

The Economic Contributions of Acute Care Hospitals in Oregon in 2010

FINAL REPORT

 **Oregon Association
of Hospitals and Health Systems**

ECONorthwest

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Introduction and Key Findings

The Oregon Association of Hospitals and Health Systems (“OAHHS”) is a nonprofit trade association that promotes community health and seeks to improve Oregon's health care industry. OAHHS works on behalf of the 62 acute care and specialty hospitals in Oregon who provide inpatient and outpatient medical care 24 hours a day, 365 days a year.

OAHHS commissioned ECONorthwest¹ to measure the *economic contributions* of Oregon's acute care hospitals on the state's economy.² Economic contributions describe the economic linkages between a project, program, or activity—in this case, acute care hospitals—and other sectors of the economy. These economic linkages are determined by the indirect (supply-chain) and induced (consumption-driven) impacts that can be traced back to acute care hospitals.

In this analysis, the economic contributions of acute care hospitals will be measured collectively, as an industry sector, and for individual counties and the state of Oregon. As such, we will refer to acute care hospitals as the “acute care sector.” We also offer measures of the economic contributions for individual acute care hospitals in the Appendix to this report. The economic contributions of the acute care sector in Oregon in 2010³ are summarized in Table ES1.

Table ES1: Economic Contributions of the Acute Care Sector in Oregon (in millions of 2010 dollars)

Type of Impact	Direct	Secondary	Total
Jobs	59,580	69,790	129,370
Gross State Product	\$4,401.6	\$4,763.0	\$9,164.7
State and Local Taxes	\$246.2	\$469.6	\$715.8

Sources: ECONorthwest using direct employment data from the American Hospital Association 2010 Annual Survey and the IMPLAN economic impact model.

The key findings from this analysis include:

- **Employment.** Collectively, acute care hospitals in Oregon directly generated 59,580 full- and part-time jobs in 2010. Through supply-chain and consumption-driven effects, this

¹ Alec Josephson, senior economist, was the primary researcher and author of this report. He received valuable research assistance from Tessa Krebs, economist.

² Although economic contributions and economic impacts can both be measured using an input-output modeling framework, the measure of economic contributions is a more limited type of analysis that does not include adjustments for baseline conditions or potential counterfactual spending scenarios. As such, economic contributions should be thought of as a subset of economic impact analysis.

³ This analysis relies on full- and part-time employment data from the American Hospital Association's Annual Survey Database for fiscal year 2010. Accordingly, all references to 2010 are for the 2010 hospital fiscal year.

direct employment is linked to another 69,790 jobs in other sectors of the Oregon economy. In total, therefore, acute care hospitals in Oregon are associated with 129,370 full- and part-time jobs in Oregon in 2010. According to the economic impact model, this represents 5.9 percent of the total covered and uncovered employment in Oregon in 2010.⁴

- **Gross State Product.** The direct and secondary economic activity linked to acute care hospitals contributed approximately \$9.2 billion to Oregon’s Gross State Product (“GSP”) in 2010. (*Gross State Product is a measure of the value added in production and, in the economic impact model, represents the sum of personal income, other income, and indirect business taxes.*)
- **State and Local Taxes.** Acute care hospitals directly generated approximately \$246.2 million in tax and fee revenues for state and local tax jurisdictions in 2010.
 - Direct taxes do not include approximately \$146.0 million in hospital provider taxes paid by acute care hospitals. These taxes were used to secure \$391.3 million in federal matching funds through the U.S. Medicaid Program.⁵ Together, these funds financed additional coverage for Oregon children and very low-income adults through the state’s Oregon Health Plan-Standard program (“OHP-s”).
 - The secondary economic activity that is linked to the acute care sector generated another \$469.6 million in state and local tax and fee revenues. In total, therefore, Oregon’s acute care sector is directly and indirectly linked to economic activity that generated approximately \$715.8 million in tax and fee revenues for state and local tax jurisdictions in 2010.

Statewide, the economic contributions of the acute care sector increased across all measures between 2009 and 2010. Table ES2 reports the total economic contributions of the acute care sector in Oregon in each year.

Table ES2: Economic Contributions of the Acute Care Sector in Oregon in 2009 and 2010 (in millions of current year dollars)

Type of Impact	2009	2010	Change	% Change
Jobs	124,981	129,370	4,389	3.5%
Gross State Product	\$8,848.4	\$9,164.7	\$316.3	3.6%
State and Local Taxes	\$698.2	\$715.8	\$17.6	2.5%

Sources: ECONorthwest using direct employment data from the American Hospital Association 2010 Annual Survey and the IMPLAN economic impact model.

⁴ Source: IMPLAN 2010 base data for Oregon. Note: Covered employment refers to jobs that are “covered” by state unemployment insurance. There are number of reasons workers would be classified as uncovered employees. In this analysis, uncovered employment generally refers to workers who are self-employed.

⁵ Hospital provider taxes are not included as a direct tax because, once they have secured Federal matching funds, those taxes are returned to hospitals in the aggregate. To the extent that hospital provider taxes and federal matching funds are used to purchase health care services from acute care hospitals, then the economic impacts associated with that spending are already included in this analysis. However, if those funds procure additional health care services from other health care providers, then those impacts are in addition to those reported in this analysis.

All of the impact measures described previously can be summarized across direct, indirect, and/or induced impact categories using mathematical formulae to measure and explain what economists refer to as the “multiplier effect.” In essence, economic multipliers are a shorthand way to better understand the linkages between an activity and other sectors of the economy, i.e., all else equal, larger economic multipliers mean greater linkages and larger contributions to the economy. The economic multipliers associated with the acute care sector in Oregon are shown in Table ES3.⁶

Table ES3: Economic Multipliers for the Acute Care Sector in Oregon

Type of Impact	Multiplier
Jobs	2.2
Gross State Product	2.1
State and Local Taxes	2.9

Sources: ECONorthwest using direct employment data from the American Hospital Association 2010 Annual Survey and the IMPLAN economic impact model.

The economic multipliers for the acute care sector in Oregon can be interpreted as follows:

- **Job multiplier of 2.2** suggests that every ten direct jobs in the acute care sector are linked, on average, to another 12 jobs elsewhere in Oregon.
- **Gross State Product multiplier of 2.1** means that every million dollars in value added (incomes, profits, and business taxes) directly generated by the acute care sector is associated with another \$1.1 million in valued added in other sectors of the Oregon economy.
- **State and local tax multiplier of 2.9** means that every million dollars in state and local taxes and fees directly generated by the acute care sector is linked to another \$1.9 million in state and local taxes and fees generated by other sectors. (This does not include hospital provider taxes or federal matching Medicaid funds.)

The modeling approach, data, and economic contributions are presented, in detail, in the next section of the report.

⁶ Table ES3 reports the Type SAM (“Social Accounting Matrix”) economic multipliers for the acute care sector in Oregon. Type SAM multipliers include both the indirect and induced economic effects and are calculated as: (direct + indirect + induced) / direct.

Modeling Approach

To measure the economic contributions of acute care hospitals, ECONorthwest used an input-output modeling framework, the IMPLAN economic impact modeling software, and employment data from the American Hospital Association's 2010 Annual Survey Database.

Input-output models provide a reasonably comprehensive picture of the economic activities within a region using mathematical equations that describe the flow of commodities between producing and consuming sectors, the flow of income between businesses and institutions, and the trade in commodities between regions. They offer several characteristics that make them well suited for measuring economic contributions, including:

- A double-entry accounting framework that results in a model structure that is well-ordered, symmetric, and where, by definition, inputs must be equal to outputs; and
- Reliance on secondary source data gathered and vetted by government agencies that makes it possible to cost-effectively create input-output models for any region.

These input-output modeling techniques and data have been packaged into the IMPLAN (for Impact Analysis for PLANning) modeling software.⁷ This is the modeling software ECONorthwest used in this analysis. In general terms, the IMPLAN model works by tracing how spending associated with Oregon's acute care hospitals circulates through the economy, via supply- and demand-chain linkages, altering the equilibrium quantities of inputs and outputs and associated jobs, income, and taxes. These "multiplier effects" continue until the initial change in final demand leaks out of the economy in the form of savings, taxes, and imports.

For this analysis, ECONorthwest used IMPLAN's multi-regional, input-output ("MRIO") functionality to link individual county models to the rest of the state. This approach facilitated the measurement of "spillover effects" (also called leakages or, more precisely, domestic imports) that spill out of one county and are captured elsewhere in Oregon. For example, purchases of medical equipment or pharmaceuticals by acute care hospitals in Lane County may accrue to businesses in Multnomah County, or *vice versa*. Although the IMPLAN model can measure spillover effect between specific counties, the sheer number of counties in Oregon would make that effort quite costly. Consequently, spillover effects were not allocated to specific counties and, as a result, county level impacts will be understated.

The primary inputs into these models were full- and part-time employment data⁸ for acute care hospitals in Oregon, as reported in the American Hospital Association's Annual Survey Database

⁷ *IMPLAN has been distributed by the Minnesota IMPLAN Group since 1993. Currently there are over 1,500 public and private users of the IMPLAN modeling software. This modeling system is widely used and well respected. The United States Department of Agriculture (USDA) recognized the IMPLAN modeling framework as "one of the most credible regional impact models used for regional economic impact analysis" and, following a review by experts from seven USDA agencies, selected IMPLAN as its analysis framework for monitoring job creation associated with the American Recovery and Reinvestment Act (ARRA) of 2009. See excerpts from an April 9, 2009 letter to MIG, Inc., from John Kort, Acting Administrator of the USDA Economic Research Service, on behalf of Secretary Vilsack, at www.implan.com.*

⁸ *According to conversations with OAHHS staff, acute care hospitals are classified under the three-digit North American Industry Classification System ("NAICS") code #622:Hospitals. In most instances, this sector maps directly to IMPLAN sector #397:Hospitals. For 7 of the 32 counties in which acute care hospitals exist, this sector*

(“AHA Survey Database”) for the 2010 fiscal year.⁹ The AHA Survey Database is compiled from surveys of 6,500 hospitals throughout the United States and, with more than 800 data fields, provides comprehensive information for hospitals and the communities in which they operate.

Results

This section presents the economic contributions of acute care hospitals. As discussed previously, the economic contributions of acute care hospitals will be measured collectively, as an industry sector, for individual counties and the state of Oregon. As such, we will refer to acute care hospitals as the “acute care sector.” We also offer measures of the economic contributions for individual acute care hospitals in the Appendix to this report.

There are various measures of economic impacts. This report provides measures for the following:

- **Jobs** represent full- and part-time jobs.
- **Gross State Product (“GSP”)** measures the value added in production. It includes personal income, other income, and indirect business taxes.
- **State and local taxes and fees** include indirect business taxes; business and personal property taxes; personal income taxes; social insurance (employer and employee contributions) taxes; and various other taxes, fines, licenses, and fees paid by businesses and households. State and local taxes do not include hospital provider taxes.

Economic impact analysis employs specific terminology to identify the three different types of economic impacts. **Direct impacts** consist of the employment, value added, and state and local taxes and fees paid by acute care hospitals. The spending and activities at acute care hospitals will generate additional or secondary impacts in other sectors of the economy. These **secondary impacts** consist of supply-chain (indirect impacts) and consumption-driven (induced impacts) effects.

The economic contributions of the acute care sector are reported for individual counties and the state of Oregon in Table 1.

did not exist in the IMPLAN model. As a result, for these 7 counties, the employment data was mapped to IMPLAN sector #394: Offices of physicians, dentists, and other health practitioners. Subsequent comparisons of employment data from the AHA Survey Database, IMPLAN, and the Oregon Employment Department validated this approach.

⁹ For more information, see <http://www.ahadata.com/ahadata/html/AHASurvey.html>.

Table 1: Economic Contributions of the Acute Care Sector, by County (in millions of 2010 dollars)

County	Jobs				Gross State Product				State & Local Taxes		
	Direct	Secondary	Total	% of County	Direct	Secondary	Total	% of County	Direct	Secondary	Total
Baker	258	175	433	5.1%	\$17.9	\$9.8	\$27.8	6.2%	\$1.0	\$1.1	\$2.1
Benton	1,875	1,425	3,300	6.0%	\$165.2	\$88.0	\$253.2	7.5%	\$8.6	\$10.6	\$19.3
Clackamas	3,809	3,542	7,351	3.5%	\$314.6	\$231.4	\$546.0	3.6%	\$16.1	\$28.5	\$44.6
Clatsop	849	807	1,656	7.0%	\$64.5	\$41.2	\$105.7	7.4%	\$2.6	\$5.4	\$7.9
Coos	1,387	929	2,316	7.6%	\$87.8	\$51.4	\$139.3	8.0%	\$5.4	\$5.5	\$10.9
Crook	170	105	275	3.0%	\$11.3	\$6.0	\$17.3	3.2%	\$0.9	\$0.7	\$1.6
Curry	204	92	296	2.8%	\$7.2	\$4.5	\$11.6	2.2%	\$0.5	\$0.5	\$1.0
Deschutes	2,946	2,975	5,921	6.6%	\$198.4	\$195.8	\$394.2	6.9%	\$12.0	\$19.7	\$31.7
Douglas	1,084	878	1,962	4.1%	\$81.3	\$51.5	\$132.8	4.8%	\$5.0	\$5.5	\$10.4
Grant	207	77	284	7.5%	\$6.1	\$3.9	\$10.0	5.6%	\$0.5	\$0.4	\$0.9
Harney	141	49	190	4.6%	\$5.4	\$2.3	\$7.6	3.8%	\$0.4	\$0.2	\$0.6
HoodRiver	485	340	825	5.3%	\$34.6	\$19.9	\$54.6	6.4%	\$2.0	\$2.1	\$4.1
Jackson	3,612	3,648	7,260	6.5%	\$254.2	\$235.1	\$489.3	7.0%	\$14.9	\$24.8	\$39.7
Jefferson	250	75	325	3.9%	\$10.4	\$4.0	\$14.4	3.0%	\$0.8	\$0.5	\$1.3
Josephine	905	733	1,638	4.5%	\$62.5	\$43.3	\$105.8	5.2%	\$3.7	\$4.6	\$8.3
Klamath	1,055	865	1,920	6.0%	\$75.8	\$51.1	\$126.9	7.0%	\$4.6	\$5.7	\$10.3
Lake	143	50	193	5.1%	\$8.2	\$2.5	\$10.7	5.1%	\$0.5	\$0.3	\$0.8
Lane	5,685	5,571	11,256	6.0%	\$398.2	\$341.0	\$739.2	6.4%	\$25.1	\$34.4	\$59.5
Lincoln	865	779	1,644	6.5%	\$68.3	\$45.7	\$114.0	7.8%	\$3.9	\$4.7	\$8.7
Linn	1,318	883	2,201	4.3%	\$97.9	\$48.5	\$146.4	4.4%	\$6.1	\$5.1	\$11.2
Malheur	441	185	626	3.5%	\$24.7	\$9.3	\$34.0	3.7%	\$1.4	\$0.9	\$2.3
Marion	5,811	5,404	11,215	6.4%	\$478.0	\$353.5	\$831.5	7.5%	\$29.2	\$36.6	\$65.8
Morrow	62	14	76	1.2%	\$2.6	\$0.8	\$3.4	0.7%	\$0.2	\$0.1	\$0.2
Multnomah	21,276	20,425	41,701	7.5%	\$1,587.6	\$1,554.9	\$3,142.6	7.2%	\$79.8	\$129.8	\$209.6
Polk	124	78	202	0.8%	\$14.9	\$4.5	\$19.4	1.4%	\$0.9	\$0.5	\$1.4
Tillamook	289	217	506	3.8%	\$23.2	\$11.9	\$35.1	4.8%	\$1.3	\$1.3	\$2.6
Umatilla	1,019	662	1,681	4.1%	\$69.5	\$37.9	\$107.4	4.4%	\$4.3	\$4.2	\$8.5
Union	505	328	833	5.5%	\$33.2	\$16.9	\$50.2	6.7%	\$2.1	\$2.0	\$4.1
Wallowa	187	77	264	5.9%	\$6.4	\$4.1	\$10.5	4.7%	\$0.4	\$0.4	\$0.9
Wasco	895	528	1,423	10.2%	\$61.7	\$27.8	\$89.5	12.6%	\$3.7	\$2.8	\$6.6
Washington	713	585	1,298	0.5%	\$52.3	\$44.1	\$96.4	0.3%	\$3.3	\$4.3	\$7.6
Yamhill	1,010	566	1,576	3.7%	\$77.6	\$34.7	\$112.3	4.2%	\$4.9	\$3.9	\$8.8
Spillover	0	16,722	16,722		\$0.0	\$1,185.8	\$1,185.8		\$0.0	\$122.5	\$122.5
Total Oregon	59,580	69,790	129,370	5.9%	\$4,401.6	\$4,763.0	\$9,164.7	5.9%	\$246.2	\$469.6	\$715.8

Sources: ECONorthwest using direct employment data from the American Hospital Association 2010 Annual Survey and the IMPLAN economic impact model.

Note: Spillover effects cannot be allocated to individual counties. As such, individual county impacts likely underestimate the true economic contributions of the acute care sector.

The acute care sector directly employed 59,580 persons in fiscal year 2010. Through supply-chain and consumption-driven effects, the acute care sector is associated with another 69,790 secondary jobs in other sectors of the Oregon economy. In total, therefore, 129,370 full and part-time jobs are linked to economic activity generated by the acute care sector in 2010. This represents approximately 5.9 percent of total (covered and uncovered) employment in Oregon in 2010.

The direct and secondary economic activity linked to the acute care sector contributed approximately \$9.2 billion to Oregon's GSP in 2010. According to the economic impact model, this is approximately 5.9 percent of Oregon's total GSP in 2010.

In addition, the acute care sector directly generated approximately \$246.2 million in revenues for state and local taxing jurisdictions. This does not include \$146.0 million in hospital provider taxes paid by acute care hospitals or an estimated \$391.3 million in federal matching funds that

hospital provider taxes are expected to leverage. Secondary spending and activities that are linked to the acute care sector generated another \$469.6 million in state and local tax and fee revenues. In total, therefore, the economic activity directly and indirectly linked to the acute care sector generated a total of \$715.8 million in tax and fee revenues for state and local taxing jurisdictions in 2010.

The economic multipliers are shown for each county and the state of Oregon in Table 2.

Table 2: Economic Multipliers of the Acute Care Sector (2010)

County	Jobs	Gross State Product	State and Local Taxes
Baker	1.68	1.55	2.05
Benton	1.76	1.53	2.23
Clackamas	1.93	1.74	2.76
Clatsop	1.95	1.64	3.08
Coos	1.67	1.59	2.03
Crook	1.62	1.53	1.79
Curry	1.45	1.62	1.93
Deschutes	2.01	1.99	2.64
Douglas	1.81	1.63	2.10
Grant	1.37	1.63	1.87
Harney	1.35	1.42	1.62
Hood River	1.70	1.58	2.06
Jackson	2.01	1.92	2.66
Jefferson	1.30	1.38	1.62
Josephine	1.81	1.69	2.25
Klamath	1.82	1.67	2.23
Lake	1.35	1.30	1.57
Lane	1.98	1.86	2.37
Lincoln	1.90	1.67	2.21
Linn	1.67	1.50	1.84
Malheur	1.42	1.38	1.61
Marion	1.93	1.74	2.25
Morrow	1.23	1.31	1.41
Multnomah	1.96	1.98	2.63
Polk	1.63	1.30	1.59
Tillamook	1.75	1.51	1.96
Umatilla	1.65	1.55	1.96
Union	1.65	1.51	1.94
Wallowa	1.41	1.64	1.93
Wasco	1.59	1.45	1.76
Washington	1.82	1.84	2.29
Yamhill	1.56	1.45	1.79
Oregon	2.17	2.08	2.91

Sources: ECONorthwest using direct employment data from the American Hospital Association 2010 Annual Survey and the IMPLAN economic impact model.

The economic multipliers provide a measure of the linkages between the acute care sector and other industry sectors in Oregon, i.e., all else equal, larger economic multipliers mean larger contributions to the economy. It's important to note that the statewide multipliers include the indirect and induced spillover effects not captured in the individual county models. As such, the statewide multipliers are significantly higher than the county multipliers. In addition, for comparison purposes, ECONorthwest calculated the weighted average job multiplier for all industries in Oregon (1.85). The job multiplier for the acute care sector (2.17) exceeds the statewide multiplier by approximately 17 percent.

Table 3 reports the economic contributions of the acute care sector across Oregon’s five Congressional Districts. These estimates were generated through cross-tabulations of the county-level measures, i.e., counties were mapped to Congressional Districts and the individual county measures were summed.

Table 3: Economic Contributions of the Acute Care Sector, by Congressional District (in millions of 2010 dollars)

Congressional District	Jobs			Gross State Product			State & Local Taxes		
	Direct	Secondary	Total	Direct	Secondary	Total	Direct	Secondary	Total
First	14,851	13,745	28,596	\$1,110.6	\$1,017.4	\$2,128.1	\$56.8	\$88.4	\$145.3
Second	13,281	10,888	24,169	\$883.1	\$670.5	\$1,553.6	\$53.5	\$70.4	\$123.9
Third	9,505	9,110	18,615	\$713.3	\$688.4	\$1,401.7	\$35.9	\$58.7	\$94.6
Fourth	9,678	8,353	18,031	\$672.4	\$496.9	\$1,169.3	\$42.1	\$51.0	\$93.1
Fifth	12,265	10,973	23,238	\$1,022.2	\$704.1	\$1,726.3	\$57.9	\$78.5	\$136.4
Spillover		16,722	16,722		\$1,185.8	\$1,185.8		\$122.5	\$122.5
Total Oregon	59,580	69,790	129,370	\$4,401.6	\$4,763.0	\$9,164.7	\$246.2	\$469.6	\$715.8

Sources: ECONorthwest using direct employment data from the American Hospital Association 2010 Annual Survey and the IMPLAN economic impact model.