of direct payroll and employment impacts employed a calculation using ratios obtained from the IMPLAN model. As explained above, these ratios express the relationship between jobs per $1 million of output. As also explained above, in metropolitan Pittsburgh, every $1 million of direct general aviation visitor output supports approximately 23 full-time positions in service/retail (visitor) industries. In the case of Pittsburgh International, however, every $1 million of direct general aviation visitor output supports approximately 21 full-time positions. This is because the visitors using general aviation at Pittsburgh International frequent more expensive hotels and restaurants, which decreases the number of jobs per $1 million of output. Thus, for the Pittsburgh International example, visitors using general aviation at Pittsburgh International support approximately 123 full-time jobs. Applying the average annual salary for service/retail industries ($22,000) in the Pittsburgh MSA to the estimate of employment yields direct payroll impacts associated with these 123 jobs. Results of both airports' general aviation visitor impacts are presented in the next chapter.

On-Airport Construction

Each year, the Allegheny County Airport Authority formulates a Capital Improvement Program (CIP) at each airport, which includes items such as runway rehabilitation, hangar construction, terminal improvements, etc. In addition, businesses and other government agencies (such as the Pennsylvania Air National Guard) on the airports undertake additional capital improvement projects. These projects employ persons in jobs such as construction worker, architect, engineer, and consultant.

The following methodology was used to estimate construction impacts:

- CIP data for 2005-2008 was gathered from the ACAA as well as each tenant and government agency in the study. The CIP data for the four-year period was averaged to avoid showing peaks or troughs in construction activity.

- The IMPLAN Input/Output model indicates that $1 million spent in construction activity supports 12.2 full-time construction-related jobs in the Pittsburgh region. These jobs are comprised of those people who are engaged directly in these projects – construction workers, equipment operators, foremen, engineers, project managers, etc.

- For example, CIP spending at Pittsburgh International Airport averaged $65.5 million between 2005 and 2008, and annually supports the equivalent of 800 first-round full-time jobs generating approximately $34.4 million in payroll. The average annual payroll for a construction worker in the Pittsburgh MSA is $43,000.

Impact Multipliers

Employment, payroll, and output impacts derived from the on-airport tenant surveys and commercial service visitor surveys represent the first-round impacts identified in this study. As these first-round impacts are generated, they circulate among other sectors of the economy, creating successive waves of additional spending. This phenomenon is known as the multiplier effect and is referred to as second-round impacts in this study. Multiplier effects arise from various interdependencies within an economic system. For example, the operation of an airport requires inputs in the form of supplies, equipment, and maintenance. These inputs generate a boost in sales for those firms or businesses providing these products. Moreover, these goods and services themselves require inputs for their production. The process continues as a large number of impacts re-circulate through the economy. The total requirement for goods and services is a multiple of the direct needs of the airports in the study; hence they are referred to using the term "multiplier."

The multipliers that were used in this analysis were developed specifically to measure economic impacts in the Pittsburgh region. Individual multipliers must be used for each sector of the economy being modeled. As previously mentioned, individual IMPLAN multipliers were obtained for various sectors organized by the North American Industrial Classification System (NAICS). The multipliers used for modeling on-airport and visitor impacts in this study are depicted in **Table 2-3**.

While these groupings do not cover all on-airport tenant and arriving visitor impact categories, they do provide a representative average for generating multipliers. For example, Commercial Service tenant expenditures at the airports were grouped into air transportation and various types related to aerospace NAICS codes. Visitor expenditures were grouped into general merchandise, auto rental, hotel/motel, and food/beverage NAICS codes.

The multipliers presented in Table 2-3 were used to estimate second-round impacts in this analysis. For example, $100 in direct expenditures (output) in the Commercial Service Tenant sector supports a total output impact equivalent to $197 ($100 times the multiplier of 1.9691). Second-round impacts would therefore be $97 ($197 minus $100).

Table 2-3
Pennsylvania Specific Multipliers

Sector/Industry	Total Employment Multiplier	Total Payroll Multiplier	Total Output Multiplier
Commercial Service Tenants[1]	2.0781	1.7914	1.9691
General Aviation Tenants[2]	2.4614	2.0082	2.0166
Construction Multiplier[3]	1.7674	1.6210	1.9426
Visitor Multiplier[4]	1.5898	1.8379	1.8379

Source: IMPLAN. Notes: 1. Commercial Service Tenant multipliers are a weighted average of Air Transportation, Food & Beverage Establishment, General Merchandise, Ground Transportation, Auto Rental, and Air Cargo sectors. 2. General Aviation Tenant multipliers are the weighted average of Air Transportation, Aircraft Manufacturing, Aircraft Engine and Parts Manufacturing, and Other Aircraft Parts Manufacturing sectors. 3. Government Agencies multipliers are the weighted average of the Commercial and Institutional Buildings, Services to Buildings and Dwellings, Architectural and Engineering, and State and Local Government sectors. 4. Visitor industries multipliers are the weighted average of the Hotel, Food/Drink, General Merchandise, and Automobile Rental sectors.

The methodology discussed in this section was applied to both airports. By following this methodology, estimates of annual employment, annual payroll, and annual output/spending associated with each airport were derived. Results are presented in the next chapter of this report.

Chapter Three
The Economic Impacts of ACAA Airports

Pittsburgh International and Allegheny County Airports are major regional assets and gateways to Pittsburgh for millions of travelers each year.

Airport Locations and History

Allegheny County Airport is the largest general aviation airport in western Pennsylvania and is located on a 432-acre plateau site in south central Allegheny County in West Mifflin Borough. It is located approximately eight miles southeast of downtown Pittsburgh and approximately 15 miles southeast of Pittsburgh International Airport. Located just 16 miles west of downtown Pittsburgh, Pittsburgh International airport is easily accessible from most of western Pennsylvania's major interstates. The airport sits on a 9,000-acre site.

Between 1932 and 1952, Allegheny County Airport served as the commercial airport for the Pittsburgh metropolitan area. A major development occurred in 1940, when the War Department offered to construct a fighter field at Allegheny County Airport, under the provision that the county would provide the land for such a facility. As part of this agreement, the War Department agreed to turn over the facility to the county for its use at the end of World War II.

In 1952, commercial airline operations moved from Allegheny County Airport to Greater Pittsburgh International Airport. That move enabled Allegheny County Airport to become the County base for general aviation. Since then, it has grown and thrived, becoming one of the busiest corporate airports in the United States.

In the 1980s, the 30-year-old Greater Pittsburgh International Airport terminal had reached its capacity and was obsolete in the face of the unprecedented and unexpected boom in air travel. The terminal was land-locked by runways and operation facilities and could not be adequately expanded to meet current, much less future, air travel needs.

A new site in Findlay Township, just west of the former terminal building, was selected to house the airport's new terminals. Pittsburgh International Airport's new terminal opened for business in October 1992 after an expenditure of nearly $1 billion. Pittsburgh International Airport is configured to accommodate 24 million passengers per year.

This chapter discusses both airport's current economic contribution to the Pittsburgh region. The economic impacts of Pittsburgh's airports are presented in the following sections:

- Airport Overviews
- Economic Impacts of Aviation
- Tax Benefits
- Business Use of the Airport
- Qualitative Benefits

Airport Overview – Pittsburgh International Airport

Pittsburgh International Airport's outstanding terminal facility rests on 9,000 acres of property and prides itself on its size and efficiency. A user-friendly four-concourse terminal system is connected with automatic walkways, escalators, elevators, and high-speed people movers to the landside terminal. The landside and airside terminals are linked by two parallel tunnels carrying three-car people movers with a capacity for 80 passengers in each car. The trip between the landside and airside terminals takes just 70 seconds, including boarding time. Moving sidewalks and the people mover transport a deplaning passenger from plane to parking in 11 minutes.

The airport is home to 52 based aircraft and experiences over 146,623 annual operations. The airport is served by four runways and a continuously staffed air traffic control tower (ATCT). Runway 10R/28L is 11,500 feet long and 200 feet wide. This runway is served by two precision approaches. Runway 10L/28R is 10,502 feet long, 150 feet wide, and is served by four precision approaches . Runway 14/32 is 8,101 feet long, 150 feet wide, and is served by two precision approaches while Runway 10C/28C is 9,708 feet long and 150 feet wide.

Major On-Airport Tenants

Thirteen passenger airlines and their 11 affiliates operate at Pittsburgh International Airport, providing non-stop service to 39 cities with 168 average daily flights. While US Airways has reduced its hub operations at the airport since 2001, they remain the largest business on the airport with an aircraft maintenance facility and Operations Control Center (OCC) on the airport. Other major tenants include:

Airmall® - The Airmall®, which is managed by BAA-Pittsburgh, includes approximately 100 shops, restaurants, and services occupying retail space equaling 100,000 square feet in size. In 1992, BAA USA was awarded a 15-year contract to manage all commercial and retail operations at Pittsburgh International Airport. In 2002, the contract was extended until 2017. BAA has invested more than $26 million in the airport over the past seven years.

Hyatt Regency Pittsburgh International Airport – One of Pittsburgh's most outstanding full service business-class hotels and conference facilities is connected to Pittsburgh International Airport via enclosed moving walkways. This boutique-style hotel features 336 guestrooms and over 20,000 square feet of meeting and banquet space. Hyatt Regency Pittsburgh International Airport offers a restaurant, a bar and a health club complete with indoor pool, cardiovascular and strength training equipment and saunas. Total construction cost was $62.8 million in 2000.

Republic Airlines – Republic Airlines operates an aircraft maintenance and repair base in two hangars totaling 83,000 square feet.

Atlantic Aviation – Atlantic Aviation is a full-service FBO located on Pittsburgh International Airport that serves the corporate and general aviation needs of the airport. Atlantic's Business Aviation Center opened in 2001 and included the following amenities:

- 11,000-square foot operations building with Executive Center
- 4,000-square foot maintenance building
- Two hangars, one with a 28-foot-high dome and the other with a 45-foot-high dome
- A 160,000-gallon fuel farm and an advanced de-icing pad

In 2007, Atlantic Aviation opened expanded facilities that include a new 30,000-square foot hangar and a 7,250-square foot charter terminal and office center. The new facilities can accommodate up to 12 corporate or charter aircraft as well as sports charters and includes security screening and passenger processing. The total cost of the expansion was $5.0 million.

Aviation Facilities Company (AFCO) – Aviation Facilities Company (AFCO) operates four cargo buildings on Pittsburgh International Airport that total over 235,000 square feet of cargo handling space and 694,000 square feet of aircraft apron space. Tenants include DHL, Federal Express, UPS, and Worldwide Flight Services.

On-Airport Military Bases – The Pennsylvania Air National Guard 171st Air Refueling Wing (ARW) and U.S. Air Force Reserve, 911th Airlift Wing, are located on Pittsburgh International Airport. The primary mission of the 171st ARW is to refuel U.S. and NATO aircraft using KC-135 aircraft. A secondary mission of cargo and passenger transportation has increased dramatically due to the recent downsizing within the Air Force, which has resulted in a shortfall of airlift capability. The 91lth has nine C-130H "Hercules" aircraft whose primary mission is to airlift and airdrop combat forces, equipment and supplies. More than 90 percent of the organization is comprised of Air Force Reserve volunteers from Pennsylvania, Ohio and West Virginia.

Corporate Aviation – Several local corporations use Pittsburgh International Airport to base their corporate jets. U.S. Steel, Allegheny Technologies, H.J. Heinz, Dick's Sporting Goods, and Mellon Bank all use the airport on a regular basis. U.S. Steel, H.J. Heinz, Dick's Sporting Goods, and Mellon Bank base their corporate aircraft at the airport.

Airport Overview – Allegheny County Airport

Allegheny County Airport's property encompasses 432 acres in the southeast portion of the Borough of West Mifflin in Allegheny County. AGC is eight miles from downtown Pittsburgh and approximately 15 miles southeast of Pittsburgh International Airport. The Airport is conveniently located near a major mall as well as popular shopping, dining and entertainment establishments. Many residential developments and businesses are also located near the Airport.

Allegheny County Airport serves as the primary FAA designated reliever airport for Pittsburgh International Airport. In this role, the airport supports a high volume of business and corporate-related activity. Many of the area's largest corporations base their aircraft at the airport. Businesses routinely charter aircraft, ship and receive supplies and products, and have customers and suppliers who arrive routinely via the airport. Some of the major corporations that base aircraft at the airport include CONSOL, ALCOA, PPG Industries, and PNC Financial Corporation. Other area businesses and agencies that rely on Allegheny County Airport include Anthony Holdings, Civil Air Patrol, Federated Investments, and J.J. Gumberg. Many of the nation's leading Fortune 500 companies fly into the airport on a regular basis.

Major On-Airport Tenants

Aviation Education - The airport also supports activities that support aviation-related career training and education. Since 1929, the Pittsburgh Institute of Aeronautics (PIA) has been recognized as the premiere training school for aviation maintenance. Many graduates have become high level managers with major airlines, the FAA, and contract maintenance facilities. Currently, PIA offers Associate of Specialized Technology Degree programs in Aviation Maintenance Technology (A&P), and Aviation Electronics Technology (Avionics). PIA also offers a program in Commercial Electronics. Pittsburgh Flight Training Center is located on the airport and offers flight instruction and aircraft rentals.

Air Ambulance - Allegheny County Airport is also used extensively to support emergency medical services. Recently CJ Systems, an air ambulance company based at the airport for a number of years was acquired by Air Methods, a Denver based air ambulance company. This acquisition will give Air Methods a presence in the eastern United States. Air Methods will utilize CJ Systems' headquarters hub at Allegheny County Airport, which will become the maintenance, overhaul, and logistics center for the combined fleet's aircraft operating in the eastern U.S. STAT MedEvac, a service of the Center for Emergency Medicine, provides medical service support for air medical transport to patients with critical illness or injuries. The organization is directed by a consortium of hospitals, including Altoona Regional Health System, Children's Hospital of Pittsburgh of UPMC, UPMC Mercy, and UPMC Presbyterian Shadyside.

Fixed Base Operator (FBO) – Two FBOs are located on the airport: Voyager Jet and Corporate Air. Both are full service FBOs providing aircraft maintenance, air charters, fuel, corporate aircraft management and catering. Corporate Air has a rental car operation.

Economic Impact of ACAA Airports

The economic impacts of ACAA airports were identified for all tenants and all visitors arriving via commercial service airlines and general aviation aircraft. This section documents the findings and results of the analysis.

Impacts were calculated for the following:

- Airport tenants
- Visitors arriving on commercial airlines
- Visitors arriving on general aviation aircraft
- Business use of the airport
- Qualitative benefits
- Total airport impacts

As described in Chapter Two, the multiplier effect reflects the number of times first-round spending re-circulates within the economy. This multiplier effect varies by industry. By segregating first-round impacts, a more accurate calculation of second-round impacts was achieved by using sector-specific multipliers.

First-Round Impacts – Airport Tenants

In 2007, there were over 100 tenants with on-airport employees at Pittsburgh International Airport and 17 at Allegheny County Airport. These ranged in size from government agencies with more 3,100 full-time equivalent (FTE) employees combined, to concession businesses with fewer than five employees. In order to preserve the private business information of the individual respondents and to aid in the discussion of first-round impacts, the tenant impacts were grouped together by function. The seven general categories used to summarize the activities of on-airport tenants are:

- Government Agencies and Airport Management (including the ACAA, FAA, Air National Guard, U.S. Air Force, TSA, etc.)
- Concessions (restaurants, retail, rental car, etc.)
- Passenger Airlines
- Terminal Services (ground transportation, skycaps, housekeeping, groundskeeping, etc.)
- Air Cargo
- GA, Corporate and Aerospace (FBOs, corporate aviation, maintenance, aircraft manufacturing, etc.)
- Construction

Summary of First-Round Impacts – Tenants

Economic impacts generated by on-airport tenants at Pittsburgh International Airport include 8,710 jobs earning $355.6 million in wages, with a first-round output of slightly more than $1.2

billion. Tenants at Allegheny County Airport create first-round impacts of 478 jobs, nearly $25.1 million in payroll, and over $142.7 million in economic output.

Table 3-1 presents the 2007 first-round impacts for annual output, annual payroll, and employment related to on-airport tenants at Pittsburgh International Airport, as described above. **Table 3-2** displays the first-round economic impacts derived from tenants at Allegheny County Airport. Details of these impacts are provided in the following sections.

Table 3-1
First-Round Tenant Impacts
Pittsburgh International Airport

	First-Round Impacts		
Sector	Employment	Payroll	Output
Government/Military	3,137	$152,184,900	$364,922,600
Concessions	674	$16,845,200	$104,328,900
Auto Rental/Hotel	394	$11,840,400	$120,616,200
Air Cargo & Related Tenants	587	$20,962,800	$79,188,500
Passenger Airline & Related Tenants	2,912	$113,312,000	$460,784,800
Construction	800	$34,400,000	$65,535,100
Off Airport Support Businesses	206	$6,022,000	$20,704,400
First Round Total	**8,710**	**$355,567,300**	**$1,216,080,500**

Source: Wilbur Smith Associates.

Table 3-2
First-Round Tenant Impacts
Allegheny County Airport

	First-Round Impacts		
Sector	Employment	Payroll	Output
Government	39	$2,360,000	$9,359,700
Air Transportation	285	$13,144,800	$105,266,600
Aviation Education	86	$4,125,000	$7,627,100
Corporate	69	$5,533,500	$20,420,200
Construction	77	$3,311,000	$6,283,100
First Round Total	**555**	**$28,474,300**	**$148,956,700**

Source: Wilbur Smith Associates.

Government Agencies and Airport Management - As described previously, the management of Pittsburgh International and Allegheny County Airports is provided by the Allegheny County Airport Authority. The Authority's main purpose is the safe, reliable, and efficient operation of its airports, as well as the development of business opportunities related to the operation of the airports. To that end, the Authority maintains a staff of professionals to oversee the day-to-day management of the airports and their long-term development.

In addition to the ACAA, several other governmental agencies are located at Pittsburgh International Airport. On the federal level, the airport is home to several Federal Aviation Administration offices, Customs and Border Protection, Transportation Security Administration, and the U.S. Department of Agriculture. The Pennsylvania Air National Guard 171st Air Refueling Wing (ARW) and U.S. Air Force Reserve, 911th Airlift Wing, are located on Pittsburgh International Airport. The primary mission of the 171st ARW is to refuel U.S. and NATO aircraft using KC-135 aircraft. The 91lth has nine C-130H "Hercules" aircraft whose primary mission is to airlift and airdrop combat forces, equipment, and supplies.

At Pittsburgh International Airport in 2007, these agencies had a first-round economic impact of 3,137 full-time equivalent employees. These employees earned $152.2 million in wages and benefits. On-airport first-round output resulting from these agencies' operations totaled $364.9 million.

The impact of government agencies at Allegheny County Airport is limited to ACAA management and safety of the facility, as well as the FAA air traffic control tower located on the airport. The first-round impact of these functions is 39 full-time equivalent jobs earning $2.3 million with an estimated output of $9.4 million.

Concessions – Individual concessions at Pittsburgh International Airport include rental car agencies, parking, food and beverage establishments, gift and news shops, and various traveler service businesses located in the terminal, Airmall and on the airport. During the time frame of the study, there were dozens of concessions businesses located on the airport.

The tenant survey indicated that the estimated first-round annual output related to concessions at Pittsburgh International Airport in 2007 was approximately $104.3 million. Annual payroll impacts are estimated at $16.8 million. Total employment associated with the concessions at the airport is the equivalent of 674 full-time jobs.

With the exception of a barbershop, no economic impacts relating to this category were generated at Allegheny County Airport in 2007.

Passenger Airlines – Pittsburgh International Airport is served by both major/national and regional/commuter airlines, with the following 13 carriers and 11 affiliate airlines providing passenger service to the airport:

- Air Canada
- AirTran Airways
- American Airlines
- *American Eagle
- Continental
- *Continental Express
- Delta
- *Atlantic Southeast
- *Comair
- *Express 1
- JetBlue
- Midwest Airlines
- Myrtle Beach Direct
- Northwest
- *Mesaba
- *Pinnacle
- Southwest Airlines
- United
- *Mesa
- *Shuttle America
- *United Express
- US Airways
- *US Airways Express
- USA3000

* Affiliate airline

In addition to the airlines, ground handling services were included in the Passenger Airline category. The presence of these airlines and support services at the airport provides the second-largest direct employment and payroll impact at the airport. Passenger airlines and supporting services include all activities associated with the airlines such as passenger ticketing, baggage functions, fueling, airline administration, aircraft cleaning, catering and aircraft maintenance staff. US Airways' maintenance facility is included in this category.

The tenant survey indicated that the estimated total direct output related to passenger airlines at Pittsburgh International Airport in 2007 was approximately $460.8 million. Annual payroll impacts, which are measured separately, were estimated at $113.3 million. First-round employment associated with passenger airlines at the airport is the equivalent of approximately 2,900 full-time employees.

As a general aviation facility, there are no economic impacts at Allegheny County Airport arising from passenger airlines.

Automobile Rental and Hotel – Hyatt Regency Pittsburgh International Airport is a full service business-class hotel and conference facility and is connected to Pittsburgh International Airport via enclosed moving walkways. This boutique-style hotel features 336 guestrooms and over 20,000 square feet of meeting and banquet space. It is the only hotel on airport property.

There are six automobile rental agencies representing nine brands located on Pittsburgh International Airport.

Results from the tenant survey indicate that the estimated total first-round annual employment related this sector at Pittsburgh International Airport in 2007 was 394 full-time equivalent jobs, with annual payroll impacts estimated at $11.8 million. First-round output generated by these service businesses amounted to approximately $120.6 million.

Rental car activity at Allegheny County Airport is accommodated by the airport's FBOs and are included in the Air Transportation sector.

Air Cargo – As the largest city within a three-hour drive, Pittsburgh's businesses are dependent on air and ground cargo companies to move products and provide express deliveries to customers. FedEx Express, UPS and DHL all have varying levels of activity at the airport. FedEx and UPS both have wide-body aircraft moving inbound and outbound air cargo and mail. DHL relies on trucking to their Wilmington, Ohio hub.

First-round annual output for air and ground cargo tenants at Pittsburgh International Airport in 2007 was estimated at approximately $79.2 million. First-round annual payroll impacts were estimated at $21.0 million. First-round employment associated with these cargo businesses is the equivalent of 587 full-time employees.

No air or ground cargo businesses operated at Allegheny County Airport in 2007; therefore, no economic impacts were generated in this category.

Off Airport Businesses – Several aviation-related businesses are located off-airport property but are 100 percent reliant on the airport for revenue generation. For example there are four off airport parking companies located in the vicinity of the airport. Several ground transportation companies and limousine services rely on the passenger traffic at the airport. Although many air freight forwarders are located off airport their analysis is included in the air cargo sector.

First-round annual output for off airport businesses at Pittsburgh International Airport in 2007 was estimated at approximately $20.7 million. First-round annual payroll impacts were estimated at $6.0 million. First-round employment associated with these cargo businesses is the equivalent of 206 full-time employees.

Construction Activity – Each year, ACAA spends a considerable amount on projects related to public airside capital improvements (e.g. runway and taxiway improvements, lighting, etc.); and public landside improvements (e.g., facility renovations, parking, etc.). These projects create economic impacts in terms of construction jobs, supplier inputs, and so on. Construction activity in the Pittsburgh MSA typically supports 12.2 full-time equivalent employees for every $1 million spent on projects. Capital improvement project (CIP) expenditures by all government agencies, as well as CIP expenditures by on-airport businesses, were averaged over a four-year period to even out peaks in spending. Based on survey data, over $71.8 million ($65.5 million at Pittsburgh International and $6.3 million at Allegheny County) on average is spent annually on public and private construction projects at ACAA airports.

Construction activity at Pittsburgh International generates a first-round impact of approximately 800 full-time equivalent employees earning an estimated $34.4 million annually. At Allegheny County Airport, CIP spending creates an average first-round impact of 77 full-time equivalent jobs earning $3.3 million annually.

Air Transportation, Corporate Flight Departments, and Aviation Education – These categories of tenants are only at Allegheny County Airport and include an array of Fixed Base Operators (FBOs), maintenance facilities, corporate flight departments, and aviation education facilities.

Results of the tenant surveys indicate that the estimated total first-round annual output related to Corporate Flight Departments at Allegheny County Airport was approximately $20.4 million in 2007, and first-round estimates of annual payroll impacts were $5.5 million. Total first-round employment associated with this category is estimated at 69 employees. Air Transportation businesses at Allegheny County Airport include FBO and air ambulance businesses at the airport and account for first-round impacts of 285 jobs paying approximately $13.1 million in wages and benefits, and generate first-round output of approximately $105 million. Flight instruction and aviation vocational education account for first-round impacts of 86 jobs paying approximately $4.1 million in wages and benefits, and generate first-round output of approximately $7.6 million.

Second-Round Impacts – Airport Tenants

IMPLAN multipliers were next used to estimate second-round impacts generated by tenants at ACAA airports. Second-round impacts at Pittsburgh International Airport account for approximately 9,075 full-time positions in the Pittsburgh region; these employees received approximately $276.4 million in annual payroll. Second-round annual output by tenants is estimated at approximately $1.2 billion. These impacts are shown by category in **Table 3-3**.

Table 3-3
Second-Round Tenant Impacts
Pittsburgh International Airport

	Second-Round Impacts		
Sector	Employment	Payroll	Output
Government/Military	2,299	$84,361,700	$360,721,400
Concessions	189	$11,779,500	$92,002,500
Auto Rental/Hotel	512	$13,273,500	$101,166,100
Air Cargo & Related Tenants	890	$21,857,600	$79,342,500
Passenger Airline & Related Tenants	4,415	$118,149,000	$461,680,800
Construction	614	$21,362,900	$61,774,900
Off Airport Support Businesses	156	$5,575,900	$19,647,700
Second Round Total	**9,075**	**$276,360,100**	**$1,176,335,900**

Source: Wilbur Smith Associates.

Second-round economic impacts generated by tenants at Allegheny County Airport are 758 full-time equivalent jobs earning $27.4 million, and generating output of over $151.0 million. **Table 3-4** shows details of these impacts.

Table 3-4
Second-Round Tenant Impacts
Allegheny County Airport

	Second-Round Impacts		
Sector	Employment	Payroll	Output
Government	29	$1,308,200	$9,251,900
Air Transportation	434	$13,870,500	$107,220,300
Aviation Education	130	$4,352,700	$7,768,700
Corporate	105	$5,839,000	$20,799,200
Construction	59	$2,056,200	$5,922,600
Second Round Total	**758**	**$27,426,600**	**$150,962,700**

Source: Wilbur Smith Associates.

Total Impact – Airport Tenants

For 2007, the total annual output (including first-round and second-round impacts) generated by tenants at Pittsburgh International Airport is estimated at nearly $2.4 billion. Total full-time employment related to these businesses and agencies is estimated to be 17,785 persons, with a total annual payroll of approximately $631.9 million annually. **Table 3-5** summarizes the 2007 economic impacts generated by all tenants at Pittsburgh International Airport.

Table 3-5
Total Tenant Impacts
Pittsburgh International Airport

	Total Impacts		
Sector	Employment	Payroll	Output
Government/Military	5,436	$236,546,600	$725,644,000
Concessions	863	$28,624,700	$196,331,400
Auto Rental/Hotel	906	$25,113,900	$221,782,300
Air Cargo & Related Tenants	1,478	$42,820,400	$158,531,000
Passenger Airline & Related Tenants	7,327	$231,461,000	$922,465,600
Construction	1,414	$55,762,900	$127,310,000
Off Airport Suport Businesses	362	$11,597,900	$40,352,100
Total	**17,785**	**$631,927,400**	**$2,392,416,400**

Source: Wilbur Smith Associates.

Table 3-6 shows the total 2007 tenant impacts at Allegheny County Airport. The airport's businesses employed an estimated 1,313 persons, with a total annual payroll of over $55.9 million. These businesses generated over $299.9 million in output in 2007.

Table 3-6
Total Tenant Impacts
Allegheny County Airport

Sector	Employment	Total Impacts Payroll	Output
Government	68	$3,668,200	$18,611,600
Air Transportation	719	$27,015,300	$212,486,900
Aviation Education	216	$8,477,700	$15,395,800
Corporate	174	$11,372,500	$41,219,400
Construction	136	$5,367,200	$12,205,700
Second Round Total	**1,313**	**$55,900,900**	**$299,919,400**

Source: Wilbur Smith Associates.

Commercial Service Airline Visitor Impacts

In 2007, Pittsburgh International Airport passenger traffic was ranked by Airports Council International as the 45th busiest in North America. Passenger survey data indicates that 36.6 percent of the nearly 4.9 million enplaning passengers at the airport in 2007 were visitors to the Pittsburgh region. Nearly 1.8 million visitors traveled to the region for business or pleasure purposes. These visitors made significant economic contributions to the Pittsburgh region through expenditures for food, lodging, entertainment, transportation, retail sales and other goods and services.

Survey data indicate that passengers visiting the region on business stay an average of 4.3 days, and spend $190 per day for lodging, food, retail, and entertainment. Survey data indicate that passengers visiting the region for personal or vacation purposes stay an average of 8.4 days, and spend $90 per day for lodging, food, retail, and entertainment. Extending these averages to Pittsburgh International's 4.9 million enplanements in 2007 results in the figures shown in **Table 3-7**. Of the 4.9 million enplaning passengers, 1.8 million were visitors. These visitors accounted for 12.0 million visitor-days, during which nearly $1.4 billion was spent in the local economy.

Table 3-7
Commercial Service (CS) Visitor Passengers and Spending Patterns
Pittsburgh International Airport

Annual CS Enplanements	Estimated CS Visitors	Total Annual Number of Days Stayed	Annual CS Visitor Expenditures
4,890,697	1,791,756	12,038,807	$1,399,379,200

Source: Wilbur Smith Associates.

Among the economic impacts arising from commercial service visitors, first-round output is defined as the visitor expenditures made in the region. The number of jobs supported by these visitor expenditures may be determined using IMPLAN multipliers. Total first-round payroll for these employees is obtained by applying an average wage for visitor-industry employees. First-round impacts totaled 28,979 full-time equivalent jobs that were paid approximately $634.4 million in wages and benefits. The first-round economic output generated in commercial service visitor-related industries was $1.4 billion.

Second-round impacts were calculated using IMPLAN multipliers. Second-round impacts account for 17,091 full-time positions earning an estimated $ $531.5 million in annual payroll, and generating over $1.0 billion in output.

When first-round and second-round impacts are combined, the total employment generated by commercial service visitors using Pittsburgh International Airport in 2007 was 46,070 full-time equivalent jobs, while the total annual payroll impact was estimated at over $1.17 billion. The total economic output impact of commercial service visitors was estimated at over $2.35 billion. **Table 3-8** shows the resulting employment, payroll, and output impacts generated by commercial service visitors to the Pittsburgh region.

Table 3-8
Commercial Service Visitor Impacts
Pittsburgh International Airport

	First-Round	Second-Round	Total
Employment	28,979	17,091	46,070
Payroll	$634,365,600	$531,550,700	$1,165,916,300
Output	$1,278,763,000	$1,071,507,200	$2,350,270,200

Source: Wilbur Smith Associates.

General Aviation Visitor Impacts

The economic activity generated by general aviation visitors at the two ACAA airports was identified through a transient pilot survey effort. Surveys were left with the FBOs at each airport and were then distributed to transient pilots.

This transient pilot survey effort, which lasted approximately two months, was used to estimate general aviation visitors and their associated economic activity. The FBOs at Allegheny County Airport indicated an estimated 35 percent of all itinerant aircraft operations at each airport are true transient while itinerant aircraft activity at Pittsburgh International is estimated to be 75 percent. True transient operations are flights conducted by aircraft not based locally, and are that portion of each airport's general aviation activity that brings in visitors.

To calculate transient operations, itinerant operations counts were obtained via air traffic control data and other FAA sources. Itinerant operations are defined as non-training flights or aircraft that enter or leave an airport's airspace.

In 2007, there were an estimated 7,800 arriving itinerant general aviation aircraft at Pittsburgh International Airport, of which an estimated 5,850 were true transient arrivals. At Allegheny County Airport, these figures were approximately 28,845 itinerant arrivals, resulting in 10,096 true transient arrivals.

Survey data indicates that the average general aviation visitor using Pittsburgh International Airports spends $150 a day per person, and the average length of stay by general aviation pilots and passengers is 1.9 days. General aviation aircraft arriving at Pittsburgh International Airport carry, on average, 3.6 passengers while those arriving at Allegheny County carry 3.7. General aviation visitors using Allegheny County Airport spend $110 a day per person, and the average length of stay by general aviation pilots and passengers is 2.2 days.

General aviation visitors at Pittsburgh International Airport generated 123 first-round, full-time equivalent jobs, over $2.7 million in first-round annual payroll, and $5.8 million in first-round output in 2007. At Allegheny County Airport, these first-round figures were 204 jobs paying $4.5 million and generating $9.0 million in output. These impacts are generated off-airport in the visitor/tourism sectors of the regional economy.

Second-round impacts were calculated using IMPLAN multipliers. Second-round impacts at Pittsburgh International accounted for an additional 73 full-time positions, $2.3 million in annual payroll, and $4.8 million in annual output. At Allegheny County Airport, second-round impacts were 112 full-time jobs earning $3.8 million, while second-round output was nearly $8.0 million.

When first-round and second-round GA visitor impacts were combined, the total employment impact generated by general aviation visitors using Pittsburgh International Airport was estimated at 196 full-time employees, earning a total payroll impact estimated at $4.97 million. Output generated by GA visitor activity at Pittsburgh International Airport was estimated at nearly $10.7 million in 2007. At Allegheny County Airport, general aviation visitors generated 316 full-time jobs earning $8.3 million. These jobs generated output of $17.0 million. **Tables 3-9 and 3-10** show these economic impacts related to general aviation visitors.

Table 3-9
General Aviation Visitor Impacts
Pittsburgh International Airport

	First-Round	Second-Round	Total
Employment	123	73	196
Payroll	$2,706,000	$2,267,400	$4,973,400
Output	$5,844,200	$4,897,000	$10,741,200

Source: Wilbur Smith Associates.

Table 3-10
General Aviation Visitor Impacts
Allegheny County Airport

	First-Round	Second-Round	Total
Employment	204	112	316
Payroll	$4,488,000	$3,799,400	$8,287,400
Output	$9,039,900	$7,971,500	$17,011,400

Source: Wilbur Smith Associates.

Total Economic Impact of ACAA Airports

When all first-round and second-round impacts from all on-airport tenants, commercial service visitors, general aviation visitors and off-airport aviation-related businesses are summed, the total economic benefits generated in the Pittsburgh region from the operation and presence of ACAA airports can be quantified.

The total tenant and visitor-related employment at both ACAA airports is estimated at approximately 65,679 full-time positions, total annual payroll at nearly $1.9 billion, and total output of over $5.0 billion.

Tables 3-11, 3-12 and 3-13 summarize the combined economic impact of ACAA airports.

Table 3-11
Total Economic Impacts
Pittsburgh International Airport

	First-Round	Second-Round	Total
Employment	37,812	26,239	64,051
Payroll	$992,638,900	$810,178,200	$1,802,817,100
Output	$2,500,687,700	$2,252,740,100	$4,753,427,800

Source: Wilbur Smith Associates.

Table 3-12
Total Economic Impacts
Allegheny County Airport

	First-Round	Second-Round	Total
Employment	759	869	1,628
Payroll	$32,962,300	$31,226,000	$64,188,300
Output	$157,996,600	$158,934,200	$316,930,800

Source: Wilbur Smith Associates.

Table 3-13
Combined Economic Impacts of Pittsburgh International
and Allegheny County Airports

Airport	Employment*	Payroll	Output
Pittsburgh International	64,051	$1,802,817,100	$4,753,427,800
Allegheny County	1,628	$64,188,300	$316,930,800
ACAA Airports Total	**65,679**	**$1,867,005,400**	**$5,070,358,600**

Source: Wilbur Smith Associates. *Full-time equivalent.

As discussed in Chapter Two, there are approximately 1,197,200 persons in the Pittsburgh MSA labor force. Based on the modeling efforts, an estimated 5.5 percent of these persons relate to or benefit from ACAA airports. Chapter Two also indicated that the Gross Metropolitan Product for the Pittsburgh MSA is $112.0 billion. Based on this study's findings, Pittsburgh's airports are directly and/or indirectly responsible for $5.0 billion, or approximately 4.5 percent, of the Pittsburgh MSA Gross Metropolitan Product. In addition, when combining all first-round on-airport jobs, Pittsburgh International Airport, with its 7,900 full-time equivalent jobs, is the eighth-largest employer in Metropolitan Pittsburgh.

Pittsburgh International Airport Regional Tax Benefits

Several forms of tax benefits flow into various state and local accounts in the form of income taxes, hotel room taxes, sales taxes and food and beverage taxes. On-airport concessions fees benefit the airport and help fund airport operations. It is estimated that 8,710 airport employees, including construction workers, earned $355.6 million in payroll and benefits. The Pittsburgh region has an average local payroll and school district tax of 1.76 percent that generates an estimated $6.3 million in income tax from these on-airport employees. Visitors to the Pittsburgh region create jobs and payroll that are also taxed. It is estimated that all employees in the visitor industry live or work within the Pittsburgh region and therefore pay 1.76 percent of their income to local income taxes. These taxes generate an estimated $11.2 million for the local governments in the Pittsburgh region. **Table 3-14** identifies these tax benefits.

Table 3-14
Pittsburgh International Airport
Income Tax Benefits to Pittsburgh Region

On Airport Employment	Payroll	Taxes
1.76% Pittsburgh Region Payroll Tax *	$355,567,300	$6,254,400
Commercial Service Visitor Industry Employment		
1.76% Pittsburgh Region Payroll Tax *	$634,365,600	$11,158,400
General Aviation Visitor Industry Employment		
1.76% Pittsburgh Region Payroll Tax *	$2,706,000	$47,598
Total Local Payroll Tax to Pitts. Region	**$992,638,900**	**$17,460,398**

* Average regional combined school district and payroll tax
Source: Wilbur Smith Associates.

A portion of visitor output into the Pittsburgh economy flows to state and local governments in the form of taxes. Visitors to the Pittsburgh region pay various taxes and fees while spending money for hotels/motels, meals, shopping and renting automobiles. **Table 3-15** identifies the types of taxes based on the type of expenditure. Based on passenger survey data, it is estimated that 45 percent of all expenditures by visitors are for hotels/motels, 25 percent is for food and beverage, 15 percent is for retail sales/entertainment, and 15 percent is for ground transportation. Based on these ratios, tax benefits were derived using the average tax rates for these types of expenditures. The model indicates total Pittsburgh International Airport visitor expenditures to be more than $1.2 billion in 2007. Using the tax rates of local governments, it is estimated that 11.5 percent, or $140.1 million, of the $1.2 billion in visitor expenditures is received by state and local governments as tax revenue in the Pittsburgh region.

Table 3-15
Pittsburgh International Airport
Visitor Industry
Tax Benefits to Pittsburgh Region

Commercial Service Visitor Industry	Type of Tax	Estimated Expenditures	Estimated Tax
Hotels	14% Bed Tax	$575,443,400	$80,562,100
Eating Est.	7% Sales Tax	$319,690,800	$22,378,400
Retail	7% Sales Tax	$191,814,500	$13,427,000
Rental Car	19% Taxes/Fees	$120,616,200	$22,977,400
		$1,207,564,900	**$139,344,900**
General Aviation Visitor Industry	**Type of Tax**	**Estimated Expenditures**	**Estimated Tax**
Hotels	14% Bed Tax	$2,922,100	$409,094
Eating Est.	7% Sales Tax	$1,577,934	$110,455
Retail	7% Sales Tax	$818,188	$155,865
Rental Car	19% Taxes/Fees	$525,978	$36,818
		$5,844,200	**$712,233**
Estimated Taxes to Pittsburgh Region		**$1,213,409,100**	**$140,057,133**

Source: Wilbur Smith Associates

Pittsburgh International Airport Local Tax Benefits

Pittsburgh International Airport lies in both Findlay Township and Moon Township. Passenger terminals, on-airport hotel, passenger parking areas, some runways, airline and corporate hangars, and the air traffic control tower are within the boundaries of Findlay Township. The cargo areas, general aviation FBO, military bases, and some runways are within the boundaries of Moon Township. In addition, US Airways' hangars and several administrative offices are located in Findlay Township.

As a result of where these airport facilities are located, each township derives benefits from the collection of employees' local services tax and earned income tax from residents who work at the airport and reside in the community. The local services tax is a $52 annual occupation tax paid by each full-time and part-time employee working within the township. For each $52 paid, $47 is allocated to the township and $5 is allocated to the local school district. In 2007, Findlay Township had an estimated total population of 5,058 while Moon Township had an estimated total population of 22,696[6]. The majority of the aviation activity and employment on the airport takes place in Findlay Township since the Terminal is in the township. The approximately 4,540 full-time and part-time employees on the airport who work in Findlay Township pay the township a total of $213,400 and West Allegheny School district a total of

[6] U.S. Census Bureau

$22,700 in local services taxes annually. Moon Township gains an estimated $148,700 annually and Moon Area School District receives $15,800 from the approximately 3,164 airport employees on the airport that work in the township. (See **Table 3-16**)

Table 3-16
Pittsburgh International Airport
Estimated Employment Related Tax Benefits to Moon and Findlay Townships

Moon Township	
Number of Airport Employees	3,164
Residing Employees	192
Local Services Tax (formerly Emergency & Municipal Services Tax)	$148,700
Earned Income	$49,100
Tax Benefits to Moon Township	**$197,800**
Local Services Tax (Schools)	$15,800
Earned Income (Schools)	$49,100
Tax Benefits to Moon Area School District	**$64,900**
Findlay Township	
Number of Airport Employees	4,540
Residing Employees	98
Local Services Tax (formerly Emergency & Municipal Services Tax)	$213,400
Earned Income	$50,300
Tax Benefits to Findlay Township	**$263,700**
Local Services Tax (Schools)	$22,700
Earned Income (Schools)	$50,300
Tax Benefits to West Allegheny School District	**$73,000**

Source: Moon and Findlay Township records and Wilbur Smith Associates

An earned income tax of 1.0 percent is applied in both townships to airport workers who reside in the township and is equally divided between the township and local school district. Findlay Township has a total labor force of approximately 2,287[7]. An estimated 98 on-airport employees reside in the township. Of the township's entire labor force, 4.3 percent work on the airport. Wages earned by Findlay Township's resident airport employees are estimated at $4.0 million annually. This payroll generates approximately $50,300 in earned income tax for the township and $50,300 for West Allegheny School District.

Moon Township has a total labor force of approximately 10,691. An estimated 192 on-airport employees reside in the township. Of the township's entire labor force, 1.8 percent works on the airport. Airport employees residing in Moon Township earn an estimated $7.9 million annually. This payroll generates an estimated $197,800 in earned income tax for the township and $64,900 for Moon Area School District.

[7] U.S. Census Bureau

Findlay Township and Moon Township also receive benefits from various additional sources of tax revenue related to the airport. One of these sources is property taxes from buildings and tenants located on Pittsburgh International Airport. Findlay Township collects property taxes from two corporate aircraft hangars and the Sunoco APlus gas station on the airport as well as Airmall tenants other than food and beverage concessionaires. The property tax from these tenants is estimated to generate approximately $27,500 annually for Findlay Township, approximately $310,000 annually for the West Allegheny School District, and approximately $66,100 for Allegheny County. Moon Township collects property taxes from four office buildings in the Airside Business Park. A total of approximately $6,300 in annual property tax is estimated to be generated for Moon Township, a separate $39,300 annually for the Moon Area School District, and approximately $9,000 in annual tax for Allegheny County.

Because Pittsburgh International Airport's parking garage and lots are located in Findlay Township, the Township receives parking tax revenue from customers parking at the airport. The parking tax is a 9 percent tax collected for the ACAA by Grant Oliver Corporation, which manages the ACAA's parking facilities. A seven percent tax is allocated to Findlay Township and a 2 percent tax is allocated to the West Allegheny School District. In 2007, this tax generated approximately $2,195,300 for Findlay Township and approximately $627,200 for the West Allegheny School District. **Table 3-17** summarizes the estimated tax benefits from these additional sources of tax revenue for Findlay and Moon townships.

Table 3-17
Pittsburgh International Airport
Estimated Property and Parking Tax Benefits to
Allegheny County, Moon and Findlay Townships

Moon Township	County	Township	School District
Buildings (Property Tax)[1]	$9,000	$6,300	$39,300
Total	**$9,000**	**$6,300**	**$39,300**
Findlay Township			
Parking Tax[2]	$0	$2,195,300	$627,200
Airmall Tenants (Property Tax)[3]	$46,700	$19,400	$218,900
Buildings (Property Tax)[3]	$19,400	$8,100	$91,100
Total	**$66,100**	**$2,222,800**	**$937,200**

Sources: [1] Allegheny County website; [2] Allegheny County Airport Authority records; [3] Findlay Township records and Allegheny County website

Table 3-18 summarizes total tax benefits to Moon and Findlay townships from Pittsburgh International Airport.

Table 3-18
Pittsburgh International Airport
Estimated Total Tax Benefits to Allegheny County, Moon and Findlay Townships

Moon Township	County	Township	School District
Local Services Tax (formerly Emergency & Municipal Services Tax)[1]	$0	$148,700	$15,800
Earned Income[1]	$0	$49,100	$49,100
Buildings (Property Tax)[2]	$9,000	$6,300	$39,300
Total	**$9,000**	**$204,100**	**$104,200**
Findlay Township			
Local Services Tax (formerly Emergency & Municipal Services Tax)[3]	$0	$213,400	$22,700
Earned Income[3]	$0	$50,300	$50,300
Parking Tax[4]	$0	$2,195,300	$627,200
Airmall Tenants (Property Tax)[5]	$46,700	$19,400	$218,900
Buildings (Property Tax)[5]	$19,400	$8,100	$91,100
Total	**$66,100**	**$2,486,500**	**$1,010,200**

Sources: [1] Moon Township website and Wilbur Smith Associates; [2] Allegheny County website; [3] Findlay Township records and Wilbur Smith Associates; [4] Allegheny County Airport Authority records; [5] Findlay Township records and Allegheny County website

Allegheny County Airport Regional Tax Benefits

Similar to Pittsburgh International Airport, several forms of tax benefits flow into various state and local accounts in the form of income taxes, hotel room taxes, sales taxes and food and beverage taxes. It is estimated that 555 on-airport employees, including construction workers, earned $28.5 million in payroll. The Pittsburgh region has an average payroll and school district tax of 1.76 percent that generates an estimated $500,900 in income tax from these on-airport employees. Visitors to the Pittsburgh region using Allegheny County Airport create jobs and payroll that are also taxed. It is estimated that all employees in the visitor industry live or work within the Pittsburgh region and therefore pay the 1.76 percent Pittsburgh regional income tax. This tax generates an estimated $78,900 for local government. **Table 3-19** identifies these tax benefits.

Table 3-19
Allegheny County Airport
Income Tax Benefits to Pittsburgh Region

On Airport Employment	Payroll	Taxes
1.76% Pittsburgh Region Payroll Tax *	$28,474,300	$500,900
Visitor Industry Employment		
1.76% Pittsburgh Region Payroll Tax *	$4,488,000	$78,900
Estimated Taxes to Pittsburgh Region		**$579,800**

* Average regional combined school district and payroll tax
Source: Wilbur Smith Associates

A portion of visitor output into the Pittsburgh economy flows to state and local governments in the form of taxes. Visitors to the Pittsburgh region pay various taxes and fees while spending money for hotels/motels, meals, shopping and renting automobiles. **Table 3-20** identifies the types of taxes based on the type of expenditure. Based on transient pilot survey data, it is estimated that 50 percent of all expenditures by visitors are for hotels/motels, 27 percent is for food and beverage, 9 percent is for retail sales/entertainment, and 14 percent is for ground transportation. Based on these ratios, tax benefits were derived using the appropriate tax rates for these types of expenditures. The model indicates total Allegheny County Airport visitor expenditures to be nearly $9.0 million in 2007. Using the tax rates of local governments, it is estimated that 10.8 percent, or $975,200, of visitor expenditures benefit state and local governments in the Pittsburgh region.

Table 3-20
Allegheny County Airport
Visitor Industry
Tax Benefits To Pittsburgh Region

Visitor Industry	Type of Tax	Estimated Expenditures	Estimated Tax
Hotels/Motels	14% Bed Tax	$4,520,000	$632,800
Food & Beverage	7% Sales Tax	$2,440,800	$170,900
Retail/Entertainment	7% Sales Tax	$813,600	$57,000
Ground Transportation	9% Sales Tax/Fees	$1,265,600	$114,500
Total		**$9,040,000**	**$975,200**

Source: Wilbur Smith Associates

Allegheny County Airport Local Tax Benefits

Allegheny County Airport lies in the Borough of West Mifflin. In 2007, West Mifflin had an estimated population of 20,820[8]. Of the Borough's entire labor force, 91 residing employees, or 1.0 percent, work at the airport.

West Mifflin derives benefits from the collection of a local services tax and earned income tax from resident and non-resident employees who work on the airport. The local services tax is a $52 annual tax paid by each full-time and part-time employee working within the Borough, be they residents or non-residents. For each $52 paid, $47 is allocated to the Borough and $5 is allocated to the West Mifflin Area School District. The 478 full-time and part-time employees on the airport pay the Borough a total of approximately $24,856 in local service taxes annually, of which approximately $2,490 goes to the school district. The Borough receives a total of approximately $22,370 annually from the collection of the local services tax.

An earned income tax of 1.0 percent is applied to airport workers who reside in the Borough and is equally divided between the Borough and the West Mifflin Area School District. West Mifflin has a total labor force of approximately 9,047[9]. Borough tax officials indicate that approximately 91 on-airport employees reside in West Mifflin. When considering the total on-airport work force, 19.0 percent reside in West Mifflin. Wages earned by West Mifflin's airport employees are estimated at $5.3 million annually. This payroll generates a total of approximately $28,800 in earned income tax for the Borough and $28,800 for the school district.

West Mifflin also receives benefits from the collection of a mercantile tax and business privilege tax from businesses and retail and wholesale vendors located within the community. The mercantile tax is a 1.5 percent tax applied to the annual gross sales of wholesale and retail vendors located in the Borough. The tax is allocated entirely to the school district. This tax is estimated to generate nearly $150,000 for the local school district.

Two forms of a business privilege tax are imposed on businesses located in the community. The first is a flat tax in the amount of $500 levied annually upon businesses in West Mifflin. The 10 businesses on Allegheny County Airport pay a total of $5,000 annually in business privilege taxes to the Borough. The second business privilege tax is allocated to the school district and is a 6.0 percent tax applied to the gross sales of businesses in West Mifflin. The 10 businesses located on Allegheny County Airport had estimated sales of $9.9 million in 2007, which generates approximately $594,000 in business privilege taxes annually for the school district.

Finally, in addition to these sources of tax revenue, West Mifflin also receives property tax revenue from various buildings located on Allegheny County Airport. It is estimated that these taxes generate approximately $39,700 annually for the Borough, approximately $121,700 annually for the West Mifflin Area School District, and approximately $25,600 annually for

[8] U.S. Census Bureau

[9] U.S. Census Bureau

Allegheny County. **Table 3-21** summarizes the total estimated tax benefits to West Mifflin Borough and Allegheny County.

Table 3-21
Allegheny County Airport
Estimated Tax Benefits to West Mifflin Borough and Allegheny County

West Mifflin Borough	
Number of Employees on Airport	478
Residing Employees	91
Business Privilege Tax	$5,000
Local Services Tax	$22,400
Earned Income	$28,800
Buildings (Property Tax)	$38,200
Total Tax to West Mifflin Borough	**$94,400**
Local Services Tax (Schools)	$2,500
Earned Income (Schools)	$28,800
Mercantile Tax (Schools)	$148,500
Business Privilege Tax (School Related)	$594,000
Buildings (Property Tax)	$117,000
Total Tax to West Mifflin School District	**$890,800**
Allegheny County	
Buildings (Property Tax)	$24,600
Total Tax to Allegheny County	**$24,600**

Source: Wilbur Smith Associates, West Mifflin Borough records, and Allegheny County website

Business Use of Pittsburgh's Airports

Many employers in Metropolitan Pittsburgh, while perhaps not located directly at the airport, benefit from the proximity and availability of ACAA airports. Without Pittsburgh International Airport and Allegheny County Airport, many companies in the region would experience adverse effects in business activity levels. Because of the efficiencies gained by the availability of aviation, many businesses receive additional benefits. This section identifies the benefits that businesses in the Pittsburgh region derive from the day-to-day operation of these airports.

Approximately 1,000 businesses in the primary market area received surveys designed to assess their dependence on Pittsburgh's airports. While it is impossible to make exact estimates of all the additional benefits that businesses in the Pittsburgh region derive from use of the airports, it is possible to make some broad assumptions as to how the airports benefit the region's non-aviation business community. Approximately 7 percent of the businesses surveyed responded, which was adequate for the purposes of this study. The survey sought information on topics such as reliance on commercial airline service and air cargo, employment and payroll, and important factors considered when a business is expanding or relocating. Other questions asked businesses to provide information regarding reliance on general aviation at both Pittsburgh International and Allegheny County Airports. The survey sampled businesses in the airport's primary market area and targeted businesses that have a propensity to use aviation services.

The business survey confirmed that many businesses in the region depend on the two ACAA airports for the transport of employees, clients and suppliers as well as goods. Without access to the airports, some companies would be forced to cut employment or possibly locate outside the airports' primary market area.

According to U.S. Department of Commerce, Bureau of Economic Analysis (BEA) data there are over 1,197,200 persons in the Pittsburgh labor force. The industrial sectors surveyed above account for over 681,700 employees. Based on the survey data approximately 49 percent of the business activity in the sampled industrial sectors is linked to the availability of Pittsburgh International Airport, with another 3 percent dependent on the availability of Allegheny County Airport. In order to estimate the additional regional benefit from the availability of ACAA airports, one can assume that approximately 52 percent of the 681,700 employees (approximately 354,500 jobs) can attribute their employment to the airports and the efficiencies gained from their operation.

The area business survey also contained questions regarding the importance of various factors considered when a business contemplates relocation or expansion. The top 13 factors, ranked in the relative order of importance by Metropolitan Pittsburgh businesses, are as follows:

1. Highway Access
2. Trained Labor
3. Tax Incentives
4. **Commercial Service Airport**
5. Input Suppliers
6. **General Aviation Airport**
7. Universities/R&D
8. Cultural Centers
9. Historic Location
10. Urban Business District
11. Raw Materials/Nat. Resources
12. Rail Transport
13. Water Transport

Approximately 51 percent of all survey respondents indicated that a commercial service airport was "Very Important" to the decision of business location, and 31 percent indicated that a general aviation airport was "Very Important." An additional 20 percent of the respondents indicated the presence of a commercial service airport was at least "Important", and 29 percent indicated the presence of a general aviation airport was "Important."

Overall findings of the business survey are as follows:

- Approximately 95 percent of the respondents indicated that they utilize commercial airline service related to their routine business functions.

- Approximately 77 percent of business respondents use Pittsburgh International Airport for at least one trip per month.

- The average business responding to the survey indicated that they use Pittsburgh International Airport for 260 trips per year.

- Approximately 14 percent of surveyed businesses use Allegheny County to support their business activity. On average, these firms use the airport 11 times per year.

- Approximately 85 percent of the responding businesses indicated that they have customers or suppliers who rely on commercial airline service at Pittsburgh International Airport when conducting business with their company.

- Approximately 11 percent of responding businesses reported the use of Allegheny County Airport by clients and/or vendors; these clients used the airport approximately seven times per year per responding business.

- Approximately 65 percent of the respondents indicated they use some form of air cargo and/or express package service on a regular basis.

- Approximately 71 percent of all respondents indicated that scheduled commercial air service is "important" or "very important" to their location decision.

- Approximately 60 percent of all respondents indicated that the presence of a general aviation airport is "important" or "very important" to their location decision.

- Nearly 47 percent of the respondents classified their business in the manufacturing sector. Business Service industries accounted for approximately 29 percent of the responses.

Qualitative Benefits

In addition to the economic benefits described above, Pittsburgh's airports have aviation-related activity that takes place to which it is difficult to assign a monetary value. For example, the airports serve corporate aircraft from across the country. A sample of large corporations located outside the region that used ACAA airports for general aviation activity in the last year include:

- AFLAC Insurance - Columbus, OH
- AK Steel - Middletown, OH
- Alltel - Little Rock, AR
- American International Group - New York, NY
- Anheuser-Busch - St. Louis, MO
- Archer-Daniels-Midland - Decatur, IL
- Bristol Myers Squibb - West Trenton, NJ
- Caterpillar - Peoria, IL
- Exxon Mobil - Houston, TX
- General Electric - Fairfield, CT

- HealthSouth - Birmingham, AL
- Martin Marietta-Materials - Raleigh, NC
- Nationwide Insurance - Columbus, OH
- Procter & Gamble - Cincinnati, OH
- S.C. Johnson - Racine, WI
- Scotts Miracle-Gro - Marysville, OH
- SunTrust Banks - Orlando, FL
- Target Corporation - Minneapolis, MN
- Tyson Foods - Little Rock, AR
- Verizon Wireless - White Plains, NY
- Wachovia Financial - Charlotte, NC
- Wal-Mart - Bentonville, AR

Pittsburgh's airports also support a wide variety of other aviation activities, some of which occur on a regular basis, and others which occur on an occasional or annual basis. Pittsburgh International Airport is used extensively by the Pennsylvania Air National Guard 171st Air Refueling Wing and U.S. Air Force 911th Airlift Wing for flight training and exercises, due to the presence of both military units' bases on the airport. Aircraft Rescue and Firefighting (ARFF) training is another aviation activity that occurs regularly at Pittsburgh International. Since 1999, in cooperation with the American Association of Airport Executives North East Chapter, the airport's ARFF training facility has provided top-of-the-line ARFF training to firefighters from the United States and around the world. Nowhere else can one find more comprehensive firefighter training and emergency services instruction than with the PIT ARFF training facility. Today, Pittsburgh trains more than 1,000 emergency responders from many states and the island of Puerto Rico each year. Transport of medical doctors occurs frequently at the airport as well. Aerial inspections of utilities occurs on an occasional basis. The airport is also used occasionally by visitors arriving via general aviation aircraft as a gateway to the Pittsburgh region.

A significant event that is held at Pittsburgh International Airport on an annual basis is the Wings Over Pittsburgh Air Show. The event is hosted by the U.S. Air Force 911th Airlift Wing and draws approximately 250,000 attendees each year. The show is ranked as one of the top 10 largest air shows in the country. The 911th Airlift Wing and ACAA coordinate closely to ensure the event's success. In 2008, the event featured the Canadian Forces 4-32 Demonstration Squadron, the Snowbirds, United States Army Golden Knights Jump Team, United States Navy Leap Frogs Jump Team, and U.S. Air Force F-22 Raptor.

At Allegheny County Airport, recreational aircraft and flight training activity occurs on a daily basis. Wings of Eagles offers professional flight training and aircraft rental at the airport, as well as a flight simulator for training private pilots. Other activities that take place on a regular basis include use of the airport by visitors arriving via general aviation aircraft as a gateway to the Pittsburgh region, police and law enforcement operations, career training and education, emergency medical evacuation and patient transfer by STAT Medevac, medical doctor transport, environmental patrol, and traffic and news reporting. Aviation activities that occur on an occasional basis include aerial inspections of utilities, staging area for community events, prisoner transport, search and rescue operations, aerial photography, aerial advertising, static displays of aircraft during the summer months, and blimp mooring.

In addition to these aviation-related activities at Pittsburgh's airports, the ACAA is very involved in the local community. For example, the ACAA organizes an annual golf outing to benefit Wings for Children, a local non-profit organization based at Allegheny County Airport. Wings for Children provides free medical airlifts to ambulatory children with life threatening and chronic illnesses requiring specialized treatment. ACAA firefighters raise funds at Pittsburgh International Airport for the Muscular Dystrophy Association's annual "Fill the Boot" drive. The funds raised through this event each year send one child with Muscular Dystrophy to a week-long summer camp for children with neuromuscular disease. The camp provides a wide range of activities especially designed for children who have limited mobility or use wheelchairs. The ACAA also assists the Aviation Council of Pennsylvania with promoting the goals of the Aviation Council's annual Aviation Scholarship Program. The primary goal of the scholarship program is to assist applicants in the attainment of their aviation and career goals through education. The program is open to any resident of Pennsylvania interested in a career in aviation. Awards range from $1,000 to $3,000 and are available in categories that include Aviation Technology, Aviation Management, and Professional Pilot. The ACAA is a member of the Aviation Council.

Finally, the ACAA, Pittsburgh Area Chamber of Commerce, and the Pittsburgh Convention and Visitors Bureau cooperate on a Joint Aviation Task Force, which supports new or improved air service, the attraction of new corporate headquarters, and the promotion of greater convention activity.

Summary

The airports operated by the ACAA are clearly a significant asset to the Metropolitan Pittsburgh region. In all, ACAA airports contribute 65,679 jobs to Pittsburgh's regional economy. These jobs earn nearly $1.9 billion in wages and benefits, and produce an economic output of over $5.0 billion. **Table 3-22** summarizes these impacts. As the global economy continues to grow, ACAA's airports will continue to grow and be a major catalyst of the region's economy.

Table 3-22
Summary of Economic Impacts
ACAA Airports

Airport	Employment*	Payroll	Output
Pittsburgh International	64,051	$1,802,817,100	$4,753,427,800
Allegheny County	1,628	$64,188,300	$316,930,800
ACAA Airports Total	**65,679**	**$1,867,005,400**	**$5,070,358,600**

Source: Wilbur Smith Associates.

Chapter Four
The Economic Impacts of Non-Aviation Activity on ACAA Airports

Introduction

As part of the Allegheny County Airport Authority Economic Impact Study, a separate analysis of non-aviation businesses located on Pittsburgh International Airport and Allegheny County Airport properties was conducted to ascertain the economic benefit to the regional economy derived by these business' activities.

There are 18 non-aviation businesses and one military facility currently located on Pittsburgh International Airport property. Businesses and military facilities located on airport property presented in this analysis are identified in **Table 4-1**.

Table 4-1
Non-Aviation Businesses on Pittsburgh International Airport Property

Business Name	Location	Type
Adidas	Airside Business Park	Wholesale/Distributor
Airside Business Park LP	Airside Business Park	Real Estate
ATS-Chester Engineers	Airside Business Park	Engineering Services
Canon Business Solutions	Airside Business Park	Wholesale/Distributor
Countrywide Home Loans	Airside Business Park	Finance Insurance Real Estate
Elliott's Off Broadway Deli	Airside Business Park	Restaurant
Honeywell International/ADI	Airside Business Park	Wholesale/Distributor
Michael Baker Jr. Corp	Airside Business Park	Engineering Consulting
National Rehab Equipment	Airside Business Park	Wholesale/Distributor
NDCHealth Corp/Mckesson Corp	Airside Business Park	Information Technologies
Park Corporation	Airside Business Park	Manufacturing
Rockwell Automation	Airside Business Park	Manufacturing
Veolia Water	Airside Business Park	Engineering Services
American Tire Distributors	Clinton Commerce Park	Wholesale/Distributor
Buncher Corporation	Clinton Commerce Park	Real Estate
Knepper Press	Clinton Commerce Park	Manufacturing
US Army Reserve Center	Highway 60-Moon Twp.	Federal Military
All American Bowling	Hookstown Grade Road	Wholesale/Distributor
Dick's Sporting Goods HQ	Industry Drive	Corporate HQ

Source: ACAA records, tenant surveys

It is noteworthy that the Transportation Security Administration (TSA) has an office in the Airside Business Park, but their impact is included in the aviation-related tenant analysis of this study.

The new corporate headquarters for Dick's Sporting Goods, Inc. is located on airport property on a 116-acre site at the intersection of Moon-Clinton Road and Route 60 and is under construction. It is anticipated to be completed and occupied in 2009. Once Dick's Sporting Goods current headquarters building on airport property on Industry Drive is vacated, Thermo-Fisher, Inc. will take occupancy and be the only tenant in the building. Thermo Fisher employs about 1,000 people in the region and will occupy the building in 2010.

One unique characteristic of Dick's Sporting Goods new headquarters building is that it will be the only non-aviation business with access to the airfield. Their 670,000-square-foot on-airport corporate headquarters building includes an adjacent 60,000-square-foot corporate aircraft hangar.

Also on airport property is the McGarrity Army Reserve Center[10] which is on Highway 60 in Moon Township. The facility now has four non-aviation military tenants which include the:

- 316th Expeditionary Sustainment Command,
- 354th Mobile Public Affairs detachment,
- 339th Combat Support Hospital,
- and Charles E. Kelly Support Facility (as of September 2009).

Only one non-aviation business tenant is located on Allegheny County Airport. Century III Kia car dealership is currently under construction on leased airport property and is yet to be staffed and occupied.

Methodology

First-round impacts for non-aviation business tenants were identified through survey efforts. Non-aviation businesses located on airport property were mailed surveys in June 2009. These surveys were similar to surveys sent to aviation-related tenants. This aspect of the analysis is important to ensure that final economic impact estimates are valid, since estimates of second-round (multiplier) impacts are driven by estimates of first-round impacts.

All on-airport non-aviation tenants were contacted to collect information regarding their economic activity. Airport staff provided names, mailing addresses, telephone numbers, and employment estimates for each non-aviation tenant. Surveys were then sent to each, and follow-up calls and emails were made where necessary to obtain responses and verify information. On-airport non-aviation tenants were grouped into several categories to aid in applying study multipliers. These categories are based on the industry type identified by each respondent and include:

10 McGarrity Army Reserve Center off Business Route 60 in Moon, is the former home of the 99th Regional Readiness Command Headquarters which relocated its operations to Fort Dix in New Jersey.

- Manufacturing
- Engineering/Architectural Services
- Information Technologies
- Restaurants
- Real Estate
- Finance
- Wholesale
- Retail
- Corporate Administration
- Government/military
- Construction

Surveys sent to each airport tenant requested the following data:

- Type of activity conducted by the tenant
- Number of full-time and part-time on-airport employees
- Total annual wages and benefits paid to on-airport employees
- Total capital improvement expenditures on the airport for 2005 through 2008
- Total operating expenses (excluding payroll and capital improvements previously identified)
- Total gross sales (where applicable)

Each tenant was grouped by their North American Industry Classification System (NAICS) code based on the primary service or good they provide. This was done to facilitate subsequent IMPLAN modeling to estimate second-round impacts. The NAICS is a sector-specific list used to describe industry types. When the first-round and second-round impacts are summed, the total economic benefit is realized.

On-Airport Construction Methodology

Each year, many non-aviation businesses on the airport undertake additional capital improvement projects (CIP). These projects employ persons in jobs such as construction worker, architect, engineer, and consultant.

The following methodology was used to estimate construction impacts:

- CIP data for 2005-2008 was gathered from non-aviation tenants. The CIP data for the four-year period was used to determine a yearly average to avoid showing peaks or troughs in construction activity.

- The IMPLAN Input/Output model indicates that $1 million spent in construction activity supports 12.2 full-time construction-related jobs in the Pittsburgh region. These jobs are comprised of those people who are engaged directly in these projects – construction workers, equipment operators, foremen, engineers, project managers, etc.

- For example, if CIP spending at Pittsburgh International Airport for a non-aviation business averaged $10 million between 2005 and 2008, this would annually support the equivalent of 122 first-round full-time jobs generating approximately $5.2 million in payroll. The average annual payroll for a construction worker in the Pittsburgh MSA is $43,000.

Impact Multipliers Methodology

Employment, payroll, and output impacts derived from the on-airport non-aviation tenant surveys represent the first-round impacts identified in this study. As these first-round impacts are generated, they circulate among other sectors of the economy, creating successive waves of additional spending. This phenomenon is known as the multiplier effect and is referred to as second-round impacts in this study. Multiplier effects arise from various interdependencies within an economic system. For example, the operation of a business requires inputs in the form of supplies, equipment, and maintenance. These inputs generate a boost in sales for those firms or businesses providing these products. Moreover, these goods and services themselves require inputs for their production. The process continues as a large number of impacts re-circulate through the economy. The total requirement for goods and services is a multiple of the direct needs of the non-aviation businesses included in the study; hence they are referred to using the term "multiplier."

The multipliers that were used in this analysis were developed specifically to measure economic impacts in the Pittsburgh region. Individual multipliers must be used for each sector of the economy being modeled. As previously mentioned, individual IMPLAN multipliers were obtained for various sectors organized by the North American Industrial Classification System (NAICS). The multipliers used for modeling non-aviation business impacts in this study are depicted in **Table 4-2**.

The multipliers presented in Table 4-2 were used to estimate second-round impacts in this analysis. For example, $100 in direct expenditures (output) in the Information Technologies sector supports a total output impact equivalent to $195 ($100 times the multiplier of 1.9521). Second-round impacts would therefore be $95 ($195 minus $100).

The methodology discussed in this section was applied to both Pittsburgh International and Allegheny County Airports. By following this methodology, estimates of annual employment, annual payroll, and annual output/spending associated with non-aviation businesses were derived. Results are presented in the next section.

Table 4-2
Pennsylvania-Specific Multipliers
By Industry

Sector/Industry	Total Output Multiplier	Total Payroll Multiplier	Total Employment Multiplier
Corporate Administration	1.8629	1.9325	2.5308
Engineering Services	2.1201	1.7392	2.2006
Finance, Insurance, Real Estate	1.8647	1.7392	1.6943
Information Technology	1.9521	2.1888	3.4421
Manufacturing	1.7720	1.4093	1.5480
Real Estate	1.5381	2.0753	1.8642
Restaurant	1.9212	1.8093	1.3267
Retail	1.8629	1.9325	2.5308
Wholesale/Distributor	1.7479	1.6749	2.0990
Construction	1.9426	1.6210	1.7674
Military	1.8165	1.2885	1.4216

Source: IMPLAN

Economic Impact of Non-Aviation Organizations at Pittsburgh International Airport

In 2008, there were 18 non-aviation businesses and one military facility with on-airport employees at Pittsburgh International Airport. Most of these tenants (presented in Table 4-1) are located in the Airside Business Park and Clinton Commerce Park. These tenants range in size from a small restaurant to the corporate headquarters of Dick's Sporting Goods, Inc. with hundreds of employees and millions of dollars spent on construction.

First-Round Impacts – Non-Aviation Tenants

In order to protect the private business information of the individual respondents and to aid in the discussion of first-round impacts, the tenant impacts were grouped together by function. The five general categories used to summarize the activities of on-airport tenants are:

- Light industrial (manufacturing, distribution)
- Corporate offices (engineering, corporate headquarters, finance etc)
- Army reserve center
- Other (restaurants, real estate)
- Construction

Economic impacts generated by non-aviation on-airport tenants at Pittsburgh International Airport include 3,462 jobs earning $184.6 million in wages, with a first-round output of $511.9 million. **Table 4-3** presents the 2008 first-round impacts for annual output, annual payroll, and employment related to on-airport tenants at Pittsburgh International Airport, by sector. Details of these impacts are provided in the following sections.

Table 4-3
First-Round Non-Aviation Tenant Impacts
Pittsburgh International Airport

	First-Round Impacts		
Sector	Employment	Payroll	Output
Light Industrial	152	$7,203,800	$28,957,800
Corporate Offices	2,323	$137,841,450	$401,983,850
Army Reserve Center	140	$3,278,250	$11,369,250
Other	9	$217,300	$779,400
Construction	839	$36,096,600	$68,807,800
First Round Total	**3,462**	**$184,637,400**	**$511,898,100**

Source: Wilbur Smith Associates

Light Industrial – Several businesses fall into the light industrial category. They include Knepper Press (a commercial printing company), American Tire Distributors, as well as Rockwell Automation. Knepper Press and American Tire Distributors are both located in newly constructed facilities at Clinton Commerce Park. Flabeg is a light manufacturing firm constructing a facility in the same industrial park and occupancy is expected in 2009. Only Flabeg's and FedEx' construction activity is captured in the analysis since they have yet to hire staff. The first-round impact of these light industrial functions is 152 full-time equivalent jobs earning $7.2 million with an estimated output of nearly $29.0 million.

Corporate Offices – The majority of non-aviation activities at Pittsburgh International Airport are related to corporate offices in the Airside Business Park. Tenants in this category include three engineering firms, five wholesale/distributors, a finance/insurance firm, and an information technology firm. The corporate offices category also includes the corporate headquarters of Dick's Sporting Goods, Inc. located on Industry Drive, which is the largest non-aviation employer on the airport.

The non-aviation business tenant survey indicated that the estimated first-round annual output related to corporate offices at Pittsburgh International Airport in 2008 was approximately $402 million. Annual payroll impacts are estimated at $137.8 million. Total employment associated with non-aviation corporate offices at the airport is the equivalent of 2,323 full-time jobs.

Other – This category includes a restaurant within the Airside Business Park and activities related to property management of both the Airside Business Park and Clinton Commerce Park.

Construction Activity – Several non-aviation businesses constructed new facilities on leased airport property. Dick's Sporting Goods, Inc is nearing completion of a $125 million headquarter facility, while Knepper Press and American Tire Distributors recently moved into newly constructed facilities at the Clinton Commerce Park. Flabeg, a solar reflector manufacturer, will be completing a new facility in 2009. Other new construction on airport property includes a 200,000-square-foot addition to the Buncher warehouse. This facility will be a distribution center for FedEx Smart Post[11]. Their construction impacts are included in this analysis. These projects create economic impacts in terms of construction jobs, supplier inputs, and so on. Construction activity in the Pittsburgh MSA typically supports 12.2 full-time equivalent employees for every $1 million spent on projects.

Non-aviation business construction activity at Pittsburgh International generated a first-round impact of approximately 839 full-time equivalent employees earning an estimated $36.1 million annually. Total output related to construction by non-aviation tenants was approximately $68.8 million.

Second-Round Impacts – Non-Aviation Tenants

IMPLAN multipliers were next used to estimate second-round impacts generated by non-aviation tenants at ACAA airports. Second-round impacts at Pittsburgh International Airport account for approximately 3,645 full-time equivalent positions in the Pittsburgh region; these employees received approximately $138.8 million in annual payroll. Second-round annual output by tenants is estimated at approximately $468.8 million. These impacts are shown by category in **Table 4-4**.

Table 4-4
Second-Round Non-Aviation Tenant Impacts
Pittsburgh International Airport

	Second-Round Impacts		
Sector	Employment	Payroll	Output
Light Industrial	83	$2,948,600	$22,354,800
Corporate Offices	2,883	$114,664,913	$368,626,991
Army Reserve Center	59	$945,687	$9,283,209
Other	4	$201,700	$531,900
Construction	615	$20,009,700	$68,015,700
Second Round Total	**3,645**	**$138,770,600**	**$468,812,600**

Source: Wilbur Smith Associates

Total Impact – Non-Aviation Tenants

For 2008, the total annual output (including first-round and second-round impacts) generated by non-aviation business tenants at Pittsburgh International Airport is estimated at $980.7 million. Total full-time employment related to these businesses and agencies is estimated to be 7,107 persons, with a total annual payroll of approximately $323.4 million annually. **Table 4-5**

[11] FedEx Smart Post transports high volume, low-weight products that fulfill catalog or Internet orders. The U.S. Postal Service delivers these product to the consumer.

summarizes the 2008 economic impacts generated by all non-aviation business tenants at Pittsburgh International Airport.

Table 4-5
Total Non-Aviation Tenant Impacts
Pittsburgh International Airport

		Total Impacts	
Sector	Employment	Payroll	Output
Light Industrial	235	$10,152,400	$51,312,600
Corporate Offices	5,206	$252,506,363	$770,610,841
Army Reserve Center	198	$4,223,937	$20,652,459
Other	13	$419,000	$1,311,300
Construction	1,455	$56,106,300	$136,823,500
Total	**7,107**	**$323,408,000**	**$980,710,700**

Source: Wilbur Smith Associates

Economic Impact of Non-Aviation Businesses at Allegheny County Airport

Only one non-aviation business tenant is located on Allegheny County Airport. Century III Kia car dealership is currently under construction on leased airport property. No impacts related to operations of this tenant were available since it is yet to be staffed and occupied; however, construction impacts have been estimated.

Table 4-6 identifies the non-aviation tenant construction impacts at Allegheny County Airport in 2008. Construction employed an estimated 37 first-round workers, with a total annual payroll of over $1.6 million. Total first-round output related to construction activity is $3.0 million. When first-round impacts are combined with second-round impacts, the construction output of the new automobile dealership is nearly $6.0 million, supporting an equivalent of 64 full-time jobs.

Table 4-6
Total Non-Aviation Tenant Construction Impacts
Allegheny County Airport

	Employment	Payroll	Output
First-Round	37	$1,573,800	$3,000,000
Sound-Round	27	$872,415	$2,965,462
Total	**64**	**$2,446,215**	**$5,965,462**

Source: Wilbur Smith Associates

Economic Impact of Non-Aviation Businesses at ACAA Airports

Non-aviation businesses and government organizations on Pittsburgh International Airport and Allegheny County Airport properties, when combined, generate millions of dollars of economic activity and create thousands of quality jobs in Pittsburgh, as shown in **Table 4-7**. When all factors are combined, the non-aviation businesses on airport property:

- Support 7,171 jobs
- Generate nearly $325.9 million in payroll
- Produce $986.7 million in economic activity

Table 4-7
Total Non-Aviation Tenant Impacts
Pittsburgh International and Allegheny County Airport Combined

	First-Round Impacts		
Sector	Employment	Payroll	Output
Light Industrial	235	$10,152,400	$51,312,600
Corporate Offices	5,206	$252,506,363	$770,610,841
Army Reserve Center	198	$4,223,937	$20,652,459
Other	13	$419,000	$1,311,300
Construction	1,519	$58,552,515	$142,788,962
Total	**7,171**	**$325,854,215**	**$986,676,162**

Source: Wilbur Smith Associates

Appendix A

ECONOMIC BENEFITS OF AIR CARGO

Pittsburgh International Airport is served by three integrated express carriers and 17 air freight forwarders. **Table A-1** identifies integrated express and freight forwarding operators providing air cargo service to the airport.

Table A-1
Air Cargo Sector Operators at
Pittsburgh International Airport

Air Forwarders
Allstates World Cargo (Goal Worldwide, Inc)
ACS Logistics (Air Cargo Sales, Inc.)
AIT Worldwide Logistics
BAX Global
D.T. Gruelle
EMO Trans
CEVA Logistics (EGL Eagle Global Logistics)
Expeditors International of Washington Inc
Kuehne + Nagle
Mid America Overseas
Nippon Express USA, Inc.
Pilot Air Freight (Air Charter of PA Inc)
R L Swearer Company
Seko
Schenkers International
Tazmanian Freight Systems Inc
Team Worldwide
Integrated Express Carriers
DHL
Federal Express
UPS (United Parcel Service)

Source: Wilbur Smith Associates

Integrated Express Operators

Integrated express operators move the customer's goods door-to-door, providing shipment collection, transport via air or truck, and delivery. Integrated express operators include FedEx Express[12], UPS, and DHL[13]. Express companies provide next day and deferred, time-definite delivery of documents and small packages (two to 70 pounds). Increasingly, however, express operators are transporting "heavy" freight, identified as more than 70 pounds. Integrated express carriers operate using hub and spoke systems similar to the passenger airline systems. The hub is the backbone of integrated express carrier since it provides connections to each market in the integrator's system. Each day of operation, flights from around the U.S. arrive at the hub. Once at the hub, packages are unloaded, sorted to the appropriate destination market, and then loaded back onto the appropriate outbound aircraft for eventual delivery by truck to its destination.

Freight Forwarders

An air freight forwarder is a company that accepts packages from shippers and consolidates them into destination container loads. These loads are then transferred to the non-integrated carrier or a passenger airline to deliver to an agent or subsidiary at another airport. BAX Global operates as a multi-modal forwarder, but utilizes it own aircraft fleet and a hub and spoke system to support its air freight operations. Freight forwarders also rely heavily on lift provided by commercial passenger carriers. Freight forwarders have their leading gateways near major hub airports such as Los Angeles International and New York's John F. Kennedy International. There are 17 air freight forwarders operating in the Pittsburgh market area. Most are in the vicinity of the airport but only a few are located directly on airport property. For purposes of this study off-airport freight forwarders are included in the analysis since they are heavily reliant on commercial airlines to transport their customer's shipments.

Integrated Express Operations

Integrated express operators operating at Pittsburgh International Airport include DHL, Federal Express, and UPS. DHL operates one cargo flight per weekday at Pittsburgh International Airport using a B727. This aircraft departs the Wilmington, Ohio hub in the morning stops at Pittsburgh International Airport to drop off cargo then proceeds on to Manchester, New Hampshire. In the evening the aircraft stops in at Pittsburgh International Airport to pick up cargo on its way back to the Hub.

FedEx Express has two morning flights into Pittsburgh International Airport every weekday from their Memphis Hub and Indianapolis regional hub. Both these hub flights utilize an Airbus 306 aircraft. Feeder aircraft support these flights with departures onto to State College, Cumberland, Maryland, Altoona, and Johnstown. These feeders are Cessna 208 aircraft. In the

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[12] FedEx has several product types that utilize the FedEx brand name in some form. FedEx Express is the integrated express arm of the company. They provide the "overnight service" synonymous with the brand while FedEx Ground is the trucking division; they operate similar to UPS trucking. FedEx LTL is the Less Than Truckload branch, and FedEx Custom Critical is a truck charter service.

[13] In January 2009 DHL ceased operations at PIT

evening these same aircraft depart for there respective hubs carrying cargo collected in the Pittsburgh region as well as fed by the feeder cargo aircraft. It should be noted that one of the A306 aircraft departs every weekday morning back to Memphis to carry mail and low priority cargo to the carrier's day-time sort. This aircraft returns later in the afternoon.

UPS has two morning flights into Pittsburgh International Airport every weekday from their Louisville Hub and Philadelphia regional hub. The Louisville flight utilizes an Airbus 306 aircraft while the Newark flight utilizes a B757 aircraft. In the evening these same aircraft depart for there respective hubs carrying cargo collected in the Pittsburgh region.

Economic Impact

The extensive operations activity of integrated express carriers and air freight forwarders provides a considerable economic benefit to the Pittsburgh region. Airport records indicate 91 percent of air cargo tonnage flowing through the airport relate to Integrated Express carriers on the airport. Thirteen passenger carriers and 11 affiliate airlines accommodate 9 percent of air cargo tonnage annually at PIT. The economic impact of passenger airline cargo operations are not included in this economic impact of cargo analysis since double counting is nearly impossible to avoid without extensive research and station manager interviews. Passenger airline staff and operations combine passenger services and cargo related tasks.

When focusing on freight forwarders and integrated express operations we found that the forwarders have a first round impact of 255 employees with an associated payroll of $9.9 million. First round economic output is the equivalent of $31.2 million annually. Integrated express carriers have a first round impact of 332 employees with an associated payroll of 14.3 million. First round economic output is the equivalent of $47.9 million annually. It is noteworthy to point out that the average salary for individuals working in the air cargo sector is approximately $41,400. The national average salary for workers in the transportation and warehousing industry[14] is $38,900.

Second round (Multiplier) and Total Impact

As these expenditures flow into the Pittsburgh economy, additional spending re-circulates throughout the local economy as a result of expenditures by integrated express carriers and freight forwarders.

For each direct expenditure item, second round impacts were calculated by applying sector specific multipliers. When the first round and second round (multiplier) impacts are combined, the air cargo operations at Pittsburgh International Airport contribute approximately $158.5 million in output to the economy supporting 1,478 jobs with an associated payroll of $42.8 million.

[14] US Bureau of Labor Statistics www.BLS.gov

Table A-2
Air Cargo Sector Economic Benefits

First Round Impacts	Employment	Payroll	Output
Freight Forwarders	255	$9,945,000	$31,248,500
Integrated Express Carriers	332	$14,350,300	$47,940,000
Sub total	**587**	**$24,295,300**	**$79,188,500**
Second Round Impacts			
Freight Forwarders	387	$8,947,200	$31,309,300
Integrated Express Carriers	504	$12,910,400	$48,033,200
Sub total	**890**	**$21,857,600**	**$79,342,500**
Total Cargo Impacts			
Freight Forwarders	642	$18,892,200	$62,557,800
Integrated Express Carriers	836	$27,260,700	$95,973,200
Total	**1,478**	**$42,820,400**	**$158,531,000**

Source: Wilbur Smith Associates

Forecasted Economic Impact of Air Cargo

Future growth of air cargo demand will create quality logistics jobs on the airport. In addition, off-airport freight-forwarding businesses will benefit and experience employment growth. It should be noted that the following forecast include only jobs in the air cargo industry and freight-forwarding industry.

Boeing 2008-2009 Air Cargo Forecast - The Boeing Company issues the biennial World Air Cargo Forecast (WACF) to provide a comprehensive up-to-date overview of the air cargo industry. The forecast summarizes the world's major air trade markets, identifies major trends, and presents forecasts for the future performance and development of markets as well as for the world freighter airplane fleet. According to Boeing the US domestic market has matured, and since 2004, annual volume has been flat or slightly declining. In 2006, the domestic air cargo market increased. 0.4 percent and in 2007 declined 1.5 percent. The Boeing forecast suggests that cargo traffic will undergo moderate growth in North America over the next 10 years: "North America’s air traffic is projected to sustain an average growth of 2.9 percent over the 10-year forecast period through 2017 and 2.7 percent over the 20-year period through 2027." Applying this growth rate of 2.9 percent to the first round jobs, payroll and output generated in 2008 results in a forecast of 781 jobs and over $100 million in annual first round output.

Table A-3
Air Cargo Forecasted Impacts
Based On Boeing 2008 Air Cargo Forecast

First Round 2008	Employment	Payroll	Output
Freight Forwarders	255.0	$9,945,000	$31,248,500
Integrated Express			
Carriers	332.4	$14,350,300	$47,940,000
Total	**587.4**	**$24,295,300**	**$79,188,500**
First Round 2013	**Employment**	**Payroll**	**Output**
Freight Forwarders	294.2	$11,473,123	$36,050,065
Integrated Express			
Carriers	383.4	$16,555,330	$55,306,338
Total	**677.6**	**$28,028,454**	**$91,356,403**
First Round 2018	**Employment**	**Payroll**	**Output**
Freight Forwarders	339.4	$13,236,054	$41,589,426
Integrated Express			
Carriers	442.3	$19,099,180	$63,804,569
Total	**781.7**	**$32,335,234**	**$105,393,994**
AAGR 2008 TO 2018	**Employment**	**Payroll**	**Output**
Freight Forwarders	2.9%	2.9%	2.9%
Integrated Express			
Carriers	2.9%	2.9%	2.9%
Total	**2.9%**	**2.9%**	**2.9%**

1/ Boeing forecasts an AAGR of 2.9% for N.A. Domestic 2008-2018.
Source: Wilbur Smith Associates

Appendix B

ECONOMIC BENEFITS OF TRANSATLANTIC SERVICE SCENARIO

The potential benefit of new air routes was also analyzed as part of this study. A scenario was developed for transatlantic passenger service from Pittsburgh to Paris route utilizing Boeing 757, Boeing 767, and Airbus 330 aircraft. The B757 is a narrow-body aircraft while the B767 and A330 are wide-body aircraft. It should be noted that the estimates provided are conservative and reflect the estimated economic benefit of transatlantic visitor and airline operations to the Pittsburgh region. Several assumptions were made to develop the estimated economic benefits transatlantic service provides.

Assumptions

The analysis included two operations categories: five flights per week or seven flights per week. The Boeing 757 (B757) aircraft was assumed to have 174 seats with 16 in Business Class. The Boeing 767 (B767) aircraft was assumed to have a 205-seat configuration with 24 Business Class seats. The Airbus 330 (A330) was assumed to have a 298-seat configuration with 34 Business Class seats. An average load factor of 90 percent was used while 40 percent of passengers were assumed to be visitors to the Pittsburgh region. Only impacts affecting the Pittsburgh regional economy were included in the analysis and impacts to Paris were omitted. All assumptions are presented in **Table B-1**.

Table B-1

Transatlantic Service Scenario Assumptions

Aircraft Type	757	767	A330
Bus. Class Seats	16	24	34
Coach Seats	158	181	264
Load Factor	90%	90%	90%
Resident	50%	50%	50%
Visitor	40%	40%	40%
Connecting	10%	10%	10%
Cost per block Hour*	$1,108	$1,336	$2,664
Fuel per Block Hour*	$2,197	$3,260	$3,708
Block Hours	7.11	7.11	6.95
Bus. Class Expenditures Per Passenger	$2,486	$2,486	$2,486
Coach Class Expenditures per Passenger	$1,942	$1,942	$1,942

* Based on United Airlines 2007 costs. Adjusted to reflect impacts to Pittsburgh.

Source: Wilbur Smith Associates

First Round Output Impacts
In this transatlantic scenario two categories of operations were analyzed. Each aircraft category operates the route either five or seven flights a week. For purposes of this discussion the categories with the least impact (B757 five flights per week) and greatest (A330 seven flights per week) economic benefits are discussed in order to identify the range of the impacts. As presented in **Tables B-2 and B-3,** the transatlantic route originating in Pittsburgh for the B757 five-flights-a-week operation would contribute nearly $44.1 million annually in first round output while the A330 seven-flights-a-week operation would contribute $109.7 million annually in first round output to the Pittsburgh economy. This does not include the second round or multiplier impact. A discussion of each industry sector's benefits is provided below.

International Visitor Expenditures – This impact is based on the number of international visitors traveling on a nonstop transatlantic flight, as well as the estimated average spending per visitor while in the local area. It includes expenditures by international visitors on lodging, meals, entertainment, retail purchases, and ground transportation.

According to the U.S. Department of Commerce, International Trade Administration, international visitors to the Pittsburgh region spend, $1,956 per trip on average[15]. On the Pittsburgh to Paris route, an average of 10 percent of enplaning passengers are assumed to be connecting, while 50 percent are resident and 40 percent are visitors to the region. In this scenario, there would be a minimum of 16,286 passenger enplanements on the B757 five-flights-a-week operation to a maximum of nearly 39,157 passenger enplanements on the A330 seven-flights-a-week operation. Over 39,150 international visitors using this route would contribute nearly $86 million in expenditures in the region's hospitality industry.

Air Carrier Expenditures – This amount is an estimate of the air carrier expenditures to be incurred by the air carrier while in the Pittsburgh region on- and off-airport. It includes Pittsburgh related airport fees and rentals, fuel purchases, employee compensation, in-flight catering, crew per diem, and other operational expenses. The transatlantic route originating in Pittsburgh for the B757 five-flights-a-week operation would contribute approximately $6.4 million while the A330 seven-flights-a-week operation would contribute nearly $16.6 million annually to the Pittsburgh economy.

Concessions Expenditures – As connecting resident and visitor passengers pass through the airport terminal building, many purchase from the concessions in the Airmall®. According to BAA, the average concession expenditure is $14 per passenger. Applying this average to the transatlantic route originating in Pittsburgh, the B757 five-flights-a-week operation would contribute approximately $570,000 while the A330 seven-flights-a-week operation would contribute nearly $1.4 million annually in airport concessions.

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[15] Passenger expenditures in Table B-2 & B-3 were adjusted to reflect Business Class passengers as well as expenditures in the AirMall. This figure does not include air fare.

Table B-2

Transatlantic Service Scenario Economic Benefits

Impact by Sector	B757 Category 5 Days	B757 Category 7 Days	B767 Category 5 Days	B767 Category 7 Days
First Round Annual Output				
International Visitor Impacts				
Business Class Visitor Expenditure	$3,723,034	$5,226,566	$5,584,550	$7,839,850
Coach Class Visitor Expenditure	$31,910,900	$44,798,100	$36,556,200	$51,319,300
Air Carrier Expenditures				
Air Carrier Fuel Expenditures	$4,061,500	$5,701,700	$6,026,500	$8,460,300
Air Carrier Local Expenditures	$2,048,000	$2,875,100	$2,469,400	$3,466,700
Crew Per Diem Expenditures	$291,200	$408,800	$291,200	$408,800
Other Sectors				
Concessions	$570,000	$800,200	$671,600	$942,800
Freight	$1,456,000	$2,044,000	$3,120,000	$4,380,000
Travel Agent Commission	$61,600	$86,500	$70,600	$99,100
Total	**$44,122,234**	**$61,940,966**	**$54,790,050**	**$76,916,850**
First Round Employment				
International Visitor Impacts				
Business Class Visitor Expenditure	78	110	117	165
Coach Class Visitor Expenditure	670	940	767	1,077
Air Carrier Expenditures				
Air Carrier Fuel Expenditures	20	29	30	42
Air Carrier Local Expenditures	20	29	25	35
Crew Per Diem Expenditures	6	9	6	9
Other Sectors				
Concessions	13	18	15	21
Freight	20	29	44	61
Travel Agent Commission	1	1	1	2
Total	**829**	**1,163**	**1,005**	**1,411**
First Round Payroll				
International Visitor Impacts				
Business Class Visitor Expenditure	$1,719,200	$2,413,500	$2,578,800	$3,620,300
Coach Class Visitor Expenditure	$14,735,800	$20,686,800	$16,880,900	$23,698,200
Air Carrier Expenditures				
Air Carrier Fuel Expenditures	$873,200	$1,225,900	$1,295,700	$1,819,000
Air Carrier Local Expenditures	$645,100	$905,700	$777,900	$1,092,000
Crew Per Diem Expenditures	$134,500	$188,800	$134,500	$188,800
Other Sectors				
Concessions	$275,900	$387,300	$325,100	$456,300
Freight	$917,300	$1,287,700	$1,965,600	$2,759,400
Travel Agent Commission	$37,500	$52,600	$42,900	$60,300
Total	**$19,338,500**	**$27,148,300**	**$24,001,400**	**$33,694,300**
Total Including Multiplier Impacts				
Annual Output	**$83,869,700**	**$117,740,400**	**$104,147,600**	**$146,207,300**
Annual Employment	**1,404**	**1,971**	**1,703**	**2,390**
Annual Payroll	**$35,122,300**	**$49,306,400**	**$43,591,000**	**$61,195,100**

Time Savings	**$8,130,697**	**$11,414,248**	**$9,314,280**	**$13,075,816**

Source: Wilbur Smith Associates, IMPLAN multipliers

Table B-3

Transatlantic Service Scenario Economic Benefits

Impact by Sector	B757 Category 5 Days	B757 Category 7 Days	A330 Category 5 Days	A330 Category 7 Days
First Round Annual Output				
International Visitor Impacts				
Business Class Visitor Expenditure	$3,723,034	$5,226,566	$7,911,446	$11,106,454
Coach Class Visitor Expenditure	$31,910,900	$44,798,100	$53,319,552	$74,852,448
Air Carrier Expenditures				
Air Carrier Fuel Expenditures	$4,061,500	$5,701,700	$6,700,400	$9,406,300
Air Carrier Local Expenditures	$2,048,000	$2,875,100	$4,814,500	$6,758,900
Crew Per Diem Expenditures	$291,200	$408,800	$291,200	$408,800
Other Sectors				
Concessions	$570,000	$800,200	$976,200	$1,370,500
Freight	$1,456,000	$2,044,000	$4,056,000	$5,694,000
Travel Agent Commission	$61,600	$86,500	$103,000	$144,500
Total	**$44,122,234**	**$61,940,966**	**$78,172,298**	**$109,741,902**
First Round Employment				
International Visitor Impacts				
Business Class Visitor Expenditure	78	110	166	233
Coach Class Visitor Expenditure	670	940	1,119	1,571
Air Carrier Expenditures				
Air Carrier Fuel Expenditures	20	29	34	47
Air Carrier Local Expenditures	20	29	48	68
Crew Per Diem Expenditures	6	9	6	9
Other Sectors				
Concessions	13	18	21	30
Freight	20	29	57	80
Travel Agent Commission	1	1	2	2
Total	**829**	**1,163**	**1,453**	**2,040**
First Round Payroll				
International Visitor Impacts				
Business Class Visitor Expenditure	$1,719,200	$2,413,500	$3,653,300	$5,128,700
Coach Class Visitor Expenditure	$14,735,800	$20,686,800	$24,621,900	$34,565,300
Air Carrier Expenditures				
Air Carrier Fuel Expenditures	$873,200	$1,225,900	$1,440,600	$2,022,400
Air Carrier Local Expenditures	$645,100	$905,700	$1,516,600	$2,129,100
Crew Per Diem Expenditures	$134,500	$188,800	$134,500	$188,800
Other Sectors				
Concessions	$275,900	$387,300	$472,500	$663,300
Freight	$917,300	$1,287,700	$2,555,300	$3,587,200
Travel Agent Commission	$37,500	$52,600	$62,600	$87,900
Total	**$19,338,500**	**$27,148,300**	**$34,457,300**	**$48,372,700**
Total Including Multiplier Impacts				
Annual Output	**$83,869,700**	**$117,740,400**	**$148,593,700**	**$208,602,700**
Annual Employment	**1,404**	**1,971**	**2,461**	**3,455**
Annual Payroll	**$35,122,300**	**$49,306,400**	**$62,580,900**	**$87,853,800**

Time Savings	**$8,130,697**	**$11,414,248**	**$13,585,469**	**$19,071,908**

Source: Wilbur Smith Associates, IMPLAN multipliers

Air Cargo Expenditures – This amount is an estimate of the air carrier expenditures incurred by the airlines and freight forwarders on- and off-airport. It includes labor for freight and mail loading and handling, equipment operating costs, storage space, and other operational expenses. The value of goods shipped are not reflected in these estimates. The transatlantic route originating in Pittsburgh for the B757 five-flights-a-week operation would contribute approximately $1.5 million in the air cargo sector while the B767 seven-flights-a-week operation would contribute nearly $4.4 million annually. The A330 seven-flights-a-week operation would contribute $5.7 million annually. An A330-200 has a 26 lower deck container configuration while the B767 has a 22 lower deck container configuration. The B757 is a narrow body aircraft, which entails bulk loading the cargo.

Travel Agent Revenues – This amount is based on estimated commission levels and travel agent utilization for Pittsburgh. The analysis estimates 10 percent of Pittsburgh's originating international passengers will book their travel through local travel agents which receive an estimated $30 commission per passenger. Travel agent commissions range from $61,600 to nearly $145,000.

First Round Employment and Payroll Impacts

Annual first round employment and associated payroll attributed to these sectors is also provided in Table B-2 and B-3. The transatlantic route originating in Pittsburgh for the B757 five-flights-a-week operation would support 829 employees in the Pittsburgh region with an estimated $19.3 million in annual first round payroll while the A330 seven-flights-a-week operation would support approximately 2,040 employees with over $48.4 million in payroll. These employees and payroll are a direct result of the transatlantic route and do not include the multiplier impact.

Second round (Multiplier) and Total Impact

As these expenditures flow into the Pittsburgh economy, additional spending circulates throughout the local economy as a result of expenditures by airlines and passengers, such as visitor expenditures, air carrier expenditures, and travel agency revenues.

For each direct expenditure item, second round impacts were calculated by applying sector specific multipliers. When the first round and second round (multiplier) impacts are combined, the transatlantic route originating in Pittsburgh for the B757 five-flights-a-week operation would contribute approximately $83.8 million in output to the economy supporting 1,404 jobs with an associated payroll of $35.1 million. The A330 seven-flights-a-week operation would contribute nearly $208.6 million in output annually to the Pittsburgh economy, supporting 3,455 jobs with an associated payroll of $87.9 million.

Time Savings Benefit of Transatlantic Service at Pittsburgh International Airport

In addition to the above economic benefits, an additional benefit can be added to the economic impacts of a transatlantic route. These benefits are in the form of passenger time-savings benefits from direct air service routes. This factor is based on estimated passenger time-savings from less circuitous routings, with time values based on guidance furnished by the U.S.

Department of Transportation and endorsed by the Federal Aviation Administration (FAA). The idea behind this factor is that, if direct international services were to operate from Pittsburgh International Airport were available, local residents would spend less valuable time reaching their destinations than by connecting through other airports and on potentially longer flights. Based on the analysis, it is estimated that both resident and visitor passengers originating in the Pittsburgh market would experience an aggregated time-savings value of nearly $8.1 million on the B757 five-flights-a-week operation and $19.1 million on the A330 seven-flights-a-week operation. It should be noted, however, that these benefits do not have a multiplier value, and are added as a separate line item in Table B-2 and B-3. In addition, time-savings benefits generally are not included in traditional airport economic impact studies and are used only in this study to identify the economic benefit of a specific air route.

Appendix C

ECONOMIC BENEFITS OF ALL CARGO LATIN AMERICA SERVICE SCENARIO

The potential benefit of new all cargo air route was also analyzed as part of this study. A scenario was developed for all cargo service from Bogotá, Columbia to Pittsburgh route utilizing Boeing 747 aircraft. It should be noted that the estimates provided are conservative and reflect the estimated economic benefit of airline operations to the Pittsburgh region.

Assumptions
The analysis included a twice weekly all cargo B747 aircraft that is assumed to carry inbound and outbound 200,000 pounds of air cargo. An average load factor of 80 percent was used. Only impacts affecting the Pittsburgh regional economy were included in the analysis and impacts to Bogotá were omitted. All assumptions are presented in **Table C-1**.

Table C-1
Latin America Service Scenario Assumptions

Aircraft Type	B747
Load Factor	80%
Cost per block Hour*	$1,336
Fuel per Block Hour*	$5,500
Hours Flown	4.5

*Adjusted to reflect impacts to Pittsburgh.
Source: Wilbur Smith Associates

First Round Output Impacts
This Latin America Flight scenario analyzes a B747 operating the PIT-BOG route two flights a week. As presented in **Table C-2,** the PIT-BOG route originating in Bogotá would contribute nearly $12.0 million annually in first round output. This does not include the second round or multiplier impact. A discussion of each industry sector's benefits is provided below.

Air Carrier Expenditures – This amount is an estimate of the air carrier expenditures to be incurred by the air carrier while in the Pittsburgh region on- and off-airport. It includes Pittsburgh related airport fees and rentals, fuel purchases, employee compensation, in-flight catering, crew per diem, and other operational expenses. The route would contribute approximately $3.6 million annually to the Pittsburgh economy.

Air Cargo Expenditures – This amount is an estimate of the air carrier expenditures incurred by the airlines and freight forwarders on- and off-airport. It includes labor for freight and mail loading and handling, equipment operating costs, storage space, and other operational expenses. The value of goods shipped is not reflected in these estimates. The route would contribute approximately $8.3 million in the air cargo sector annually.

Table C-2
All Cargo Latin America
Service Scenario Economic Benefits

Impact by Sector	B747 Category 2 Days/Week
First Round Annual Output	
Air Carrier Expenditures	
Air Carrier Fuel Expenditures	$2,574,000
Air Carrier Local Expenditures	$987,800
Crew Per Diem Expenditures	$43,680
Other Sectors	
Freight	$8,320,000
Total	**$11,925,480**
First Round Employment	
Air Carrier	
Air Carrier Fuel Employment	13
Air Carrier Local Employment	10
Crew Per Diem (Hospitality Employment)	1
Other Sectors	
Freight	37
Total	**61**
First Round Payroll	
Air Carrier	
Air Carrier Fuel	$553,400
Air Carrier Local	$311,200
Crew Per Diem	$20,200
Other Sectors	
Freight	$1,684,800
Total	**$2,569,600**
Total Including Multiplier Impacts	
Annual Output	**$22,668,500**
Annual Employment	**104**
Annual Payroll	**$4,666,900**

Source: Wilbur Smith Associates, IMPLAN multipliers

First Round Employment and Payroll Impacts

Annual first round employment and associated payroll attributed to these sectors is also provided in Table C-2. The PIT-BOG route would support 61 employees in the Pittsburgh region with an estimated $2.6 million in annual first round payroll. Thirteen of these employees are related to fueling the aircraft and fuel equipment operations and maintenance while 10 employees are related to airline ground handling and aircraft maintenance. Approximately 37 employees would support air freight handling, loading and sales. This new cargo route would support the equivalent of one position in the hospitality industry. These employees and payroll are a direct result of the Latin America route and do not include the multiplier impact.

Second Round (Multiplier) and Total Impact

As these expenditures flow into the Pittsburgh economy, additional spending re-circulates throughout the local economy as a result of expenditures by airlines, freight forwarders, and their vendors.

For each direct expenditure item, second round impacts were calculated by applying sector specific multipliers. When the first round and second round (multiplier) impacts are combined, the Latin America route operating two times per week would contribute approximately $22.7 million in output to the economy supporting 104 jobs with an associated payroll of $4.7 million.

Appendix D

ECONOMIC BENEFITS OF COMMUTER HUB SCENARIO

The potential benefit of new commuter air routes "hubbing" at Pittsburgh International Airport were analyzed as part of this study. A scenario was developed which identifies the economic impact of a commuter hub at the airport servicing small Essential Air Service (EAS) markets in the region as well as a few major commercial airports. The scenario provides the annual economic impact of initial operations as well as the ultimate development of the commuter hub at the airport.

Two aircraft types anticipated to operate at the commuter hub include the Beech 1900 (B1900), a 19-seat turboprop commuter aircraft and is a workhorse of the commuter industry, and the Cessna 402 (C402) piston-engine aircraft. This nine passenger aircraft is traditionally utilized by air taxi and commuter airlines in specialized markets such as New England, South Florida and the Caribbean.

<u>**Initial Commuter Hub**</u>

Initial commuter hub activity at PIT will provide service to six markets in Pennsylvania with three round-trip operations per day. **Table D-1** identifies these markets and their respective aircraft types. Aircraft types are selected based on potential passenger loads. In all, 21 round-trip commuter flights per day will take place at the airport during the initial year of operations.

Table D-1
Commuter Hub Activity
Initial Level

Routes	Aircraft Type	Flights Per Day
Latrobe	C402	3
Morgantown	C402	3
Johnstown & Altoona	C402	3
Erie	C402	3
Williamsport	B1900	3
State College	B1900	3
Harrisburg	B1900	3
		21

Source: Wilbur Smith Associates

The economic impact of the commuter hub is measured by estimating the level of employment, payroll and output (operating expenses) taking place at Pittsburgh International Airport. Employees are needed for servicing aircraft, baggage transfer, ticket sales, aircraft maintenance, and flight crews. Operating expenses that directly impact the local market area include fuel, labor, and aircraft maintenance. Payroll to all employees involved in the commuter hub will flow into the local economy.

First-Round Impacts

Based on the anticipated 21 round-trip flights per day occurring at PIT, it is estimated that nearly $6.2 million in annual airline activity will be generated by the commuter hub. This will add an estimated 95 passengers per day, or 34,675 annually, connecting at the airport to other flights. See **Table D-2**.

Upon initial operation, 21 full-time equivalent airline employees will be required to accommodate the commuter hub operation. This will include eight full-time employees and 25 part-time employees. The equivalent of seven aircraft pilots will be required to accommodate the level of flight activity at the commuter hub. In addition, three aircraft mechanics and three support personnel, such as contracted fuel technicians, are required for the operation. Passengers spending money in airport concessions will support eight additional jobs on the airport and nearly $487,500 in annual output.

Table D-2
Commuter Hub Activity
Initial Level
Economic Impact

Economic Impact			Annual Output
Flights per Day	21		$5,755,920
Passengers per day	95		
	Annual Employment	Annual Salary	
Airline Full-time Employees	8	$384,384	
Airline Part-time Employees	25	$681,408	
Fulltime Equivalent	21	$1,065,792	
Pilot/Crew	7	$497,000	
Maintenance	3	$119,700	
Support	3	$81,120	
Concessions	8	$171,598	$487,494
First Round Impacts	**41**	**$1,935,210**	**$6,243,414**
Second Round Impacts	**29**	**$1,579,131**	**$5,625,316**
Total Impacts	**70**	**$3,514,341**	**$11,868,730**

Source: Wilbur Smith Associates, IMPLAN multipliers

Second-Round (Multiplier) and Total Impact
As these expenditures flow into the Pittsburgh economy, additional spending circulates throughout the local economy as a result of expenditures by airlines and passengers, such as air carrier expenditures for fuel and catering.

For each direct expenditure item, second round impacts were calculated by applying sector specific multipliers. When the first round and second round (multiplier) impacts are combined, the commuter hub at Pittsburgh International Airport would contribute approximately $11.9 million in output to the economy supporting 70 jobs with an associated payroll of $3.5 million.

Ultimate Commuter Hub
Additional analysis provides an estimate of the commuter hub activity at PIT after the facility reaches full market maturity. This is defined as a commuter facility serving 23 markets with 57 flights per day. **Table D-3** identifies these markets and their respective aircraft types. Aircraft types and frequency are selected based on potential passenger loads.

First-Round Impacts
Based on the anticipated 57 round-trip flights per day occurring at PIT it is estimated that nearly $33.1 million in annual airline activity will be generated by the commuter hub. This will add an estimated 359 passengers per day, or 131,035 annually, connecting at the airport to other flights. See **Table D-4**.

Upon ultimate operation, a total of 57 full-time equivalent airline employees will be required to accommodate the commuter hub operation. This will include 23 full-time and 68 part-time employees. The equivalent of 17 aircraft pilots will be required to accommodate the level of flight activity at the commuter hub. In addition, seven aircraft mechanics and eight support personnel are required for the operation. Passengers spending money in airport concessions will support 29 additional jobs on the airport and over $1.8 million in annual output.

Table D-3
Commuter Hub Activity
Ultimate Level

Routes	Aircraft Type	Flights Per Day
Latrobe	C402	3
Morgantown	C402	3
Johnstown & Altoona	C402	3
Clarksburg	C402	1
Parkersburg	C402	1
Erie	C402	3
Bradford	B1900	1
Jamestown	B1900	2
State College	B1900	3
Hagerstown	B1900	3
Charleston, (Yeager)	B1900	4
Williamsport	B1900	2
Lewisburg	B1900	2
Harrisburg	B1900	3
Huntington	B1900	2
Lancaster	B1900	2
Wilkes Barre/Scrantan	B1900	3
Allentown	B1900	2
Richmond	B1900	3
Syracuse	B1900	2
Norfolk	B1900	2
Louisville	B1900	3
Nashville	B1900	4
		57

Source: Wilbur Smith Associates

Second-Round (Multiplier) and Total Impact

As discussed previously, these expenditures flow into the Pittsburgh economy, and additional spending circulates throughout the local economy as a result of expenditures by airlines and passengers, such as air carrier expenditures.

For each direct expenditure item, second round impacts were calculated by applying sector specific multipliers. When the first round and second round (multiplier) impacts are combined, the ultimate development of the commuter hub at Pittsburgh International Airport would contribute approximately $66.5 million in output to the economy, supporting 201 jobs with an associated payroll of $9.6 million.

Table D-4
Commuter Hub Activity
Ultimate Level
Economic Impact

Economic Impact			Annual Output
Flights per Day	57		$33,128,222
Passengers per day	359		
	Annual Employment	**Annual Salary**	
Airline Full-time Employees	23	$1,043,328	
Airline Part-time Employees	68	$1,849,536	
Fulltime Equivalent	57	$2,892,864	
Pilot/Crew	17	$1,207,000	
Maintenance	7	$324,900	
Support	8	$220,183	
Concessions	29	$645,021	$1,832,446
First Round Impacts	**119**	**$5,289,968**	**$34,960,668**
Second Round Impacts	**82**	**$4,316,614**	**$31,499,562**
Total Impacts	**201**	**$9,606,582**	**$66,460,230**

Source: Wilbur Smith Associates, IMPLAN multipliers

Appendix E

PRIMARY MARKET AREA POPULATION AND EMPLOYMENT

Population

As explained earlier, the primary market for Pittsburgh International Airport is comprised of Allegheny County, Armstrong County, Beaver County, Butler County, Fayette County, Washington County, and Westmoreland County. **Table E-1** identifies the historic and forecasted population and population growth rate of each county in the primary market.

The total population of the seven-county area in 2000 was 2,431,087. In 2007 the population decreased to 2,355,712, a growth rate of -0.31 percent. Beaver County witnessed the largest decrease in population during this time period with a growth rate of -0.46 percent. Allegheny County was a close second with a decrease of -0.41 percent. Butler County and Washington Counties were the only counties to experience an increase in population. Butler County grew at a rate of 0.45 percent and Washington County grew 0.13 percent. Pennsylvania's population during the time period grew from 12,281,054 in 2000 to an estimated 12,432,792 in 2007 at a growth rate of 0.12 percent.

The Pittsburgh region has long been experiencing a decrease in population. Causes of the decrease have included the collapse of the steel industry in the 1980s, the region's unusual age ratio, which has resulted in a larger number of senior citizens and fewer child-bearing couples, and lower level of international immigration than other urban areas in the United States[16].

Population forecasts for the Pittsburgh region show that the trend of population decline will begin to reverse by 2010, and the population will increase modestly by 2030[17]. The forecasts are predicated on the rebuilding and diversification of Pittsburgh's regional economy since the 1980s, the gradual movement of the age ratio closer to the rest of the country, the education and high-tech sectors of the economy drawing international immigrants to the region, and the total number of jobs increasing in the region. Forecasts project a total population of 2,407,352 in 2010 for the primary market, which represents an increase of 0.22 percent from 2007 estimates.

Armstrong, Beaver, and Westmoreland Counties are all projected to decline in population, but Allegheny, Butler, Fayette, and Westmoreland Counties are projected to grow by 0.25 percent, 1.35 percent, 0.86, and 0.06 percent, respectively. Pennsylvania's population is expected to continue to increase, growing from 12,432,792 in 2007 to 12,678,576 in 2010 at a rate of 0.20 percent.

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[16] "Old Story on Population about to Change," *Pittsburgh Post-Gazette*, April 15, 2007

[17] Pennsylvania Department of Environmental Protection, Bureau of Watershed Management, June 2006

Table E-1
Primary Market Area
Historic and Forecasted Population

County	2000 Population Total	2007 Population Total *	Historic Annual Growth Rate 2000-2007	2010 Forecasted Population	Forecasted Annual Growth Rate 2007-2010
Allegheny	1,281,666	1,219,210	-0.41%	1,249,669	0.25%
Armstrong	72,392	69,059	-0.15%	67,012	-0.30%
Beaver	181,412	173,074	-0.46%	165,995	-0.41%
Butler	174,083	181,934	0.45%	206,545	1.35%
Fayette	148,644	144,556	-0.28%	156,982	0.86%
Washington	202,897	205,553	0.13%	196,732	-0.43%
Westmoreland	369,993	362,326	-0.21%	364,417	0.06%
Primary Market Total	**2,431,087**	**2,355,712**	**-0.31%**	**2,407,352**	**0.22%**

* Estimated
Source: U.S. Census Bureau, Pennsylvania Department of Environmental Protection

Employment

Since the decline of the steel industry in the 1980s, the economy of the Pittsburgh region has been transitioning from an economy dominated by heavy manufacturing to one that is more diversified and based on health care, light manufacturing, professional services, financial services, research, education, automation, and communications. Employment levels in the Pittsburgh region have been affected as the economy rebuilds itself and the work force transitions to these other industries.

Table E-2 presents historic and current data on the primary market area's total employment, employment annual growth rate, total unemployment, and unemployment rate. The number of employees in the primary market was 1,145,400 in 2007, an increase from 1,139,500 in 2000[18]. This job growth occurred at a rate of 0.1 percent. During the same period, the number of employees in the United States grew from 136,891,000 to 146,047,000 at a growth rate of 0.7 percent. Job growth in the primary market has historically lagged behind the national average, but positive indications for the region's economy are seen in the reversal of this trend. The unemployment rate in the primary market stood at 4.3 percent in 2000 compared to 4.0 percent for the nation. In 2007, the unemployment rate for the primary market held steady at 4.3 percent but was lower than the 4.6 percent for the nation.

[18] Pennsylvania Department of Labor and Industry

Table E-2
Primary Market Area
Employment Levels

County	Total Employment 2000	Total Employment 2007	Historic Employment Annual Growth Rate 2000-2007	Total Unemployment 2000	Total Unemployment 2007	Unemployment Rate 2000	Unemployment Rate 2007
Allegheny	610,000	600,600	-0.2%	25,900	25,700	4.1%	4.1%
Armstrong	31,200	31,200	0.0%	1,900	1,600	5.7%	4.9%
Beaver	85,000	84,900	< -0.1%	3,800	4,000	4.3%	4.5%
Butler	85,400	92,200	0.8%	3,700	3,800	4.1%	4.0%
Fayette	60,900	61,500	0.1%	3,700	3,700	5.7%	5.6%
Washington	93,800	98,300	0.5%	4,600	4,700	4.6%	4.5%
Westmoreland	173,200	176,700	0.2%	8,500	8,400	4.7%	4.5%
Primary Market Total	**1,139,500**	**1,145,400**	**0.1%**	**52,100**	**51,900**	**4.3%**	**4.3%**
United States	**136,891,000**	**146,047,000**	**0.7%**	**5,692,000**	**7,078,000**	**4.0%**	**4.6%**

Source: Pennsylvania Department of Labor and Industry

Evidence of the shift of the Pittsburgh region's economy away from heavy manufacturing is illustrated in **Table E-3**, which identifies annual average employment by industry sector for each county in the primary market for 2006 (most recent data). The three industry sectors with the largest percentage of workers in the primary market were the health care and social assistance sector at 15.8 percent, followed by the retail trade sector at 12.2 percent and the government sector at 11.3 percent. The manufacturing sector employed 9.2 percent of the work force, down from 11.9 percent in 1999 and 12.5 percent in 1990. The agriculture, forestry, fishing, and hunting industry sector employed the fewest workers in the primary market at 0.1 percent.

Gross Metropolitan Product

Gross Metropolitan Product (GMP) is a concept analogous to Gross Domestic Product, the commonly accepted measure used to calculate the total annual value of goods and services produced by a nation. Similarly, GMP estimates the value of goods and services produced at a metropolitan area level. The Pittsburgh MSA is the second largest MSA in the State of Pennsylvania, and ranks 23rd overall in the United States, with a total GMP of $112.0 billion.[19]

Major Pittsburgh Region Employers

Table E-4 identifies the major employers in the Pittsburgh region in 2008 ranked by local, full-time employees and their percent change from 2007. The largest employer in the region is the University of Pittsburgh Medical Center with an estimated 32,000 employees. The second-largest employer is the U.S. Government with 18,881 employees, followed by the Commonwealth of Pennsylvania with 13,616 employees. Five of the ten largest employers in the Pittsburgh region are in the health care and social assistance, education services, and finance and insurance industry sectors. None of the top ten employers are in the manufacturing industry sector. The largest employer in the manufacturing industry sector is United States Steel Corporation, ranked sixteenth with 4,000 employees. US Airways Group is ranked thirty-first with 2,298 employees.

[19] *U.S. Metro Economies*, *June 2008*, prepared by Global Insight for the U.S. Conference of Mayors.

Table E-3
Primary Market Area
2006 Employment by Industry

Industry	Allegheny County	Armstrong County	Beaver County	Butler County	Fayette County	Washington County	Westmoreland County	Primary Market Total	Percentage Breakdown
Accomodation and Food Services	53,527	1,105	4,244	6,721	4,336	6,342	12,178	**88,453**	**8.14%**
Admin., Support, Waste Mgmt, Remediation	35,690	216	1,510	4,347	1,630	2,645	5,898	**51,936**	**4.78%**
Agriculture, Forestry, Fishing & Hunting	219	N/A	18	220	108	110	N/A	**675**	**0.06%**
Arts, Entertainment, and Recreation	11,040	176	582	796	485	1,869	2,572	**17,520**	**1.61%**
Construction	30,355	686	3,012	4,232	1,785	6,452	7,004	**53,526**	**4.93%**
Education Services	32,656	N/A	1,081	498	133	799	1,734	**36,901**	**3.40%**
Finance and Insurance	43,715	462	1,235	1,573	742	1,971	3,384	**53,082**	**4.89%**
Government*	71,281	2,928	8,317	9,027	6,512	9,023	15,941	**123,029**	**11.32%**
Health Care and Social Assistance	112,361	3,150	9,031	9,822	6,887	11,997	18,678	**171,926**	**15.82%**
Information	16,832	132	579	824	938	1,540	1,815	**22,660**	**2.09%**
Management of Companies and Enterprises	20,011	N/A	287	459	152	1,209	1,363	**23,481**	**2.16%**
Manufacturing	42,720	2,729	7,565	12,876	4,265	10,008	19,938	**100,101**	**9.21%**
Mining	1,110	1,141	118	581	382	1,307	435	**5,074**	**0.47%**
Other Services (except Public Admin.)	25,443	652	2,428	2,423	1,365	3,145	5,340	**40,796**	**3.75%**
Professional, Scientific, and Technical Services	49,506	344	2,852	2,411	1,586	2,829	5,328	**64,856**	**5.97%**
Real Estate and Rental and Leasing	11,264	108	342	605	404	504	971	**14,198**	**1.31%**
Retail Trade	75,874	2,308	7,952	10,668	6,215	9,396	19,649	**132,062**	**12.16%**
Transportation and Warehousing	19,935	989	1,778	2,869	1,420	2,625	7,678	**37,294**	**3.43%**
Utilities	1,891	147	1,831	269	306	550	519	**5,513**	**0.51%**
Wholesale Trade	24,609	400	1,538	5,501	1,133	3,445	6,737	**43,363**	**3.99%**
Total Employment, All Industries	680,039	17,673	56,300	76,722	40,784	77,766	137,162	**1,086,446**	**100.00%**

* 2005 Annual Average Data

Source: Pennsylvania Department of Labor and Industry

Table E-4
Pittsburgh Region
Major Employers in 2008

Rank	Employer	Number of Employees	Percent Change from 2007	Rank	Employer	Number of Employees	Percent Change from 2007
1	University of Pittsburgh Medical Center	32,000	3.4%	26	FedEx Ground	2,670	4.7%
2	U.S. Government	18,881	-1.8%	27	PPG Industries Inc.	2,550	-5.6%
3	Commonwealth of Pennsylvania	13,616	-2.9%	28	CONSOL Energy Inc.	2,500	0.0%
4	Giant Eagle Inc.	13,386	9.5%	29	Children's Hospital of Pittsburgh of UPMC	2,453	-10.4%
5	West Penn Allegheny Health System	11,730	2.3%	30	Comcast	2,400	0.0%
6	University of Pittsburgh	10,775	0.6%	31	US Airways Group Inc.	2,298	-57.6%
7	Wal-Mart Stores Inc.	9,660	-0.5%	32	Macy's	2,100	N/A
8	PNC Financial Services Group Inc.	7,026	7.0%	33	National City Bank of Pennsylvania	1,945	-26.8%
9	Allegheny County	6,756	2.3%	34	Duquesne University	1,902	7.8%
10	Mellon Financial Corp.	6,100	-3.2%	35	Westmoreland County	1,900	3.7%
11	Highmark Inc.	5,285	8.6%	36	Alcoa Inc.	1,764	-8.1%
12	Eat'n Park Hospitality Group Inc.	5,250	1.6%	37	Allegheny Energy Inc.	1,733	0.5%
13	Pittsburgh Board of Education	5,202	-0.8%	38	Citizens Bank of Pennsylvania	1,730	-9.8%
14	Carnegie Mellon University	4,216	-7.5%	39	Washington Hospital	1,715	-0.1%
15	Verizon Communications Inc.	4,000	N/A	40	Siemens AG	1,700	N/A
16	United States Steel Corp.	4,000	0.0%	41	Jefferson Regional Medical Center	1,650	1.5%
17	Heritage Valley Health System	3,401	2.0%	42	St. Clair Hospital	1,645	3.3%
18	Westinghouse Electric Co.	3,400	13.3%	43	Respironics Inc.	1,628	18.3%
19	United Parcel Service	3,255	1.4%	44	AK Steel Inc.	1,575	N/A
20	Excela Health	3,230	-5.4%	45	Grane Healthcare	1,509	0.0%
21	Pittsburgh Mercy Health System	3,201	-4.6%	46	Bayer Corp.	1,500	0.0%
22	Allegheny Technologies Inc.	3,200	6.7%	46	Eckerd Corp.	1,500	7.1%
23	Fisher Scientific Co.	3,100	N/A	46	Mine Safety Appliances Co.	1,500	0.0%
24	City of Pittsburgh	3,087	1.6%	46	YMCA of Greater Pittsburgh	1,500	0.0%
25	Port Authority of Allegheny County	3,016	-0.4%	50	Natl. Real Est. Information Services	1,478	N/A

Source: *Pittsburgh Business Times'* "2008 Book of Lists"

Appendix F

THE ECONOMIC BENEFIT OF LOW COST CARRIERS TO THE PITTSBURGH REGION, AUGUST 8, 2007