



## WYOMING AVIATION 2013 Economic Impact Study



# Tutorial on Economic Impact Methodology

February 16, 2014

# My airport's annual economic impact is...

I can't believe the airport supports this much benefit!

The airport really generates \$31.3M in annual economic activity?

There aren't 264 people working at the airport!

- 264 Jobs
- \$9.1 million in annual payroll
- \$31.3 million in annual output/economic activity



# Let's dissect this example airport's total annual economic impact

*Remember, the  
“**BIG**” economic  
impact estimate is  
a rolled-up number:*

$$\begin{array}{rcl} & + & \text{Initial (Direct) Impacts} \\ & & \text{Multiplier Impacts} \\ \hline = & & \text{Total Annual Economic} \\ & & \text{Impacts} \end{array}$$

*We are going to go through a step-by-step example of how the BIG number is estimated – starting from the bottom up.*

# The most straightforward portion of the economic impact analysis is each initial (direct) impact

***For the Wyoming study, initial economic impacts were estimated for 5 different categories***



## ***Initial Impacts***



### On-Airport Related Activities

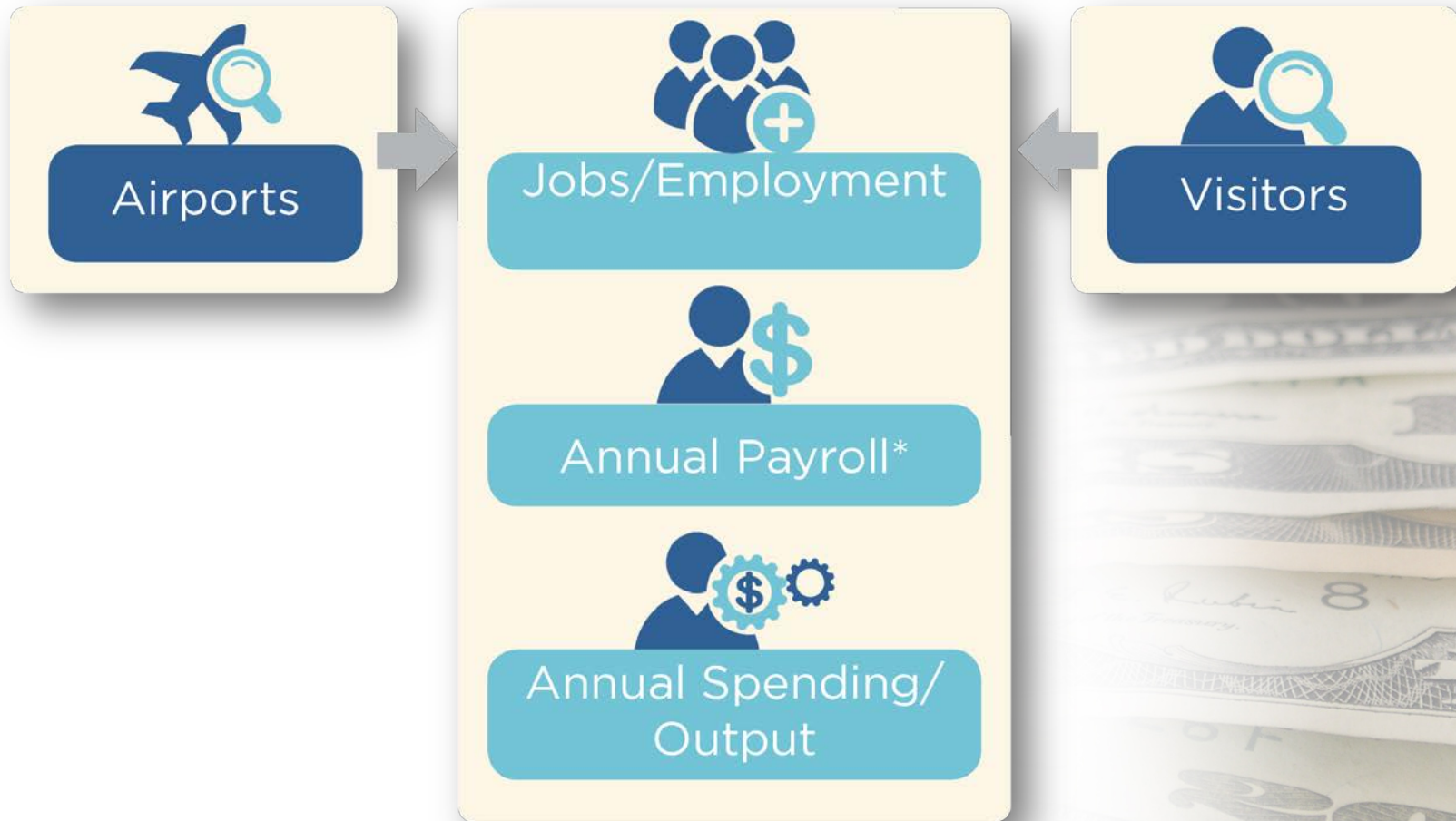
1. Administration, Maintenance, Operation
2. Aviation-Related Tenants/ Businesses
3. Investment for Capital Improvements

### Off-Airport Visitor Spending

4. Visitors arriving on *Commercial* airlines
5. Visitors arriving on *General Aviation* aircraft



# For each of the 5 impact categories, initial economic impacts were estimated for 3 measures



# Let's review the calculations that were used to estimate economic impacts for an example airport

***How were initial impacts obtained for each of the 5 impact categories?***

***How were multiplier impacts estimated?***

# Collection of initial impacts

- Surveys of over 4,000 travelers
- Interviews with 145 airport tenants
- Direct mailings to over 400 Wyoming businesses
- Contact with 30 state agencies/organizations
- Contact with 50 chambers of commerce and economic development groups
- Press release/survey link distributed through 40 media and news outlets



# Estimating multiplier impacts

- IMPLAN input/output model; first developed in 1976
- FAA approved approach
- State model and county-based models
- Conservative approach to estimating multiplier impact





# Economic impacts for airport administration

***In our analysis, all jobs associated with running, operating and maintaining each airport were identified***

- Initial jobs in this category were identified through management surveys, on-site visits, and phone interviews.
- Jobs in this category are usually on-airport, but may sometimes be off-airport.
- Some jobs are full-time and some are part-time.
- Part-time positions were converted to full-time jobs based on either the number of hours worked or the seasonality of the job.



**For our example airport, there are 9 *full-time jobs* in the airport administration category**

***So, it's easy to understand the confusion when total economic impacts are reported as 264 jobs for the airport.***

**Now I get it!**

***The remaining jobs are in other impact categories and also result from “multiplier impacts.”***



# What are *Multiplier Impacts*?

***Multiplier impacts provide a way to show how the initial jobs, payroll and output associated with airport-supported activities result in additional economic impacts when those dollars are spent locally or in the state***





# Example of the *Multiplier Effect* in action

***Joe is a manager at one of the airports. His job and his salary (payroll) are classified as *initial economic impacts* in our study***

- Joe uses his paycheck locally to buy groceries, shop at local retail businesses, and to pay for child care, among other things.
- When he uses his income (earned at the airport) to pay locally for goods and services, the providers of these goods and services benefit from increased business sales (output).
- The multiplier effect measures the “secondary” impacts that accrue to the recipients of Joe’s paycheck.
- For this study, all multiplier impacts were estimated using the IMPLAN input/output model built on data reflecting Wyoming’s economy.



# Example of *Local* vs. *State* multiplier impacts

***Joe can buy most goods and services he needs locally. Sometimes though, he has to spend outside his local market area, but still within Wyoming (i.e., a new truck)***

- For this study, two models were used for each airport to estimate multiplier impacts:
  - A county-based model
  - A state model
- The county-based model estimates the local multiplier impacts that occur in the airport's immediate market area.
- The state model estimates the multiplier impacts that occur in the local market area as well as in other parts of Wyoming.

# The state and local models

- Results from this study provide each airport with an estimate of its total annual economic impacts on the state's economy, as well as an estimate of the impacts that are realized within the airport's local market area.
- Total state impacts are always greater than total local impacts.
- If Joe cannot obtain all of his goods and services in his local market area, he may make purchases elsewhere in Wyoming. The impact of other purchases in the state plus the local purchases is measured by the state IMPLAN model.
- There is a higher multiplier effect (or greater re-spending) estimated using the state model because this model considers both local purchases as well as other purchases made outside the local market, but still within Wyoming.



# Total annual economic impacts for airport administration

*One measurement for the economic impact of airport administration is **Jobs***

- Initial jobs by industry were entered into the IMPLAN model to estimate multiplier jobs.
- In this example, every initial airport administration job supports an additional 0.44 jobs in other industries in the study region. *The implied jobs multiplier is 1.44*
- **9 jobs x 1.44 = 13 jobs**



■ Initial Jobs	9
■ Multiplier Jobs	4
<hr/>	
■ Total Jobs	13



# Total annual economic impacts for airport administration

*The economic impact of airport administration was also measured in terms of **payroll** and **output***

- **Payroll** includes wages and benefits.
- **Output** represents gross annual sales for commercial businesses, or the annual operating budget for government entities
- Study airports provided information (initial impacts) on their payroll and output (annual operating budget) for this analysis.
- IMPLAN was used to estimate multiplier impacts for payroll and output.





# Total annual economic impacts for airport administration

## Example Results

	Initial Impacts	Multiplier Impacts	Total Impacts
Jobs	9	4	13
Payroll	\$440,000	\$157,000	\$597,000
Output	\$1,410,000	\$900,000	\$2,310,000

- Every \$1 in initial payroll supports another 36 cents in payroll in the study region: *1.36 multiplier*
- Every \$1 in initial output supports another 64 cents in output in the study region: *1.64 multiplier*
- The implied multiplier ratios are different for each airport and for state versus local impacts.



# Economic impacts from airport tenants

***Wyoming airports have on-airport tenants/businesses that provide aviation services or support airport customers***

- The process to estimate annual economic impacts associated with tenants is similar to that used for airport management.
- Each airport manager provided a list of tenants, and all tenants were contacted or visited by the consultant team.
- Examples of airport tenants are: concessionaries, airlines, flight instructors, FBOs, aircraft maintenance/repair, and agricultural operators.
- For the “modeling process” each tenant was assigned to an industry category; multiplier impacts vary by type of tenant.

# Total annual economic impacts from airport tenants

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
Jobs	46	18	64
Payroll	\$2,150,000	\$740,000	\$2,890,000
Output	\$7,380,000	\$4,410,000	\$11,790,000

*Tenants provided information on their initial employment, payroll, and output.*

- In this example, tenants reported a combined employment of 46, total annual payroll of \$2.1 million and total annual output (gross sales or operating budgets) of \$7.4 million.
- Multiplier impacts vary by category. For our example, each airport management job supported an additional 0.44 jobs. Each airport tenant job supports an additional 0.39 jobs.





# Economic impacts from capital investment

***While capital projects are being planned, designed and implemented, there is associated economic activity (jobs, payroll, and output)***

- Unlike economic impacts associated with administration and tenants, these impacts are temporary, lasting only over the duration of the project.
- WYDOT Aeronautics provided a 5-year history of capital investment at all airports. This information was used to develop an estimate of annual average capital investment for all airports.
- Average annual capital spending was used since economic impact studies are a “snap shot” of conditions for the study year and capital investment spending may vary significantly from year to year.



# Economic impacts from capital investment

***While capital projects are being planned, designed and implemented, there is associated economic activity (jobs, payroll, and output), cont'd***

- If an airport completed a major runway extension between economic impact updates, the economic impact of this project is captured by using a multi-year average for capital spending.
- The economic impact of capital investment varies by type of project.
- The purchase of equipment that is manufactured in Pennsylvania provides lower local and state economic returns than construction work, which relies on local labor and supplies.

# Total annual economic impacts from airport capital improvement

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
Jobs	8	4	12
Payroll	\$730,000	\$185,000	\$915,000
Output	\$2,050,000	\$962,000	\$3,012,000

- Wyoming specific data contained in the IMPLAN model were used to estimate the initial payroll and initial jobs associated with average annual capital spending.
- For the example airport in the capital investment category, every \$1 of initial output supports 47 cents in output for other businesses: 1.47 multiplier.

# Economic impacts of visitors

***Most impacts in the airport management, tenant, and capital spending categories take place on-airport, but spending by visitors who arrive in Wyoming by air primarily occurs off-airport***

- Visitors spend money in Wyoming for lodging, food, local transportation, retail items, entertainment, or recreation. The multiplier effects of spending in each of these categories differ.
- Depending on the purpose of their trip, visitors stay for different lengths of time and have different spending patterns.
- Surveys of visitors arriving on commercial airlines and general aviation planes were conducted at each Wyoming airport to establish airport specific visitor spending patterns.



# Economic impacts of visitors arriving on commercial airlines

- For the example airport, an estimated 10,350 commercial visitors arrived by air in 2013.
- This estimate was based on year-to-date total enplanement estimates and information from USDOT Origin-Destination Passenger Survey which provides information on resident versus visitor travel.
- An estimated 43% of the example airport's annual enplanements are visitors.
- Each visitor spends an estimated \$593 during their stay (determined from the airport passenger survey).
- This results in \$6,140,000 in annual output (visitor spending) associated with this airport's commercial airline visitors.



# Total annual economic impacts from commercial airline visitors

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
Jobs	90	15	105
Payroll	\$2,130,000	\$706,000	\$2,836,000
Output	\$6,140,000	\$2,250,000	\$8,390,000

- Wyoming specific data contained in the IMPLAN model were used to estimate the initial payroll and initial jobs associated with the visitor spending (output).
- Once initial impacts were established, IMPLAN was used to estimate the multiplier impacts shown here.



# Estimates of general aviation visitors

- Visitors also come to Wyoming on general aviation planes.
- Each airport provided estimates of their weekly visiting general aviation aircraft arrivals and departures, the fleet mix for these planes, and the typical number of pilots/passengers per plane.
- Surveys of general aviation visitors and input from the Aeronautics Division and the FAA were used to validate these estimates.



# Trip characteristics of general aviation visitors

- General aviation visitors also spend money on lodging, food, local transportation, retail items, entertainment, and recreation.
- Study surveys show that general aviation visitors to Wyoming tend to stay for a shorter duration and spend less money than commercial airline visitors.
- An estimated 54% of all general aviation visitors flying in Wyoming on business stay only for the day and 22% of all pleasure/leisure general aviation visitors also stay only for the day.





# General aviation visitors and spending

- 16,735 annual visitors were estimated for the the example airport.
- These visitors spent an estimated \$4,200,000 or an average of \$250 per visitor per trip.
- Jobs per output (visitor spending) and jobs per payroll from the IMPLAN model indicate that this spending supports 60 initial jobs that have an annual initial payroll of \$1,450,000.
- IMPLAN was used to estimate multiplier impacts.

# Total annual economic impacts from general aviation visitors

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
Jobs	60	10	70
Payroll	\$1,450,000	\$440,000	\$1,890,000
Output	\$4,200,000	\$1,550,000	\$5,750,000

- For this impact category, every \$70,000 in general aviation visitor spending supports one initial job.
- $\$70,000 \times 60 = \$4,200,000$  in annual general aviation visitor spending (output).

# Annual economic impacts for *On-Airport* activities

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
JOBS			
Airport Administration	9	4	13
Airport Tenants	46	18	64
Capital Investment	8	4	12
<b>Total Jobs</b>	<b>63</b>	<b>26</b>	<b>89</b>



# Annual economic impacts for *On-Airport* activities

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
PAYROLL			
Airport Administration	\$440,000	\$157,000	\$597,000
Airport Tenants	\$2,150,000	\$740,000	\$2,890,000
Capital Investment	\$730,000	\$185,000	\$915,000
<b>Total Payroll</b>	<b>\$3,320,000</b>	<b>\$1,080,000</b>	<b>\$4,402,000</b>

# Annual economic impacts for *On-Airport* activities

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
OUTPUT			
Airport Administration	\$1,410,000	\$900,000	\$2,310,000
Airport Tenants	\$7,380,000	\$4,410,000	\$11,790,000
Capital Investment	\$2,050,000	\$962,000	\$3,012,000
<b>Total Output</b>	<b>\$10,840,000</b>	<b>\$6,272,000</b>	<b>\$17,112,000</b>

# Total impacts of *On-Airport* activities

***When initial and multiplier impacts are considered, economic impacts from airport administration, airport tenants, and capital investment account for a total of 89 jobs, \$4.4 million in annual payroll, and \$17.1 million in annual output***

## ***Example Results***

	On-Airport Impacts	Total Impacts	Share of Total Impacts
Jobs	89	264	34%
Payroll	\$4.4M	\$9.1M	48%
Output	\$17.1M	\$31.3M	55%



# Annual economic impacts for *Off-Airport* visitor activities

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
JOBS			
Commercial Visitors	90	15	105
General Aviation Visitors	60	10	70
<b>Total Jobs</b>	<b>150</b>	<b>25</b>	<b>175</b>

# Annual economic impacts for *Off-Airport* visitor activities

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
PAYROLL			
Commercial Visitors	\$2,130,000	\$706,000	\$2,836,000
General Aviation Visitors	\$1,450,000	\$440,000	\$1,890,000
<b>Total Payroll</b>	<b>\$3,580,000</b>	<b>\$1,146,000</b>	<b>\$4,726,000</b>

# Annual economic impacts for *Off-Airport* visitor activities

## *Example Results*

	Initial Impacts	Multiplier Impacts	Total Impacts
OUTPUT			
Commercial Visitors	\$6,140,000	\$2,250,000	\$8,390,000
General Aviation Visitors	\$4,200,000	\$1,550,000	\$5,750,000
<b>Total Output</b>	<b>\$10,340,000</b>	<b>\$3,800,000</b>	<b>\$14,140,000</b>



# Total impacts of all *Air Visitors*

***When initial and multiplier impacts are considered, economic impacts from commercial and general aviation visitors account for a total of 175 jobs, \$4.7 million in annual payroll, and \$14.1 million in annual output.***

## ***Example Results***

	Off-Airport Impacts (visitors)	Total Impacts	Share of Total Impacts
Jobs	175	264	66%
Payroll	\$4.7M	\$9.1M	52%
Output	\$14.1M	\$31.3M	45%

# Breakdown of total economic impacts for the example airport

## *Example Results*

	On-Airport Impacts	Off-Airport Impacts (Visitors)	Total Impacts
<b>Jobs</b>	<b>89</b> (34%)	<b>175</b> (66%)	<b>264</b>
<b>Payroll</b>	<b>\$4.4M</b> (48%)	<b>\$4.7M</b> (52%)	<b>\$9.1M</b>
<b>Output</b>	<b>\$17.1M</b> (55%)	<b>\$14.1M</b> (45%)	<b>\$31.3M</b>

# Summary

- The process discussed today provides a high level overview of the very detailed process that was followed to estimate each airport's economic impact.
- The actual process to estimate and model economic impacts is multi-layered and complex.
- It is important to remember that **Total impacts** include both the **Initial** and **Multiplier** impacts of 5 different sources of airport-related activities.





# WYOMING AVIATION

## 2013 Economic Impact Study

# Additional questions?

**Please see the FAQ included on  
the following slides**



# Frequently Asked Questions

## **Were the 4,000 travelers who were represented in the surveys from only commercial airline flights or did that number also include passengers arriving on general aviation aircraft?**

The 4,000 represents both commercial and general aviation survey respondents. Not all of these respondents were visitors, some were residents. If one survey, for example, indicated that responses included 4 travelers, each of these 4 travelers are represented in the 4,000 total.

## **Is the multiplier modified by the surveys?**

The surveys were used to collect only initial or direct impacts. Multiplier impacts are determined using the IMPLAN model. The surveys themselves have no specific impact or use in determining multiplier impacts.

## **Do economic impacts for airport Administration include impacts from air ambulance operators?**

Economic impacts for airport administration are related to the daily administration, operation, and maintenance of each airport. Impacts from airport tenants, such as air ambulance operators, are included in the tenant impact category, but only if the operator is “based” at the airport. If an air ambulance operator flies to a Wyoming airport to transport patients, there is no direct economic impact from their operations, unless they purchase fuel or have some other expenditure at their destination airport. If there is spending involved, economic impacts from the air ambulance operator would be included in other tenant or airport impacts for the destination airport.

## **Are airport specific “multipliers” included in the technical report?**

No, they are not. An individual airport’s “implied” multiplier by impact category for employment, payroll, and output can be estimated by dividing the total impact by the initial impact. However, airports are not encouraged to do this calculation nor are they encouraged to focus discussion of study results on the multiplier impacts. Airports are cautioned that in reality there is not a single multiplier that is used to estimate any of the secondary (multiplier) impacts presented in the study. For instance, in the visitor spending category, while an implied jobs multiplier could be calculated at 1.3, in reality, multipliers vary by industry and dozens of multipliers are used to calculate the final multiplier impacts as they are presented in the study. The resultant implied multipliers in the study are an average of all multipliers considered.

~ continued ~

## Frequently Asked Questions, *cont'd*

### **If a payroll clerk at the city works 15% of the time on airport accounting, does the model assume a full person?**

No. All part-time employment in each impact category is considered to determine if the part-time employment translates to one or more “full time equivalent” positions. At least 60% of one jobs needs to be supported before one full-time equivalent position is supported. In this analysis, if only 15% of a job is supported by an airport, this does not translate into one job.

### **Is TSA included as a tenant?**

Yes, all TSA employment, their payroll, and their annual operating budget (output) are included in the tenant category.

### **Does ground transportation get counted?**

Each airport provided information on their tenants. If the airport provided information on ground transportation providers that serve their airport, then yes, employment, payroll, and output for ground transportation providers are included in the tenant category.

### **Does the construction impact include hangar development?**

If hangar construction was funded with FAA, State, or Wyoming Business Council funds, then yes, the impacts are included in the study’s capital investment economic impacts. If hangar development was funded with third party/private investment, then it may or may not be included in the capital investment impacts. As part of our tenant surveys we contacted each tenant. We requested that each tenant provide information on any capital investments they have made at the airport. If the tenant returned a survey and provided this information, then yes, this investment is included.

### **Does the capital investment impact include business ready grants from the Wyoming Business Council?**

The Wyoming Business Council has provided grants to airports for projects that support economic development. These grants have been issued between 2004 and 2011. For the state study, economic impacts for each study airport from capital investment were based on grants issued from 2009-2013. If a similar time frame had been used for the airport investment from the Business Council, a significant part of the economic impact these grants have supported would have been missed. As a result, for the state study, the decision was made to consider the economic impact of all cumulative investment from the Wyoming Business Council. Economic impacts from Wyoming Business Council investments in the technical report are reported on a statewide rather than an airport specific basis.

*~ continued ~*

## Frequently Asked Questions, *cont'd*

### **Does the capital investment impact include business ready grants from the Wyoming Business Council?**

The Wyoming Business Council has provided grants to airports for projects that support economic development. These grants have been issued between 2004 and 2011. For the state study, economic impacts for each study airport from capital investment were based on grants issued from 2009-2013. If a similar time frame had been used for the airport investment from the Business Council, a significant part of the economic impact these grants have supported would have been missed. As a result, for the state study, the decision was made to consider the economic impact of all cumulative investment from the Wyoming Business Council. Economic impacts from Wyoming Business Council investments in the technical report are reported on a statewide rather than an airport specific basis.

### **Does the construction impact include projects that had bonding vs. federal and state funding?**

If an airport paid for a construction project exclusively with funds that it obtained through the bonding process, then most likely the economic impact of this capital investment is not reflected in the state study.

### **If someone flies to an airport for an interview and the employer pays for the trip, did the surveys record this as money into the economy?**

Since passenger surveys were self-administered, there is some possibility that a respondent may have not reported spending if someone else (their employer) paid for the trip. However, the way this question was presented on the survey it was designed to collect spending in each category whether or not the traveler was being reimbursed for their expenses.

### **If a family of four spent \$1,000 how was this divided? Each person used \$250?**

That would be one way to interpret the results. For this analysis, survey results were summarized to show average spending by person by trip. For most airports, spending by visitor by trip was in the \$550 range and most visitors stayed about 4 days or 3 nights. For this example (\$550 per trip), the visitor spent about \$183 for each night they spent in the state. For the family of four in the question above, on an average basis, the family of four would have spent \$2,200 for their visit. If they reported spending only \$1,000, their expenditures would have been significantly below the average for most commercial airports.

*~ continued ~*



## Frequently Asked Questions, *cont'd*

### **If a traveler indicated no meal cost and stayed with family, did you add any cost to the local resident for housing and feeding the guests?**

If the visitor helped pay their family for groceries or gas, for example, and reported this as part of their retail purchases, then yes, the impact would be captured. Otherwise, increased spending by the local resident is not captured in the impact results.

### **Where did IMPLAN model come from?**

IMPLAN as a system was first developed by the federal government in 1972 to measure the impacts of the Rural Development Act. The model continued to be refined under the guidance of the USDA Forest Service. In 1984, IMPLAN partnered with the University of Minnesota, and in 1993, the model was purchased privately and taken over by the Minnesota IMPLAN Group (MIG). MIG continued to refine and improve the model. The model is used, for example, by FEMA, Duke Power, the Bureau of Land Management, and the Federal Reserve Bank to measure various types of economic impact. In 2013, MIG was purchased by the IMPLAN Group, LLC, and the headquarters of the company was relocated to Charlotte. IMPLAN is frequently used to estimate economic impacts for individual airports and airport systems and is acknowledged by the FAA as an appropriate tool for estimating aviation related economic impacts.

### **Will the State be doing a press release?**

Yes, working with WYDOT, the Aeronautics Division will issue a press release on the study. Information will be distributed through the 40 news/media outlets that were used to disseminate information on the study's business survey.