

OREGON AVIATION PLAN  
Economic Impact Statement  
for NPIAS Airports



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This report is an update of the Oregon Aviation Plan (OAP 2007) which identifies the economic contributions of airports to the state of Oregon economy. The economic contribution made by airports are generated from on-airport economic activities and spending off-airport by visiting air travelers. Economic impacts of aviation also includes the air transportation sector that relies on airports for business travel and for shipping locally manufactured goods to the rest of the United States and international markets.

Total economic impacts of airports are the sum of on-airport economic activities, off-airport spending by visitors who arrive by air, and spin-off impacts (economic multipliers). Aviation dependent impacts include the value of air cargo and air business travel to industries throughout the state as well as related spin-off effects. Data for this study was collected directly from ODA airports during base year 2012, as well as by industry within Oregon and Portland International Airport (PDX). All results are reported in 2012 dollars.

The project team analyzed the economic contributions of 57 NPIAS airports (National Plan for Integrated Air Service); NPIAS designation is by the Federal Aviation Administration. In addition, the Port of Portland commissioned a separate economic impact study of Portland International Airport (PDX) and tables throughout this section separately display results from PDX. The sum of economic impacts from the OAP 2012 update and PDX account for the economic impacts generated by all public use airports in Oregon. Levels of economic impact are measured by individual airports, regions, and the state as a whole.

The report is organized into the following sections:

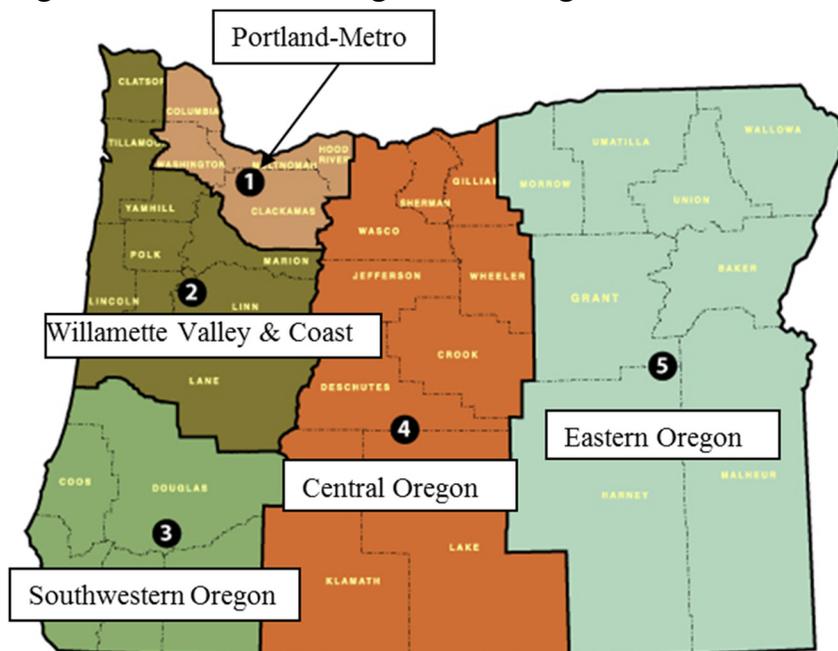
1. A summary overview of the analysis and results
2. Methodology, definition of terms, and data collection methods for valuation estimates
3. Direct economic impacts of airports & the aviation industry
4. Total regional and state economic impacts of airports & the aviation industry

# Executive Summary

This study addresses the contribution of aviation by NPIAS<sup>1</sup> airports to the Oregon state economy and within the five regions defined by Connect Oregon (see Figure ES-1). Economic impacts of airports include: (1) on-airport economic activities; and (2) spending off airport by visiting air travelers. On a regional basis, this study also includes an industry-based analysis of how different sectors in the Oregon economy (other than the air transportation sector) rely on airports for business travel and for shipping locally produced cargo to customers throughout the United States and around the world.

Total economic impacts by airports are the sum of on-airport economic activities, off-airport spending by visitors who arrive by air, and spin-off impacts<sup>2</sup>. Aviation dependent impacts include the value of air cargo and air business travel to industries throughout the state, and related spin-off effects. Data for this study was collected directly from airports during base year 2012, as well as by industry within Oregon. All results are reported in 2012 dollars. Detailed analysis is provided in the following chapters.

**Figure ES-1. The five regions of Oregon**



Source: Connect Oregon ([www.oregon.gov/ODOT/comm/co](http://www.oregon.gov/ODOT/comm/co)).

<sup>1</sup> Airports designated by the Federal Aviation Administration as part of the National Plan of Integrated Airport Systems.

<sup>2</sup> Spin-off impacts, also known as multiplier effects, measure the additional economy activity due to spending on materials/services and employee spending.

## Findings – Contribution of Airports to the Economy of Oregon

As shown in **Table ES-1**<sup>3</sup>, Oregon public use airports including PDX contributed a total economic impact to the state economy of \$9.1B as measured by business sales and budget expenditures. **Table ES-2** lists the contribution of each airport in this study to the total.

Additional study highlights (excluding PDX) include:

- Oregon public use airports including airport tenants directly employ 7,677 people for aviation related activities and expended \$495 million in wages.
- Oregon public use airport employees and tenants earned an average annual salary \$64,500 per year for aviation activities, including jobs related to administrating and maintaining airport facilities, servicing air carriers and GA aircraft, and providing terminal services to passengers, as well as to air crews and other employees.
- Almost 5,000 jobs across the state are directly attributed to visitor spending. Visitor industry employees earned an average annual salary of \$20,700 per year.
- Air cargo and business travel services directly contribute \$8 billion to the state economy by enabling long distance business sales of goods and services produced in Oregon. The value of instate productivity supported by aviation supports more than 23,700 jobs to State residents.<sup>4</sup>

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<sup>3</sup> Spin-off Effects: Supplier and Income Re-spending use State multipliers

<sup>4</sup> Note that while Portland International Airport is not part of the airport component of this study, PDX is accounted for in documenting the role of aviation in supporting air-reliant businesses in the general economy of Oregon by facilitating business travel and air cargo shipments.

**Table ES-1. Economic Contribution of Airports to the Oregon Economy<sup>5</sup>**

Impact Type	Jobs	Payroll	Business Sales
1. On Airport (incl. FBO and air related tenants)	7,677	\$494,920,000	\$1,680,058,000
2. Off-Airport: Visitor Spending	4,938	\$102,187,000	\$342,540,000
<b>Subtotal Total Direct Contribution</b>	12,615	\$597,107,000	\$2,022,598,000
Spin-off Effects: Supplier and Income Re-spending			
3. Due to On Airport Aviation	11,193	\$365,742,000	\$1,351,803,000
4. Due to Visitor Spending	2,054	\$80,250,000	\$250,918,000
<b>Subtotal Spin-off Effects</b>	13,247	\$445,992,000	\$1,602,721,000
<b>Subtotal Total Airport Aviation Related Impacts (excluding PDX)</b>	25,862	\$1,043,099,000	\$3,625,319,000
<b>Portland International Airport Totals*</b>			
Airport Generated	16,308	\$922,000,000	\$3,725,000,000
Visitor Generated	35,963	\$1,020,400,000	\$1,752,700,000
<b>Total Impact PDX</b>	52,271	\$1,942,500,000	\$5,477,700,000
<b>Total Impact Oregon Airports</b>	<b>78,133</b>	<b>\$2,985,499,000</b>	<b>\$9,103,019,000</b>

Sources: Airport and tenant surveys. EDR Group and Mead & Hunt Analyses. IMPLAN econometric package, and The Local and Regional Economic Impacts of the Port of Portland, 2011.

\*PDX totals taken directly from Port of Portland study.

**Table ES-2. Economic Contribution to the Oregon Economy by Airport\***

Airport Name	Airport Code	Jobs	Payroll	Business Sales
Albany Municipal	S12	44	\$1,729,000	\$6,221,000
Ashland Municipal	S03	172	\$6,875,000	\$37,034,000
Astoria Regional	AST	268	\$11,212,000	\$42,124,000
Aurora State	UAO	3,359	\$148,718,000	\$546,060,000
Baker City Municipal	BKE	36	\$753,000	\$4,592,000
Bandon State	S05	15	\$567,000	\$2,048,000
Bend Municipal Airport	BDN	1,038	\$35,044,000	\$165,576,000
Boardman	M50	1	\$23,000	\$83,000
Brookings	BOK	24	\$608,000	\$1,946,000
Burns Municipal	BNO	39	\$1,341,000	\$7,150,000
Chiloquin State	2S7	3	\$62,000	\$220,000
Christmas Valley	62S	3	\$77,000	\$273,000
Columbia Gorge/Dalles	DLS	159	\$6,418,000	\$22,883,000
Condon State	3S9	11	\$223,000	\$1,426,000
Corvallis Municipal	CVO	228	\$9,547,000	\$34,854,000
Cottage Grove State	61S	28	\$898,000	\$2,967,000
Creswell Hobby Field	77S	78	\$2,811,000	\$9,604,000
Eastern Oregon Regional Airport	PDT	50	\$1,720,000	\$4,909,000
Florence Municipal	6S2	4	\$102,000	\$337,000
Gold Beach Municipal	4S1	10	\$315,000	\$797,000

<sup>5</sup> The Port of Portland conducted an independent economic impact assessment for Portland International Airport in 2011, which is used by Project Team and shown separately in tables and discussion throughout this report. Several key differences should be noted immediately. First, the Port studies did not differentiate between aviation related and non-aviation related impacts. Therefore, all impacts are assumed to be aviation related. Second, the Port studies refer to the Portland Area, but are not specific regarding the boundaries of the Area and do not report state impacts. This report assumes that the region is within the Portland/Metro Region defined by ConnectOregon (see Figure ES-1), and uses the same impacts when discussing either regional or statewide contributions of airports and aviation. Data reported for PDX are not adjusted to 2012 dollars, and are shown in tables in this report as provided in the 2011 study.

<b>Airport Name</b>	<b>Airport Code</b>	<b>Jobs</b>	<b>Payroll</b>	<b>Business Sales</b>
Grant Co. Reg./Ogilvie Field	GCD	42	\$1,715,000	\$3,304,000
Grants Pass	3S8	215	\$7,377,000	\$36,116,000
Hermiston Municipal	HRI	107	\$2,029,000	\$13,361,000
Hillsboro Airport	HIO	2,680	\$140,848,000	\$429,191,000
Hood River	4S2	48	\$2,303,000	\$7,109,000
Illinois Valley	3S4	7	\$168,000	\$539,000
Independence State	7S5	90	\$3,213,000	\$11,282,000
Joseph State	JSY	59	\$1,031,000	\$8,248,000
Klamath Falls Airport	LMT	2,248	\$119,400,000	\$300,888,000
La Grande/Union Co.	LGD	381	\$11,257,000	\$48,991,000
Lake County	LKV	3	\$80,000	\$244,000
Lebanon State	S30	22	\$926,000	\$2,899,000
Lexington	9S9	0	\$8,000	\$32,000
Madras City-County	S33	36	\$1,114,000	\$3,956,000
Mahlon Sweet Field Airport	EUG	2,524	\$77,824,000	\$257,024,000
McDermitt State	26U	1	\$15,000	\$61,000
McMinnville Municipal	MMV	2,812	\$130,966,000	\$449,286,000
Mulino Airport	4S9	23	\$792,000	\$2,442,000
Myrtle Creek Municipal	16S	4	\$102,000	\$327,000
Newport Municipal	ONP	160	\$8,436,000	\$16,745,000
Ontario Municipal	ONO	18	\$398,000	\$1,429,000
Portland Downtown Heliport	61J	13	\$440,000	\$1,270,000
Portland-Troutdale	TTD	282	\$15,920,000	\$48,374,000
Prineville	S39	54	\$1,528,000	\$6,896,000
Prospect State	64S	19	\$486,000	\$2,761,000
Roberts Field Airport	RDM	810	\$24,735,000	\$81,561,000
Rogue Valley International	MFR	3,888	\$102,912,000	\$436,569,000
Roseburg Regional	RBG	68	\$1,782,000	\$8,622,000
Salem McNary Field	SLE	1,417	\$62,165,000	\$253,195,000
Scappoose Industrial Airpark	SPB	387	\$23,890,000	\$71,225,000
Seaside Municipal	56S	7	\$279,000	\$580,000
Siletz Bay State	S45	3	\$66,000	\$213,000
Southwest Oregon Regional	OTH	1,526	\$55,945,000	\$174,886,000
Sportsman Airpark	2S6	144	\$6,319,000	\$23,276,000
Sunriver	S21	24	\$716,000	\$2,189,000
Tillamook	TMK	159	\$6,648,000	\$27,484,000
Wasco State	35S	11	\$223,000	\$1,640,000
<b>Total</b>		25,862	\$1,043,099,000	\$3,625,319,000

\*:Portland International Airport is not included in this table as it was not part of this survey.

Totals include spin-off effects and may not add due to rounding

Sources: Airport and tenant surveys. EDR Group and Mead & Hunt Analyses, IMPLAN econometric package

## Regional Analysis

Each region within Oregon has its own economic profile that provides an indication of business activity. Although the Portland metro region is the smallest geographically, in 2010, it represented over 51% of total state employment, \$56B in wages and nearly \$153B in business sales **Table ES-3**. Willamette Valley & Coast provides over a quarter of state employment and over \$60M in business sales. The remaining three regions combine for roughly 23% of state employment and over \$53B in business sales.

**Table ES-3: Economic profile by region (2010 data in 2012\$'s)**

Region	Output (In \$M's)	Labor Income	Employment	% of Total Employment
Portland Metro	\$152,912	\$56,513	1,083,142	51%
Willamette Valley & Coast	\$60,319	\$21,605	547,090	26%
Southwest Oregon	\$25,048	\$8,414	238,188	11%
Central Oregon	\$16,889	\$5,890	161,378	8%
Eastern Oregon	\$11,726	\$3,372	101,103	5%
<b>Total</b>	<b>\$266,893</b>	<b>\$95,793</b>	<b>2,130,900</b>	<b>100%</b>

Source: BLS & BEA via IMPLAN

**Table ES-4** shows the summary contribution by each airport to their respective regions (**Figure ES-1**). The contribution made by an airport to a regional economy and the state economy differ for two reasons:

1. Regional and state impacts only account for travelers arriving from out of state; and
2. Economic multipliers (spin-off effects) for the state are larger than regional spin-offs. This is because transactions that cross a regional border but stay within Oregon are not counted in the analyses of regional economic impacts, but are counted in the statewide context. For example, if a business or consumer purchases a computer one town over a regional boundary, that purchase would be counted in the Oregon economy, but not in the regional economy.

**Table ES-4. Summary of Contributions of All Airports to Regional Economies**

Aviation Related Economic Activity	Portland/ Metro*	Willamette Valley & Coast	Southwestern Oregon	Central Oregon	Eastern Oregon
On-Airport Tenant Jobs	18,826	7,994	2,990	2,928	467
Visitor Spending Jobs	36,788	2,619	2,731	906	91
Total Jobs	55,614	10,613	5,721	3,834	558
On-Airport Tenant Wages (thousands)	\$1,071,580	\$362,736	\$110,309	\$145,124	\$15,119
Visitor Spending Wages (thousands)	\$1,046,142	\$59,156	\$54,351	\$22,058	\$1,878
Total Wages (thousands)	\$2,117,722	\$421,892	\$164,660	\$167,182	\$16,997
On-Airport Tenant Bus. Sales (thousands)	\$4,183,062	\$1,307,475	\$436,354	\$428,014	\$65,383
Visitor Spending Sales (thousands)	\$1,826,470	\$198,126	\$186,107	\$67,557	\$6,379
Total Sales (thousands)	\$6,009,532	\$1,505,601	\$622,461	\$495,571	\$71,762
Total Reliant & Dependent Businesses					
Job	55,171	10,303	3,203	2,042	689
Wages(thousands)	\$3,621,758	\$532,295	\$126,206	\$94,135	\$28,153
Business Sales (thousands)	\$11,373,131	\$1,948,996	\$525,104	\$353,125	\$161,949

*Source: IMPLAN econometric package, Local and Regional Economic Impacts of the Port of Portland, 2011, EDR Group and Mead and Hunt Analyses. Totals include spin-off effects. Source: Airport and tenant surveys Reliant and dependent business impacts are estimated by location of industry and not by airport. \*PDX totals taken directly from Port of Portland study.*

**Table ES-4**, above, shows the contribution of aviation to regional economies, which are the sum of airport based aviation activities, off-airport spending by air travelers and the reliance and dependence of non-aviation businesses Oregon for air travel and air cargo shipments. Reliant and dependent business impacts are estimated by location of industry and not by airport location.

Given that PDX is a statewide resource that serves businesses located throughout Oregon, business travel and cargo shipments through PDX are imbedded in the analysis of aviation reliance and dependence by non-aviation industries which are counted according to business locations. However, the economic contribution of airport tenants and visitor spending from PDX was not evaluated in this analysis; economic impacts from PDX are only cited from the Port of Portland study and are only included in the executive summary totals.

Tables **Table ES-5** through **Table ES-9** presents total contributions of airports to each of the five regional economies within Oregon.

**Table ES-5. Contribution of Region 1 Airports to Regional Economies**

Region 1: Portland/Metro				
Airport Name	Airport Code	Jobs	Payroll	Sales
Hillsboro Airport	HIO	2,609	\$134,088,000	\$407,879,000
Hood River	4S2	47	\$2,194,000	\$6,760,000
Mulino Airport	4S9	21	\$757,000	\$2,325,000
Portland Downtown Heliport	61J	13	\$424,000	\$1,212,000
Portland-Troutdale	TTD	275	\$15,140,000	\$45,971,000
Scappoose Industrial Airpark	SPB	378	\$22,719,000	\$67,685,000
Portland International Airport*	PDX	52,271	\$1,942,500,000	\$5,477,700,000
<b>Regional Total</b>		55,614	\$2,117,822,000	\$6,009,532,000

*Totals include spin-off effects and may not add due to rounding*

*Sources: Airport and tenant surveys. EDR Group and Mead & Hunt Analyses, IMPLAN econometric package. \*PDX totals taken directly from Port of Portland study (2011).*

**Table ES-6. Contributions of Region 2 Airports to Regional Economies**

Region 2: Willamette Valley and Coast				
Airport Name	Airport Code	Jobs	Wages	Sales
Albany Municipal	S12	41	\$1,537,000	\$5,482,000
Astoria Regional	AST	222	\$10,272,000	\$36,659,000
Aurora State	UAO	3,059	\$130,964,000	\$482,920,000
Columbia Gorge/Dalles	DLS	146	\$5,695,000	\$20,223,000
Corvallis Municipal	CVO	211	\$8,402,000	\$30,821,000
Cottage Grove State	61S	26	\$829,000	\$2,610,000
Creswell Hobby Field	77S	73	\$2,510,000	\$8,504,000
Florence Municipal	6S2	4	\$92,000	\$300,000
Independence State	7S5	84	\$2,836,000	\$9,983,000
Lebanon State	S30	21	\$828,000	\$2,567,000
Mahlon Sweet Field Airport	EUG	2,493	\$69,962,000	\$228,285,000
McMinnville Municipal	MMV	2,529	\$114,761,000	\$396,799,000
Newport Municipal	ONP	134	\$7,353,000	\$14,600,000
Salem McNary Field	SLE	1,288	\$54,318,000	\$221,098,000
Siletz Bay State	S45	3	\$59,000	\$189,000
Sportsman Airpark	2S6	131	\$5,567,000	\$20,577,000
Tillamook	TMK	14	\$5,907,000	\$23,984,000
<b>Regional Total</b>		10,479	\$421,892,000	\$1,505,601,000

*Totals include spin-off effects and may not add due to rounding*

*Sources: Airport and tenant surveys. EDR Group and Mead & Hunt Analyses, IMPLAN econometric package*

**Table ES-7. Contributions of Region 3 Airports to Regional Economies**

Region 3: Southwestern Oregon				
Airport Name	Airport Code	Jobs	Wages	Sales
Ashland Municipal	S03	164	\$6,676,000	\$32,356,000
Bandon State	S05	14	\$530,000	\$1,798,000
Brookings	BOK	23	\$532,000	\$1,732,000
Gold Beach Municipal	4S1	10	\$283,000	\$710,000
Grants Pass	3S8	200	\$7,006,000	\$31,908,000
Illinois Valley	3S4	7	\$147,000	\$480,000
Myrtle Creek Municipal	16S	4	\$90,000	\$292,000
Prospect State	64S	16	\$480,000	\$2,432,000
Rogue Valley International	MFR	3,772	\$95,509,000	\$386,828,000
Roseburg Regional	RBG	62	\$1,684,000	\$7,624,000
Seaside Municipal	56S	7	\$256,000	\$515,000
SW Oregon Regional	OTH	1,442	\$51,467,000	\$155,786,000
<b>Regional Total</b>		6,071	\$169,216,000	\$674,793,000

*Totals include spin-off effects and may not add due to rounding*

*Sources: Airport and tenant surveys. EDR Group and Mead & Hunt Analyses, IMPLAN econometric package*

**Table ES- 8. Contributions of Region 4 Airports to Regional Economies**

Region 4: Central Oregon				
Airport Name	Airport Code	Jobs	Wages	Sales
Bend Municipal Airport	BDN	846	\$32,580,000	\$143,549,000
Chiloquin State	2S7	3	\$54,000	\$196,000
Christmas Valley	62S	3	\$66,000	\$243,000
Condon State	3S9	9	\$206,000	\$1,227,000
Klamath Falls Airport	LMT	2,024	\$109,092,000	\$265,826,000
Lake County	LKV	3	\$70,000	\$215,000
Madras City-County	S33	31	\$1,031,000	\$3,424,000
Prineville	S39	48	\$1,399,000	\$6,023,000
Roberts Field Airport	RDM	835	\$21,851,000	\$71,527,000
Sunriver	S21	23	\$622,000	\$1,936,000
Wasco State	35S	9	\$211,000	\$1,405,000
<b>Regional Total</b>		3,834	\$167,182,000	\$495,571,000

*Totals include spin-off effects and may not add due to rounding*

*Sources: Airport and tenant surveys. EDR Group and Mead & Hunt Analyses, IMPLAN econometric package*

**Table ES-9. Contributions of Region 5 Airports to Regional Economies**

Region 5: Eastern Oregon				
Airport Name	Airport Code	Jobs	Wages	Sales
Baker City Municipal	BKE	27	\$640,000	\$3,587,000
Boardman	M50	1	\$19,000	\$65,000
Burns Municipal	BNO	31	\$1,136,000	\$5,529,000
Eastern Oregon Regional	PDT	43	\$1,463,000	\$3,829,000
Grant Co. Regional	GCD	36	\$1,500,000	\$2,622,000
Hermiston Municipal	HRI	80	\$1,680,000	\$10,374,000
Joseph State	JSY	43	\$867,000	\$6,439,000
La Grande/Union Co.	LGD	280	\$9,343,000	\$38,126,000
Lexington	9S9	-	\$7,000	\$26,000
McDermitt State	26U	1	\$12,000	\$49,000
Ontario Municipal	ONO	16	\$330,000	\$1,116,000
<b>Regional Total</b>		<b>558</b>	<b>\$16,997,000</b>	<b>\$71,762,000</b>

*Totals include spin-off effects and may not add due to rounding*

*Sources: Airport and tenant surveys. EDR Group and Mead & Hunt Analyses, IMPLAN econometric package*

## **Methodology of Economic Assessment**

The economic impact analysis of airports in this report updates the contribution of aviation and airport facilities to regional economies and the state economy. This study also examines the role aviation plays in supporting businesses that depend on airports for business travel and cargo shipments.

Economic impacts refer to measuring business activities in terms of jobs, payroll, business sales, and budget expenditures. With respect to airports, the study reports the economic impacts of on-airport activities, which includes airport administration and airport tenants and off-airport spending by visitors who arrive by air. Examples of these initial transactions include administration of airport activities, services provided on airports to passengers, pilots and crew, and other aviation related business, and visitors who spend money to stay in hotels and eat in restaurants. The impacts are reported for each airport, and are summarized for five state regions as well as statewide.

The Port of Portland conducted separate economic assessments of Portland International Airport (PDX) which are outside the scope of this study. However the results of PDX are presented in some tables throughout this report to combine reporting of economic impact analysis for all of Oregon's public use airport system.

### **Rounding to account for False Precision**

Using limited data to convey precise totals is known as "false precision." Throughout this analysis, the Project Team has attempted to avoid misleading readers in giving the appearance of more accuracy than warranted by the data.

To avoid misleading readers, rounding was employed for all final totals for visitor spending, on-airport impacts, and air reliant impacts to the nearest thousand. By rounding to the closest thousand dollar unit, the study enhances maximum reliability and avoids misleading readers by claiming false precision<sup>6</sup>.

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<sup>6</sup> False precision carries with it an implication of high accuracy, which is not necessarily true. As conveyed in the text of the report, for example, "payroll" and "business sales," as well as multiplier impacts, are based on state and regional averages by industry in Oregon. As averages, they do not necessarily convey the exact wages or sales by airport tenants or that are actually generated through multiplier effects, which for individual business establishments may be higher or lower than industry averages. Moreover, visitor spending totals are based on surveys, which had a robust response rate (visitors using commercial airport visitors) or based on survey data from airports outside of Oregon (and matched to Oregon airport's GA operations and local economies).

## Types of Economic Impact

Total economic impacts are derived from the sum of on-airport direct impacts, off-airport direct impacts (visitor spending), and spin-off impacts (multiplier effect). In addition, airport dependent impacts are provided to show the importance of each airport to the business community. All impacts reported represent a base year of 2012. Each type of impact is defined as follows:

**On-Airport Direct Impacts** represent those impacts that would not occur if the airport did not exist, such as airlines, fixed base operators (FBO), government, and other tenants located at the airport or directly dependent on the airport. This category also includes airport management and other individuals employed directly by the airport.

**Off-Airport Direct Impacts (Visitor Spending)** are financial transactions that occur primarily off-site and are associated with visitor spending. The primary difference between on-airport direct impacts and off-airport direct impacts is that off-airport businesses benefit from additional revenue because of the airport, but would likely exist in the absence of the airport. Off-airport direct impacts by visitors are expenditures made in the regional area by air travelers who are visiting from outside the region. These expenditures include items such as lodging, food, entertainment, and retail purchases.

**Airport Dependent and Reliant Impacts** represent area businesses that are dependent on an airport for just-in-time shipping, a high degree of corporate travel, or specialized airport facilities and services such as free trade zones. These businesses would relocate or suffer substantial loss if the airport were not available. This impact is not included in traditional economic impact methodology and is provided as an indicator of the importance of airports to area businesses.

**Spin-Off Impacts (Multiplier Effect)** are calculated using impact multipliers, which are used to reflect the recycling of dollars through the economy. A dollar spent in the economy does not disappear; rather, it continues to move through the local economy in successive rounds until it is incrementally exported from the community. As the expenditures described above are released into the economy, they circulate among other industry sectors, creating successive waves of additional economic benefit in the form of jobs, payroll, and output (expenditures). These successive rounds of spending are known as spin-off impacts, and help to represent the full impact of each dollar spent in a region. An example would be an airport employee spending his or her salary for housing, food, and other services, or an airport business purchasing needed supplies. Spending outside the area is considered economic leakage and is not reflected in the multiplier.

## Measures of Economic Impact

Each of the four impact types is measured in three ways – jobs, wages, and economic activity.

- **Jobs** represent the total number of individuals' employed – not full time equivalent positions.
- **Wages** are the full payroll expended for employees from the employers' perspective, including all taxes and benefits.
- **Economic Activity**, otherwise known as output, represents business sales. For government, or non-profit entities, output represents their annual budget. For visitor spending, output represents visitor expenditures.

## Data Collection

An extensive data collection effort was conducted for this study. Surveys were distributed to two distinct groups: airport managers and air carrier passengers. Supporting data for the analysis included Federal Aviation Administration (FAA) Terminal Area Forecasts (TAF) and EDRG estimates of GA visitor spending.

The Airport Manager Survey was designed to gather the local employment, itinerant operations, and enplanements data for each airport. For non-responding airports, firms and employment levels were estimated through discussions with M&H, airport managers and sponsors, ODA, and confirmed using multiple private databases, including Claritas, and InfoUSA. These coordinate efforts resulted in an estimate of 7,677 employees who work at the 57 NPIAS airports (excluding PDX). These jobs include airport management, airport staff, and others that work for the airport directly.

Air Carrier Visitor Surveys were conducted at all air carrier airports other than Portland International Airport. The survey was designed to determine expenditure profiles for visiting airport passengers using commercial flights. Commercial visitor spending includes airport-specific averages from passenger surveys for Mahlon Sweet Field, Rogue Valley International, Redmond Municipal - Roberts Field, Eastern Oregon Regional, Southwest Oregon Regional Airport, and Klamath Falls Airport.

Air carrier visitor spending analysis was based on 293 surveys after discounting outliers. The sample of air carrier passengers surveyed accounts for 412 visitors either from outside of Oregon, international travelers, or residents of Oregon who were visiting other regions in the state by air<sup>7</sup>.

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<sup>7</sup> Overall data collected from these surveys represent a 95% confidence level with a 5% margin of error.

General Aviation (GA) spending estimates were derived general aviation passenger surveys from other states including Virginia, Vermont, South Dakota, and Colorado. A linear regression was applied to explain passenger spending, using spending per trip per person from surveys as the dependent variable, and percent of transient operations, runway length, and median household income as independent (or explanatory) variables. Both explanatory variables were significant with 95 percent confidence. GA visitor spending for Oregon was then estimated using the above listed parameters.

The project team and the Oregon Department of Aviation (ODA) identified three airport whose regression analysis spending estimates were either below or above reasonably expected values. For McDermitt State, Wasco State, and Lexington which represent small and relatively isolated airports, a minimal spending value of \$20 was applied based on specific knowledge of individual airports by ODA and fieldwork by the project team. For airports assigned \$20 per visitor, the project team and ODA assumed 67 percent (67%) of the spending was for food and drink and 33 percent (33%) for retail.

### Calculating On-airport direct impacts

On-airport direct impacts account for aviation-related economic activities and are aggregated directly from the Airport Manager survey with supplemental information from establishment datasets compiled by Claritas and InfoUSA. Data received from airport managers consisted of employment estimates for on-airport tenants<sup>8</sup>. Employment by tenant category is listed in **Table 1**.

**Table 1: On-airport Employment by Tenant Category**

Tenant Category	Employment	% of Total	GA	Commercial
Aerospace	872	11.4%	851	21
Aviation & Air Carriers	3,672	47.8%	2,814	858
Car Rental	168	2.2%	21	147
Construction	3	0.04%	3	-
Courier	34	0.4%	21	13
Entertainment	7	0.1%	7	-
Federal Gov't	1,713	22.3%	418	1,295
Hotel	45	0.6%	45	-
Manufacturing	288	3.8%	288	-
Reliant Services	64	0.8%	33	31
Restaurant	113	1.5%	43	70
Retail	26	0.3%	11	15
Security	63	0.8%	-	63
Services	308	4.0%	285	23
State & Local Gov't	280	3.6%	155	125
Transportation	22	0.3%	7	15
<b>Total</b>	<b>7,677</b>	<b>100%</b>	<b>5,001</b>	<b>2,676</b>

*Source: ODA and Mead & Hunt*

<sup>8</sup> Regional ratios were used to estimate wages and business sales. These ratios were used from IMPLAN which packages federal sources by county, including US Department of Commerce, US Department of Labor, and US Department of Agriculture data sets.

The project team identified 50 airports that do not have any business tenants which are listed below in **Table 2**.

**Table 2: Oregon NPIAS airports that do not have tenants**

Alkali Lake State	Lake Billy Chinook	Pinehurst State
Arlington Municipal	Lake County	Portland Downtown Heliport
Beaver Marsh	Lakeside Municipal	Powers
Boardman	Lenhardt Airpark	Rome State
Brookings	Lexington	Sandy River
Cape Blanco State	Malin	Santiam Junction State
Cascade Locks State	McDermitt State	Siletz Bay State
Chehalem Airpark	McKenzie Bridge State	Sisters Eagle Air
Chiloquin State	Miller Memorial Airpark	Skyport
Christmas Valley	Monument Municipal	Starks Twin Oaks Airpark
Country Squire Airpark	Myrtle Creek Municipal	Sunriver
Crescent Lake State	Nehalem Bay State	Toketee State
Davis	Oakridge State	Toledo State
Enterprise Municipal	Ontario Municipal	Valley View
Florence Municipal	Owyhee Reservoir State	Vernonia
George Felt	Pacific City State	Wakonda Beach State
Illinois Valley	Paisley	

## Determining Off-Airport Visitor Spending

### Visitors arriving by Air Carrier Airports

The number of estimated visitors for each air carrier airport was calculated by multiplying the 2012 reported enplaned passengers by the percentage of visitors to the area. The enplaned passenger numbers were derived from FAA data that reports a ten percent (10%) sample of ticketed passengers, which is derived from the Airline Origin and Destination Survey (DB1B), Bureau of Transportation Statistics, US Department of Transportation. The visitor share of each commercial airport covered in this study is shown in **Table 3** and includes visitors from out of state, including international arrivals, and visitors from other regions in Oregon.

**Table 3: Percentage of Visitors at Oregon Commercial Airports**

Airport	Code	Within Oregon	Out of State	Total Visitors
Mahlon Sweet Field Airport	EUG	1%	39%	40%
Klamath Falls Airport	LMT	6%	26%	32%
Rogue Valley International	MFR	6%	38%	44%
Southwest Oregon Regional Airport	OTH	10%	45%	55%
Eastern Oregon Regional Airport	PDT	46%	1%	47%
Roberts Field Airport	RDM	4%	37%	41%

*Source: Airline Origin and Destination Survey (DB1B)(Bureau of Transportation Statistics) aggregated by Data Base Products, Inc.*

Data was collected for visitor spending in the following sectors: Lodging/Hotel, food and beverage, transportation, entertainment, and retail. **Table 4** below outlines the spending per category for visitors arriving via air carriers for each commercial airport.

**Table 4: Visitor spending at Commercial Airports in Oregon**

Airport	Airport Code	Lodging	Food & Bev.	Transp.	Entertainment	Retail	Total
Southwest Oregon Regional	OTH	\$720	\$356	\$31	\$435	\$110	\$1,652
Rogue Valley International	MFR	\$243	\$214	\$19	\$92	\$101	\$670
Mahlon Sweet Field	EUG	\$164	\$181	\$35	\$56	\$130	\$566
Klamath Falls	LMT	\$189	\$138	\$85	\$15	\$33	\$459
Roberts Field	RDM	\$137	\$94	\$34	\$36	\$25	\$325
Eastern Oregon Regional	PDT	\$54	\$46	\$10	\$12	\$8	\$130

Source: ODA Air Carrier Visitor Survey

Just under a million enplanements occurred at commercial airports in Oregon in 2012 (**Table 5**). Between 32% and 55% of those enplanements were visitors to the state totaling over 400,000 visitors. Mahlon Sweet Field airport in Eugene had the highest level of activity with over 388,000 enplanements and over 154,000 visitors. In **Table 6**, the average spending per trip is applied to the number of estimated visitors resulting in over \$230M spent within Oregon's economy.

**Table 5: Number of Air Carrier Visitors by Airport**

Name	Airport Code	Enplanements	% visitors	Total Visitors
Mahlon Sweet Field	EUG	388,512	40%	154,167
Rogue Valley International	MFR	308,334	44%	135,102
Roberts Field	RDM	225,809	41%	91,803
Southwest Oregon Regional	OTH	22,094	55%	12,127
Klamath Falls	LMT	17,086	32%	5,473
Eastern Oregon Regional	PDT	5,186	47%	2,458
Total		967,021		401,129

Source: FAA & ODA Air Carrier Visitor Survey

**Table 6: Total commercial visitor spending by airport**

Name	Airport Code	Total Visitors	Avg. Spending	Total Spending
Mahlon Sweet Field	EUG	154,167	\$566	\$87,224,000
Rogue Valley International	MFR	135,102	\$670	\$90,504,000
Roberts Field	RDM	91,803	\$325	\$29,849,000
Southwest Oregon Regional	OTH	12,127	\$1,652	\$20,031,000
Klamath Falls	LMT	5,473	\$459	\$2,513,000
Eastern Oregon Regional	PDT	2,458	\$130	\$319,000
Total		401,129		\$230,440,000

Source: FAA, ODA Air Carrier Visitor Survey, & EDRG calculations

### Visitors arriving by General Aviation Airports

Visitors arriving by general aviation (GA) aircraft use both commercial and GA airports. The number of estimated visitors was calculated by multiplying total arrival operations by the average number of people per aircraft, and the estimated number of transient visitors.

Estimates for transient GA operation and the number of passengers per aircraft was gathered from the airport managers' survey and supplemented with Terminal Area Forecasts (TAF) from the FAA. Over 77,000 GA visitors arrived at commercial airports and averaged 2.3 passengers per aircraft as listed in **Table 7**. Visitors are assumed to spend on average between \$20 and \$176 per trip according to a regression analysis of GA spending by EDRG. Combined, GA visitors arriving at commercial airports spent over \$7M across the same spending categories within Oregon (**Table 8**).

**Table 7: General Aviation operations and visitors at commercial airports**

Airport Code	Airport Name	GA Itn Operations.	GA Arrivals	Passengers/ Operation	Number of Visitors
EUG	Mahlon Sweet Field	18,886	9,443	3.0	28,329
LMT	Klamath Falls	8,656	4,328	2.0	8,656
MFR	Rogue Valley International	17,243	8,622	2.0	17,243
OTH	Southwest Oregon Regional	986	493	3.0	1,479
PDT	Eastern Oregon Regional	9,064	4,532	2.0	9,064
RDM	Roberts Field	12,926	6,463	2.0	12,926
Total / Average		67,761	33,881	2.3	77,697

Source: FAA, Airport managers' survey, & ODA staff

**Table 8: General Aviation visitor spending via commercial airports.**

Airport Code	Airport Name	Number of Visitors	Avg. Spending per Trip	Total GA Spending
EUG	Mahlon Sweet Field	28,329	\$88	\$2,503,000
LMT	Klamath Falls	8,656	\$86	\$744,000
MFR	Rogue Valley International	17,243	\$100	\$1,728,000
OTH	Southwest Oregon Regional	1,479	\$105	\$155,000
PDT	Eastern Oregon Regional	9,064	\$73	\$664,000
RDM	Roberts Field	12,926	\$99	\$1,281,000
Total / Average		77,697	\$91	\$7,075,000

Source: Airport managers' survey, ODA, & EDRG analysis

Estimates for the number of GA visitors are presented in **Table 9**. In 2012 there were over 636,000 GA operations with an average passenger per operation ranging between 1.5 and 6 people. Each itinerant operation was assumed to contain 100% visitors resulting in over 892,000 GA visitors to the state. GA visitor spending per trip by GA airport is calculated from a minimum of \$20, a maximum of \$176, and a weighted average of \$118. Combined together, GA visitor spending at GA airports equaled \$105M in 2012.

**Table 9: GA Operations, Passengers, and Visitors by GA airport**

<b>Airport ID</b>	<b>Airport Name</b>	<b>GA Itn. Operations</b>	<b>GA Arrivals</b>	<b>Passengers/ Operation</b>	<b>Number of Visitors</b>
S12	Albany Municipal	12,650	6,325	2.0	12,650
S03	Ashland Municipal	8,000	4,000	2.0	8,000
AST	Astoria Regional	11,750	5,875	2.0	11,750
UAO	Aurora State	39,225	19,613	6.0	117,675
BKE	Baker City Municipal	3,409	1,705	2.0	3,409
S05	Bandon State	2,900	1,450	3.0	4,350
BDN	Bend Municipal	50,951	25,476	2.0	50,951
M50	Boardman	1,300	650	2.0	1,300
BOK	Brookings	20,572	10,286	2.0	20,572
BNO	Burns Municipal	6,563	3,282	2.0	6,563
2S7	Chiloquin State	2,700	1,350	2.0	2,700
62S	Christmas Valley	3,148	1,574	3.0	4,722
DLS	Columbia Gorge/Dalles	24,449	12,225	2.0	24,449
3S9	Condon State	3,005	1,503	2.0	3,005
CVO	Corvallis Municipal	25,650	12,825	1.5	19,238
61S	Cottage Grove State	9,735	4,868	2.0	9,735
77S	Creswell Hobby Field	23,991	11,996	2.0	23,991
6S2	Florence Municipal	2,640	1,320	2.0	2,640
4S1	Gold Beach Municipal	3,787	1,894	2.0	3,787
GCD	Grant Co. Reg./Ogilvie Field	4,800	2,400	2.0	4,800
3S8	Grants Pass	15,693	7,847	3.0	23,540
HRI	Hermiston Municipal	9,950	4,975	2.0	9,950
HIO	Hillsboro	75,927	37,964	6.0	227,781
4S2	Hood River	9,900	4,950	3.0	14,850
3S4	Illinois Valley	3,224	1,612	2.0	3,224
7S5	Independence State	23,492	11,746	2.0	23,492
JSY	Joseph State	2,900	1,450	2.0	2,900
LGD	La Grande/Union Co.	11,120	5,560	2.0	11,120
LKV	Lake County	3,300	1,650	2.0	3,300
S30	Lebanon State	5,305	2,653	2.0	5,305
9S9	Lexington	1,023	512	2.0	1,023
S33	Madras City-County	5,239	2,620	2.0	5,239
26U	McDermitt State	1,900	950	2.0	1,900
MMV	McMinnville Municipal	39,091	19,546	2.0	39,091
4S9	Mulino	8,200	4,100	2.0	8,200
16S	Myrtle Creek Municipal	1,880	940	2.0	1,880
ONP	Newport Municipal	10,500	5,250	3.0	15,750

Airport ID	Airport Name	GA Itn. Operations.	GA Arrivals	Passengers/ Operation	Number of Visitors
ONO	Ontario Municipal	8,147	4,074	2.0	8,147
61J	Portland Downtown Heliport	4,940	2,470	2.0	4,940
TTD	Portland-Troutdale	21,152	10,576	3.0	31,728
S39	Prineville	7,356	3,678	2.0	7,356
RBG	Roseburg Regional	19,772	9,886	2.0	19,772
SLE	Salem McNary Field	20,261	10,131	2.0	20,261
SPB	Scappoose Industrial Airpark	39,740	19,870	2.0	39,740
56S	Seaside Municipal	1,600	800	2.0	1,600
S45	Siletz Bay State	1,780	890	2.0	1,780
2S6	Sportsman Airpark	7,894	3,947	2.0	7,894
S21	Sunriver	11,975	5,988	2.0	11,975
TMK	Tillamook	1,000	500	2.0	1,000
35S	Wasco State	1,315	658	2.0	1,315
<b>Total/Average</b>		<b>636,801</b>	<b>318,401</b>	<b>2.8</b>	<b>892,339</b>

Source: FAA, ODA & EDRG

**Table 10: Total spending by GA visitors at GA airports**

Airport ID	Airport Name	Number of Visitors	Avg. Spending/Trip	Total GA Spending
S12	Albany Municipal	12,650	\$64	\$816,000
S03	Ashland Municipal	8,000	\$65	\$523,000
AST	Astoria Regional	11,750	\$50	\$583,000
UAO	Aurora State	117,675	\$157	\$18,474,000
BKE	Baker City Municipal	3,409	\$51	\$175,000
S05	Bandon State	4,350	\$57	\$249,000
BDN	Bend Municipal	50,951	\$126	\$6,417,000
M50	Boardman	1,300	\$37	\$48,000
BOK	Brookings	20,572	\$55	\$1,126,000
BNO	Burns Municipal	6,563	\$58	\$380,000
2S7	Chiloquin State	2,700	\$51	\$137,000
62S	Christmas Valley	4,722	\$36	\$170,000
DLS	Columbia Gorge/Dalles	24,449	\$91	\$2,218,000
3S9	Condon State	3,005	\$47	\$141,000
CVO	Corvallis Municipal	19,238	\$125	\$2,396,000
61S	Cottage Grove State	9,735	\$85	\$832,000
77S	Creswell Hobby Field	23,991	\$86	\$2,069,000

<b>Airport ID</b>	<b>Airport Name</b>	<b>Number of Visitors</b>	<b>Avg. Spending per Trip</b>	<b>Total GA Spending</b>
6S2	Florence Municipal	2,640	\$74	\$197,000
4S1	Gold Beach Municipal	3,787	\$88	\$334,000
GCD	Grant Co. Reg./Ogilvie Field	4,800	\$69	\$334,000
3S8	Grants Pass	23,540	\$93	\$2,188,000
HRI	Hermiston Municipal	9,950	\$96	\$957,000
HIO	Hillsboro	227,781	\$159	\$36,202,000
4S2	Hood River	14,850	\$75	\$1,118,000
3S4	Illinois Valley	3,224	\$97	\$312,000
7S5	Independence State	23,492	\$78	\$1,837,000
JSY	Joseph State	2,900	\$62	\$181,000
LGD	La Grande/Union Co.	11,120	\$70	\$778,000
LKV	Lake County	3,300	\$43	\$141,000
S30	Lebanon State	5,305	\$72	\$383,000
9S9	Lexington	1,023	\$20	\$20,000
S33	Madras City-County	5,239	\$60	\$317,000
26U	McDermitt State	1,900	\$20	\$38,000
MMV	McMinnville Municipal	39,091	\$142	\$5,570,000
4S9	Mulino	8,200	\$104	\$850,000
16S	Myrtle Creek Municipal	1,880	\$102	\$191,000
ONP	Newport Municipal	15,750	\$59	\$929,000
ONO	Ontario Municipal	8,147	\$101	\$827,000
61J	Portland Downtown Heliport	4,940	\$150	\$742,000
TTD	Portland-Troutdale	31,728	\$72	\$2,283,000
S39	Prineville	7,356	\$44	\$325,000
RBG	Roseburg Regional	19,772	\$70	\$1,388,000
SLE	Salem McNary Field	20,261	\$176	\$3,567,000
SPB	Scappoose Industrial Airpark	39,740	\$97	\$3,836,000
56S	Seaside Municipal	1,600	\$90	\$144,000
S45	Siletz Bay State	1,780	\$69	\$123,000
2S6	Sportsman Airpark	7,894	\$100	\$788,000
S21	Sunriver	11,975	\$107	\$1,279,000
TMK	Tillamook	1,000	\$66	\$66,000
35S	Wasco State	1,315	\$20	\$26,000
<b>Total/Average</b>		<b>892,339</b>	<b>\$118</b>	<b>\$105,025,000</b>

Source: FAA, ODA & EDRG

## **Airport Dependent & Reliant impacts**

The value that airports provide the state economy goes beyond contribution of employing tenants and enabling visitor spending. Aviation dependent impacts measure the scale of reliance that Oregon manufacturers and agricultural producers place on Oregon airports in order to deliver their products and services to domestic and international customers. Industries also rely on air travel to for business meetings, on-site consulting and other related services. Dependency includes: (1) the costs of air-carrier business travel as a proportion of total business sales revenues per industry; and (2) the value of goods (manufactures and agriculture products) produced in state and exported by air from Oregon's airports. These two categories of dependence combine for over \$8B in sales (**Table 11**).

Because this impact is not included in traditional economic impact analysis nor calculated by airport, its impact is not listed for each airport. It is provided by region as an indicator of the importance of airports to area businesses. Impacts were allocated to each region according to the percentage of output each region has compared to the state total for each industry. PDX is the dominant airport in facilitating business travel and in air cargo goods movement. The Portland/Metro region contains over 75% of the sales value of goods shipped and aviation travel. PDX is located within this region and contains the dominant share of aviation activity.

The sources of data to estimate the degree of reliance and dependence on aviation include:

- The fraction of business sales by industry used to purchase air services was estimated using BEA data aggregated by IMPLAN.
- The value of Oregon produced goods shipped by air to domestic customers (by commodity type, volume, and value) was gathered from the Freight Analysis Framework (FAF) provided by the FHWA and based off of the Commodity Flow Survey (CFS) which is published every 5 years. Since the FAF data does not designate the airport of origin, these commodity flows were collected at the state level, converted into 3 digit NAICS, and then allocated to each of the 5 regions within Oregon according to the portion of output each region contained relative to the state.
- Data from the Bureau of Census International Trade Administration provided by WISER were also collected for all international goods manufactured in Oregon and shipped to foreign destinations. These exports were also allocated to each region within Oregon according to the portion of industry output compared to state totals. Both aviation reliant and dependent impacts categorized by region are illustrated in **Table 11**.

**Table 11: Direct impacts of air reliant and dependent businesses by region**

Code	Region	Domestic Outbound	International Exports	Aviation reliant travel	Combined Total	% of total
1	Portland / Metro	\$3,947,414,000	\$1,791,922,000	\$252,860,000	\$5,992,196,000	75%
2	Willamette Valley & Coast	\$1,032,124,000	\$252,838,000	\$34,342,000	\$1,319,304,000	16%
3	Southwestern Oregon	\$286,077,000	\$60,094,000	\$9,085,000	\$355,256,000	4%
4	Central Oregon	\$195,679,000	\$39,340,000	\$6,299,000	\$241,318,000	3%
5	Eastern Oregon	\$85,268,000	\$38,920,000	\$4,374,000	\$128,562,000	2%
	<b>Total</b>	\$5,546,562,000	\$2,183,114,000	\$306,960,000	\$8,036,636,000	100%

Source: FAF FHWA , U.S. Census Foreign Trade, and Dept. of Commerce & BEA via IMPLAN

## Direct Economic Impacts of Airports and Aviation

The impacts of public use airports in Oregon are measured as direct impacts, total regional impacts and total state impacts. This chapter details the direct contribution of aviation to the economy of Oregon. Direct impacts in this report are defined as the initial economic activities on airport, spending by visitors who arrive by air, and by businesses off-airport that rely on air services for business travel and cargo shipments. Three classes of direct impacts are supported by public use airports in Oregon, which are:

1. On-airport economic activities, including administration of airports, and tenants that supply goods and services to passengers, airlines and general aviation. Also included in this category are local, state and federal government agencies.
2. Spending by air carrier and general aviation air-travelers at off-airport businesses.
3. Business travel and cargo shipments by non-aviation businesses. These activities are indications of how non-aviation businesses in the economy are dependent on aviation services provided at Oregon airports.

These three classifications comprise the economic impact of airports in Oregon and the economic contribution of aviation to regional and state economies.

- **Direct economic impacts of airports** are the sum of on-airport activities and off-airport spending of visitors who use airports (Classifications 1, and 2.).
- **Direct contribution of aviation** in the Oregon economy is the sum of on-airport aviation related activity, off-airport spending of visitors who use airports, and aviation dependency and reliance (classifications 1, 2 and 3).

Ratios of sales to wages and sales to employment were applied for each sector to calculate direct jobs, wages, and sales where applicable for each category of impact.

### Direct Economic Impacts of Airports

As shown in **Table 12**, the aggregate direct economic impact of all Oregon airports, excluding PDX, is approximately \$2B in business sales. These sales, in turn, support about 12,600 jobs statewide that pay workers about \$597M in wages.

**Table 12: Direct Impact of Airport Tenant and Visitor Spending**

Impact Type	Jobs	Wages	Business Sales
1. On Airport (incl. FBO and air related tenants)	7,677	\$494,920,000	\$1,680,058,000
2. Off-Airport: Visitor Spending	4,938	\$102,187,000	\$342,540,000
<b>Subtotal Total Direct Contribution</b>	<b>12,615</b>	<b>\$597,107,000</b>	<b>\$2,022,598,000</b>

*Sources: EDR Group and Mead & Hunt analyses.*

*US Department of Commerce Bureau of Economic Analysis (packaged by IMPLAN)*

The average annual wage of direct jobs generated by airports is \$47,300. However wages vary significantly by classification. Workers in aviation-related jobs on airports earn an average of \$64,500 annually, while off-airport workers who serve visitors average \$20,700 in wages. It should be noted that many of these service workers are part time and are employed at low hourly rates.

**Table 13** shows the direct Oregon-wide impacts for each airport, consisting of on-airport employment and visitor spending by air travelers. Six of the 57 airports listed show direct employment of more than 1,000, together accounting for more than 74% of the 12,615 direct jobs generated by Oregon's airports (except PDX).

**Table 13: Direct Tenant and Visitor Spending Impacts by Airport**

Airport Name	Direct Tenant & Visitor Spending		
	Jobs	Wages	Business Sales
Albany Municipal	23	\$964,000	\$3,483,000
Ashland Municipal	70	\$4,162,000	\$22,348,000
Astoria Regional	114	\$6,761,000	\$24,420,000
Aurora State	1,347	\$77,744,000	\$301,011,000
Baker City Municipal	16	\$446,000	\$2,524,000
Bandon State	9	\$375,000	\$1,219,000
Bend Municipal	434	\$20,565,000	\$98,643,000
Boardman	1	\$13,000	\$48,000
Brookings	17	\$347,000	\$1,126,000
Burns Municipal	19	\$832,000	\$4,258,000
Chiloquin State	2	\$37,000	\$137,000
Christmas Valley	2	\$45,000	\$170,000
Columbia Gorge/Dalles	76	\$3,482,000	\$12,737,000
Condon State	5	\$120,000	\$797,000
Corvallis Municipal	102	\$5,007,000	\$19,236,000
Cottage Grove State	18	\$563,000	\$1,727,000
Creswell Hobby Field	44	\$1,571,000	\$5,419,000
Eastern Oregon Regional	31	\$1,071,000	\$2,741,000
Florence Municipal	3	\$58,000	\$197,000
Gold Beach Municipal	7	\$208,000	\$456,000
Grant Co. Reg./Ogilvie Field	29	\$1,300,000	\$1,906,000
Grants Pass	103	\$4,396,000	\$21,704,000
Hermiston Municipal	49	\$1,097,000	\$7,247,000
Hillsboro	1,278	\$81,192,000	\$244,478,000
Hood River	25	\$1,312,000	\$4,129,000
Illinois Valley	5	\$96,000	\$312,000
Independence State	49	\$1,724,000	\$6,279,000
Joseph State	23	\$538,000	\$4,522,000
Klamath Falls	1,030	\$80,660,000	\$159,018,000
La Grande/Union Co.	162	\$7,065,000	\$26,723,000
Lake County	2	\$46,000	\$141,000
Lebanon State	12	\$543,000	\$1,612,000
Lexington	0	\$5,000	\$20,000
Madras City-County	19	\$749,000	\$2,187,000
Mahlon Sweet Field	1,609	\$42,770,000	\$148,313,000
McDermitt State	1	\$9,000	\$38,000
McMinnville Municipal	1,105	\$70,681,000	\$244,955,000
Mulino	14	\$436,000	\$1,382,000

<b>Airport Name</b>	<b>Jobs</b>	<b>Wages</b>	<b>Business Sales</b>
Myrtle Creek Municipal	3	\$58,000	\$191,000
Newport Municipal	81	\$5,716,000	\$8,936,000
Ontario Municipal	13	\$228,000	\$827,000
Portland Downtown Heliport	9	\$249,000	\$742,000
Portland-Troutdale	125	\$9,229,000	\$28,088,000
Prineville	27	\$898,000	\$3,806,000
Prospect State	7	\$260,000	\$1,511,000
Roberts Field Airport	517	\$13,290,000	\$45,658,000
Rogue Valley International	2,179	\$57,072,000	\$244,077,000
Roseburg Regional	34	\$958,000	\$4,805,000
Salem McNary Field	630	\$32,860,000	\$138,354,000
Scappoose Industrial Airpark	172	\$14,318,000	\$42,998,000
Seaside Municipal	5	\$202,000	\$327,000
Siletz Bay State	2	\$38,000	\$123,000
Southwest Oregon Regional	797	\$35,233,000	\$94,349,000
Sportsman Airpark	58	\$3,307,000	\$12,840,000
Sunriver	17	\$406,000	\$1,279,000
Tillamook	80	\$3,679,000	\$15,124,000
Wasco State	4	\$116,000	\$900,000
<b>Total</b>	<b>12,615</b>	<b>\$597,107,000</b>	<b>\$2,022,598,000</b>

### **Direct Economic Impacts of Aviation**

After including aviation reliant and dependent impacts from off-airport business, aviation contributes over \$10B to Oregon's economy in sales, accounting for nearly 36,400 jobs and over \$2.5B in wages (**Table 14**). These impacts include airport aviation impacts, direct spending by air travelers, and business activity that relies on airports for travel and cargo shipments. Aviation reliant and dependent impacts account for over 23,700 jobs and over \$8.0 billion in sales throughout the state. The airport related impacts (on-airport and visitor spending) do not include airports under the jurisdiction of the Port of Oregon. However, the analysis of dependent business activity includes PDX as well as all other airports in the state.

**Table 14: Direct Impacts of Aviation on Oregon’s Economy**

<b>Impact Type</b>	<b>Jobs</b>	<b>Wages</b>	<b>Business Sales</b>
1. On Airport (incl. FBO and air related tenants)	7,677	\$494,920,000	\$1,680,058,000
2. Off-Airport: Visitor Spending	4,938	\$102,187,000	\$342,540,000
<b>Subtotal Total Direct Contribution</b>	<b>12,615</b>	<b>\$597,107,000</b>	<b>\$2,022,598,000</b>
Aviation Reliant & Dependent	23,782	\$1,989,215,000	\$8,036,636,000
<b>Total</b>	<b>36,397</b>	<b>\$2,586,322,000</b>	<b>\$10,059,234,000</b>

*Sources: EDR Group & ICF/M&H analyses, US Census Bureau, Foreign Trade Division prepared by WISERTrade; US Department of Commerce Bureau of Economic Analysis (packaged by IMPLAN).*

## **Total Regional and State Economic Impacts of Airports and Aviation**

The impacts of public use airports in Oregon are measured as direct impacts, total regional impacts and total state impacts. This chapter details the total economic impacts of airports and aviation in the economies of regions and across the state of Oregon.

Five factors make up total impacts on regional and statewide scales. The initial three factors on the list below are the direct effects of airports and aviation that were discussed in the preceding chapter. Total impacts are the sum of direct impacts plus “spin-off” effects noted in factors four and five below.

### **Direct Impacts**

1. On airport economic activities that are related to the aviation mission of airports.
2. Spending by air-travelers at off airport businesses.
3. Business travel and cargo shipments by non-aviation businesses.

### **Spin-Off Impacts**

4. Suppliers of goods and services to airports, business on airport, and businesses off airport that (a) serve air travelers or (b) rely on aviation services for business travel or cargo shipments to customers.
5. Subsequent consumer spending of worker income supported by airport based activities, visitor spending, air dependent businesses and suppliers of goods and services.

For regional impacts, regional specific IMPLAN models were calibrated to capture “spin-off” benefits within each region, and a statewide IMPAN model was calibrated to measure spin-off affects across Oregon.

## State Impacts

Spin-off effects measure the additional economic activity that occurs within a region as subsequent spending on suppliers/services and employee spending occurs. A regional analysis focuses on the economic activity that occurs within that region. Spending that occurs outside a region is called 'leakage' since these purchases are "leaking" outside the regional economy<sup>9</sup>. However because economic transactions do not stop at regional boundaries, regional impacts are not fully represent airport values for the state.

An analysis from a State perspective retains all of the spending "leakage" that occurs between regions. For example, purchases of goods in the Portland Metro region from the Central Oregon region are captured in a State impact analysis. Only goods and services purchased outside the state of Oregon are not included in the impact analysis. Impacts due to Spin-Off spending are always higher in a State analysis since inter-regional purchases are captures. The inclusions of inter-regional purchases are reflected in the higher multipliers which increases the Spin-Off over a regional analysis. Direct impacts remain the same in either a Regional or State analysis.

Spin-Off effects within the state of Oregon added an additional 13,200 jobs, \$446M in wages, and \$1.6B in business sales. Airports and utilization of aviation services by Oregon businesses for shipping cargo and conducting air travel contribute a total of \$19.1B to the state economy as shown in **Table 15**. This business activity supports 101,800 jobs and \$5.7B in wages (averaging more than \$56,000 per job).

**Table 15: On-airport and visitor spending impacts with state multipliers**

Impact Type	Jobs	Wages	Business Sales
1. On Airport (incl. FBO and air related tenants)	7,677	\$494,920,000	\$1,680,058,000
2. Off-Airport: Visitor Spending	4,938	\$102,187,000	\$342,540,000
<b>Subtotal Total Direct Contribution</b>	<b>12,615</b>	<b>\$597,107,000</b>	<b>\$2,022,598,000</b>
Spin-off Effects: Supplier & Income Re-spending			
3. Due to On Airport Aviation	11,193	\$365,742,000	\$1,351,803,000
4. Due to Visitor Spending	2,054	\$80,250,000	\$250,918,000
<b>Subtotal Spin-off Effects</b>	<b>13,247</b>	<b>\$445,992,000</b>	<b>\$1,602,721,000</b>
<b>Subtotal Total Airport Aviation Related Impacts</b>	<b>25,862</b>	<b>\$1,043,099,000</b>	<b>\$3,625,319,000</b>
5. Aviation Reliant & Dependent	23,782	\$1,989,215,000	\$8,036,636,000
Spin-off Effects: Supplier and Income Re-spending			
6. Due to Aviation Reliant & Dependent	52,202	\$2,691,171,000	\$7,463,624,000
<b>Total Aviation Reliant &amp; Dependent Impacts</b>	<b>75,984</b>	<b>\$4,680,386,000</b>	<b>\$15,500,260,000</b>
<b>Total Airport &amp; Aviation activity</b>	<b>101,846</b>	<b>\$5,723,485,000</b>	<b>\$19,125,579,000</b>

<sup>9</sup> Leakages from Oregon to other surrounding states or counties are not included in this report

## Regional Impacts

Direct impacts of airports to the economies of respective regions are shown in **Table 16**. Job impacts from on-airport activities and visitor spending range from 5,300 jobs, \$257M in wages and nearly \$945M of economic activity in the Willamette Valley region to fewer than 340 jobs, \$12.6M in wages and nearly \$51M in business sales in Eastern Oregon. Note that fewer jobs wages are shown in the Portland/Metro region than in Willamette Valley and Coast due to the exclusion of PDX. If, however, PDX was included in this analysis, jobs and wages in the Portland/Metro region would be displayed as greater than the other four regions.

The last three rows in **Table 16** represent the additional direct impact of aviation on the regional economy in terms of jobs, wages, and business sales due to the reliance and dependence of non-aviation businesses for air travel and air cargo shipments. By region, these impacts correspond to the vibrancy of the respective regional economies.

**Table 16: Direct Job, Wage, & Business Sales impacts by region of airport related activities**

Aviation Related Economic Activity	Portland/Metro	Willamette Valley & Coast	Southwestern Oregon	Central Oregon	Eastern Oregon
On-Airport Tenant Jobs	1,030	3,502	1,412	1,463	270
Visitor Spending Jobs	593	1,851	1,824	596	74
<b>Total Jobs</b>	<b>1,623</b>	<b>5,353</b>	<b>3,236</b>	<b>2,059</b>	<b>344</b>
On-Airport Tenant Wages (in \$000's)	\$91,544	\$220,322	\$69,058	\$102,689	\$11,307
Visitor Spending Wages (in \$000's)	\$15,192	\$37,146	\$34,309	\$14,243	\$1,297
<b>Total Wages (in \$000's)</b>	<b>\$106,736</b>	<b>\$257,468</b>	<b>\$103,367</b>	<b>\$116,932</b>	<b>\$12,604</b>
On-Airport Tenant Bus. Sales (in \$000's)	\$276,786	\$814,191	\$273,552	\$269,396	\$46,133
Visitor Spending Sales (in \$000's)	\$45,031	\$130,575	\$118,873	\$43,340	\$4,721
<b>Total Sales (in \$000's)</b>	<b>\$321,817</b>	<b>\$944,766</b>	<b>\$392,425</b>	<b>\$312,736</b>	<b>\$50,854</b>
<b>Total Reliant &amp; Dependent Businesses</b>					
Jobs	15,983	4,717	1,677	1,025	380
Wages (in \$000's)	\$1,537,267	\$310,238	\$69,936	\$54,505	\$17,269
Business Sales (in \$000's)	\$5,992,196	\$1,319,304	\$355,256	\$241,318	\$128,562

Sources: FAA, Airport Managers & Air Carrier Visitor Survey, BEA, U.S. Dept. of Commerce, FHWA FAF, Census (Int'l Trade), & EDRG analysis

Businesses that rely on aviation for business travel and air cargo shipments contributed another 23,700 jobs, \$1.9B in wages, and \$8B in sales.

Aviation impacts by region including regional spin-off effects are shown below in **Table 17**. Impacts range from more than \$1.5B in business sales that support 10,600 jobs and \$421M in wages in Willamette Valley to more than \$71M in business sales, 550 jobs and nearly \$17M wages in Eastern Oregon.

The last three rows in **Table 17** outline the additional total impact of aviation on the regional economy in terms of regional jobs, wages, and business sales impacts due to the reliance and dependence of non-aviation businesses for air travel and air cargo shipments.

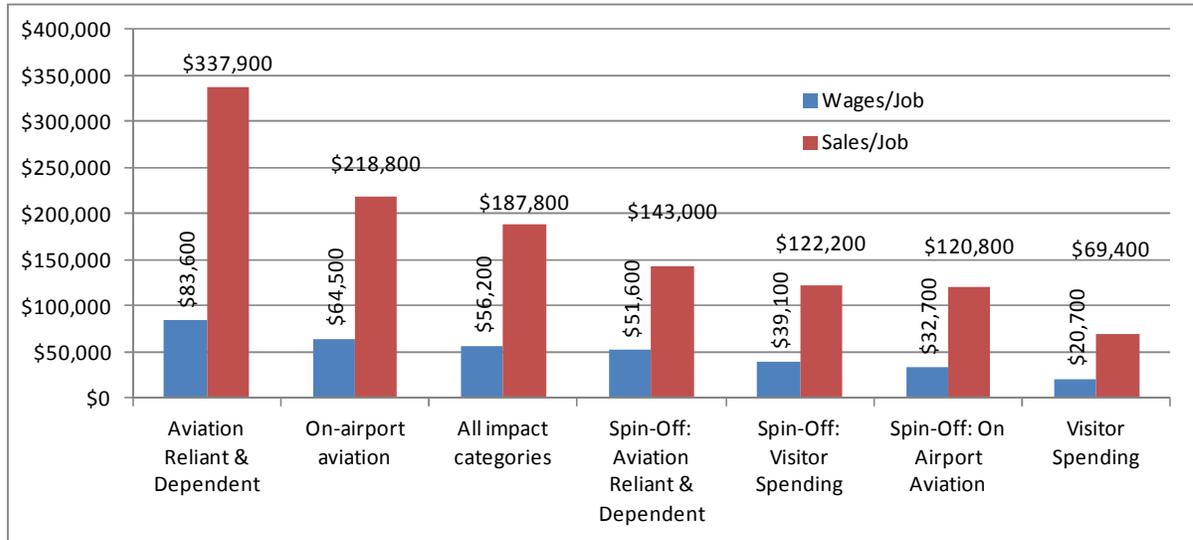
**Table 17: Aviation related economic activity – Total Jobs, Wages, and Business Sales by region**

Aviation Related Economic Activity	Portland/Metro	Willamette Valley & Coast	Southwestern Oregon	Central Oregon	Eastern Oregon
On-Airport Tenant Jobs	2,518	7,994	2,990	2,928	467
Visitor Spending Jobs	825	2,619	2,731	906	91
<b>Total Jobs</b>	<b>3,343</b>	<b>10,613</b>	<b>5,721</b>	<b>3,834</b>	<b>558</b>
<b>Wages</b>					
On-Airport Tenant Wages (in \$000's)	\$149,580	\$362,736	\$110,309	\$145,124	\$15,119
Visitor Spending Wages (in \$000's)	\$25,742	\$59,156	\$54,351	\$22,058	\$1,878
<b>Total Wages (in \$000's)</b>	<b>\$175,322</b>	<b>\$421,892</b>	<b>\$164,660</b>	<b>\$167,182</b>	<b>\$16,997</b>
<b>Business Sales</b>					
On-Airport Tenant Bus. Sales (in \$000's)	\$458,062	\$1,307,475	\$436,354	\$428,014	\$65,383
Visitor Spending Sales (in \$000's)	\$73,770	\$198,126	\$186,107	\$67,557	\$6,379
<b>Total Sales (in \$000's)</b>	<b>\$531,832</b>	<b>\$1,505,601</b>	<b>\$622,461</b>	<b>\$495,571</b>	<b>\$71,762</b>
<b>Total Reliant &amp; Dependent Businesses</b>					
Jobs	55,171	10,303	3,203	2,042	689
Wages (in \$000's)	\$3,621,758	\$532,295	\$126,206	\$94,135	\$28,153
Business Sales (in \$000's)	\$11,373,131	\$1,948,996	\$525,104	\$353,125	\$161,949

A profile of total contribution of airports to each of the five regional economies within Oregon is found in Appendix I. Air dependent industry profiles are in Appendix II.

Each employee that works in a job generated by airports in the state earns on average \$56,200 based on \$187,800 in business sales as shown in Figure 1. However, airport related jobs range from engineers in aviation instrumentation to part-time work in service related industries and have a higher payroll average of \$64,500 per employee. The highest compensation per employee is for jobs that are air reliant and dependent which typically include high value electronics, machinery, and electrical equipment. These jobs provide over \$83,600 in wages. Lower paying jobs include those related to visitors spending (hotel, restaurant, retail, transportation, and entertainment) with an average wage of \$20,700 per job.

**Figure 1: Average Business sales and Wages per job by impact type**



## Comparisons of the 2007 and 2012 studies.

### Background

Before introducing the differences in the 2007 and 2014 economic impact studies, it is important to put the two studies in proper context. This includes differences of the scopes of the two studies, changes in the state economy, increases in worker productivity, and changes in aviation operations and employment.

### Scope

The scopes of the 2007<sup>10</sup> and 2012 studies have two major differences. The first difference is in the airports that are covered by the two studies. The 2007 study encompassed all 93 public use airports in the state of Oregon, other than those operated by the Port of Portland. In contrast the 2012 study is limited to 57 NPIAS airports (National Plan for Integrated Air Service; NPIAS designation is by the Federal Aviation Administration). Three airports, Wasco State Airport, Hillsboro Airport and Troutdale Airport are part of the 2012 study but were not included in the 2007 effort. Thus, 54 airports are in common in the two studies.

The second difference is that on-airport impacts counted in the 2007 studies included both aviation related and non-aviation related tenants, although these were separated when impacts were reported. The 2012 study is limited to aviation related tenants.

<sup>10</sup> The 2007 study actually contains data from 2004/2005

## The State Economy

The 2007 and 2012 studies bracketed the severe national downturn that began in late 2008, and for which the effects are still being felt in states and communities across the United States. From 2007-2012 the Oregon gross state product increased in real terms by 15% but worker earnings fell by 2% and the number of jobs fell by 3%.<sup>11</sup> Together, these data indicate that productivity per job of Oregon workers has increased, meaning on average it takes more economic activity to create a job and generate wages to those who are working.

Significant economic changes are also seen in air cargo. The International Trade Administration of the U.S. Census Bureau traces annual value and metric tonnage of international air exports from point of origin as well as by airport. (Unfortunately, no such data set is available for domestic cargo shipments.) Tonnage has decreased by 27% for goods produced in Oregon and shipped from Oregon airports (primarily Portland International Airport), while the value of Oregon generated goods has increased by 63% in constant value. Thus, less production is needed to sustain overall value across commodities. For domestic cargo shipments, PDX reported 127,890 tons enplaned in 2007 and 91,480 tons in 2012, a decrease of 28%.

## Aviation Metrics

The core metrics that form the basis of airport impacts are on-airport jobs and visitor spending, and both are subject to changes in regional, state and national economies. Counting the 54 airports addressed in both studies, aviation related jobs on airports fell 7% from 7,287 to 6,774 which is largely attributable to changes of tenants.

Visitor spending is driven primarily by commercial enplanements, the percent of enplanements that are visitors and the spending per visitor per trip. The comparisons of these metrics from the 2007 to 2012 studies are mixed. Commercial enplanements at six air carrier airports increased by 6%, from 910,095 to 967,021, and the number of commercial visitors also increased by 9% from 368,108 in 2007 to 401,129 in 2012. (See **Table 18.**) Statewide, the percent of enplaned passengers who were visitors was stable, 40% in 2012 and 41% in 2007. However, spending per visitor decreased in real terms at four of six airports (**Table 19**). Secondly, visitor spending from GA operations are functions of itinerant arrivals (50% of itinerant operations) and these fell by 4% from 314,297 to 303,084, along with changes in the estimated passengers per aircraft. Consequently, visitors from GA operations fell by 11% from 794,555 to 709,212.

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<sup>11</sup> Source for GSP, earnings and jobs : United States Bureau of Economic Analysis

**Table 18. The number of visitors based on commercial enplanements increased across Oregon**

Airport		2007		2012	
Code	Airport Name	Visitors	Percent Visitors*	Visitors	Percent Visitors*
PDT	Eastern Oregon Regional Airport	3,843	57%	2,458	47%
LMT	Klamath Falls Airport	15,698	52%	5,473	32%
EUG	Mahlon Sweet Field Airport	120,946	35%	154,167	40%
RDM	Roberts Field Airport	83,589	42%	91,803	41%
MFR	Rogue Valley International	119,630	41%	135,102	44%
OTH	Southwest Oregon Regional Airport	22,842	61%	12,127	55%
Total		368,108	40%	401,129	41%

*Enplanements provided by Mead and Hunt. Percent of enplanements who are visitors from Database Products, Inc., derived from the DB1B Survey of the FAA. Data covers 4 quarters ending Q3 2012.*

*Note: 2007 totals include 1,500 commercial visitors using Corvallis Municipal Airport.*

*\*Percent visitors note the percent of total enplanements who are visitors from out of state and who travel across regions in-state*

**Table 19. Average Visitor Spending Air Carrier Visitor by Airport**

Code	Airport Name	2007	2012
PDT	Eastern Oregon Regional Airport	\$366	\$130
LMT	Klamath Falls Airport	\$467	\$459
EUG	Mahlon Sweet Field Airport	\$778	\$566
RDM	Roberts Field Airport	\$800	\$325
MFR	Rogue Valley International	\$866	\$670
OTH	Southwest Oregon Regional Airport	\$778	\$1,652

*Source: Visitor spending surveys by Mead and Hunt and ODA, and 2007 Study.*

*Calculations by EDR Group*

*2007 Study Adjusted to 2012 Dollars*

**Table 20. Aviation impact Comparison: 2007 vs. 2012 at 53 NPIAS Airports**

Impact Type	Jobs		Wages (thousands)		Business Sales (thousands)	
	2007	2012	2007	2012	2007	2012
On Airport tenants	7,287	6,774	\$301,970	\$417,349	\$953,175	\$1,445,103
Off Airport Visitor Spending	6,945	4,434	\$120,299	\$89,221	\$377,978	\$304,029
<b>Total Direct Contribution</b>	<b>14,232</b>	<b>11,208</b>	<b>\$422,269</b>	<b>\$506,570</b>	<b>\$1,331,153</b>	<b>\$1,749,132</b>
Tenant Spin Off	12,033	9,836	\$352,319	\$309,185	\$1,018,264	\$1,173,627
Visitor Spending Spin Off	3,153	1,845	\$92,081	\$70,353	\$357,883	\$223,355
<b>Total Spin Off</b>	<b>15,186</b>	<b>11,681</b>	<b>\$444,400</b>	<b>\$379,538</b>	<b>\$1,376,148</b>	<b>\$1,396,982</b>
<b>Total Aviation Impacts</b>	<b>29,418</b>	<b>22,889</b>	<b>\$866,669</b>	<b>\$886,108</b>	<b>\$2,707,300</b>	<b>\$3,146,114</b>
<b>Reliant/Dependent Impacts</b>	<b>91,645</b>	<b>75,984</b>	<b>\$4,211,110</b>	<b>\$4,680,386</b>	<b>\$17,446,481</b>	<b>\$15,500,260</b>

*2007 Study Adjusted to 2012 Dollars*

As shown in **Table 21**, it took 41% more business sales to generate a job in 2012 than in 2007, and workers were paid 15% more for the increase in productivity. For economic activities reliant on Oregon's NPIAS airports, labor productivity rose by 7% and wages were 34% higher, but as discussed above less cargo was moved and value per ton increased.

**Table 21. Productivity Analysis - Change in Wage and Sales per Job**

Impact Type	Wages per Job		Output per Job		% Change Wage	% Change Output
	2007	2012	2007	2012		
Total Aviation Related Impacts	\$29,461	\$38,713	\$92,029	\$137,451	31%	49%
Air Reliant/Dependent impacts	\$45,950	\$61,597	\$190,371	\$203,994	34%	7%

2007 Study Adjusted to 2012 Dollars

### Portland International Airport

The Port of Portland previously conducted a study for PDX in 2006. As displayed in **Table 22**, employment reported at PDX fell by more than 5,600 jobs from 2006 to 2011, while payroll and business revenues each decreased by about 3% in constant value. This is similar pattern to the 2012 study of the other airports in Oregon.

**Table 22. PDX impact comparison: 2006 vs. 2011 (in 2011\$'s)\***

Impact Type	2006	2011	Percent Change
Jobs	57,911	52,271	-10%
Payroll	\$1,975,246,000	\$1,920,544,000	-3%
Business Sales	\$5,773,211,000	\$5,613,331,000	-3%

*The Local and Regional Economic Impacts of the Port of Portland 2006 and 2011.*

\*PDX totals taken directly from Port of Portland study

2006 Study Adjusted to 2011 Dollars

# Appendix I

<b>Region 1: Portland/Metro</b>				
<b>Airport Name</b>	<b>Code</b>	<b>Jobs</b>	<b>Wages</b>	<b>Sales</b>
Hillsboro Airport	HIO	2,609	\$134,088,000	\$407,879,000
Hood River	4S2	47	\$2,194,000	\$6,760,000
Mulino Airport	4S9	21	\$757,000	\$2,325,000
Portland Downtown Heliport	61J	13	\$424,000	\$1,212,000
Portland-Troutdale	TTD	275	\$15,140,000	\$45,971,000
Scappoose Industrial Airpark	SPB	378	\$22,719,000	\$67,685,000
<b>Regional Total</b>		3,343	\$175,322,000	\$531,832,000
<b>Region 2: Willamette Valley and Coast</b>				
<b>Airport Name</b>	<b>Code</b>	<b>Jobs</b>	<b>Wages</b>	<b>Sales</b>
Albany Municipal	S12	41	\$1,537,000	\$5,482,000
Astoria Regional	AST	222	\$10,272,000	\$36,659,000
Aurora State	UAO	3,059	\$130,964,000	\$482,920,000
Columbia Gorge/Dalles	DLS	146	\$5,695,000	\$20,223,000
Corvallis Municipal	CVO	211	\$8,402,000	\$30,821,000
Cottage Grove State	61S	26	\$829,000	\$2,610,000
Creswell Hobby Field	77S	73	\$2,510,000	\$8,504,000
Florence Municipal	6S2	4	\$92,000	\$300,000
Independence State	7S5	84	\$2,836,000	\$9,983,000
Lebanon State	S30	21	\$828,000	\$2,567,000
Mahlon Sweet Field Airport	EUG	2,493	\$69,962,000	\$228,285,000
McMinnville Municipal	MMV	2,529	\$114,761,000	\$396,799,000
Newport Municipal	ONP	134	\$7,353,000	\$14,600,000
Salem McNary Field	SLE	1,288	\$54,318,000	\$221,098,000
Siletz Bay State	S45	3	\$59,000	\$189,000
Sportsman Airpark	2S6	131	\$5,567,000	\$20,577,000
Tillamook	TMK	148	\$5,907,000	\$23,984,000
<b>Regional Total</b>		10,613	\$421,892,000	\$1,505,601,000
<b>Region 3: Southwestern Oregon</b>				
<b>Airport Name</b>	<b>Code</b>	<b>Jobs</b>	<b>Wages</b>	<b>Sales</b>
Ashland Municipal	S03	164	\$6,676,000	\$32,356,000
Bandon State	S05	14	\$530,000	\$1,798,000
Brookings	BOK	23	\$532,000	\$1,732,000
Gold Beach Municipal	4S1	10	\$283,000	\$710,000
Grants Pass	3S8	200	\$7,006,000	\$31,908,000
Illinois Valley	3S4	7	\$147,000	\$480,000
Myrtle Creek Municipal	16S	4	\$90,000	\$292,000
Prospect State	64S	16	\$480,000	\$2,432,000
Rogue Valley International	MFR	3,772	\$95,509,000	\$386,828,000
Roseburg Regional	RBG	62	\$1,684,000	\$7,624,000
Seaside Municipal	56S	7	\$256,000	\$515,000
Southwest Oregon Regional	OTH	1,442	\$51,467,000	\$155,786,000
<b>Regional Total</b>		5,721	\$164,660,000	\$622,461,000

<b>Region 4: Central Oregon</b>				
<b>Airport Name</b>	<b>Airport Code</b>	<b>Jobs</b>	<b>Wages</b>	<b>Sales</b>
Bend Municipal Airport	BDN	846	\$32,580,000	\$143,549,000
Chiloquin State	2S7	3	\$54,000	\$196,000
Christmas Valley	62S	3	\$66,000	\$243,000
Condon State	3S9	9	\$206,000	\$1,227,000
Klamath Falls Airport	LMT	2,024	\$109,092,000	\$265,826,000
Lake County	LKV	3	\$70,000	\$215,000
Madras City-County	S33	31	\$1,031,000	\$3,424,000
Prineville	S39	48	\$1,399,000	\$6,023,000
Roberts Field Airport	RDM	835	\$21,851,000	\$71,527,000
Sunriver	S21	23	\$622,000	\$1,936,000
Wasco State	35S	9	\$211,000	\$1,405,000
<b>Regional Total</b>		3,834	\$167,182,000	\$495,571,000
<b>Region 5: Eastern Oregon</b>				
<b>Airport Name</b>	<b>Airport Code</b>	<b>Jobs</b>	<b>Wages</b>	<b>Sales</b>
Baker City Municipal	BKE	27	\$640,000	\$3,587,000
Boardman	M50	1	\$19,000	\$65,000
Burns Municipal	BNO	31	\$1,136,000	\$5,529,000
Eastern Oregon Regional	PDT	43	\$1,463,000	\$3,829,000
Grant Co. Reg./Ogilvie Field	GCD	36	\$1,500,000	\$2,622,000
Hermiston Municipal	HRI	80	\$1,680,000	\$10,374,000
Joseph State	JSY	43	\$867,000	\$6,439,000
La Grande/Union Co.	LGD	280	\$9,343,000	\$38,126,000
Lexington	9S9	-	\$7,000	\$26,000
McDermitt State	26U	1	\$12,000	\$49,000
Ontario Municipal	ONO	16	\$330,000	\$1,116,000
<b>Regional Total</b>		558	\$16,997,000	\$71,762,000

## Appendix II: Air Dependent Industry Profiles

Air dependent industries are reliant on aviation services to transport their manufactured goods to domestic and international customers. The FHWA Freight Analysis Framework (FAF) provides the value and volume of commodities manufactured in Oregon and air shipped from Oregon to other states within the U.S. Using U.S. Dept. of Commerce and BEA data via IMPLAN<sup>12</sup>, this information at the state level was allocated to the 5 regions within Oregon according to the percentage of industry output each region had compared to the state total as illustrated in **Table 23** below. The top 10 industries account for 93% to 99% of all manufactured products in each region. The primary industries for each region are computer & electronics, miscellaneous manufacturing, machinery, and electrical equipment. Southwestern and Central Oregon also export furniture products that make up between 7% and 10% of total domestic exports. In addition to these primary manufacturing industries, Eastern Oregon specializes in Transportation equipment manufacturing representing 20% of its domestic air exports indicating its role as a vital pillar of its regional economy.

**Table 23: Percent of total industry output by region – Domestic cargo**

<b>Manufacturing Industries</b>	<b>Portland / Metro</b>	<b>Willamette Valley &amp; Coast</b>	<b>South - western Oregon</b>	<b>Central Oregon</b>	<b>Eastern Oregon</b>
Computer & Electronics	54%	18%	9%	6%	3%
Miscellaneous	14%	35%	37%	27%	10%
Machinery	15%	26%	18%	30%	36%
Electrical Equip. & Appliance	6%	3%	7%	17%	4%
Furniture	2%	4%	10%	7%	1%
Chemical	2%	6%	8%	3%	7%
Fabricated Metals	2%	2%	3%	3%	3%
Transportation Equipment	1%	1%	3%	2%	20%
Nonmetallic Minerals	1%	1%	2%	2%	8%
Primary Metals	1%	1%	0%	1%	0%
Top 10 industries	99%	97%	98%	98%	93%
All others	1%	3%	2%	2%	7%
Total	100%	100%	100%	100%	100%

Source: FHWA FAF and Dept. of Commerce & BEA via IMPLAN

<sup>12</sup> Source: U.S. Dept. of Commerce, Dept. of Labor, & Census Bureau aggregated by IMPLAN.

Manufactured goods shipped to international destinations also rely on aviation services within Oregon. Information on air cargo exports was gathered from the U.S. Census Foreign Trade division via WISER for the state of Oregon. Allocation to the 5 regional economies was also performed using industry output data from IMPLAN. Foreign exports are more spread out across a variety of industries. The top five industries are computer & electronics, machinery (non-electrical), transportation equipment, electrical equipment, and leather products as shown in **Table 24**. These primary industries represent between 75% and 95% of all international exports from each region. The Portland/Metro region has a vital stake in computer & electronic manufacturing which represents 81% of its foreign air cargo exports and 60% of Eastern Oregon’s air exports are concentrated in transportation equipment.

**Table 24: Percent of total industry output by region – International cargo**

<b>Manufacturing Industries</b>	<b>Portland / Metro</b>	<b>Willamette Valley &amp; Coast</b>	<b>South - western Oregon</b>	<b>Central Oregon</b>	<b>Eastern Oregon</b>
Computer & Electronics	81%	50%	29%	19%	5%
Machinery (non-Electrical)	8%	24%	19%	34%	18%
Transportation Equipment	3%	6%	22%	14%	60%
Electrical Equip. & Appliances	2%	2%	5%	13%	1%
Leather & Allied Products	2%	0%	0%	0%	1%
Top 5 Industries	95%	82%	75%	80%	85%
All others	5%	18%	25%	20%	15%
Total	100%	100%	100%	100%	100%

Source: U.S. Census Foreign Trade Division and Dept of Commerce & BEA via IMPLAN