

## **Chapter 8 Economic Impact of Oregon Airports**

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This chapter of the *Oregon Aviation Plan (OAP 2007)* addresses the economic contributions of airports and the aviation industry to the state of Oregon economy. These terms are important to distinguish as some airports include tenants that are not related to aviation. Economic impacts of airports include on-airport economic activities, spending off-airport by visiting air travelers, as well as on-airport activities that are not aviation related but rather represent the use of airport facilities as industrial or business parks for local businesses. Economic impacts of aviation include aviation-related businesses located on airports and visitor spending, and also include impacts to sectors in the Oregon economy other than the air transportation sector that 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 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, but not tenants on airports that are not related to aviation. Data for this study was collected directly from ODA airports and airport-related businesses during base year 2005, as well as by industry within Oregon and from the Port of Portland. All results are reported in 2005 dollars.

The project team analyzed the economic contributions of 91 airports under the jurisdiction of the Oregon Department of Aviation (ODA). In addition, the Port of Portland commissioned a separate economic impact studies of Portland International Airport, Portland Hillsboro Airport and Portland Troutdale Airport, which are administered by the Port. Tables throughout this section separately display results from the Port studies. The sum of economic impacts derived from the OAP 2007 and the Port of Portland studies account for 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.

### **Sections of this Chapter**

The remainder of this chapter is organized as follows:

- A summary overview of the analysis and results (section 8.1)
- Methodology, including definition of terms, data collection methods, and steps used to determine the value of each component (section 8.2)
- Direct economic impacts of airports & the aviation industry (section 8.3)
- Total regional and state economic impacts of airports & aviation industry (section 8.4)

## 8.1 Summary of Analysis and Results

This section provides a succinct overview of the results of the economic impact analysis. Section 8.2 describes in detail the methodology used to determine these results, while sections 8.3 and 8.4 provide the full results of the analysis. As seen in **Table 8.1**, Oregon public-use airports contribute more than \$8 billion to the state economy, including airports managed by the Port of Portland: Portland International Airport, Portland Hillsboro Airport and Portland Troutdale Airport.<sup>1</sup> Excluding facilities managed by the Port, airports under the jurisdiction of the Oregon Department of Aviation (ODA) contributed a total economic impact of nearly \$3 billion to the state economy. Port of Portland airports contributed an additional \$5 billion.

As noted, the value of aviation within the state of Oregon is measured at the airport level as well as at the broader level of industries in Oregon that use aviation for conducting business travel and for shipping products. This is an important distinction, as business travel and cargo services afforded by airports in Oregon to agriculture, manufacturing and service industries in the state contribute roughly \$16 billion to the state economy. (The value of aviation to the Oregon economy for providing businesses travel and air-freight services to businesses located throughout the state is measured by industry and not by specific airport.)

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<sup>1</sup> The Port of Portland conducted independent economic impact assessments for three Port owned airports, Portland International Airport, Portland Troutdale Airport and Hillsboro Airport, and provided the completed studies to the 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 8.1), and uses the same impacts when discussing either regional or statewide contributions of airports and aviation.

**Table 8.1 Economic Contribution of Airports to the Oregon Economy***(Dollars are rounded to the thousand to avoid implications of "false precision")*

	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
<b>Direct Effects of On-Airport Aviation Activities and Visitor Spending</b>			
On-Airport, including FBO & air related tenants	7,273	\$262,147,000	\$827,475,000
Off-Airport: visitor spending	6,762	\$101,641,000	\$324,097,000
<i>Subtotal of Direct Effects</i>	14,035	\$363,788,000	\$1,151,572,000
<b>Spin-off Effects of Supplier and Income Re-spending</b>			
Due to On-Airport Aviation	12,029	\$305,851,000	\$883,988,000
Due to Visitor Spending	3,558	\$94,459,000	\$310,756,000
<i>Subtotal of Spin-off Effects</i>	15,587	\$400,310,000	\$1,194,744,000
<b>Total Airport Aviation Related Impacts</b>	29,621	\$764,098,000	\$2,346,316,000
<b>Airport Generated Impacts of Non-Aviation Activities</b>			
On Airport Non-Aviation Activities	2,177	\$67,294,000	\$320,530,000
Spin-offs due to Non-Aviation Activities	3,374	\$96,239,000	\$332,084,000
<b>Total Airport Non-Aviation Impacts</b>	5,551	\$163,533,000	\$652,614,000
<b>Grand Total ODA Airports - Aviation and Non-Aviation Related</b>	35,172	\$927,631,000	\$2,998,930,000
<b>*Port of Portland Totals</b>			
Airport Generated	20,005	\$941,244,000	\$3,533,456,000
Visitor Generated	39,418	\$907,718,000	\$1,740,344,000
Total Impact Port of Portland Airports	59,423	\$1,848,862,000	\$5,273,800,000
<b>Total Amount</b>	94,595	\$2,776,493,000	\$8,272,630,000

Source: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

\* Port of Portland studies provided by the Port.

**Table 8.2** itemizes the total contribution of airports and aviation to Oregon's economy.

Airports and utilization of aviation services by Oregon businesses for shipping cargo and conducting air travel accounts for a \$24 billion impact to the state economy. This business activity supports almost 200,000 jobs and \$6.7 billion in wages (averaging more than \$34,000 per job).

**Table 8.2 Economic Contribution of the Aviation Industry to the Oregon Economy***(Dollars are rounded to the thousand to avoid implications of "false precision")*

	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
<b>Direct Effects of On-Airport Aviation Activities and Visitor Spending</b>			
On-Airport, including FBO & air related tenants	7,273	\$262,147,000	\$827,475,000
Off-Airport: visitor spending	6,762	\$101,641,000	\$324,097,000
<i>Subtotal of Direct Effects</i>	14,035	\$363,788,000	\$1,151,572,000
<b>Spin-off Effects of Supplier and Income Re-spending</b>			
Due to On-Airport Aviation	12,029	\$305,851,000	\$883,988,000
Due to Visitor Spending	3,558	\$94,459,000	\$310,756,000
<i>Subtotal of Spin-off Effects</i>	15,587	\$400,310,000	\$1,194,744,000
<b>Total Airport Aviation Related Impacts</b>	29,621	\$764,098,000	\$2,346,316,000
<b>Airport Generated Impacts of Non-Aviation Activities</b>			
On Airport Non-Aviation Activities	2,177	\$67,294,000	\$320,530,000
Spin-offs due to Non-Aviation Activities	3,374	\$96,239,000	\$332,084,000
<b>Total Airport Non-Aviation Impacts</b>	5,551	\$163,533,000	\$652,614,000
<b>Total Airport Activity</b>	35,172	\$927,631,000	\$2,998,930,000
<b>Regional Off-Airport Aviation Dependent Business</b>			
Direct Business Activity	32,429	\$1,662,752,000	\$8,463,830,000
Spin-offs due to Dependent Activities	70,016	\$2,315,741,000	\$7,634,489,000
<b>Total Aviation Activity</b>	102,445	\$3,978,493,000	\$16,098,319,000
<b>Grand Total Airport and Aviation Activity</b>	137,617	\$4,906,124,000	\$19,097,249,000
<b>*Port of Portland Totals</b>			
Airport Generated	20,005	\$941,244,000	\$3,533,456,000
Visitor Generated	39,418	\$907,718,000	\$1,740,344,000
Total Impact Port of Portland Airports	59,423	\$1,848,862,000	\$5,273,800,000
<b>Total Amount</b>	197,040	\$6,754,986,000	\$24,371,049,000

Notes: Regional Off-airport Aviation Dependent Business activities account for business activity that rely on aviation for business travel and cargo, and do not reflect a specific airport. Analysis of Regional Off-Airport Aviation Dependent Business includes the Port of Portland.

\* Port of Portland studies provided by the Port.

### 8.1.a Individual Airport Contributions to the Economy

This study addresses 91 air-carrier and general aviation airports in Oregon that are under the jurisdiction of ODA. **Table 8.3** illustrates the contribution of each airport to the overall state economy in terms of jobs, wages and business sales for each airport overseen by ODA.

**Table 8.3 Economic Contribution to the State Economy per ODA Airport  
(Dollars are rounded to the thousand to avoid implications of “false precision”)**

<i>Airport Name</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Albany Municipal	51	\$885,000	\$2,983,000
Alkali Lake State	0	\$1,000	\$4,000
Arlington Municipal	0	\$6,000	\$18,000
Ashland Municipal	484	\$11,548,000	\$41,899,000
Astoria Regional	657	\$19,505,000	\$46,968,000
Aurora State	2,469	\$59,326,000	\$147,863,000
Baker City Municipal	48	\$1,235,000	\$3,481,000
Bandon State	10	\$181,000	\$596,000
Beaver Marsh	0	\$3,000	\$9,000
Bend Municipal	5,315	\$155,830,000	\$629,008,000
Boardman	3	\$78,000	\$212,000
Brookings	8	\$121,000	\$393,000
Burns Municipal	16	\$373,000	\$1,012,000
Cape Blanco State	1	\$10,000	\$35,000
Cascade Locks State	1	\$29,000	\$92,000
Chehalem Airpark	259	\$5,015,000	\$11,775,000
Chiloquin State	3	\$51,000	\$165,000
Christmas Valley	3	\$79,000	\$215,000
Columbia Gorge Regional/Dalles	38	\$829,000	\$2,400,000
Condon State – Pauling Field	4	\$84,000	\$273,000
Corvallis Municipal	994	\$30,332,000	\$111,083,000
Cottage Grove State	48	\$890,000	\$2,905,000
Country Squire Airpark	5	\$145,000	\$345,000
Crescent Lake State	0	\$6,000	\$18,000
Creswell - Hobby Field	105	\$1,506,000	\$5,159,000
Davis	1	\$43,000	\$99,000
Eastern Oregon Regional	649	\$18,847,000	\$45,057,000
Enterprise Municipal	10	\$211,000	\$610,000
Florence Municipal	169	\$4,863,000	\$19,499,000
George Felt	2	\$59,000	\$152,000
Gold Beach Municipal	12	\$277,000	\$780,000
Grant County Regional/Ogilvie Field	92	\$1,997,000	\$6,381,000
Grants Pass	926	\$25,585,000	\$71,750,000
Hermiston Municipal	227	\$6,269,000	\$17,665,000
Illinois Valley	11	\$238,000	\$612,000
Independence State	87	\$1,825,000	\$5,452,000
Joseph State	6	\$110,000	\$364,000
Ken Jernstedt Airfield	49	\$713,000	\$1,878,000
Klamath Falls	1,487	\$41,399,000	\$85,950,000
La Grande/Union County	58	\$907,000	\$3,301,000
Lake Billy Chinook	2	\$44,000	\$102,000
Lake County	12	\$321,000	\$836,000
Lakeside Municipal	2	\$56,000	\$140,000

**Table 8.3 Economic Contribution to the State Economy per ODA Airport**  
**(Dollars are rounded to the thousand to avoid implications of “false precision”)**

Lebanon State	19	\$352,000	\$1,150,000
Lenhardt Airpark	50	\$1,444,000	\$3,353,000
Lexington	2	\$28,000	\$96,000
Madras City-County	18	\$509,000	\$1,236,000
Mahlon Sweet Field	4,176	\$92,493,000	\$267,078,000
Malin	2	\$50,000	\$119,000
McDermitt State	1	\$23,000	\$77,000
McKenzie Bridge State	0	\$0	\$0
McMinnville Municipal	245	\$5,710,000	\$9,559,000
McNary Field	2,643	\$77,922,000	\$296,775,000
Miller Memorial Airpark	3	\$87,000	\$197,000
Monument Municipal	1	\$43,000	\$99,000
Mulino	69	1,584,000	4,790,000
Myrtle Creek Municipal	11	\$261,000	\$713,000
Nehalem Bay State	1	\$27,000	\$90,000
Newport Municipal	751	\$19,408,000	\$65,631,000
Oakridge State	1	\$15,000	\$49,000
Ontario Municipal	22	\$367,000	\$1,169,000
Owyhee Reservoir State	0	\$0	\$0
Pacific City State	5	\$82,000	\$275,000
Paisley	2	\$46,000	\$107,000
Pinehurst State	0	\$6,000	\$19,000
Portland Downtown Heliport	28	\$663,000	\$1,949,000
Powers Hayes Field	1	\$43,000	\$99,000
Prineville	34	\$1,018,000	\$2,660,000
Prospect State	1	\$16,000	\$54,000
Redmond Municipal - Roberts Field	2,797	\$63,833,000	\$200,847,000
Rogue Valley International	4,576	\$103,415,000	\$289,505,000
Rome State	0	\$0	\$0
Roseburg Regional	112	\$2,623,000	\$8,533,000
Sandy River	5	\$148,000	\$357,000
Santiam Junction State	0	\$0	\$0
Scappoose Industrial	563	\$24,815,000	\$79,969,000
Seaside Municipal	9	\$222,000	\$597,000
Siletz Bay State	6	\$106,000	\$355,000
Sisters Eagle Air	6	\$159,000	\$430,000
Skyport	1	\$43,000	\$99,000
Southwest Oregon Regional	3,014	\$90,816,000	\$313,240,000
Sportsman Airpark	73	\$1,895,000	\$5,955,000
Starks Twin Oaks	155	\$3,270,000	\$8,563,000
Sunriver	82	\$1,808,000	\$5,462,000
Tillamook	1,353	\$40,330,000	\$157,730,000
Toketee State	0	\$0	\$0
Toledo State	1	\$14,000	\$45,000
Valley View	3	\$66,000	\$173,000

**Table 8.3 Economic Contribution to the State Economy per ODA Airport  
(Dollars are rounded to the thousand to avoid implications of “false precision”)**

Vernonia Airfield	3	\$68,000	\$180,000
Wakonda Beach State	2	\$44,000	\$145,000
Wasco State	1	\$18,000	\$57,000
<b>Total Amount</b>	35,172	\$927,631,000	\$2,998,930,000

Sources: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package.

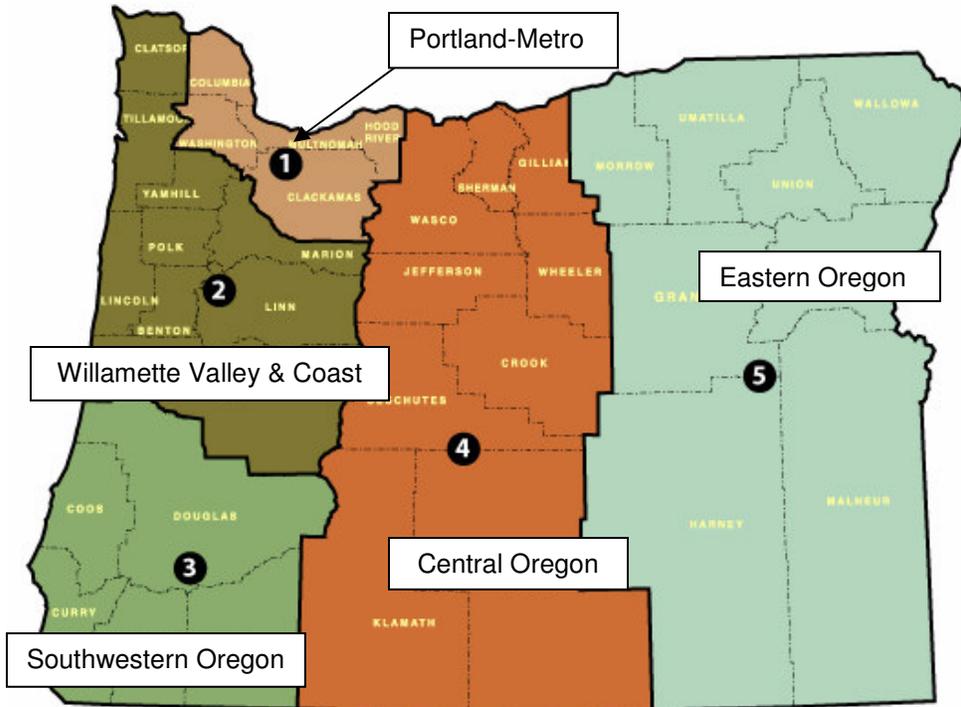
Notes: Totals include spin-off effects, totals may not add due to rounding.

### 8.1. b. Contribution of Airports to Regional Economies within Oregon

In addition to the individual airport assessments, it was determined the evaluation of the impacts of the airports on a regional level would be beneficial. **Figure 8.1** illustrates the geographic boundaries of the five regions defined for the *ConnectOregon* program. The program provides funding for both aviation development and economic growth, and has been used as a point of reference throughout this study. **Table 8.4** presents the total contributions from airports by each of the five regional economies within Oregon. **Tables 8.5 through 8.9** show the contribution by each airport to their respective regions. It must be noted that the contributions made by an airport to a regional economy and state economy differ for two reasons:

- Regional impacts account for visitors from other regions in Oregon, as well as from out of state. When measuring contributions to the state economy only travelers arriving from out of state are counted.
- By definition, spin-off effects (economic multipliers) for the state are equal to or larger than regional spin-offs. This is because spin-offs from direct impacts measure the extent to which businesses purchase supplies and workers spend wages in a regional or state economy. 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.

Figure 8.1 Five Connect Oregon regions



**Table 8.4 Summary of Contributions of Airports to Regional Economies**

(Dollars are rounded to the thousand to avoid implications of “false precision”)

<i>Region</i>	<i>*Port of Portland</i>	<i>Portland/ Metro (ODA)</i>	<i>Willamette Valley &amp; Coast</i>	<i>Southwest OR</i>	<i>Central OR</i>	<i>Eastern OR</i>
Total Jobs On-Airport (Aviation and Non-Aviation)	20,005	563	9,182	4,809	6,719	687
Total Jobs from Visitor Spending	39,418	265	3,974	3,493	2,158	217
<b>Total Jobs</b>	<b>59,423</b>	<b>828</b>	<b>13,156</b>	<b>8,302</b>	<b>8,877</b>	<b>904</b>
Wages from On-Airport Activity (Aviation and Non)	\$941,244,000	\$23,923,000	\$250,052,000	\$152,305,000	\$215,028,000	\$22,025,000
Off-Airport Wages from Visitor Spending	\$907,718,000	\$5,929,000	\$72,357,000	\$61,881,000	\$40,651,000	\$3,597,000
<b>Total Wages</b>	<b>\$1,848,862,000</b>	<b>\$29,852,000</b>	<b>\$322,409,000</b>	<b>\$214,186,000</b>	<b>\$255,679,000</b>	<b>\$25,622,000</b>
Sales from On-Airport (Aviation and Non)	\$3,533,456,000	\$76,700,000	\$790,289,000	\$441,225,000	\$723,932,000	\$52,681,000
Off-Airport Sales from Visitor Spending	\$1,740,344,000	\$18,069,000	\$233,925,000	\$194,767,000	\$131,367,000	\$11,350,000
<b>Total Business Sales</b>	<b>\$5,273,800,000</b>	<b>\$94,769,000</b>	<b>\$1,024,214,000</b>	<b>\$635,992,000</b>	<b>\$855,299,000</b>	<b>\$64,031,000</b>

Source: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

\*Port of Portland studies provided by the Port.

**Table 8.5 Regional Contribution of Airports from Region 1 - Portland-Metro**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Cascade Locks State	1	\$27,000	\$84,000
Country Squire Airpark	5	\$139,000	\$330,000
Ken Jernstedt Airfield	45	\$663,000	\$1,743,000
Mulino	65	1,460,000	4,423,000
Portland Downtown Heliport	26	\$613,000	\$1,811,000
Scappoose Industrial Airpark	539	\$23,845,000	\$78,253,000
Skyport	1	\$41,000	\$95,000
Starks Twin Oaks	145	\$3,064,000	\$8,029,000
<b>Regional Totals:</b>	828	\$29,852,000	\$94,769,000
<b>*Port of Portland</b>			
Hillsboro	1,272	\$66,680,000	\$81,515,000
Portland International	57,911	\$1,770,300,000	\$5,174,200,000
Troutdale	242	\$11,882,000	\$18,084,000
<b>Port of Portland Total</b>	59,423	\$1,848,862,000	\$5,273,800,000
<b>Total Amount</b>	60,251	\$1,878,714,000	\$5,368,569,000

Sources: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects.

\* Port of Portland studies provided by the Port.

**Table 8.6 Regional Contribution of Airports from Region 2 – Willamette Valley & Coast**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Albany Municipal	49	\$831,000	\$2,749,000
Astoria Regional	641	\$17,317,000	\$43,107,000
Aurora State	2,403	\$52,348,000	\$134,828,000
Chehalem Airpark	253	\$4,393,000	\$10,730,000
Columbia Gorge/Dalles	37	\$752,000	\$2,196,000
Corvallis Municipal	879	\$25,613,000	\$94,349,000
Cottage Grove State	46	\$838,000	\$2,679,000
Creswell – Hobby Field	103	\$1,337,000	\$4,711,000
Davis Field	1	\$38,000	\$90,000
Florence Municipal	146	\$4,124,000	\$16,559,000
Independence State	84	\$1,666,000	\$4,990,000
Lebanon State	18	\$332,000	\$1,060,000
Lenhardt Airpark	49	\$1,260,000	\$3,052,000
Mahlon Sweet Field	4,021	\$85,548,000	\$245,921,000
McKenzie Bridge State	0	\$0	\$0
McMinnville Municipal	237	\$5,130,000	\$8,755,000
McNary Field	2,195	\$65,703,000	\$246,337,000
Nehalem Bay State	1	\$25,000	\$81,000

**Table 8.6 Regional Contribution of Airports from Region 2 – Willamette Valley & Coast**

Newport Municipal	700	\$17,780,000	\$59,847,000
Oakridge State	1	\$14,000	\$44,000
Pacific City State	4	\$77,000	\$252,000
Sandy River	5	\$130,000	\$325,000
Santiam Junction State	0	\$0	\$0
Siletz Bay State	6	\$99,000	\$325,000
Sportsman Airpark	68	\$1,698,000	\$5,423,000
Tillamook	1,205	\$35,241,000	\$135,468,000
Toledo State	1	\$12,000	\$41,000
Vernonia	3	\$60,000	\$164,000
Wakonda Beach State	2	\$41,000	\$133,000
<b>Regional Totals:</b>	<b>13,156</b>	<b>\$322,409,000</b>	<b>\$1,024,214,000</b>

Sources: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects.

**Table 8.7 Regional Contribution of Airports from Region 3 – Southwestern Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Ashland Municipal	389	\$9,484,000	\$34,882,000
Bandon State	9	\$158,000	\$512,000
Brookings	7	\$108,000	\$339,000
Cape Blanco State	1	\$9,000	\$29,000
George Felt	2	\$55,000	\$131,000
Gold Beach Municipal	11	\$254,000	\$675,000
Grants Pass	719	\$22,746,000	\$60,275,000
Illinois Valley	10	\$215,000	\$528,000
Lakeside Municipal	2	\$52,000	\$121,000
Myrtle Creek Municipal	10	\$241,000	\$624,000
Pinehurst State	0	\$5,000	\$16,000
Powers – Hayes Field	1	\$42,000	\$87,000
Prospect State	1	\$14,000	\$45,000
Rogue Valley International	4,312	\$96,911,000	\$263,254,000
Roseburg Regional	103	\$2,315,000	\$7,428,000
Seaside Municipal	8	\$205,000	\$519,000
Southwest Oregon Regional	2,715	\$81,309,000	\$266,379,000
Toketee State	0	\$0	\$0
Valley View	2	\$61,000	\$149,000
<b>Regional Totals:</b>	<b>8,302</b>	<b>\$214,186,000</b>	<b>\$635,992,000</b>

Sources: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects.

**Table 8.8 Regional Contribution of Airports from Region 4 – Central Oregon**

(Dollars are rounded to the thousand to avoid implications of “false precision”)

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Alkali Lake State	0	\$1,000	\$4,000
Arlington Municipal	0	\$5,000	\$16,000
Beaver Marsh	0	\$2,000	\$8,000
Bend Municipal Airport	4,619	\$153,619,000	\$579,282,000
Chiloquin State	3	\$44,000	\$145,000
Christmas Valley	3	\$72,000	\$194,000
Condon State – Pauling Field	4	\$74,000	\$241,000
Crescent Lake State	0	\$5,000	\$16,000
Klamath Falls	1,477	\$40,358,000	\$83,057,000
Lake Billy Chinook	1	\$42,000	\$95,000
Lake County	12	\$298,000	\$764,000
Madras City-County	17	\$477,000	\$1,139,000
Malin	2	\$46,000	\$110,000
Paisley	1	\$43,000	\$99,000
Prineville	30	\$956,000	\$2,427,000
Redmond Municipal – Roberts Field	2,622	\$57,829,000	\$182,311,000
Sisters Eagle Air	6	\$147,000	\$393,000
Sunriver	79	\$1,646,000	\$4,948,000
Wasco State	1	\$15,000	\$50,000
<b>Regional Totals:</b>	<b>8,877</b>	<b>\$255,679,000</b>	<b>\$855,299,000</b>

Sources: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects.

**Table 8.9 Regional Contribution of Airports from Region 5 – Eastern Oregon**

(Dollars are rounded to the thousand to avoid implications of “false precision”)

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Baker City Municipal	40	\$1,021,000	\$2,789,000
Boardman	3	\$64,000	\$168,000
Burns Municipal	13	\$309,000	\$800,000
Eastern Oregon Regional at Pendleton	506	\$15,931,000	\$36,563,000
Enterprise Municipal	8	\$174,000	\$482,000
Grant County Regional/Ogilvie Field	77	\$1,647,000	\$5,174,000
Hermiston Municipal	181	\$5,185,000	\$13,864,000
Joseph State	5	\$90,000	\$287,000
La Grande/Union County	47	\$749,000	\$2,616,000
Lexington	1	\$23,000	\$74,000
McDermitt State	1	\$18,000	\$60,000
Miller Memorial Airpark	2	\$72,000	\$157,000
Monument Municipal	1	\$36,000	\$78,000
Ontario Municipal	19	\$302,000	\$922,000
Owyhee Reservoir State	0	\$0	\$0
Rome State	0	\$0	\$0
<b>Regional Totals:</b>	<b>904</b>	<b>\$25,622,000</b>	<b>\$64,031,000</b>

Sources: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects.

### 8.1. c. Contribution of Aviation to the Oregon Economy

As noted previously, airports and utilization of aviation services by Oregon businesses for shipping cargo and conducting air travel contributes a total of \$19 billion to the state economy (excluding the Port of Portland). This business activity supports 137,000 jobs and \$4.9 billion in wages (averaging more than \$35,000 per job). The overall contribution of airports and aviation to the state's economy is shown in **Table 8.10**.

**Table 8.10 Economic Contribution of Airports and Aviation to the Oregon Economy**

*(Dollars are rounded to the thousand to avoid implications of "false precision")*

	# of Jobs	Wages	Business Sales
<b>Direct Effects of On-Airport Aviation Activities and Visitor Spending</b>			
On-Airport, including FBO & air related tenants	7,273	\$262,147,000	\$827,475,000
Off-Airport: visitor spending	6,762	\$101,641,000	\$324,097,000
<b>Subtotal of Direct Effects</b>	14,035	\$363,788,000	\$1,151,572,000
<b>Spin-off Effects of Supplier and Income Re-spending</b>			
Due to On-Airport Aviation	12,029	\$305,851,000	\$883,988,000
Due to Visitor Spending	3,558	\$94,459,000	\$310,756,000
<b>Subtotal of Spin-off Effects</b>	15,587	\$400,310,000	\$1,194,744,000
<b>Total Airport Aviation Related Impacts</b>	29,621	\$764,098,000	\$2,346,316,000
<b>Airport Generated Impacts of Non-Aviation Activities</b>			
On Airport Non-Aviation Activities	2,177	\$67,294,000	\$320,530,000
Spin-offs due to Non-Aviation Activities	3,374	\$96,239,000	\$332,084,000
<b>Total Airport Non-Aviation Impacts</b>	5,551	\$163,533,000	\$652,614,000
<b>Total Airport Activity</b>	35,172	\$927,631,000	\$2,998,930,000
<b>Regional Off-Airport Aviation Dependent Business</b>			
Direct Business Activity	32,429	\$1,662,752,000	\$8,463,830,000
Spin-offs due to Dependent Activities	70,016	\$2,315,741,000	\$7,634,489,000
<b>Total Aviation Activity</b>	102,445	\$3,978,493,000	\$16,098,319,000
<b>Grand Total Airport and Aviation Activity</b>	137,617	\$4,906,124,000	\$19,097,249,000
<b>*Port of Portland Totals</b>			
Airport Generated	20,005	\$941,244,000	\$3,533,456,000
Visitor Generated	39,418	\$907,718,000	\$1,740,344,000
<b>Total Impact Port of Portland Airports</b>	59,423	\$1,848,862,000	\$5,273,800,000
<b>Total Amount</b>	197,040	\$6,754,986,000	\$24,371,049,000

Source: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package.

Notes: Regional Off-airport Aviation Dependent Business activities account for business activity that rely on aviation for business travel and cargo, and do not reflect a specific airport. \*Port of Portland studies provided by the Port.

### 8.1.d Contribution of Aviation to Regional Economies within Oregon

The contribution of aviation to the regional economies is the sum of aviation activities at airports within each region, off-airport spending by air travelers using regional airports, and the reliance and dependence of non-aviation Oregon businesses located in each region on air travel and air cargo shipments regardless of which airports that they use. **Tables 8.11 through 8.13** summarize these economic contributions of aviation by region. The total impacts of aviation in the regional economy are shown in **Table 8.11** while the number of dependent businesses per region is shown in **Table 8.12**. **Table 8.13** illustrates the aviation related impacts per region including direct and spin-off impacts.

**Table 8.11 Total Impacts of Aviation in Regional Economies**

(Dollars are rounded to the thousand to avoid implications of “false precision”)

<i>Region</i>	<i>*Port of Portland</i>	<i>Portland/ Metro (ODA)</i>	<i>Willamette Valley &amp; Coast</i>	<i>Southwest OR</i>	<i>Central OR</i>	<i>Eastern OR</i>
On-Airport Jobs	20,005	323	5,961	3,964	6,393	651
Off-Airport Jobs	39,418	266	3,974	3,493	2,158	218
<b>Total Jobs</b>	<b>59,423</b>	<b>589</b>	<b>9,935</b>	<b>7,457</b>	<b>8,550</b>	<b>869</b>
On-Airport Wages	\$941,244,300	\$13,428,000	\$155,495,000	\$129,945,000	\$206,035,000	\$21,069,000
Off-Airport Wages	\$907,718,100	\$5,929,000	\$72,357,000	\$61,881,000	\$40,651,000	\$3,599,000
<b>Total Wages</b>	<b>\$1,848,862,000</b>	<b>\$19,357,000</b>	<b>\$227,852,000</b>	<b>\$191,826,000</b>	<b>\$246,686,000</b>	<b>\$24,668,000</b>
On-Airport Sales	\$3,533,456,000	\$32,066,000	\$404,325,000	\$353,470,000	\$689,320,000	\$49,461,000
Off-Airport Sales	\$1,740,344,000	\$18,069,000	\$233,925,000	\$194,767,000	\$131,368,000	\$11,352,000
<b>Total Sales</b>	<b>\$5,273,800,000</b>	<b>\$50,135,000</b>	<b>\$638,250,000</b>	<b>\$548,237,000</b>	<b>\$820,688,000</b>	<b>\$60,813,000</b>

Sources: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package. \*Port of Portland studies provided by the Port.

**Table 8.12 Total Reliant and Dependent Businesses per Region**

(Dollars are rounded to the thousand to avoid implications of “false precision”)

<i>Region</i>	<i>Portland - Metro</i>	<i>Willamette Valley &amp; Coast</i>	<i>Southwest OR</i>	<i>Central OR</i>	<i>Eastern OR</i>
Jobs	54,083	22,570	9,465	3,195	2,332
Wages	\$2,388,827,000	\$793,602,000	\$307,533,000	\$103,965,000	\$62,307,000
Business Sales	\$9,208,080,000	\$3,611,079,000	\$1,547,955,000	\$440,462,000	\$340,076,000

Sources: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package.

**Table 8.13 Total Aviation Related Economic Impacts per Region (Direct and Spin-Offs)**

(Dollars are rounded to the thousand to avoid implications of “false precision”)

<i>Region</i>	<i>*Port of Portland</i>	<i>Portland – Metro (ODA)</i>	<i>Willamette Valley &amp; Coast</i>	<i>Southwest OR</i>	<i>Central OR</i>	<i>Eastern OR</i>
Jobs	54,425	54,671	32,505	16,922	11,745	3,200
Wages	\$1,848,862,000	\$2,408,185,000	\$1,021,454,000	\$499,359,000	\$350,650,000	\$86,974,000
Business Sales	\$5,273,800,000	\$9,258,215,000	\$4,249,329,000	\$2,096,192,000	\$1,261,147,000	\$400,886,000

Sources: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

\*Port of Portland studies provided by the Port..

All of the measures presented above show significant contributions to regional economies generated by airports and aviation services.

## 8.2 Methodology of Economic Assessment

The economic impact analysis of airports in Oregon measures the contributions of aviation and airport facilities to regional economies and the state economy. This study includes 91 airports under the jurisdiction of ODA within the state. Complementing the analysis of the economic impact of airports, this study examines the role aviation plays in supporting businesses that depend on airports for business travel and cargo shipments. Economic impacts are measured in terms of jobs, wages, and business sales. The impacts are reported for each airport, and are summarized for five state regions as well as statewide. With respect to airports, the study reports the economic impacts of on-airport activities, which includes airport administration and airport tenants (separating tenants that serve the aviation mission of the airport from those that not connected to aviation), and off-airport spending by visitors who arrive by air. The five regions of *ConnectOregon* were used to measure direct and total regional economic impacts of airports and dependent non-aviation businesses.<sup>2</sup>

### *Other Airports*

The Port of Portland conducted separate economic assessments of the three airports that it administers, Portland International Airport, Portland Hillsboro Airport, and Portland Troutdale Airport. Therefore, the ODA Project Team did not include these airports as part of the economic impact study within OAP 2007. However, the results of the three Port of Portland studies are presented in tables throughout this report to combine reporting of economic impact analysis for all of Oregon’s public use airport system.

<sup>2</sup> Total impacts are the sum of direct and spin-off activities. Note that *ConnectOregon* is administered by the Oregon Department of Transportation, and is focused on improving the connections between the highway system and the other modes of transportation for economic development.

Memaloose Airport and Silver Lake Airport, both operated by the U.S. Forest Service, were not included in this study as the project team had been informed that the two airports were planned for closure, although at the time of publication this action has not taken place. In addition, Lake Wohink Seaplane Base has been closed and was not included in the analysis.

### *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.

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, “wages” and “business sales,” as well as multiplier impacts, are based on state and regional averages by industry in Oregon.<sup>3</sup> 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 with a rate of response that required the Project Team to use survey data from airports outside of Oregon (general aviation visitors).

To avoid misleading readers, rounding was employed in two places. First, visitor spending per passenger, which is the aggregation of off-airport purchases of lodging, food and drink, amusements, retail and local transportation (other than airport car rentals), was rounded to the dollar. Secondly, and more importantly, all final totals for visitor spending, on-airport impacts, and air reliant impacts were rounded to the nearest thousand. By rounding to the closest thousand dollar unit, the study assures maximum reliability and avoids misleading readers by claiming false precision.

### **8.2.a Defining Economic Impacts**

Economic impacts refer to measuring streams of revenues that begin with initial spending. Examples of these initial transactions include administration of airport activities, services provided at airports to passengers, pilots and crew and other aviation-related business, and visitors who spend money for lodging, meals, entertainment, or recreation. A portion of the revenues from such transactions is spent by businesses as wages to employees and business profits. In this report, economic impacts are shown as jobs, wages, and business sales. Wages also include income earned by self-employed persons. For public sector entities, budget expenditures are interpreted as business sales.

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<sup>3</sup> As noted in the report, in some cases actual wages and budgets were obtained through airport managers surveys. In these instances, the actual numbers were used in calculations.

### 8.2.b. Total Economic Impacts

Total economic impacts are the sum of on-airport economic activities, off-airport spending by visitors who arrive by air, and spin-off impacts (economic multipliers). Airport impacts are provided by region and state to show the contribution of each airport to the regional and state economies. In addition, aviation-dependent impacts are provided by region to show the importance of airports to non-aviation businesses. All impacts reported represent a base year of 2005. Each type of impact is defined further as follows:

- **On-Airport Direct Impacts** represent economic activities that occur on airport grounds. By separating aviation-related activities from non-aviation activities, the *Oregon Aviation Plan (OAP 2007)* illustrates the regional economic contribution of aviation by airport in the regional and state economies, as well as the overall impact of each airport as a facility. Aviation related activities are those that would not occur without the airport, such as airlines, fixed base operators (FBO), government, and other tenants located at the airport that are directly dependent on the airport. This category also includes airport management and other individuals employed directly by the airport, as well as retail and service operations for passengers, pilots, and other on-airport employees.

In some cases airports provide land or building space for companies that are not affiliated with aviation. These tenants are not related to the aviation mission of the airport, but are using the facility as convenient and affordable business or industrial parks. As airports provide resources for non-aviation businesses, these businesses represent part of the economic contribution of airports. Accordingly, they are counted but separated from aviation-related business activities.

- **Off-Airport Visitor Spending** is the sum of expenditures made by air travelers who are visiting from outside the region that occurs off the airport in the regional economy. Visitor spending includes lodging, food, entertainment, recreation, retail purchases and local ground transportation (retail purchases and on-airport car rentals are captured by on-airport impacts). Off-airport spending includes expenditures by general aviation pilots and passengers as well as for commercial passengers

Visitors flying into Oregon from out of state contribute to the regional economy as well as to the state economy. However, passengers flying within Oregon from one region to another contribute to the region of their destination airport without bringing additional money into Oregon. Therefore, in regions with air carrier airports, the direct impact of visitor spending for the region is higher than the impact of visitor spending for the state. It is important to note that only arrivals from points of origin outside a given region were tabulated for that region. Passengers returning home are not counted as they are not bringing additional income into their home regions. All general aviation visitors are counted as out-of-state arrivals

- **Aviation-Dependent Impacts** represent area businesses that are dependent on airports for shipping products produced in Oregon to their customers and for business travel. These businesses may relocate or suffer substantial loss without airport access. This impact is not included in traditional economic impact methodology and is analyzed and reported by region for this study. Thus, the economic dependence of a region on aviation represents the cumulative impacts of all airports within a region. The analysis is provided as an indicator of the importance of airports to regional economies.
- **Spin-Off Impacts** (economic multipliers) reflect the recycling of dollars through both the regional and state economy. Spin-off impacts are often reported as indirect and induced impacts. Indirect impacts reflect the purchase of goods and services by businesses that make direct sales on-airports to visitors or for aviation services. Induced impacts occur when workers of the businesses spend their wages on consumer purchases.

The core concept behind spin-off impacts is that dollars spent in the economy do not disappear; rather, they move through the economy in successive rounds until incrementally exported from the region and state. As aviation-related expenditures enter the economy, they circulate among other industry sectors, creating successive waves of additional economic benefit in the form of business sales, jobs, and payroll. These successive rounds of spending are the spin-off impacts and help to represent the full impact of each dollar generated due to aviation in Oregon. Spending occurring outside the area is considered economic leakage and is not reflected in the economic multiplier.

### 8.2.c Data Collection

An extensive data collection program was conducted for this study. Survey efforts included distribution of survey instruments to four distinct groups including airport managers, business users including tenants and aviation reliant, air carrier passengers and general aviation passengers.

- The **Airport Manager Survey** was designed to gather the local employment, payroll, and average annual capital expenditures for each airport. The survey also requested qualitative information on airport benefits that may not be quantifiable. The survey was distributed by mail to the 90 airports which were identified for the economic assessment portion of the study. Of those public-use airports, responses were received from 63 airports, which is a seventy percent (70%) response rate.

In addition to the written survey, personal visits were conducted to Oregon's airports. As previously stated, the impacts for airports under the jurisdiction of the Port of Portland (Portland International Airport, Portland Hillsboro Airport, Portland Mulino Airport and Portland Troutdale Airport) were not part of this study, and therefore not visited.

Survey results and site visits indicate that there are 616 people employed directly by Oregon airports. These jobs include airport management, airport staff, and others that work for the airport directly. This figure does not include tenants.

- The **Business Survey** was distributed to a number of firms that were identified as either located on airport property at one of the study airports or identified as being a business dependent upon aviation activity or services. The survey requested local employment and payroll for each business. The survey had 126 total responses. Identification of remaining firms and employment levels were estimated through discussions with airport managers and sponsors and confirmed using multiple private databases, including Dun & Bradstreet, Claritas, InfoUSA, and Credit.net, as available. Through the comprehensive survey and research effort, nearly 500 airport tenants throughout Oregon were identified, which employ over 8,700 people.

Adding these additional personnel to the airport manager responses shows that there are 9,336 people employed on Oregon airports, including approximately 2,400 who work for companies that are not aviation dependent.

Additionally, businesses that were dependent upon aviation services were identified using the Standard Industrial Classifications (SIC). Since the overall response to this survey was not sufficiently robust to draw conclusions, an industry-based analysis was developed by region to measure the importance of aviation services in Oregon to regional businesses. Results of this analysis show that more than 32,000 non-aviation jobs throughout Oregon depend on access to passenger or cargo aviation services. This segment of the economic impact analysis includes Portland International Airport and other airports administered by the Port of Portland.

- **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 and Klamath Falls Airport. Survey responses were not received from Southwest Oregon Regional Airport at North Bend. After discussion among the project team and Department of Aviation staff, spending at Southwest Oregon Regional Airport at North Bend was assumed to be the same as at Mahlon Sweet Field in Eugene, as both airports are in Oregon's Southwest region.

A total of 750 surveys were returned and the air carrier visitor spending analysis was based on 736 surveys after discounting outliers. The sample of air carrier passengers surveyed accounts for 410 visitors from outside of Oregon, including international travelers, and 326 residents of Oregon who were visiting other regions in the state by air.

- **General Aviation (GA) Visitor Surveys** were conducted with the assistance of airport managers. These surveys were augmented by additional general aviation passenger surveys from Virginia, Vermont, 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 and median household income as independent (or explanatory) variables. Both explanatory variables were significant with 95 percent (95%) confidence. GA visitor spending for Oregon was then estimated using the above listed parameters.

The project team and the Oregon Department of Aviation (ODA) completed a regression analysis and developed an estimate that ranged from spending no money to spending \$40 for GA visitors accounting for small and relatively isolated airports, shown in **Table 8.14** below. The use of minimal spending values is based on specific knowledge of individual airports by ODA and fieldwork by the project team. For the airports assigned up to \$40 of spending 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.

**Table 8.14 Visitor Spending at 38 Rural Airports in Oregon**

<i>Airport</i>	<i>Dollar Amount</i>	<i>Airport</i>	<i>Dollar Amount</i>
Alkali Lake State	\$20	Miller Memorial Airpark	\$0
Arlington Municipal	\$20	Monument Municipal	\$0
Beaver Marsh	\$30	Nehalem Bay State	\$20
Cape Blanco State	\$30	Oakridge State	\$20
Cascade Locks State	\$30	Owyhee Reservoir State	\$0
Chiloquin State	\$30	Paisley	\$20
Christmas Valley	\$30	Pinehurst State	\$20
Condon State -Pauling Field	\$30	Powers Hayes Field	\$0
Country Squire Airpark	\$20	Prospect State	\$30
Crescent Lake State	\$30	Rome State	\$0
Davis	\$0	Sandy River	\$20
George Felt	\$20	Santiam Junction State	\$0
Lake Billy Chinook	\$30	Skyport	\$0
Lakeside Municipal	\$20	Toketee State	\$0
Lenhardt Airpark	\$20	Toledo State	\$20
Lexington	\$20	Valley View	\$20
Malin	\$20	Vernonia Airfield	\$20
McDermitt State	\$20	Wakonda Beach State	\$40
McKenzie Bridge State	\$0	Wasco State	\$20

Source: ODA Staff and Economic Development Research group

#### 8.2.d Calculating On-Airport Direct Impacts

On-airport direct impacts account for aviation-related and non-aviation-related economic activities. They are aggregated directly from the Airport Manager and Business Surveys related to each airport and subsequent visits to airports and contacts with airport managers.

Whenever provided, survey data were used for employment, payroll, and business sales. Data received from airport managers and tenants ranged from a complete set of direct data, which includes employment, wages, business sales, and budget expenditures, to one or two of these metrics. In the case of partial responses, regional ratios were used. These ratios include wages and/or business sales per job by industry in the applicable region, as well as the ratio of business sales to wages, again by industry and region. In cases where names of businesses were the only information available for airport tenants, establishment-based private vendors were used to derive employment and then regional ratios of wages and sales per worker were applied. **Table 8.15** delineates data sources for on-airport economic activity.

**Table 8.15 On-Airport Economic Activities Derived From Multiple Sources**

<i>Primary Source</i>	<i>Primary Source Data</i>	<i>Calculated Data</i>
Airport Managers and Airport Tenant Survey	Employees, wages, business sales and expenditures.	None
	Employees and wages.	Business sales calculated from the ratio of sales and wages by sector from regional economic data multiplied by wages from the survey.
	Employees and business sales and expenditures.	Wages calculated from the ratio of wage and sales by sector from regional economic data multiplied by sales from survey.
	Employees.	Wages calculated from average wages per employee by sector and business sales calculated from average sales per employee by sector, both from regional economic data.
Review of Tenants with Airport Managers	Business name and employees.	Wages calculated from average wages per employee by sector and business sales calculated from average sales per employee by sector, both from regional economic data.
	Business name.	Employees derived from establishment databases, including Dun and Bradstreet, Claritas, InfoUSA, and CreditUSA. Wages calculated from average wages per employee by sector and business sales calculated from average sales per employee by sector, both from regional economic data.

Notes: IMPLAN was the source of regional wages and sales data. IMPLAN packages federal sources by county, including US Department of Commerce, US Department of Labor, and US Department of Agriculture data sets. Excludes airports administered by the Port of Portland.

Lastly, the Project Team, by virtue of visiting the airports in this study, was able to identify 48 airports that do not have any business tenants, which are shown in **Table 8.16**.

**Table 8.16 ODA Airports in Oregon that do not have Tenants**

<i>Airport</i>	<i>Airport</i>	<i>Airport</i>
Alkali Lake State	Lake Billy Chinook	Portland Downtown Heliport
Arlington Municipal	Lakeside Municipal	Powers Hayes Field
Beaver Marsh	Lexington	Prospect State
Boardman	Malin	Rome State
Cape Blanco State	McDermitt State	Santiam Junction State
Cascade Locks State	McKenzie Bridge State	Seaside Municipal
Chiloquin State	Memaloose USFS	Siletz Bay State
Christmas Valley	Miller Memorial Airpark	Silver Lake USFS Strip
Condon State -Pauling Field	Monument Municipal	Skyport
Cottage Grove State	Nehalem Bay State	Toketee State
Country Squire Airpark	Oakridge State	Toledo State
Crescent Lake State	Owyhee Reservoir State	Valley View
Davis	Pacific City State	Vernonia Airfield
George Felt	Paisley	Wakonda Beach State
Joseph State	Pinehurst State	Wasco State

### 8.2.e Determining Off-Airport Visitor Spending

Multiplying the estimated number of visitors by the average expenditure per trip derived off-airport visitor spending. The inputs varied substantially for air carrier visitors and visitors using general aviation, as described below. Please note that air carrier airports also support general aviation operations.

#### *Visitors Arriving by Air Carrier Airports*

The number of estimated visitors for each air carrier airport was calculated by multiplying the 2005 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. Data includes origin, destination, and other itinerary details of passengers transported and the reporting often covers 75 percent (75%) to 90 percent (90%) of operations. Data were adjusted to account for operations at Oregon's commercial airports. The database also provides splits between intra-state visitors and out-of-state visitors. The visitor share of each commercial airport covered in this study is shown in **Table 8.17** and includes visitors from out of state, including international arrivals, and visitors from other regions in Oregon.

**Table 8.17 Air Carrier Visitor Enplanements at ODA Commercial Airports in Oregon**

<i>Airport</i>	<i>Percent of Visitors by Place of Origin</i>		
	<i>Out of State</i>	<i>Within Oregon</i>	<i>Total Visitors</i>
Eastern Oregon Regional	33%	24%	57%
Klamath Falls	32%	20%	52%
Mahlon Sweet Field	34%	0.4%	35%
Redmond Municipal - Roberts Field	38%	5%	42%
Rogue Valley International	36%	5%	41%
Southwest Oregon Regional	46%	15%	61%

Source: U.S. Dept. of Transportation as calculated by BACK Aviation Solutions

Notes: OD1B data is based on a ten percent (10%) sample survey. Rows might not add due to rounding. Excludes airports administered by the Port of Portland.

Data were collected through the survey effort for spending in the following sectors: hotel, food and drink, retail, entertainment, and transportation. Care was taken not to double count off-airport transportation and on-airport car rental. **Table 8.18** details the total spending for visitors arriving via air carrier for each air carrier airport. General aviation visitors to air carrier airports were estimated in the section below on general aviation visitor spending. Out-of-state visitor spending ranges from \$311 to \$736 per trip while intra-state visitor spending ranges from \$62 to \$354 per trip.

**Table 8.18 Average Spending for Visitors at ODA Air Carrier Airports**

<i>Airport</i>	<i>Lodging</i>	<i>Food and</i>		<i>Amusement/</i>	<i>Local</i>	<i>Retail</i>	<i>Totals</i>
		<i>Drink</i>	<i>Entertainment</i>				
<b>Corvallis Municipal</b>							
Out-of -state visitors	\$159.72	\$129.97	\$10.00	\$31.77	\$10.00		<b>\$341.46</b>
Intra-state visitors	\$11.59	\$40.14	\$10.00	\$5.00	\$10.00		<b>\$76.73</b>
<b>Eastern Oregon Regional</b>							
Out-of -state visitors	\$66.36	\$95.00	\$56.97	\$51.45	\$41.36		<b>\$311.14</b>
Intra-state visitors	\$64.21	\$104.48	\$72.08	\$25.00	\$83.75		<b>\$349.52</b>
<b>Klamath Falls</b>							
Out-of -state visitors	\$193.00	\$87.24	\$22.86	\$84.05	\$9.89		<b>\$397.04</b>
Intra-state visitors	\$177.64	\$95.39	\$37.67	\$68.98	\$7.38		<b>\$387.06</b>
<b>Mahlon Sweet Field</b>							
Out-of -state visitors	\$284.64	\$179.27	\$46.73	\$31.41	\$119.82		<b>\$661.87</b>
Intra-state visitors	\$11.59	\$40.14	\$12.60	\$4.57	\$29.72		<b>\$98.62</b>
<b>Redmond Municipal - Roberts Field</b>							
Out-of -state visitors	\$207.86	\$222.54	\$107.61	\$23.69	\$119.21		<b>\$680.91</b>
Intra-state visitors	\$24.78	\$21.90	\$13.27	\$0.00	\$1.92		<b>\$61.87</b>
<b>Rogue Valley International</b>							
Out-of -state visitors	\$302.68	\$164.04	\$85.81	\$76.29	\$107.64		<b>\$736.46</b>
Intra-state visitors	\$116.35	\$99.33	\$48.43	\$34.62	\$55.51		<b>\$354.24</b>
<b>Southwest Oregon Regional</b>							
Out-of -state visitors	\$284.64	\$179.27	\$46.73	\$31.41	\$119.82		<b>\$661.87</b>
Intra-state visitors	\$11.59	\$40.14	\$12.60	\$4.57	\$29.72		<b>\$98.62</b>

Source: Air carrier passenger surveys.

Note: Excludes airports administered by the Port of Portland.

**Table 8.19** shows how the number of commercial airline visitors to Oregon and within Oregon is derived. Estimates of commercial visitors at air carrier airports were calculated by multiplying enplanements by the fraction of total travelers that are visitors (percent from out-of-state and percent from in-state) times the average number of passengers per aircraft. **Table 8.20** then shows the scale of visitor spending by residents of Oregon visiting other regions and by visitors from out-of-state, which totals over \$233 million across Oregon. Totals by airport for each of the five sectors represent local business sales.

**Table 8.19 Number of Air Carrier Visits by ODA Airport**

<i>Airport</i>	<i>Enplanements</i>	<i>Visitor Percent*</i>	<i>Total Visitors</i>
Corvallis Municipal	2,400	65%	1,560
Eastern Oregon Regional	6,790	57%	3,843
Klamath Falls	30,130	52%	15,698
Mahlon Sweet Field	343,598	35%	120,946
Redmond Municipal - Roberts Field	197,144	42%	83,589
Rogue Valley International	291,781	41%	119,630
Southwest Oregon Regional	37,262	61%	22,842

Sources: FAA data.

\*Includes out of state and intra-state visitors.

Note: Excludes airports administered by the Port of Portland.

**Table 8.20 Air Carrier Visitor Spending at ODA Air Carrier Airports**

(Dollars for *Total Spending* are rounded to the thousand to avoid implications of “false precision”)

<i>Airport</i>	<i>Out of State</i>			<i>In-State</i>			<i>Total Spending</i>
	<i>Air Carrier Visitors</i>	<i>Avg. Spending</i>	<i>Total Spending</i>	<i>Air Carrier Visitors</i>	<i>Avg. Spending</i>	<i>Total Spending</i>	
Corvallis Municipal	1,404	\$341	\$479,000	156	\$77	\$12,000	\$491,000
Eastern Oregon Regional	2,247	\$311	\$699,000	1,596	\$350	\$558,000	\$1,257,000
Klamath Falls	9,581	\$397	\$3,804,000	6,116	\$387	\$2,367,000	\$6,172,000
Mahlon Sweet Field	119,572	\$662	\$79,141,000	1,374	\$99	\$136,000	\$79,277,000
Redmond Municipal - Roberts Field	74,126	\$681	\$50,473,000	9,463	\$62	\$585,000	\$51,059,000
Rogue Valley International	106,500	\$736	\$78,433,000	13,130	\$354	\$4,651,000	\$83,084,000
Southwest Oregon Regional	17,103	\$662	\$11,320,000	5,738	\$99	\$566,000	\$11,886,000
<b>Totals/Averages</b>	330,534	\$679	\$224,350,000	37,574	\$236	\$8,875,000	\$233,226,000

Source: Air Carrier Visitor Survey and FAA data.

Note: Excludes airports administered by the Port of Portland.

*Visitors Arriving by General Aviation*

As shown in **Tables 8.21 through 8.24** below, the number of estimated general aviation visitors for each airport was calculated by multiplying total arrival operations by the average number of people per aircraft, and multiplied again by the estimated number of transient visitors.

The average number of people per aircraft was gathered from the general aviation visitors' survey and discussions with airport managers, and each varies by airport. Across Oregon, air carrier airports providing itinerant GA operations were estimated to average 2.95 passengers per airplane, compared to an average of 2.35 passengers at general aviation-only airports.

**Table 8.21 General Aviation Visitors to Oregon through ODA Air Carrier Airports**

<i>Airport</i>	<i>Total GA Operations</i>	<i>GA Arrivals</i>	<i>Percent Itinerant Operations</i>	<i>Average People per Itinerant Operation</i>	<i>Total Visitor Arrivals</i>
Corvallis Municipal	103,038	51,519	11%	3.5	19,864
Eastern Oregon Regional Airport	23,651	11,826	57%	2	13,395
Klamath Falls	19,128	9,564	34%	3	9,659
Mahlon Sweet Field	92,954	46,477	37%	3	51,287
Redmond Municipal - Roberts Field	69,794	34,897	54%	3	56,100
Rogue Valley International	62,046	31,023	75%	3	69,830
Southwest Oregon Regional Airport	40,273	20,137	27%	3	16,275
<b>Totals/averages</b>	410,884	205,442	39%	2.95	236,409

Source: FAA data and interviews with airport managers and ODA staff.

Notes: Total visitor arrivals are estimated at 239,209 and an average of 2.99 people per flight. Excludes airports administered by the Port of Portland.

**Table 8.22 Spending of General Aviation Visitors arriving in Oregon through ODA Commercial Airports**

(Dollars for *Total GA Visitor Spending* are rounded to the thousand to avoid implications of “false precision”)

<i>Airport</i>	<i>Total GA Visitor Arrivals</i>	<i>Average Spending per Trip</i>	<i>Total GA Visitor Spending</i>
Corvallis Municipal	19,864	\$104	\$2,060,000
Eastern Oregon Regional Airport	13,395	\$97	\$1,300,000
Klamath Falls	9,659	\$98	\$949,000
Mahlon Sweet Field	51,287	\$151	\$7,766,000
Redmond Municipal – Roberts Field	56,100	\$131	\$7,359,000
Rogue Valley International	69,830	\$135	\$9,408,000
Southwest Oregon Regional Airport	16,275	\$100	\$1,621,000
<b>Totals/averages</b>	236,409	\$129	\$30,463,000

Source: GA Passenger Survey, EDR Group GA analysis, FAA data, interviews with airport managers and ODA staff.

Notes: GA spending from commercial airports exceeds \$45 million. Excludes airports administered by the Port of Portland.

Calculations reported for general aviation represent a conservative base case. The General Aviation (GA) Passenger Surveys did not capture the tourist attraction of three elite golf courses near the Oregon coastline in Coos County served by Bandon State Airport and Southwest Oregon Regional Airport. Therefore, a Coos County alternative visitor spending scenario was developed for these two airports to estimate observed visitor impacts. The scenarios were based on interviews with visitor-serving businesses in the area and in consultation with the Oregon Department of Aviation. The alternative scenario held operations constant with the baseline scenario, but postulated more passengers per flight for 20% of itinerant operations at Bandon State and 50% at Southwest Oregon Regional Airport, and higher levels of spending per visitor for those proportion of operations. The differences between the baseline and alternative scenarios for these two airports are described below:

- **Bandon State Airport** - the golf courses attract twenty percent (20%) of GA itinerant operations at four passengers per plane (baseline for the airport is two per plane), who spend a total of \$1,360 per person per visit (the baseline scenario is \$100).
- **Southwest Oregon Regional Airport** – the golf courses attract fifty percent (50%) of GA itinerant operations at four passengers per plane (baseline for the airport is three per plane), who spend a total of \$1,450 per person per visit (the baseline scenario is \$100).

The adjusted general aviation visitor metrics for the Coos County alternative scenario are:

<i>Airport</i>	<i>Total Arriving Itinerant Operations</i>	<i>GA visitors per operation</i>	<i>Spending per visitor by visit</i>	<i>Total visitor spending</i>
SW Oregon Regional	5,450	3.5	\$871	\$16,543,000
Bandon State	1,500	2.4	\$520	\$1,871,000

The differences between scenarios of visitor spending are about \$15 million at Southwest Regional and \$1.6 million in Bandon State. In tables that follow in this report the conservative baseline will be listed and will be part of the total economic impacts for the airport and the state. In notes below the table, we will review the key totals based on the above scenario.

Calculations of visitor spending at general aviation-only airports by pilots, crew, and passengers are shown in **Tables 8.23 and 8.24**. **Table 8.23** shows how the number of visitors is derived from total general aviation operations per airport. **Table 8.24** summarizes direct visitor spending based on itinerant operations and the sum of spending by visitors on lodging, food and drink, entertainment, local transportation, and retail purchases.

**Table 8.23 Number of Visitors to Oregon through ODA General Aviation-Only Airports**

<i>Airport</i>	<i>Total GA Operations</i>	<i>GA Arrivals</i>	<i>Percent Itinerant Operations</i>	<i>People per Itinerant Operation</i>	<i>Total Visitor Arrivals</i>
Albany Municipal	22,800	11,400	55%	2	12,650
Alkali Lake State	100	50	100%	2	100
Arlington Municipal	1,010	505	45%	2	450
Ashland Municipal	31,300	15,650	57%	2	17,748
Astoria Regional	85,000	42,500	19%	3	23,700
Aurora State	73,895	36,948	53%	3	59,213
Baker City Municipal	11,584	5,792	60%	2	6,915
Bandon State	7,100	3,550	42%	2	3,000
Beaver Marsh	150	75	100%	2	150
Bend Municipal	42,000	21,000	65%	3	40,817
Boardman	1,500	750	80%	2	1,200
Brookings	22,600	11,300	8%	2	1,900
Burns Municipal	8,000	4,000	66%	2	5,300
Cape Blanco State	667	334	85%	2	567
Cascade Locks State	1,500	750	100%	2	1,500
Chehalem Airpark	11,203	5,602	63%	2	7,003
Chiloquin State	3,500	1,750	77%	2	2,700
Christmas Valley	2,500	1,250	76%	2	1,900
Columbia Gorge Regional/Dalles	16,282	8,141	55%	2	8,920
Condon State – Pauling Field	3,880	1,940	77%	3	4,470
Cottage Grove State	16,685	8,343	58%	2	9,735
Country Squire Airpark	2,000	1,000	60%	2	1,200

**Table 8.23 Number of Visitors to Oregon through ODA General Aviation-Only Airports**

Crescent Lake State	300	150	100%	2	300
Creswell - Hobby Field	34,000	17,000	12%	2	4,000
Davis	1,000	500	60%	2	600
Enterprise Municipal	4,850	2,425	70%	2	3,400
Florence Municipal	7,000	3,500	40%	2	2,800
George Felt	1,500	750	87%	2	1,300
Gold Beach Municipal	5,500	2,750	56%	2	3,100
Grant County Rgnl/Ogilvie Field	9,500	4,750	52%	4	9,800
Grants Pass	26,000	13,000	46%	2	12,000
Hermiston Municipal	18,150	9,075	75%	2	13,670
Illinois Valley	6,000	3,000	42%	2	2,500
Independence State	31,658	15,829	71%	2	22,542
Joseph State	3,850	1,925	78%	2	3,000
Ken Jernstedt Airfield	14,210	7,105	69%	2	9,751
La Grande/Union County	17,000	8,500	47%	3	12,000
Lake Billy Chinook	500	250	12%	2	60
Lake County	5,950	2,975	55%	2	3,300
Lakeside Municipal	1,500	750	67%	2	1,000
Lebanon State	9,855	4,928	54%	2	5,305
Lenhardt Airpark	6,000	3,000	79%	2	4,750
Lexington	2,260	1,130	54%	3.87	4,141
Madras City-County	10,500	5,250	19%	2	2,000
Malin	700	350	71%	2	500
McDermitt State	2,200	1,100	86%	2	1,900
McKenzie Bridge State	400	200	100%	2	400
McMinnville Municipal	75,000	37,500	53%	2	40,000
McNary Field	66,077	33,039	53%	3	52,274
Miller Memorial Airpark	2,000	1,000	88%	2	1,750
Monument Municipal	130	65	100%	2	130
Myrtle Creek Municipal	2,280	1,140	82%	2	1,880
Nehalem Bay State	2,260	1,130	97%	2	2,200
Newport Municipal	24,027	12,014	58%	2	14,025
Oakridge State	1,700	850	71%	2	1,200
Ontario Municipal	13,120	6,560	54%	2	7,080
Owyhee Reservoir State	550	275	100%	2	550
Pacific City State	2,000	1,000	89%	2	1,775
Paisley	300	150	67%	2	200
Pinehurst State	620	310	76%	2	470
Portland Downtown Heliport	5,140	2,570	59%	3.4	5,168
Powers Hayes Field	370	185	0%	2	0
Prineville	10,400	5,200	7%	2	700
Prospect State	1,225	613	71%	2	875
Rome State	100	50	100%	2	100
Roseburg Regional	23,653	11,827	70%	2	16,450
Sandy River	11,500	5,750	13%	2	1,500
Santiam Junction State	106	53	100%	2	106
Scappoose Industrial	63,691	31,846	57%	2.06	37,972
Seaside Municipal	2,600	1,300	62%	2	1,600
Siletz Bay State	2,980	1,490	61%	2	1,830

**Table 8.23 Number of Visitors to Oregon through ODA General Aviation-Only Airports**

Sisters Eagle Air	1,400	700	64%	2	900
Skyport	2,000	1,000	63%	2	1,250
Sportsman Airpark	12,500	6,250	12%	2	1,500
Starks Twin Oaks	22,230	11,115	74%	2	16,480
Sunriver	16,600	8,300	73%	3	18,075
Tillamook	26,800	13,400	71%	3	28,500
Toketee State	300	150	0%	2	0
Toledo State	1,150	575	96%	2	1,100
Valley View	2,965	1,483	62%	2	1,830
Vernonia Airfield	3,000	1,500	67%	2	2,000
Wakonda Beach State	830	415	90%	2	750
Wasco State	2,400	1,200	58%	2	1,400
<b>Totals/Averages</b>	<b>989,643</b>	<b>494,822</b>	<b>51%</b>	<b>2.35</b>	<b>598,875</b>

Source: FAA data and interviews with airport managers and ODOA staff.

Notes: Total visitor arrivals are estimated at 599,475 and an average of 2.38 people per flight. Excludes airports administered by the Port of Portland.

**Table 8.24 Direct Visitor Spending per Itinerant Operations and the Sum of Spending at ODA Airports**

(Dollars for *Total Spending by GA Visitors* are rounded to the thousand to avoid implications of "false precision")

<i>Airport</i>	<i>Total GA Visitor Arrivals</i>	<i>Average Spending per Trip</i>	<i>Total Spending by GA Visitors</i>
Albany Municipal	12,650	\$110	\$1,392,000
Alkali Lake State	100	\$20	\$2,000
Arlington Municipal	450	\$20	\$9,000
Ashland Municipal	17,748	\$135	\$2,391,000
Astoria Regional	23,700	\$94	\$2,238,000
Aurora State	59,213	\$143	\$8,483,000
Baker City Municipal	6,915	\$71	\$492,000
Bandon State	3,000	\$100	\$299,000
Beaver Marsh	150	\$30	\$5,000
Bend Municipal	40,817	\$131	\$5,354,000
Boardman	1,200	\$47	\$57,000
Brookings	1,900	\$78	\$149,000
Burns Municipal	5,300	\$49	\$260,000
Cape Blanco State	567	\$30	\$17,000
Cascade Locks State	1,500	\$30	\$45,000
Chehalem Airpark	7,003	\$105	\$735,000
Chiloquin State	2,700	\$30	\$81,000
Christmas Valley	1,900	\$30	\$57,000
Columbia Gorge Regional/Dalles	8,920	\$91	\$808,000
Condon State – Pauling Field	4,470	\$30	\$134,000
Cottage Grove State	9,735	\$151	\$1,474,000
Country Squire Airpark	1,200	\$20	\$24,000
Crescent Lake State	300	\$30	\$9,000

**Table 8.24 Direct Visitor Spending per Itinerant Operations and the Sum of Spending at ODA Airports**

Creswell - Hobby Field	4,000	\$151	\$606,000
Davis	600	\$0	\$0
Enterprise Municipal	3,400	\$61	\$207,000
Florence Municipal	2,800	\$151	\$424,000
George Felt	1,300	\$20	\$26,000
Gold Beach Municipal	3,100	\$78	\$243,000
Grant County Regional/Ogilvie Field	9,800	\$57	\$559,000
Grants Pass	12,000	\$104	\$1,248,000
Hermiston Municipal	13,670	\$97	\$1,327,000
Illinois Valley	2,500	\$104	\$260,000
Independence State	22,542	\$91	\$2,042,000
Joseph State	3,000	\$61	\$183,000
Ken Jernstedt Airfield	9,751	\$80	\$783,000
La Grande/Union County	12,000	\$79	\$944,000
Lake Billy Chinook	60	\$30	\$2,000
Lake County	3,300	\$52	\$172,000
Lakeside Municipal	1,000	\$20	\$20,000
Lebanon State	5,305	\$110	\$584,000
Lenhardt Airpark	4,750	\$20	\$95,000
Lexington	4,141	\$20	\$83,000
Madras City-County	2,000	\$62	\$125,000
Malin	500	\$20	\$10,000
McDermitt State	1,900	\$20	\$38,000
McKenzie Bridge State	400	\$0	\$0
McMinnville Municipal	40,000	\$105	\$4,199,000
McNary Field	52,274	\$143	\$7,489,000
Miller Memorial Airpark	1,750	\$0	\$0
Monument Municipal	130	\$0	\$0
Myrtle Creek Municipal	1,880	\$113	\$212,000
Nehalem Bay State	2,200	\$20	\$44,000
Newport Municipal	14,025	\$97	\$1,364,000
Oakridge State	1,200	\$20	\$24,000
Ontario Municipal	7,080	\$78	\$555,000
Owyhee Reservoir State	550	\$0	\$0
Pacific City State	1,775	\$78	\$138,000
Paisley	200	\$20	\$4,000
Pinehurst State	470	\$20	\$9,000
Portland Downtown Heliport	5,168	\$182	\$939,000
Powers Hayes Field	0	\$0	\$0
Prineville	700	\$67	\$47,000
Prospect State	875	\$30	\$26,000
Rome State	100	\$0	\$0
Roseburg Regional	16,450	\$113	\$1,852,000
Sandy River	1,500	\$20	\$30,000
Santiam Junction State	106	\$0	\$0

**Table 8.24 Direct Visitor Spending per Itinerant Operations and the Sum of Spending at ODA Airports**

Scappoose Industrial	37,972	\$83	\$3,145,000
Seaside Municipal	1,600	\$94	\$151,000
Siletz Bay State	1,830	\$97	\$178,000
Sisters Eagle Air	900	\$131	\$118,000
Skyport	1,250	\$0	\$0
Sportsman Airpark	1,500	\$105	\$157,000
Starks Twin Oaks	16,480	\$161	\$2,652,000
Sunriver	18,075	\$131	\$2,371,000
Tillamook	28,500	\$78	\$2,216,000
Toketee State	0	\$0	\$0
Toledo State	1,100	\$20	\$22,000
Valley View	1,830	\$20	\$37,000
Vernonia Airfield	2,000	\$20	\$40,000
Wakonda Beach State	750	\$97	\$73,000
Wasco State	1,400	\$20	\$28,000
<b>Totals/averages</b>	<b>598,875</b>	<b>\$104.55</b>	<b>\$62,613,000</b>

Source: General Aviation Passenger Survey, EDR Group GA analysis, FAA data and interviews with airport managers and ODOA staff.  
Notes: Visitor spending from general aviation-only airports is almost \$64 million. Excludes airports administered by the Port of Portland.

It should be noted that regionally, ratios calculated from United States Department of Commerce data were used to derive jobs and wages based on business sales. Direct impacts of visitors via commercial airports represent the summation of jobs, wages and business sales generated by their spending. We used US Department of Commerce data packaged by the Minnesota IMPLAN Group, Inc (IMPLAN). More information about IMPLAN is included in the discussion of spin-off impacts, below.

### 8.2.f Determining Airport Dependent Impacts

Airport dependent impacts measure the importance of airports for Oregon companies that are not located at airports and do not serve air visitors. Over 30,000 of these types of airport dependent jobs are in the Oregon economy which generate over \$8 billion in business sales, including almost \$1.7 billion in personal income, as shown in **Table 8.25** below. Industries that rely on air travel and air cargo generate relatively high paying jobs in leading industries of the state's business service sectors (generating business travel) and manufacturing and agricultural sectors (generating air cargo and business travel).

This analysis was based on industries within each region. Because this measure is not included in traditional economic impact analysis and is not calculated by airport, it is not included in the total economic impact for each airport, but is provided by region as an indicator of the importance of airports to area businesses. Dependency includes:

- Costs of general aviation and air-carrier business travel as a proportion of total business sales revenues per industry

- Value of goods, including manufacture and agriculture products, produced instate and exported by air from Oregon's airports

Sources for the business travel analysis included the Bureau of Economic Analysis and the United States Department of Commerce, which documents spending by industry to determine the volume of air services purchased by industries per region. These data provided an estimate of the fraction of business sales by sectors that were used to purchase air services. Ratios of sales to wages and sales to employment were applied for each sector to calculate aviation-reliant jobs and wages in Oregon among non-aviation businesses.

The values of domestic and international air exports were aggregated for each region. To calculate international trade exports, data from the Bureau of Census International Trade Administration (ITA) were used for airports in Oregon and goods that originated in Oregon. The detailed list of over 80 industries given by ITA were aggregated to nine sectors. These sectors are: industrial machinery, optic/photo equipment, electrical machinery, chemicals, furs/skins, aircraft, wood products, other manufacturing and other agriculture. To account for exports to United States' locations, data from the Portland International Airport website and the Bureau of Transportation Statistics for enplaned international and domestic goods/exports was used. Only total weights were provided by these two data sources, so it was assumed that the distribution of industries was the same as international shipments. The ratio of domestic to international exports was extrapolated to determine the total amount for the nine industries listed above. Data were filtered to remove domestic air cargo within Oregon (i.e. a flight from a small airport to Portland International Airport) in order to avoid double counting.

Products shipped from Portland International Airport account for about ninety percent (90%) of all state air exports. A major assumption used for this analysis is that products shipped from PDX originate throughout the state based on the proportional size of each relevant industry among the regions. **Appendix D** contains a detailed description of this methodology. **Table 8.25** provides a summary of the number of jobs created by the businesses dependent upon aviation services by *ConnectOregon* region.

**Table 8.25 Number of Jobs Dependent on Aviation Services by *ConnectOregon* Regions.**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>Region</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Portland/Metro	18,713	\$1,074,226,000	\$4,899,120,000
Willamette Valley and Coast	8,061	\$368,349,000	\$2,142,913,000
Southwestern Oregon	3,206	\$136,203,000	\$927,556,000
Central Oregon	1,320	\$51,683,000	\$259,644,000
Eastern Oregon	1,129	\$32,291,000	\$234,597,000
<b>Totals</b>	<b>32,429</b>	<b>\$1,662,752,000</b>	<b>\$8,463,830,000</b>

Source: United States Census Bureau, Foreign Trade Division prepared by WISERTrade, <http://www.flypdx.com/>, BTS, and Air Carrier Statistics Database. 2002 United States absorption table for air transportation, United States Department of Commerce Bureau of Economic Analysis (updated to 2004 and packaged by IMPLAN).

### 8.2.g Determining Spin-Off Impacts (Economic Multipliers)

Spin-offs (also called economic multipliers) are the impacts of: (1) businesses spending some of their income for supplies and services; and (2) workers spending their wages for consumer purchases. These subsequent business and consumer-spending effects support additional jobs, wages, and business income for the Oregon economy.

Activities occurring at an airport generate additional orders for goods and services from suppliers and may include orders for:

- Printing and publishing for an airport operator and airlines
- Banking, insurance, legal, accounting, and technical services for airport businesses
- Off-site bus and parking services for airport employees
- Food products for airport restaurants
- Wholesale merchandise to be sold by airport stores
- Furniture and equipment for offices, hotels, restaurants, and stores located at an airport

Activities serving air travelers located off-of-airport property (off-airport) also generate additional orders for goods and services from suppliers and can include orders for:

- Fueling and maintenance services for use by off-airport taxis, rental cars, tour buses, and public transportation
- Construction and support operations of convention and hospitality facilities for visitors.
- Food products for off-airport restaurants
- Wholesale merchandise to be sold by off-airport stores
- Furniture and equipment for off-airport hotels, restaurants, and stores
- Retail purchases of food, clothing, cars, stereos, computers, and other products
- Purchases of services spanning haircuts, cleaning, car repair, and insurance

This “re-spending” of income supports additional jobs within Oregon’s five regions and statewide. For non-aviation airport-dependent businesses, spin-off effects are based on the portion of business income that is spent on aviation or that supports production of cargo shipped from Oregon airports. Direct economic activities generated at Oregon Airports, stimulated by visitor spending, and as a result of aviation dependent activities, lead to additional downstream impacts on suppliers, as well as subsequent consumer spending of worker income.

To quantify these downstream effects, both regional and statewide multipliers were calibrated and applied using the IMPLAN modeling package. IMPLAN stands for “Impact Analysis for Planning” and is now the most widely used input-output economic modeling system in the United States, with a client list of 500 public and private agencies including several federal agencies and numerous state agencies. Separate multipliers were used for each major industry grouping that represents on-airport tenants, visitor expenditures, and dependent industries in order to increase accuracy.

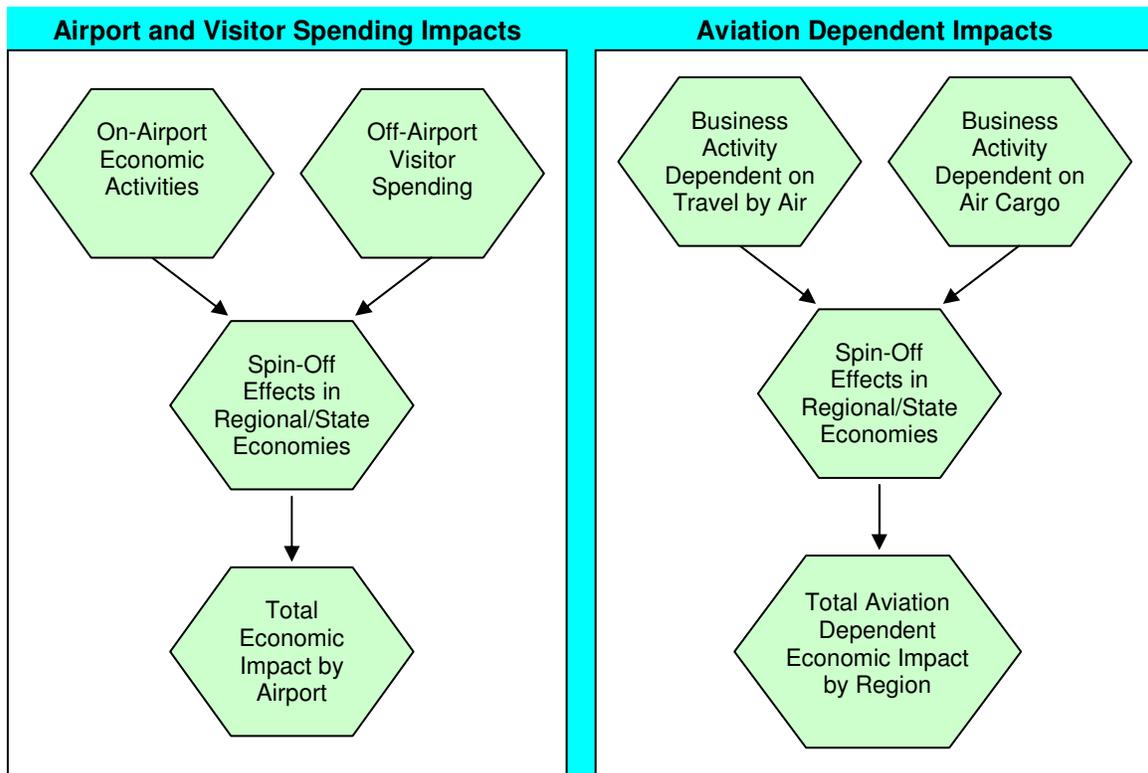
For this study the direct job and income effects for on-airport, visitor spending, and related jobs were documented and then assigned to specific sector groups, based on information from interviews, surveys, and research completed for this project and based on experience in aviation and freight economies internationally. The IMPLAN model was then calibrated for each of the five airport analysis regions, as well as for the state of Oregon as a whole. The model was run to determine the direct effects on specific industry groupings within the classifications of on-airport employment, off-airport visitor spending, and off-airport business activities dependent on airports for business travel and cargo services. Analyses of retail impacts were adjusted to account for retail markups. Retail portions of economic multipliers also incorporate these margins. Regardless of whether economic impacts are measured in terms of jobs, income, or business sales, these impacts can be classified into three categories:

- **Direct economic effects** are represented as the net increase in business activity associated with businesses on-airport or off-airport.
- **Indirect economic effects** are the broader effects on business activity for suppliers to the directly affected businesses. This can include production, distribution, and transportation for suppliers of goods and services.
- **Induced economic effects** are further shifts in spending on food, clothing, shelter, and other consumer goods and services as a consequence of the change in workers and payroll of directly and indirectly affected businesses.

This study assembled classifications of the 509 sectors in the IMPLAN modeling package by each of the five analysis regions and by the state as a whole to best mirror types of industries on airports, types of visitor spending, and other industries that rely on aviation services. The classification schemes used for on-airport, visitor spending, and air-dependent impacts are shown in **Appendix D**.

As shown in **Figure 8.2**, total economic impacts by airport are the sum of on-airport direct economic activities, off-airport direct visitor spending, and spin-off impacts (economic multipliers). Regional impacts also include the contribution of airports to support industries throughout the state that rely on business travel and shipping products by air cargo.

Figure 8.2 Total Economic Impacts for Airport, Regions, and the State of Oregon



### 8.3 Direct Economic Impacts of Airports and Aviation

The impacts of public-use airports in Oregon are measured as direct impacts, total regional impacts (discussed in section 8.4.a), and total state impacts (discussed in section 8.4.b). This section 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, at off-airport businesses that serve air travelers, and by businesses off-airport that rely on air services for business travel and cargo shipment. Direct impacts supported by public-use airports in Oregon are divided into four classifications, which include:

1. On-airport economic activities, which include administration of airports and tenants that supply goods and services to passengers, airlines, and general aviation. Also included are local, state and federal government agencies, as well as military aviation.
2. On-airport tenants which are not related to any aspect of aviation activities. In these cases, airports provide industrial or office park space for such businesses. Though not related to aviation, these businesses represent a contribution of airports to their regions.
3. Air carrier and general aviation air travelers spending at off-airport businesses.
4. 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 dependent activities, jobs, and wages are measured by the value of commodities shipped by air or the value of air travel engaged by businesses.

In different groupings, these four 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 (both aviation and non-aviation related) and off-airport spending of visitors who use airports (Classifications 1, 2, and 3). The direct contribution of aviation to the Oregon economy is the sum of on-airport aviation-related activity, off-airport spending of visitors who use airports, and aviation dependency or non-aviation businesses (Classifications 1, 3 and 4).

#### 8.3.a Direct Economic Impacts of Airports

As detailed in **Table 8.26**, the aggregate direct economic impact of all Oregon airports, excluding the Port of Portland administered airports, is approximately \$1.5 billion in business sales. These sales in turn support about 16,000 jobs statewide that pay workers about \$430 million in wages. There is a slight difference between regional and state impacts because regional impacts include air travel by Oregon residents to different parts of the state, while state impacts include only travelers who arrive in Oregon from out-of-state.

**Table 8.26 Direct Impacts of Airports in Oregon to the State Economy**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Category of Impact	# of Jobs		Wages		Business Sales	
	Regional	State	Regional	State	Regional	State
On-Airport Aviation (FBO and air related tenants)	7,273	7,273	\$262,147,000	\$262,147,000	\$827,475,000	\$827,475,000
Off-Airport						
Visitor Spending	6,948	6,762	\$104,459,000	\$101,641,000	\$332,973,000	\$324,097,000
On-Airport Non-aviation Activities	2,177	2,177	\$67,294,000	\$67,294,000	\$320,530,000	\$320,530,000
<b>Total ODA Airports</b>	16,398	16,213	\$433,900,000	\$431,082,000	\$1,480,978,000	\$1,472,102,000
<b>*Port of Portland Totals</b>	39,259		\$837,935,000		\$4,972,007,000	
<b>Total Amount</b>	55,657		\$1,271,835,000		\$6,452,985,000	

Sources: EDR Group and Mead &amp; Hunt analyses.

Columns may not add due to rounding.

Notes: When applying Coos County Alternative Scenario: ODA Airport job impacts are 16,766 (region) and 16,579 (state), wages are \$439.2 million (region) and \$436.4 million (state), and business sales impacts are \$1.497 billion (region) and \$1.489 billion (state).

\*Port of Portland studies provided by Port.

The average annual wage of direct jobs generated by airports is determined to be \$26,500. However, wages vary significantly by classification. Workers in aviation-related jobs located on-airports earn an average of \$36,000 annually, while on-airport jobs in businesses not connected to aviation pay an average of \$31,000. Off-airport workers who serve visitors average \$15,000 in wages. It should be noted that many of these service workers are part-time and are employed at low hourly rates.

**Table 8.27** shows the direct Oregon statewide impacts for each airport, consisting of on-airport employment, both aviation and non-aviation related, and visitor spending by air travelers arriving from out of state. Six of the 90 airports listed below, including Bend Municipal, McNary Field, Mahlon Sweet Field, Redmond Municipal - Roberts Field, Rogue Valley International, and Southwest Oregon Regional airports, show direct employment of more than 1,000 people, and together account for more than 10,000 of the 16,000 jobs directly generated by Oregon's airports (except for the Port of Portland airports).

**Table 8.27 Direct Statewide Economic Impacts of ODA Airports**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Airport Name	# of Jobs	Wages	Business Sales
Albany Municipal	31	\$455,000	\$1,514,000
Alkali Lake State	0	\$1,000	\$2,000
Arlington Municipal	0	\$3,000	\$9,000
Ashland Municipal	217	\$5,132,000	\$20,575,000
Astoria Regional	274	\$8,873,000	\$24,025,000
Aurora State	999	\$25,923,000	\$75,083,000

**Table 8.27 Direct Statewide Economic Impacts of ODA Airports**

Baker City Municipal	24	\$571,000	\$1,796,000
Bandon State	6	\$93,000	\$299,000
Beaver Marsh	0	\$1,000	\$4,000
Bend Municipal	1,614	\$68,363,000	\$293,788,000
Boardman	2	\$36,000	\$107,000
Brookings	4	\$59,000	\$197,000
Burns Municipal	8	\$170,000	\$509,000
Cape Blanco State	0	\$5,000	\$17,000
Cascade Locks State	1	\$15,000	\$45,000
Chehalem Airpark	97	\$2,132,000	\$5,944,000
Chiloquin State	2	\$25,000	\$81,000
Christmas Valley	2	\$36,000	\$107,000
Columbia Gorge Regional/ The Dalles	21	\$391,000	\$1,207,000
Condon State – Pauling Field	3	\$42,000	\$134,000
Corvallis Municipal	377	\$12,464,000	\$54,108,000
Cottage Grove State	31	\$462,000	\$1,474,000
Country Squire Airpark	2	\$62,000	\$174,000
Crescent Lake State	0	\$3,000	\$9,000
Creswell - Hobby Field	42	\$665,000	\$2,609,000
Davis	1	\$18,000	\$50,000
Eastern Oregon Regional	250	\$8,069,000	\$22,752,000
Enterprise Municipal	6	\$100,000	\$307,000
Florence Municipal	70	\$2,038,000	\$9,637,000
George Felt	1	\$26,000	\$76,000
Gold Beach Municipal	7	\$129,000	\$392,000
Grant County Regional/Ogilvie Field	47	\$1,063,000	\$3,439,000
Grants Pass	319	\$10,416,000	\$35,185,000
Hermiston Municipal	100	\$2,818,000	\$8,881,000
Illinois Valley	6	\$114,000	\$308,000
Independence State	51	\$875,000	\$2,741,000
Joseph State	4	\$56,000	\$183,000
Ken Jernstedt Airfield	24	\$345,000	\$943,000
Klamath Falls	923	\$26,497,000	\$42,732,000
La Grande/Union County	30	\$438,000	\$1,671,000
Lake Billy Chinook	1	\$19,000	\$52,000
Lake County	6	\$144,000	\$421,000
Lakeside Municipal	1	\$24,000	\$70,000
Lebanon State	12	\$183,000	\$584,000
Lenhardt Airpark	18	\$607,000	\$1,691,000
Lexington	1	\$14,000	\$47,000
Madras City-County	7	\$219,000	\$624,000
Mahlon Sweet Field	2,452	\$45,349,000	\$136,531,000
Malin	1	\$21,000	\$60,000
McDermitt State	1	\$11,000	\$38,000
McKenzie Bridge State	0	\$0	\$0
McMinnville Municipal	127	\$2,615,000	\$4,801,000
McNary Field	1,043	\$33,134,000	\$140,356,000

**Table 8.27 Direct Statewide Economic Impacts of ODA Airports**

Miller Memorial Airpark	1	\$36,000	\$100,000
Monument Municipal	1	\$18,000	\$50,000
Mulino	44	801,000	2,404,000
Myrtle Creek Municipal	6	\$122,000	\$361,000
Nehalem Bay State	1	\$14,000	\$44,000
Newport Municipal	395	\$9,862,000	\$35,033,000
Oakridge State	1	\$7,000	\$24,000
Ontario Municipal	13	\$185,000	\$587,000
Owyhee Reservoir State	0	\$0	\$0
Pacific City State	3	\$42,000	\$138,000
Paisley	1	\$19,000	\$54,000
Pinehurst State	0	\$3,000	\$9,000
Portland Downtown Heliport	18	\$340,000	\$989,000
Powers Hayes Field	1	\$18,000	\$50,000
Prineville	12	\$437,000	\$1,309,000
Prospect State	1	\$8,000	\$26,000
Redmond Municipal - Roberts Field	1,581	\$30,967,000	\$102,293,000
Rogue Valley International	2,570	\$50,337,000	\$148,142,000
Rome State	0	\$0	\$0
Roseburg Regional	64	\$1,340,000	\$4,447,000
Sandy River	2	\$64,000	\$180,000
Santiam Junction State	0	\$0	\$0
Scappoose Industrial	191	\$9,989,000	\$37,243,000
Seaside Municipal	5	\$101,000	\$301,000
Siletz Bay State	4	\$54,000	\$178,000
Sisters Eagle Air	3	\$74,000	\$218,000
Skyport	1	\$18,000	\$50,000
Southwest Oregon Regional	1,292	\$43,734,000	\$150,899,000
Sportsman Airpark	33	\$877,000	\$3,182,000
Starks Twin Oaks	82	\$1,614,000	\$4,372,000
Sunriver	50	\$903,000	\$2,770,000
Tillamook	566	\$17,709,000	\$78,063,000
Toketee State	0	\$0	\$0
Toledo State	0	\$7,000	\$22,000
Valley View	1	\$29,000	\$86,000
Vernonia Airfield	1	\$31,000	\$90,000
Wakonda Beach State	2	\$22,000	\$73,000
Wasco State	1	\$9,000	\$28,000
<b>Totals</b>	<b>16,213</b>	<b>\$431,082,000</b>	<b>\$1,472,102,000</b>

Source: EDR Group and Mead &amp; Hunt analyses.

### 8.3.b Direct Economic Impacts of Aviation

According to survey and research findings, aviation contributes (including airports administered by the Port of Portland) \$14.6 billion to Oregon's economy in direct business sales, accounting for more than 85,000 jobs as shown in **Table 8.28**. These impacts include airport aviation impacts, direct spending by air travelers, and non-aviation business activity that relies on airports for travel and cargo shipments. This related business activity accounts for over 32,000 jobs and nearly \$8.5 billion in sales throughout the state.

**Table 8.28 Direct Impacts of Aviation Activities in Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Category of Impact	# of Jobs		Wages		Business Sales	
	Regional	State	Regional	State	Regional	State
On-Airport Aviation (FBO and air related tenants)	7,273	7,273	\$262,147,000	\$262,147,000	\$827,475,000	\$827,475,000
Off-Airport Visitor Spending	6,948	6,762	\$104,459,000	\$101,641,000	\$332,973,000	\$324,097,000
<b>Subtotal: Direct Airport Aviation Related Activities</b>	14,221	14,035	\$366,606,000	\$363,788,000	\$1,160,448,000	\$1,151,572,000
Off-Airport Aviation Dependent Business Activities	32,429	32,429	\$1,662,752,000	\$1,662,752,000	\$8,463,830,000	\$8,463,830,000
<b>Totals</b>	46,650	46,464	\$2,029,358,000	\$2,026,540,000	\$9,624,278,000	\$9,615,402,000
<b>*Port of Portland Totals</b>	39,259		\$837,935,000		\$4,972,007,000	
<b>Total Amount</b>	85,909		\$2,867,293,000		\$14,596,285,000	

Source: United States Census Bureau, Foreign Trade Division prepared by WISERTrade, <http://www.flypdx.com/>, BTS, and Air Carrier Statistics Database. 2002 United States absorption table for air transportation, United States Department of Commerce Bureau of Economic Analysis (updated to 2004 and packaged by IMPLAN).

Notes: Applying the Coos County alternative scenario, total impacts of ODA airports are: jobs - 47,018 (regional) and 46,831 (state); wages - \$2.032 billion (regional) and \$2.035 billion (state); and business sales - \$9.64 billion (regional) and \$9.63 (state). Regional impacts include air travel by Oregon residents to different parts of the state, while state impacts includes only travelers who arrive in Oregon from out-of-state, therefore a difference in regional and state impacts exists.

\*Port of Portland studies provided by Port.

## 8.4 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 section details the total economic impacts of airports and aviation on the regional and statewide economies of Oregon. Total economic impacts are derived from the direct impacts described in the preceding sections. Six factors make up total impacts on regional and statewide scales, which include:

1. On-airport economic activities that are related to the aviation mission of airports.
2. On-airport tenants that are not related to any aspect aviation activities.
3. Spending by air-travelers at off-airport businesses.
4. Business travel and cargo shipments by non-aviation businesses.
5. Suppliers of goods and services to airports, businesses on-airport, and businesses off-airport that serve air travelers or rely on aviation services for business travel or cargo shipments to customers. These types of economic impacts are often referred to as indirect effects.
6. Subsequent consumer spending of worker income supported by airport-based activities, visitor spending, air dependent businesses, and suppliers of goods and services. These types of economic impacts are often referred to as induced effects.

The initial four factors on the list above are the direct effects of airports and aviation that were discussed in the preceding sections. Total impacts are the sum of direct impacts plus spin-off effects, which are factors five and six, and were discussed in Section 8.2g.above. For regional impacts, regional specific IMPLAN models were calibrated to capture spin-off benefits within each region, and a statewide IMPLAN model was calibrated to measure spin-off effects across Oregon. For this report indirect impacts (factor 5, above) and induced impacts (factor 6, above) have been combined and are referred to as spin-off or multiplier effects. The compositions of total impacts of airports and aviation within regions and throughout the state are shown in **Table 8.29**.

**Table 8.29 Direct Contributing Impacts of Aviation Activities in Oregon**

<i>Factors</i>	<i>State</i>		<i>Region</i>	
	<i>Airports</i>	<i>Aviation</i>	<i>Airports</i>	<i>Aviation</i>
On-airport aviation economic activities	X	X	X	X
On-airport tenant not related to aviation	X		X	
Off-airport spending by air-travelers	X	X	X	X
Air dependent business for travel and cargo shipments		X		X
Statewide spin off effects (business suppliers and worker re-spending)	X	X		
Regional specific spin off effects (business suppliers and worker re-spending)			X	X

#### 8.4.a Regional Impacts

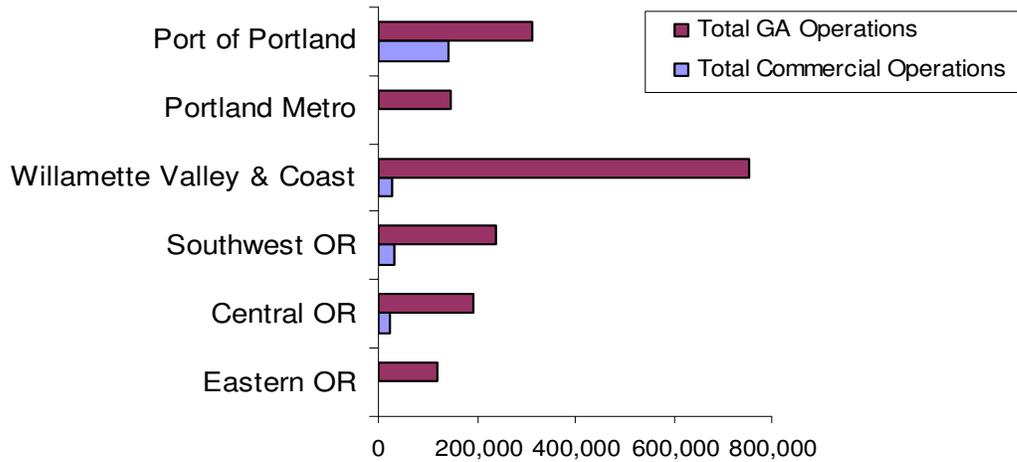
This section presents findings of the impacts of airports and the contribution of aviation to the regional economies in Oregon. The five *ConnectOregon* regions were used to measure regional economic impacts of the airports examined in this study. From west to east, the five regions are Portland/Metro, Willamette Valley and Coast, Southwest Oregon, Central Oregon and Eastern Oregon. The difference between the two analyses, as illustrated previously in **Table 8.29**, is that airport impacts include all on-airport activities, including those of tenants that are non-aviation-related, as well as visitor spending. The contribution of aviation to regional and state economies is the sum of on-airport activities that are aviation related, off-airport spending of air travelers, and the dependence of Oregon's non-aviation industries on aviation services at airports for business travel or cargo shipments to customers nationally and worldwide.

##### *Economic Contributions of Airports to Regional Economies*

The scale of commercial and general aviation operations is typically the basis for supporting aviation related businesses on airports, as well as facilitating visitor spending. This is a tendency, not a linear measure. For example, there are more general aviation and commercial operations in Southwest Oregon than Central Oregon, but aviation in the Central region overall has generated more economic impacts. Both regions, however, have significantly more commercial and general aviation operations and generate significantly greater economic activity than Eastern Oregon. **Figure 8.3 and Table 8.30** illustrates the scale of aviation activity by region and business sales per region that are generated by aviation activities at local airports. In terms of

general aviation, the Willamette Valley and Coast is the busiest of the five regions (based on the airports included in this study), with over 750,000 operations, accounting for more than fifty percent (50%) of the total of the 90 economic study airports (excluding the Port of Portland). In addition, the Willamette Valley and Coast, the Southwest Oregon, and the Central Oregon regions each show more than 20,000 commercial operations in the respective regions. The airports administered by the Port of Portland contribute more than 300,000 general aviation operations and 140,000 commercial operations.

**Figure 8.3 Summary of Aviation Activity**



**Table 8.30 Business Sales per Region**

(Dollars are rounded to the thousand to avoid implications of “false precision”)

<i>Region</i>	<i>Direct Aviation-Related Airport Business Sales</i>
<i>Port of Portland</i>	\$3,311,634,000
Portland/Metro (ODA Airports)	\$15,573,000
Willamette Valley & Coast	\$226,268,000
Southwest OR	\$200,330,000
Central OR	\$353,724,000
Eastern OR	\$31,679,000

Source: EDR Group and Mead & Hunt analyses.  
 Note: Port of Portland data were provided by the Port.

Direct impacts of airports to the economies of respective regions are shown in **Table 8.31**. For ODA airports, impacts range from more than 6,600 jobs, \$165 million in wages, and nearly \$600 million of economic activity in the Willamette Valley and Coast region to 500 jobs, almost \$14 million in wages, and \$41 million in business sales in Eastern Oregon. For the Portland/Metro region, ODA airports contribute 363 jobs, more than \$13 million in direct wages and \$46 million in business sales. Direct contribution of ODA airports and Port of Portland airports (Portland International, along with Hillsboro and Troutdale airports) to the Portland/Metro economy exceed \$5 billion of business activity, and generate nearly 40,000 jobs, that pay more than \$850 million in wages.

**Table 8.31 Direct Impacts of Airports to the Regional Economies in Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Region	Willamette					
	*Port of Portland	Portland/ Metro	Valley & Coast	Southwest OR	Central OR	Eastern OR
Direct Jobs On-Airport (Aviation & Non-Aviation)	11,307	179	3,947	2,189	2,799	338
Direct Jobs from Visitor Spending	27,951	184	2,711	2,429	1,461	163
<b>Totals Direct Jobs</b>	<b>39,259</b>	<b>363</b>	<b>6,658</b>	<b>4,618</b>	<b>4,260</b>	<b>501</b>
Direct Wages On-Airport	\$358,518,000	\$9,873,000	\$125,422,000	\$77,239,000	\$105,423,000	\$11,518,000
Off-airport Direct Wages from Visitor Spending	\$479,417,000	\$3,310,000	\$39,499,000	\$36,137,000	\$23,267,000	\$2,248,000
<b>Total Direct Wages</b>	<b>\$837,935,000</b>	<b>\$13,183,000</b>	<b>\$164,921,000</b>	<b>\$113,376,000</b>	<b>\$128,690,000</b>	<b>\$13,766,000</b>
Direct Business Sales On- Airport	\$3,311,634,000	\$36,366,000	\$450,637,000	\$253,718,000	\$373,584,000	\$33,802,000
Off-Airport Direct Business Sales from Visitor Spending	\$1,660,373,000	\$9,854,000	\$128,890,000	\$112,939,000	\$74,066,000	\$7,226,000
<b>Total Direct Business Sales</b>	<b>\$4,972,007,000</b>	<b>\$46,220,000</b>	<b>\$579,527,000</b>	<b>\$366,657,000</b>	<b>\$447,650,000</b>	<b>\$41,028,000</b>

Source: Airport and Tenant Surveys. EDR Group and Mead & Hunt Analyses. IMPLAN econometric package.

Notes: Under the alternative Coos County Scenario, effects of visitor spending in Southwest Oregon is \$129.4 million in direct off-airport business sales, which generates 2,797 jobs and \$41.4 million in wages. Total direct impacts generated by Oregon airports in the Southwest region under this alternative are 4,985 jobs that earn wages of \$118.7 million, and are supported by \$383.2 million in business sales.

\*Port of Portland studies provided by Port.

Total impacts of airports on regional economies including regional spin-off effects are shown below in **Table 8.32**. For ODA airports, totals range from more than one billion dollars in business sales that support 13,000 jobs and \$322 million in wages in the Willamette Valley & Coast region to \$64 million in business sales, 900 jobs, and \$25 million in wages in the Eastern Oregon region.

Total impacts of each airport on their regional economies are also shown below in **Table 8.32**. It must be noted that airport totals for jobs, wages earned, and business sales are the sums of:

- On-airport aviation related businesses, including airport administration
- On-airport tenants that are not related to aviation
- Off-airport visitor spending of air travelers
- Regional spin-off effects, which include portions of supplies and services, and consumer spending by workers that are contained within each airport's region

**Table 8.32 Total Business Sales Generated by Airports for Regions in Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Region	*Port of Portland	Portland/ Metro	Willamette Valley & Coast	Southwest OR	Central OR	Eastern OR
Total Jobs On-Airport (Aviation & Non-Aviation)	20,005	563	9,182	4,809	6,719	687
Total Jobs from Visitor Spending	39,418	266	3,974	3,493	2,158	217
<b>Totals Jobs</b>	<b>59,423</b>	<b>829</b>	<b>13,156</b>	<b>8,302</b>	<b>8,877</b>	<b>904</b>
Wages from On-Airport Activity	\$941,244,000	\$23,923,000	\$250,052,000	\$152,305,000	\$215,039,000	\$22,025,000
Off-Airport Wages from Visitor Spending	\$907,718,000	\$5,929,000	\$72,357,000	\$61,881,000	\$40,651,000	\$3,597,000
<b>Total Wages</b>	<b>\$1,848,862,000</b>	<b>\$29,852,000</b>	<b>\$322,409,000</b>	<b>\$214,186,000</b>	<b>\$255,679,000</b>	<b>\$25,622,000</b>
Sales from On-Airport Aviation Related Activity	\$3,533,456,000	\$76,700,000	\$790,289,000	\$441,225,000	\$723,932,000	\$52,681,000
Off-airport Sales from Visitor Spending	\$1,740,344,000	\$18,069,000	\$233,925,000	\$194,767,000	\$131,367,000	\$11,350,000
<b>Total Business Sales</b>	<b>\$5,273,800,000</b>	<b>\$94,769,000</b>	<b>\$1,024,214,000</b>	<b>\$635,992,000</b>	<b>\$855,299,000</b>	<b>\$64,031,000</b>

Source: Airport and Tenant Surveys. Totals include spin-off effects. EDR Group and Mead & Hunt Analyses. IMPLAN econometric package.

Notes: Under the alternative Coos County Scenario, total effect of visitor spending in Southwest Oregon is \$223.4 million, which generates 4,020 jobs and \$71 million in wages. Total impacts generated by Oregon airports in the Southwest region are 8,829 jobs that earn \$223.3 million in wages, that are supported by \$664.6 million in business sales.

\*Port of Portland studies provided by Port.

**Tables 8.33 through 8.37** list the total economic contributions of each airport profiled in this study to the economies of their home region. Portland International Airport accounts for more than 98% of business activity in the region. Without the Port of Portland airports, the Portland/Metro region includes just seven airports, compared to between 16 and up to 29 ODA airports in each of the other four regions in the state.

**Table 8.33 Economic Contribution of Airports from Region 1 - Portland-Metro**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>ODA Airports</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Cascade Locks State	1	\$27,000	\$84,000
Country Squire Airpark	5	\$139,000	\$330,000
Ken Jernstedt Airfield	45	\$663,000	\$1,743,000
Mulino Airport	65	\$1,460,000	\$4,423,000
Portland Downtown Heliport	26	\$613,000	\$1,811,000
Scappoose Industrial Airpark	539	\$23,845,000	\$78,253,000
Skyport	1	\$41,000	\$95,000
Starks Twin Oaks Airpark	145	\$3,064,000	\$8,029,000
<b>Regional Totals:</b>	828	\$29,852,000	\$94,769,000
<b>*Port of Portland</b>			
Portland International	57,911	\$1,770,300,000	\$5,174,200,000
Hillsboro	1,272	\$66,680,000	\$81,515,000
Troutdale	242	\$11,882,000	\$18,084,000
<b>Port of Portland Total</b>	59,423	\$1,848,862,000	\$5,273,800,000
<b>Total Portland/Metro</b>	60,251	\$1,878,714,000	\$5,368,569,000

Sources: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects. \*Port of Portland airport data provided by the Port.

**Table 8.34 Economic Contribution of Airports from Region 2 - Willamette Valley & Coast**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Albany Municipal	49	\$831,000	\$2,749,000
Astoria Regional	641	\$17,317,000	\$43,107,000
Aurora State	2,403	\$52,348,000	\$134,828,000
Chehalem Airpark	253	\$4,393,000	\$10,730,000
Columbia Gorge/Dalles	37	\$752,000	\$2,196,000
Corvallis Municipal	879	\$25,613,000	\$94,349,000
Cottage Grove State	46	\$838,000	\$2,679,000
Creswell - Hobby Field	103	\$1,337,000	\$4,711,000
Davis	1	\$38,000	\$90,000
Florence Municipal	146	\$4,124,000	\$16,559,000
Independence State	84	\$1,666,000	\$4,990,000
Lebanon State	18	\$332,000	\$1,060,000
Lenhardt Airpark	49	\$1,260,000	\$3,052,000
Mahlon Sweet Field	4,021	\$85,548,000	\$245,921,000
McKenzie Bridge State	0	\$0	\$0
McMinnville Municipal	237	\$5,130,000	\$8,755,000
McNary Field	2,195	\$65,703,000	\$246,337,000
Nehalem Bay State	1	\$25,000	\$81,000
Newport Municipal	700	\$17,780,000	\$59,847,000
Oakridge State	1	\$14,000	\$44,000
Pacific City State	4	\$77,000	\$252,000

**Table 8.34 Economic Contribution of Airports from Region 2 - Willamette Valley & Coast**

Sandy River	5	\$130,000	\$325,000
Santiam Junction State	0	\$0	\$0
Siletz Bay State	6	\$99,000	\$325,000
Sportsman Airpark	68	\$1,698,000	\$5,423,000
Tillamook	1,205	\$35,241,000	\$135,468,000
Toledo State	1	\$12,000	\$41,000
Vernonia	3	\$60,000	\$164,000
Wakonda Beach State	2	\$41,000	\$133,000
<b>Regional Totals:</b>	13,156	\$322,409,000	\$1,024,214,000

Sources: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects.

**Table 8.35 Economic Contribution of Airports from Region 3 - Southwest Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Ashland Municipal	389	\$9,484,000	\$34,882,000
Bandon State	9	\$158,000	\$512,000
Brookings	7	\$108,000	\$339,000
Cape Blanco State	1	\$9,000	\$29,000
George Felt	2	\$55,000	\$131,000
Gold Beach Municipal	11	\$254,000	\$675,000
Grants Pass	719	\$22,746,000	\$60,275,000
Illinois Valley	10	\$215,000	\$528,000
Lakeside Municipal	2	\$52,000	\$121,000
Myrtle Creek Municipal	10	\$241,000	\$624,000
Pinehurst State	0	\$5,000	\$16,000
Powers – Hayes Field	1	\$42,000	\$87,000
Prospect State	1	\$14,000	\$45,000
Rogue Valley International	4,312	\$96,911,000	\$263,254,000
Roseburg Regional	103	\$2,315,000	\$7,428,000
Seaside Municipal	8	\$205,000	\$519,000
Southwest Oregon Regional	2,715	\$81,309,000	\$266,379,000
Toketee State	0	\$0	\$0
Valley View	2	\$61,000	\$149,000
<b>Regional Totals:</b>	8,302	\$214,186,000	\$635,992,000

Sources: Airport and Tenant Surveys, EDR Group and Mead & Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects. Under the alternative Coos County Scenario, the total regional contribution of Bandon State Airport is 60 jobs, \$1,019,000 in wages, and \$3,242,000 in business sales. Under the Scenario, the total contribution for Southwest Oregon Regional Airport is 3,191 jobs, \$89,567,000 in wages, and \$292,294,000 in business sales.

**Table 8.36 Economic Contribution of Airports from Region 4 - Central Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Alkali Lake State	0	\$1,000	\$4,000
Arlington Municipal	0	\$5,000	\$16,000
Beaver Marsh	0	\$2,000	\$8,000
Bend Municipal Airport	4,619	\$153,619,000	\$579,282,000
Chiloquin State	3	\$44,000	\$145,000
Christmas Valley	3	\$72,000	\$194,000
Condon State – Pauling Field	4	\$74,000	\$241,000
Crescent Lake State	0	\$5,000	\$16,000
Klamath Falls	1,477	\$40,358,000	\$83,057,000
Lake Billy Chinook	1	\$42,000	\$95,000
Lake County	12	\$298,000	\$764,000
Madras City-County	17	\$477,000	\$1,139,000
Malin	2	\$46,000	\$110,000
Paisley	1	\$43,000	\$99,000
Prineville	30	\$956,000	\$2,427,000
Redmond Municipal - Roberts Field	2,662	\$57,829,000	\$182,311,000
Sisters Eagle Air	6	\$147,000	\$393,000
Sunriver	79	\$1,646,000	\$4,948,000
Wasco State	1	\$15,000	\$50,000
<b>Regional Totals:</b>	<b>8,877</b>	<b>\$255,679,000</b>	<b>\$855,299,000</b>

Sources: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects.

**Table 8.37 Economic Contribution of Airports from Region 5 - Eastern Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

<i>Airport</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Baker City Municipal	40	\$1,021,000	\$2,789,000
Boardman	3	\$64,000	\$168,000
Burns Municipal	13	\$309,000	\$800,000
Eastern Oregon Regional Airport	506	\$15,931,000	\$36,563,000
Enterprise Municipal	8	\$174,000	\$482,000
Grant Co. Reg./Ogilvie Field	77	\$1,647,000	\$5,174,000
Hermiston Municipal	181	\$5,185,000	\$13,864,000
Joseph State	5	\$90,000	\$287,000
La Grande/Union Co.	47	\$749,000	\$2,616,000
Lexington	1	\$23,000	\$74,000
McDermitt State	1	\$18,000	\$60,000
Miller Memorial Airpark	2	\$72,000	\$157,000
Monument Municipal	1	\$36,000	\$78,000
Ontario Municipal	19	\$302,000	\$922,000
Owyhee Reservoir State	0	\$0	\$0
Rome State	0	\$0	\$0
<b>Regional Totals:</b>	<b>904</b>	<b>\$25,622,000</b>	<b>\$64,031,000</b>

Sources: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt Analyses, IMPLAN econometric package.

Notes: Totals include spin-off effects.

*Economic Contributions of Aviation to Regional Economies*

The contribution of aviation to regional economies is the sum of airport-based aviation activities, off-airport spending by air travelers, and the reliance and dependence of non-aviation businesses in Oregon for air travel and air cargo shipments. Direct impacts showing the contribution of aviation to regional economies in Oregon are shown in **Table 8.38**. The contributions of aviation are driven by the needs of non-aviation businesses in Oregon to conduct business travel and ship products to customers.

Aviation contributes \$10 billion of economic activity to the Portland/Metro economy, \$2.5 billion to the Willamette Valley & Coast Region, and more than \$2 billion combined to the Southwest, Central, and Eastern Oregon regions. These business sales support more than 58,000 jobs in the Portland/Metro region and more than 13,000 in the Willamette Valley & Coast region. Given that Portland International Airport is a statewide resource that serves businesses located throughout Oregon, business travel and cargo shipments through Portland International are embedded in the analysis of aviation reliance by non-aviation industries, which are counted according to business locations.

**Table 8.38 Direct Impacts from Aviation Contributions to Regional Economies in Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Region	Region 1		Total Portland/ Metro	Region 2 Willamette Valley & Coast	Region 3 Southwest OR	Region 4 Central OR	Region 5 Eastern OR
	Portland/ Metro - ODA Airports	Portland/ Metro- Port of Portland Airports*					
<b>Aviation Related Economic Activity Generated by Airports in Region</b>							
Direct Jobs On-Airport (Aviation Related)	116	11,307	11,423	2,450	1,753	2,639	317
Direct Jobs from Visitor	184	27,951	28,135	2,711	2,429	1,461	163
Spending							
<b>Totals Direct Jobs</b>	<b>299</b>	<b>39,258</b>	<b>39,557</b>	<b>5,161</b>	<b>4,182</b>	<b>4,100</b>	<b>480</b>
Wages from On-Airport Activity	\$6,139,000	\$358,518,000	\$364,657,000	\$79,050,000	\$65,240,000	\$100,819,000	\$10,935,000
Off-Airport Wages from Visitor Spending	\$3,309,000	\$479,417,000	\$482,726,000	\$39,499,000	\$36,137,000	\$23,267,000	\$2,247,000
<b>Total Direct Wages</b>	<b>\$9,448,000</b>	<b>\$837,935,000</b>	<b>\$847,383,000</b>	<b>\$118,549,000</b>	<b>\$101,377,000</b>	<b>\$124,086,000</b>	<b>\$13,182,000</b>
Sales from On-Airport Aviation Related Activity	\$15,573,000	\$3,311,634,000	\$3,327,207,000	\$226,268,000	\$200,330,000	\$353,724,000	\$31,679,000
Off-airport Sales from Visitor Spending	\$9,854,000	\$1,660,373,000	\$1,670,227,000	\$128,890,000	\$112,939,000	\$74,066,000	\$7,224,000
<b>Total Direct Business Sales</b>	<b>\$25,427,000</b>	<b>\$4,972,007,000</b>	<b>\$4,997,434,000</b>	<b>\$355,158,000</b>	<b>\$313,269,000</b>	<b>\$427,790,000</b>	<b>\$38,903,000</b>
<b>Regional Reliant and Dependent Businesses</b>							
Direct Jobs			18,713	8,061	3,206	1,320	1,129
Direct Wages			\$1,074,226,000	\$368,349,000	\$136,203,000	\$51,683,000	\$32,291,000
Direct Business Sales			\$4,899,120,000	\$2,142,913,000	\$927,556,000	\$259,644,000	\$234,597,000
<b>Total Direct Aviation Contribution to Regional Economies</b>							
Total Direct Jobs			58,270	13,222	7,388	5,420	1,609
Total Direct Wages			\$1,921,609,000	\$486,898,000	\$237,580,000	\$175,769,000	\$45,473,000
Total Direct Business Sales			\$9,896,553,000	\$2,498,071,000	\$1,240,825,000	\$687,434,000	\$273,500,000

Source: Airport and Tenant Surveys. EDR Group and Mead &amp; Hunt Analyses. IMPLAN econometric package.

Notes: Totals do not include spin-off effects. Under the alternative Coos County Scenario, the direct off-airport visitor spending in Southwest Oregon is \$129.4 million, which generates 2,800 jobs and \$41.4 million in wages. In addition, direct aviation-related impacts generated by Oregon airports in the Southwest region sum to 7,800 jobs, \$243 million in wages, and \$1.3 billion in business sales. \*Data for Port of Portland airports were provided by the Port.

Total impacts of aviation on regional economies, including regional spin-off effects, are shown below in **Table 8.39**. Overall, aviation generates more than \$14.5 billion in business sales in the Portland/Metro region, which includes over \$5 billion from the Port of Portland Airports (PDX by itself generated over \$5 billion, according to the Port of Portland study) and \$9 billion due attributable to aviation dependent industries in the region. Aviation related business sales support more than 114,000 jobs that pay more than \$4.2 billion in wages. Aviation also

contributes more than 30,000 jobs in the Willamette Valley & Coast region, and an additional 30,000 jobs in aggregate in the Southwest, Central and Eastern Oregon regions.

**Table 8.39 Total Impacts of Aviation to Regional Economies in Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Region	Region 1		Total Portland/ Metro	Region 2	Region 3	Region 4	Region 5
	Portland/ Metro - ODA Airports	Portland/ Metro- Port of Portland Airports*		Willamette Valley & Coast	Southwest OR	Central OR	Eastern OR
<b>Total Aviation Related Economic Activity Generated by Airports in Region</b>							
Total Jobs On-Airport (Aviation Related)	323	20,005	20,328	5,961	3,964	6,393	651
Total Jobs from Visitor Spending	266	39,418	39,684	3,974	3,493	2,158	218
Total Jobs	589	59,423	60,012	9,935	7,457	8,550	869
Total Wages from On- Airport Activity	\$13,428,000	\$941,244,000	\$954,573,000	\$155,495,000	\$129,945,000	\$206,035,000	\$21,069,000
Off-Airport Total Wages from Visitor Spending	\$5,929,000	\$907,718,000	\$913,647,000	\$72,357,000	\$61,881,000	\$40,651,000	\$3,599,000
Total Wages	\$19,357,000	\$1,848,962,000	\$1,868,220,000	\$227,852,000	\$191,826,000	\$246,686,000	\$24,668,000
Total Sales On-Airport Aviation Related Activity	\$32,066,000	\$3,533,456,000	\$3,565,522,000	\$404,325,000	\$353,470,000	\$689,320,000	\$49,461,000
Off-airport Total Sales from Visitor Spending	\$18,069,000	\$1,740,344,000	\$1,758,413,000	\$233,925,000	\$194,767,000	\$131,368,000	\$11,352,000
Total Sales	\$50,135,000	\$5,273,800,000	\$5,323,935,000	\$638,250,000	\$548,237,000	\$820,688,000	\$60,813,000
<b>Total Regional Reliant and Dependent Businesses</b>							
Jobs			54,083	22,570	9,465	3,195	2,332
Wages			\$2,388,827,000	\$793,602,000	\$307,533,000	\$103,965,000	\$62,307,000
Business Sales			\$9,208,080,000	\$3,611,079,000	\$1,547,955,000	\$440,462,000	\$340,076,000
<b>Total Aviation Contribution to Regional Economies</b>							
Total Jobs			114,094	32,505	16,922	11,745	3,200
Total Wages			\$4,257,047,000	\$1,021,454,000	\$499,359,000	\$350,650,000	\$86,974,000
Total Business Sales			\$14,532,015,000	\$4,249,329,000	\$2,096,192,000	\$1,261,147,000	\$400,886,000

Source: Airport and Tenant Surveys. EDR Group and Mead & Hunt Analyses. IMPLAN econometric package.

By the Coos County Scenario: total aviation related impacts generated by Oregon airports in the Southwest region are 17,448 jobs and \$508.5 million in wages.

\*Data for Port of Portland airports were provided by the Port.

**Table 8.40** lists the leading aviation-dependent sectors of regional economies in order of direct business sales. The table also shows corresponding jobs and wages generated by these sectors. The Portland/Metro and Willamette Valley & Coast regions each host four industrial sectors that rely on aviation services for more than \$100 million of business sales. Aviation contributes to sales of over \$100 million in two sectors in Southwest Oregon and one in Eastern Oregon.

**Table 8.40 Leading Aviation Dependent Sectors of Regional Economies in Oregon**

<i>Region</i>	<i>Sector</i>	<i># of Jobs</i>	<i>Wages (\$Thousands)</i>	<i>Business Sales (\$Thousands)</i>
Portland/Metro	Aircraft	1,178	\$95,606	\$327,689
Portland/Metro	Electric Machinery	3,463	\$222,601	\$1,287,817
Portland/Metro	Industrial Machinery	6,244	\$375,279	\$1,655,048
Portland/Metro	Optical Instruments	2,994	\$188,736	\$730,116
Willamette Valley & Coast	Chemicals	1,084	\$85,781	\$653,077
Willamette Valley & Coast	Electric Machinery	551	\$28,662	\$151,641
Willamette Valley & Coast	Industrial Machinery	3,267	\$144,985	\$749,579
Willamette Valley & Coast	Optical Instruments	457	\$29,424	\$136,278
Southwest OR	Chemicals	152	\$11,361	\$123,307
Southwest OR	Optical Instruments	1,764	\$86,703	\$614,497
Eastern OR	Industrial Machinery	499	\$16,230	\$147,888

Source: Off-airport dependent impacts were calculated by EDR Group using data from the United States Census Bureau, Foreign Trade Division prepared by WISERTrade; <http://www.flypdx.com/>, BTS, and Air Carrier Statistics Database. 2002 US absorption table for air transportation, United States Department of Commerce Bureau of Economic Analysis (updated to 2004 and packaged by IMPLAN), and IMPLAN econometric package. Excludes airports administered by the Port of Portland.

#### 8.4.b State Impacts

Airports and utilization of aviation services by Oregon businesses for shipping cargo and conducting air travel contributes a total of \$19 billion to the state economy. This business activity supports 137,000 jobs and \$4.9 billion in wages, averaging more than \$35,000 per job. The overall contribution of airports and aviation to the state's economy is shown in **Table 8.41**. For ODA airports, approximately six percent (6%) to eight percent (8%) of the state economy can be attributed to aviation or airports, depending on the measure used, as shown in **Figure 8.4**.

**Table 8.41 Total Contribution of Aviation to the Oregon Economy  
(Dollars are rounded to the thousand to avoid implications of "false precision")**

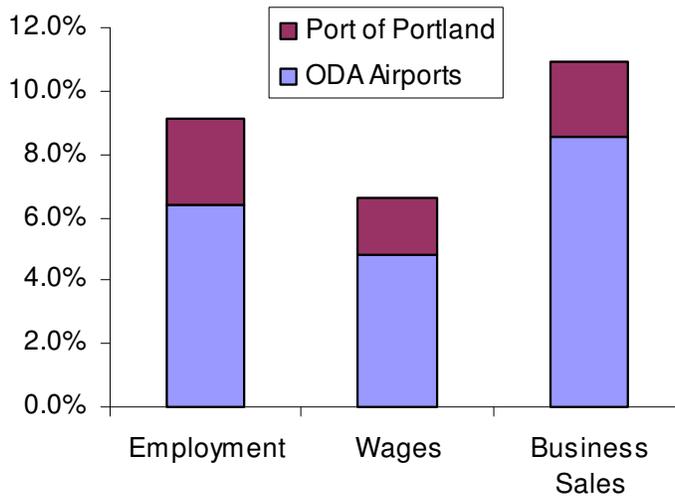
<i>Impacts</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
<b>Direct Impact of On-Airport Activities and Visitor Spending</b>			
On-Airport including FBO and Air Related			
Tenants	7,273	\$262,147,000	\$827,475,000
Off-Airport Visitor Spending	6,762	\$101,641,000	\$324,097,000
<i>Subtotal of Direct Effects</i>	14,035	\$363,788,000	\$1,151,572,000
<b>Spin-Off Effects: Supplier and Income Re-Spending</b>			
Due to On-Airport Aviation	12,029	\$305,851,000	\$883,988,000
Due to Visitor Spending	3,558	\$94,459,000	\$310,756,000
<i>Subtotal of Spin-off Effects</i>	15,587	\$400,310,000	\$1,194,744,000
<b>Total Airport Aviation Related Impacts</b>	29,621	\$764,098,000	\$2,346,316,000
<b>Total Airport Generated Impacts - Not Aviation</b>			
On Airport Non-Aviation Activities	2,177	\$67,294,000	\$320,530,000
Spin-Offs due to Non-Aviation Activities	3,374	\$96,239,000	\$332,084,000

**Table 8.41 Total Contribution of Aviation to the Oregon Economy**  
 (Dollars are rounded to the thousand to avoid implications of “false precision”)

<b>Total Airport Non-Aviation Impacts</b>	5,551	\$163,533,000	\$652,614,000
<b>Total Aviation and Non-Aviation Related</b>	35,172	\$927,631,000	\$2,998,930,000
<b>Regional Off-Airport Aviation Dependent Business</b>			
Direct Business Activity	32,429	\$1,662,752,000	\$8,463,830,000
Spin-Offs due to Dependent Activity	70,016	\$2,315,741,000	\$7,634,489,000
<i>Total Off-Airport Aviation Dependent Activity</i>	102,445	\$3,978,493,000	\$16,098,319,000
<b>Total Airport and Aviation Activity</b>	137,617	\$4,906,124,000	\$19,097,249,000
<b>*Port of Portland Totals</b>			
Airport Generated	20,005	\$941,244,000	\$3,533,456,000
Visitor Generated	39,418	\$907,718,000	\$1,740,344,000
Total Impact Port of Portland Airports	59,423	\$1,848,862,000	\$5,273,800,000
<b>Total Amount</b>	197,040	\$6,754,986,000	\$24,371,049,000

Sources: Airport and Tenant Surveys. EDR Group and Mead & Hunt Analyses. IMPLAN econometric package.  
 Notes: Regional Off-airport Aviation Dependent Business Activities account for business activity in the region that rely on aviation for business travel and cargo, and do not reflect a specific airport. Analysis of Regional Off-Airport Aviation Dependent Business includes the Port of Portland, but analysis of airports does not include airports administered by the Port. Total Airport Related Aviation Impacts are 35,251 jobs, \$924.6 million in wages, and \$2.99 billion in business sales. Total Airport and Aviation activity consists of 137,700 jobs, \$4.90 billion in wages, and \$19.08 billion in business sales. These changes are due to the additional visitor spending assumed at Bandon State and Southwest Oregon Regional airports.

**Figure 8.4 Percent of the State Economy Attributed to Aviation or Airports**



Source: Airport and Tenant surveys, EDR Group and Mead & Hunt analyses. IMPLAN econometric package.

### *Economic Contributions of Airports to the Oregon State Economy*

Viewed from a statewide perspective, and excluding the Port of Portland, airports account for nearly \$3 billion of business sales. These activities support almost 35,000 jobs that pay more than \$900 million in wages. The combined aviation missions of airports in Oregon generate more than 29,000 jobs and non-aviation uses of airports are responsible for more than 5,000 additional jobs, as shown in **Table 8.42**.

Each worker in a job generated by airports in the state earns about \$26,000 based on \$85,000 in business sales. However, airport-related jobs range from engineers in aviation instrumentation to part-time employment in service-related industries. **Figure 8.5** illustrates airport-generated wages and business sales per worker. In comparison to the general averages noted above, the figure shows direct and spin-off effects of sales and wages per job in three classifications:

- On-airport aviation activity.
- On-airport businesses not related to aviation.
- Visitor spending.

#### **8.42 Economic Contributions of Airports to the Oregon State Economy (Dollars are rounded to the thousand to avoid implications of “false precision”)**

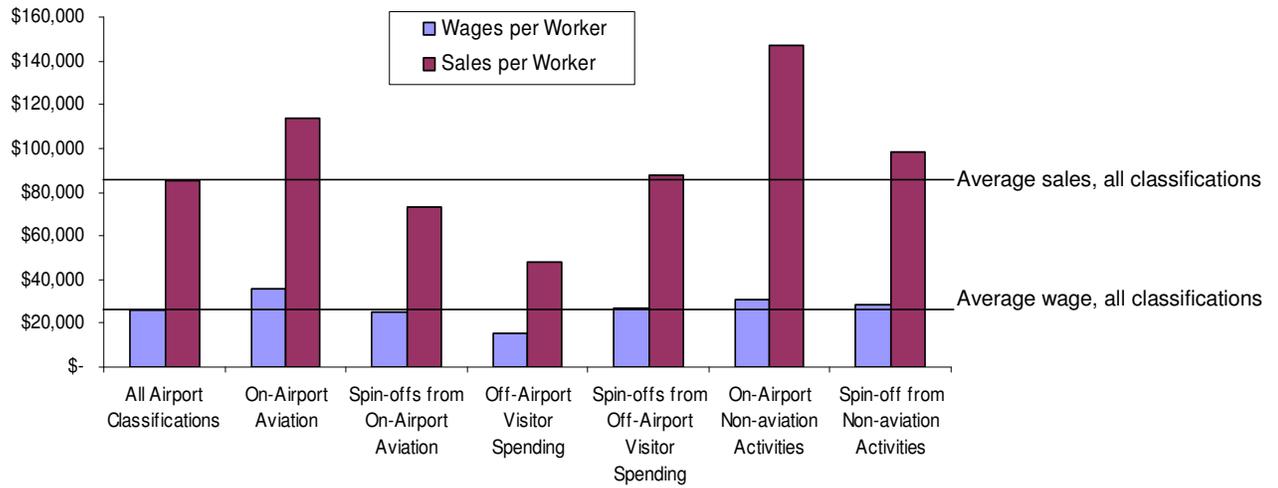
	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
<b>Direct Impact of On-Airport Activities and Visitor Spending</b>			
On-Airport: FBO and Air Related Tenants	7,273	\$262,147,000	\$827,475,000
Off-Airport Visitor Spending	6,762	\$101,641,000	\$324,097,000
<i>Total Direct</i>	14,035	\$363,788,000	\$1,151,572,000
<b>Spin-Off Effects: Supplier and Subsequent Consumer Spending</b>			
Due to On-Airport Aviation	12,029	\$305,851,000	\$883,988,000
Due to Visitor Spending	3,558	\$94,459,000	\$310,756,000
<i>Total Spin-Off</i>	15,587	\$400,310,000	\$1,194,744,000
<b>Total Airport Aviation Related Impacts</b>	29,621	\$764,098,000	\$2,346,316,000
<b>Total Airport Generated Impacts - Not Aviation</b>			
On Airport Non-Aviation Activities	2,177	\$67,294,000	\$320,530,000
Spin-Offs due to Non-Aviation Activities	3,374	\$96,239,000	\$332,084,000
<i>Total Airport Non-Aviation Impacts</i>	5,551	\$163,533,000	\$652,614,000
<b>Total Aviation and Non-Aviation Related Impacts</b>	35,172	\$927,631,000	\$2,998,930,000
<b>*Port of Portland Totals</b>			
<i>Total Amount</i>	59,423	\$1,848,862,000	\$5,273,800,000
<b>Total Amount</b>	94,595	\$2,776,493,000	\$8,272,630,000

Sources: Airport and Tenant Surveys. EDR Group and Mead & Hunt Analyses. IMPLAN econometric package. Notes: The direct impacts on the state economy by out of state air travelers are 7,086 jobs, \$106.2 million in wages,

and \$338.3 million in business sales. These increases over the base-case scenario lead to a total contribution of airports to the Oregon economy to 35,252 jobs, \$924.6 million in wages, and \$2.99 billion in business sales.

\*Port of Portland studies provided by Port.

**Figure 8.5 Airport Generated Wages and Business Sales per Worker – ODA Airports**



Sources: Airport and Tenant Surveys, EDR Group and Mead & Hunt analyses, and IMPLAN econometric package.  
 Note: Excludes airports administered by the Port of Portland.

**Table 8.43** shows the total Oregon-wide impacts for each airport, consisting of on-airport employment, both aviation and non-aviation related, and visitor spending by air travelers arriving from out of state. Led by Bend Municipal Airport, nine of the 90 airports surveyed generate more than 1,000 jobs on- and off-airport, and an additional two airports generate between 900 and 999 jobs. Together, these 11 airports account for more than 29,000 jobs, or 85 percent (85%) of the 35,000 jobs generated by Oregon’s airports, outside of the Port of Portland administered airports.

**Table 8.43 Total Economic Impacts of each Airport in the State of Oregon**

(Dollars are rounded to the thousand to avoid implications of “false precision”)

<i>Airport Name</i>	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
Albany Municipal	51	\$885,000	\$2,983,000
Alkali Lake State	0	\$1,000	\$4,000
Arlington Municipal	0	\$6,000	\$18,000
Ashland Municipal	484	\$11,548,000	\$41,899,000
Astoria Regional	657	\$19,505,000	\$46,968,000
Aurora State	2,469	\$59,326,000	\$147,863,000
Baker City Municipal	48	\$1,235,000	\$3,481,000
Bandon State	10	\$181,000	\$596,000
Beaver Marsh	0	\$3,000	\$9,000
Bend Municipal	5,315	\$155,830,000	\$629,008,000
Boardman	3	\$78,000	\$212,000
Brookings	8	\$121,000	\$393,000
Burns Municipal	16	\$373,000	\$1,012,000
Cape Blanco State	1	\$10,000	\$35,000
Cascade Locks State	1	\$29,000	\$92,000
Chehalem Airpark	259	\$5,015,000	\$11,775,000

**Table 8.43 Total Economic Impacts of each Airport in the State of Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Chiloquin State	3	\$51,000	\$165,000
Christmas Valley	3	\$79,000	\$215,000
Columbia Gorge Regional/Dalles	38	\$829,000	\$2,400,000
Condon State – Pauling Field	4	\$84,000	\$273,000
Corvallis Municipal	994	\$30,332,000	\$111,083,000
Cottage Grove State	48	\$890,000	\$2,905,000
Country Squire Airpark	5	\$145,000	\$345,000
Crescent Lake State	0	\$6,000	\$18,000
Creswell - Hobby Field	105	\$1,506,000	\$5,159,000
Davis	1	\$43,000	\$99,000
Eastern Oregon Regional	649	\$18,847,000	\$45,057,000
Enterprise Municipal	10	\$211,000	\$610,000
Florence Municipal	169	\$4,863,000	\$19,499,000
George Felt	2	\$59,000	\$152,000
Gold Beach Municipal	12	\$277,000	\$780,000
Grant County Regional/Ogilvie Field	92	\$1,997,000	\$6,381,000
Grants Pass	926	\$25,585,000	\$71,750,000
Hermiston Municipal	227	\$6,269,000	\$17,665,000
Illinois Valley	11	\$238,000	\$612,000
Independence State	87	\$1,825,000	\$5,452,000
Joseph State	6	\$110,000	\$364,000
Ken Jernstedt Airfield	49	\$713,000	\$1,878,000
Klamath Falls	1,487	\$41,399,000	\$85,950,000
La Grande/Union County	58	\$907,000	\$3,301,000
Lake Billy Chinook	2	\$44,000	\$102,000
Lake County	12	\$321,000	\$836,000
Lakeside Municipal	2	\$56,000	\$140,000
Lebanon State	19	\$352,000	\$1,150,000
Lenhardt Airpark	50	\$1,444,000	\$3,353,000
Lexington	2	\$28,000	\$96,000
Madras City-County	18	\$509,000	\$1,236,000
Mahlon Sweet Field	4,176	\$92,493,000	\$267,078,000
Malin	2	\$50,000	\$119,000
McDermitt State	1	\$23,000	\$77,000
McKenzie Bridge State	0	\$0	\$0
McMinnville Municipal	245	\$5,710,000	\$9,559,000
McNary Field	2,643	\$77,922,000	\$296,775,000
Miller Memorial Airpark	3	\$87,000	\$197,000
Monument Municipal	1	\$43,000	\$99,000
Mulino Airport	69	1,584,000	4,790,000
Myrtle Creek Municipal	11	\$261,000	\$713,000
Nehalem Bay State	1	\$27,000	\$90,000
Newport Municipal	751	\$19,408,000	\$65,631,000
Oakridge State	1	\$15,000	\$49,000
Ontario Municipal	22	\$367,000	\$1,169,000

**Table 8.43 Total Economic Impacts of each Airport in the State of Oregon**

(Dollars are rounded to the thousand to avoid implications of "false precision")

Owyhee Reservoir State	0	\$0	\$0
Pacific City State	5	\$82,000	\$275,000
Paisley	2	\$46,000	\$107,000
Pinehurst State	0	\$6,000	\$19,000
Portland Downtown Heliport	28	\$663,000	\$1,949,000
Powers Hayes Field	1	\$43,000	\$99,000
Prineville	34	\$1,018,000	\$2,660,000
Prospect State	1	\$16,000	\$54,000
Redmond Municipal - Roberts Field	2,438	\$53,958,000	\$166,592,000
Rogue Valley International	4,576	\$103,415,000	\$289,505,000
Rome State	0	\$0	\$0
Roseburg Regional	112	\$2,623,000	\$8,533,000
Sandy River	5	\$148,000	\$357,000
Santiam Junction State	0	\$0	\$0
Scappoose Industrial	563	\$24,815,000	\$79,969,000
Seaside Municipal	9	\$222,000	\$597,000
Siletz Bay State	6	\$106,000	\$355,000
Sisters Eagle Air	6	\$159,000	\$430,000
Skyport	1	\$43,000	\$99,000
Southwest Oregon Regional	3,014	\$90,816,000	\$313,240,000
Sportsman Airpark	73	\$1,895,000	\$5,955,000
Starks Twin Oaks	155	\$3,270,000	\$8,563,000
Sunriver	82	\$1,808,000	\$5,462,000
Tillamook	1,353	\$40,330,000	\$157,730,000
Toketee State	0	\$0	\$0
Toledo State	1	\$14,000	\$45,000
Valley View	3	\$66,000	\$173,000
Vernonia Airfield	3	\$68,000	\$180,000
Wakonda Beach State	2	\$44,000	\$145,000
Wasco State	1	\$18,000	\$57,000
<b>Totals</b>	<b>35,172</b>	<b>\$927,631,000</b>	<b>\$2,998,930,000</b>

Source: Airport and Tenant Surveys, EDR Group and Mead &amp; Hunt analyses, and IMPLAN econometric package.

Notes: Totals include spin-off impacts and may not add up due to rounding. The total regional contribution of Bandon State Airport is 64 jobs, \$1,132,000 in wages, and \$3,618,000 in business sales. The total contribution for Southwest Oregon Regional Airport is 3,519 jobs, \$99,918,000 in wages, and \$341,887,000 in business sales. Excludes airports administered by the Port of Portland.

*Economic Contributions of Aviation to the Oregon State Economy*

In total, aviation at ODA airports contributes over 130,000 jobs to the state, paying an aggregate of \$4.7 billion in wages and accounting for \$18.4 billion in total business activity. Jobs include 29,000 generated by airports and more than 100,000 due to the need of businesses in Oregon to use aviation for business travel or cargo shipments, as shown in **Table 8.44**.

**Table 8.44 Economic Contributions of Aviation Services to the Oregon State Economy**

(Dollars are rounded to the thousand to avoid implications of "false precision")

	<i># of Jobs</i>	<i>Wages</i>	<i>Business Sales</i>
<b>Direct Impact of On-Airport Activities and Visitor Spending</b>			
On-Airport: FBO and Air Related Tenants	7,273	\$262,147,000	\$827,475,000
Off-Airport Visitor Spending	6,762	\$101,641,000	\$324,097,000
<i>Total Direct</i>	14,035	\$363,788,000	\$1,151,572,000
<b>Spin-Off Effects: Supplier and Income Re- Spending</b>			
Due to On-Airport Aviation	12,029	\$305,851,000	\$883,988,000
Due to Visitor Spending	3,558	\$94,459,000	\$310,756,000
<i>Total Spin-Off</i>	15,587	\$400,310,000	\$1,194,744,000
<b>Total Airport Aviation Related Impacts</b>	29,621	\$764,098,000	\$2,346,316,000
<b>Regional Off-Airport Aviation Dependent Business</b>			
Direct Business Activity	32,429	\$1,662,752,000	\$8,463,830,000
Spin-Offs due to Dependent Activities	70,016	\$2,315,741,000	\$7,634,489,000
<i>Total Off-Airport Aviation Dependent Activity</i>	102,445	\$3,978,493,000	\$16,098,319,000
<b>Total On-Airport and Off-Airport Aviation Activity</b>	132,066	\$4,742,591,000	\$18,444,635,000
<b>*Port of Portland Totals</b>	59,425	\$1,848,862,000	\$5,273,800,000
<b>Total Amount</b>	191,491	\$6,591,453,000	\$23,718,435,000

Sources: Airport and Tenant Surveys. EDR Group and Mead &amp; Hunt Analyses. IMPLAN econometric package.

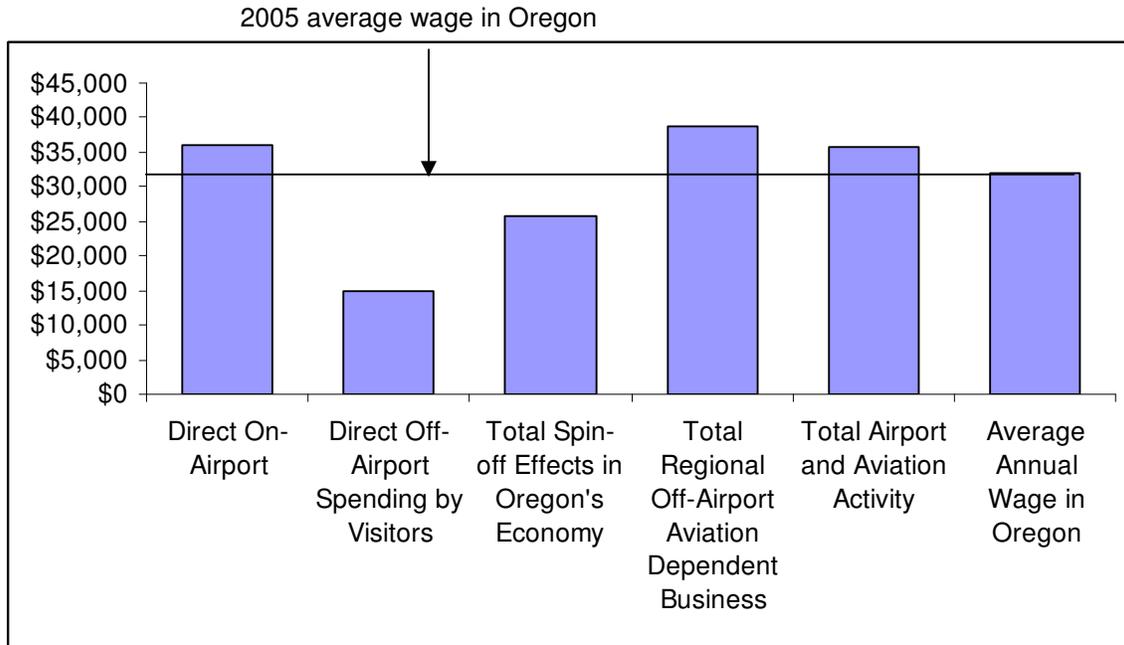
Notes: Regional Off-airport Aviation Dependent Business Activities account for business activity in the region that rely on aviation for business travel and cargo, and do not reflect a specific airport. The contribution of aviation to Oregon's economy is the sum of airport based aviation activities, off-airport spending by air travelers, and the reliance and dependence of non-aviation businesses Oregon for air travel and air cargo shipments. The direct impacts on the state economy by out of state air travelers are 7,086 jobs, \$106.2 million in wages, and \$338.3 million in business sales. These increases over the base-case scenario lead to a total contribution of airports to the Oregon economy to 132,335 jobs, \$4.754 billion in wages, and \$18.450 billion in business sales.

\*Port of Portland studies provided by Port.

### 8.4.c Wages in the Context of the Oregon Economy

Wages earned from airport and aviation activities related to off-airport activities in Oregon compare favorably to wages throughout the state economy. The average wage earned by all workers in Oregon is just under \$33,000 and is \$36,000 for all airport and aviation related activities. **Figure 8.6** shows the dispersion of wages per worker by classification. Wages earned from direct jobs on-airport were \$36,000 and off-airport aviation dependent businesses were \$39,000, which exceed the state average. The off-airport aviation dependent business jobs are those that engage in business travel and in producing goods that are exported from Oregon to domestic and international locations, which are generally the most successful enterprises in the state. Workers in jobs related to direct spending by air travelers earn \$15,000, which is less than half the state average wage. This sector includes many jobs that are part-time and that are in lower paying retail and services industries. Jobs supported by spin-off economic activities include business orders to Oregon-based suppliers as a consequence of direct sales and subsequent consumer spending of wages inside of the state which are spread throughout the state economy. These average spin-off wages are \$26,000, therefore they are lower than the state average.

**Figure 8.6 Average Wages Paid On-Airport and by Aviation Dependent Businesses**



Source: Airport and tenant surveys, EDR Group and Mead & Hunt analyses. Off-airport dependent impacts were calculated by EDR Group using data from the United States Census Bureau, Foreign Trade Division prepared by WISERTrade; <http://www.flypdx.com/>, BTS, and Air Carrier Statistics Database. 2002 United States absorption table for air transportation, United States Department of Commerce Bureau of Economic Analysis (updated to 2004 and packaged by IMPLAN) and IMPLAN econometric package.  
 Note: Excludes airports administered by the Port of Portland.

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