Economic Contributions of Oregon's Community Hospitals

FINAL REPORT

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Oregon Association of Hospitals and Health Systems

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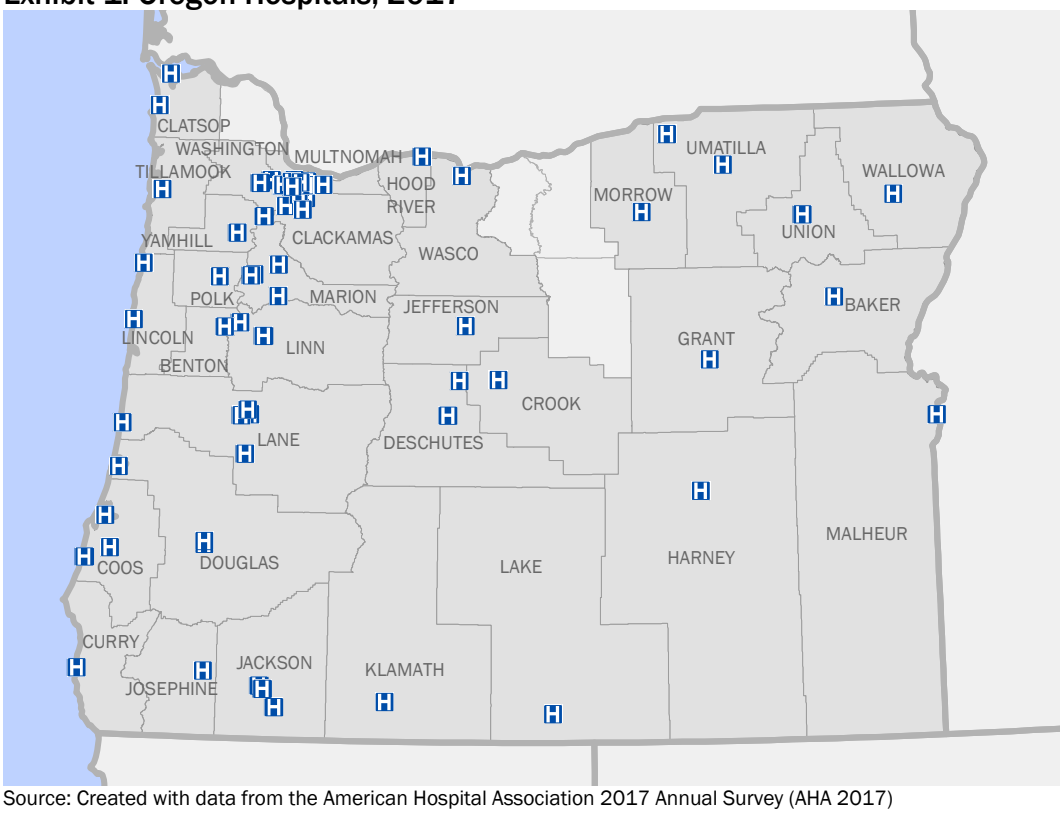
1 Introduction

1.1 Hospital Sector and Oregon Economy

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 system. OAHHS works on behalf of 62 hospitals in Oregon that provide inpatient and outpatient medical care 24 hours a day, 365 days a year. These hospitals are located throughout the state and contribute to the local economies of 32 of Oregon's 36 counties, as well as statewide.

Exhibit 1. Oregon Hospitals, 2017



Source: Created with data from the American Hospital Association 2017 Annual Survey (AHA 2017)
Note: This map represents all hospitals in Oregon which contains three hospitals which are not part of OAHHS (state and Veteran's Administration hospitals) that will be excluded from the analysis.

OAHHS commissioned ECONorthwest (ECO) to conduct a study measuring the economic contributions of OAHHS member hospitals to the state's economy.[1] Economic contributions describe the economic linkages between a firm's activities—in this case, hospitals—and other sectors of the economy. These

[1] 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.

economic linkages are determined by the indirect (supply-chain) and induced (consumption-driven) contributions that can be traced back to hospitals. ECO measured the aggregate economic activity associated with all acute-care hospitals in Oregon.

Additionally, ECO calculated the economic activity supported by those hospitals for each county with a hospital in Oregon. For this analysis, we are considering only OAHHS member hospitals. There are three other state and Veterans Administration hospitals in Oregon which are not included in our results. The total hospital impact in Oregon is therefore even larger than the results presented herein. Exhibit 2 summarizes the economic contributions of the OAHHS member hospitals for 2017.[2]

Exhibit 2. Economic Contributions of Hospitals in Oregon, 2017 ($M)

Type of Impact	Direct	Secondary	Total
Jobs	68,362	69,477	137,839
Output	$11,405	$9,512	$20,917
Gross State Product	$6,998	$5,547	$12,545
State and Local Taxes	$256	$438	$694

Sources: Created with data from AHA 2017 and the IMPLAN economic impact model

The key findings from this analysis include:

Employment. According to the 2017 American Hospital Association Annual Survey Database, OAHHS hospitals support 68,362 jobs in Oregon (full-time and part-time positions). Through supply-chain and consumption-driven effects, this direct employment is linked to another 69,477 secondary jobs in other sectors of the Oregon economy. In total, OAHHS hospitals are associated with 137,839 jobs in Oregon in 2017.[3] This represents 5.5 percent of the total employment in Oregon in 2017.[4]

Output. Direct output from hospitals in Oregon total $11.4 billion. After including secondary impacts from hospital operations, the total economic output is $20.9 billion.

Gross State Product. Hospitals directly contributed $7.0 billion to Oregon's Gross State Product (GSP) in 2017. The direct and secondary economic activity linked

Output represents the value of goods and services produced. This is the largest, most encompassing measure of economic activity and includes contribution to gross state product in addition to value of intermediate goods and services purchases.

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.

[2] This analysis relies on full- and part-time employment data from the American Hospital Association's Annual Survey Database for calendar year 2017. Accordingly, all references to 2017 are for the 2017 hospital fiscal year.

[3] IMPLAN 2016 base data for Oregon. This includes covered and uncovered employment. 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.

[4] According to the Bureau of Economic Analysis the total full-time and part-time employment in Oregon in 2017 was 2.5 million jobs.

to hospitals contributed a total of $12.5 billion to Oregon's Product (GSP) in 2017. This represents 5.7 percent of Oregon's GSP.[5]

State and Local Taxes. Hospitals directly generated $256 million in tax and fee revenue for state and local tax jurisdictions in 2017. The state and local governments collected another $438 million in taxes from businesses that supply goods and services to hospitals. This resulted in total tax revenue linked to hospitals of about $694 million in 2017.

State and Local Taxes
Taxes included are social insurance tax, property tax, motor vehicle tax, income tax, and other taxes and fees. It is important to consider that in IMPLAN, tax impacts are not based on rates or levies, but on the actual tax collected by the government for the year of the data set.

Another way to describe the economic activity supported by Oregon hospitals is to look at their economic multipliers. Economists use economic multipliers as a shorthand way to better understand the linkages between an activity and other sectors of the economy. Larger economic multipliers mean greater linkages and larger contributions to the economy. The economic multipliers associated with the hospital sector in Oregon for 2017 are shown in the exhibit below.

Exhibit 3. Economic Multipliers for the Hospital Sector in Oregon, 2017

Type of Impact	Multiplier
Jobs	2.02
Output	1.83
Gross State Product	1.79
State and Local Taxes	2.71

Sources: Created with data from AHA 2017 and the IMPLAN economic impact model

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

- **Job** multiplier of 2.02 suggests that every 10 jobs in the hospital sector are linked, on average, to another 1.2 jobs in other sectors in Oregon.
- **Output** multiplier of 1.83 means that every million dollars in goods and services produced in the hospital sector, another $830,000 is produced in other sectors of the economy.
- **Gross State Product** multiplier of 1.79 means that every million dollars in value that is directly generated by the hospital sector (incomes, profits, and business taxes) is associated with another $790,000 in value-added in other sectors of the Oregon economy.
- **State and local tax** multiplier of 2.71 means that every $1 million dollars in state and local taxes and fees directly generated by the hospital sector

[5] The Oregon statewide model in IMPLAN calculates Gross State Product (Total Value Added) for 2016 as $221.5 billion.

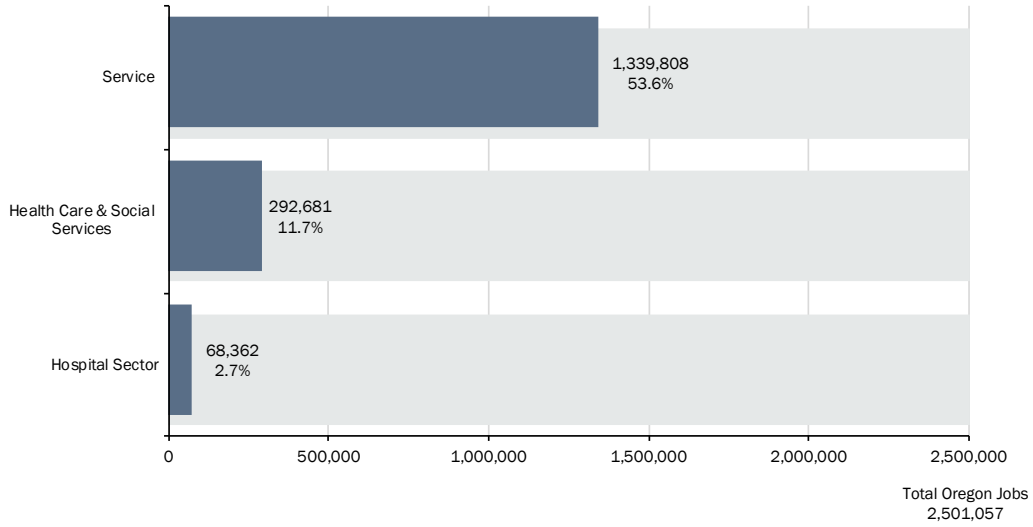
is linked to another $1.71 million in state and local taxes and fees generated by other sectors.[6]

2 Hospital Employment in Oregon

Most of this report focuses on the economic effects supported by hospital operations in Oregon. Although these economic contribution measures help describe the magnitude and distribution of economic activity supported in the state, it is also helpful to understand the broader role that the industry plays in Oregon's economy.

One way of understanding the importance of hospital employment is to describe the sector's size as a share of total employment. The exhibit below uses data from the U.S Bureau of Economic Analysis (BEA) and the 2017 American Hospital Association (AHA) survey to describe the relative size of hospital employment in Oregon. According to the BEA, Oregon's total employment was 2.5 million full-time and part-time jobs in 2017.[7] That same year, hospitals employed 68,362 people, representing 2.7 percent of the state's total employment.

Exhibit 4. Employment in Service, Health Care, and Hospital sectors (OAHHS only), Oregon, 2017



Source: Created with data from the Bureau of Economic Analysis and AHA 2017

Hospitals are a subset of the healthcare and social assistance sector, which includes 292,681 people or 11.7 percent of the state's total employment in 2017.

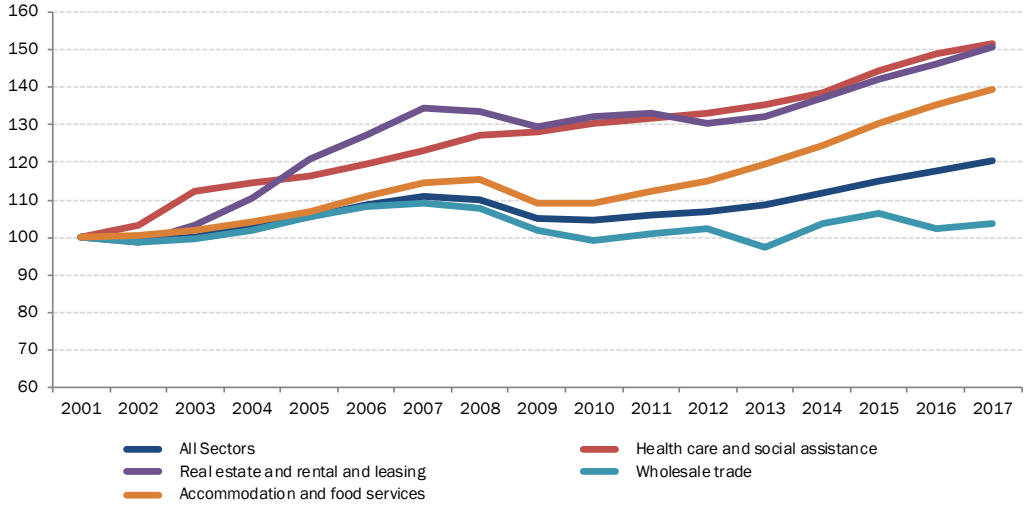
[6] This does not include hospital provider taxes or federal matching Medicaid funds.

[7] Employment here is farm and non-farm, public and private. See BEA's regional definitions of employment. https://www.bea.gov/regional/definitions/

As another comparison, the broader service sector employed 1.3 million people or 53.6 percent of Oregon's total employment in 2017.

The health care and social assistance sector has experienced higher job growth compared to other private sectors in Oregon. It also is growing at a faster rate than the largest employing private industries.
Exhibit 5 shows the growth of the different industries, with 2001 as the baseline year. Compared to 2001, the broader health care and social assistance sector has experienced a 52 percent increase in employment.

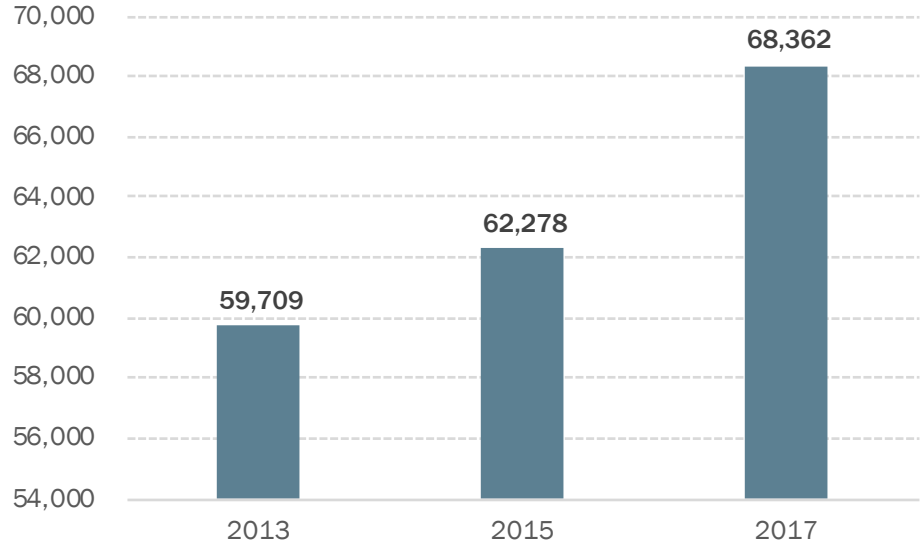
Exhibit 5. Percent Employment Growth, Health Care Industry and All Industries, 2001-2017, Oregon



Source: Created with data from the Bureau of Economic Analysis

Exhibit 6 compares OAHHS member hospital employment in 2017 to the prior year AHA surveys. Between 2013 and 2017, hospital employment in Oregon grew from 59,709 to 68,362, approximately 14 percent. Of that growth, 10 percent has occurred since 2015.

Exhibit 6. Acute Care Hospital Employment (2013, 2015, and 2017)

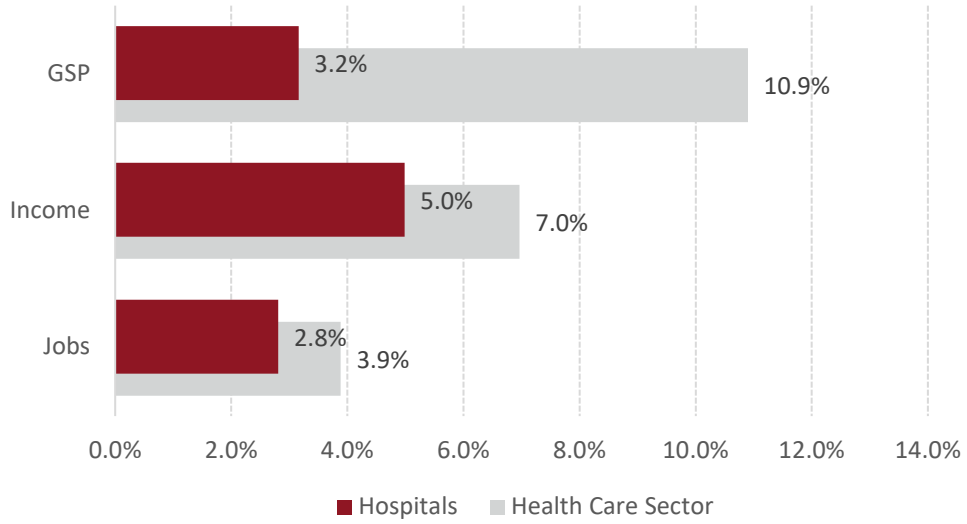


Source: Created with data from AHA 2017

Exhibit 7 shows direct GSP, income, and employment as a share of Oregon's total. The direct economic activity of OAHHS hospitals is approximately $7.0 billion to Oregon's GSP in 2017. This represents 3.2 percent of Oregon's GSP. The job contribution represents 2.8 percent of total employment in Oregon for 2017.

The red bar represents OAHHS member hospitals as a percent of the Oregon total and the gray bars represent the total for hospitals and offices of physicians from the IMPLAN model for Oregon.

Exhibit 7. OAHHS Hospital and Health Care Direct Income, GSP, and Jobs as a percent of Oregon Total, 2017



Sources: Created with data from AHA 2017 and the IMPLAN economic impact model
Note: Hospital jobs in this exhibit use the total (public and private) jobs number from the 2017 AHA survey

3 Economic Impact Results

3.1 Impacts by Type

Economic impact analysis employs specific terminology to identify the different types of economic impacts. The four terms of interest are as follows.

1. *Direct Impacts* are those associated with the payroll and employment. They also include the direct output of the activities associated with the organization, which is estimated using an expenditure approach that sums labor and non-labor operating expenses.
2. *Indirect Impacts* are the goods and services purchased for operations. This spending generates the first round of indirect impacts. Suppliers will also purchase additional goods and services; this spending leads to additional rounds of indirect impacts. Because they represent interactions among businesses, these indirect effects are often referred to as supply-chain impacts.
3. *Induced Impacts* are the purchases of goods and services from household incomes. The direct and indirect increases in employment and income enhance the overall purchasing power in the economy, thereby inducing further consumption- and investment-driven stimulus. Employees at the organization, for example, will use their income to purchase groceries or take their children to the doctor. These induced effects are often referred to as consumption-driven impacts.
4. *Secondary Impacts* are the sum of indirect and induced impacts or, simply, the economic effects on sectors outside of OAHHS member hospitals.

3.1.1 Detailed Economic Contributions and Tax Revenue Results

This section presents the detailed economic contributions of hospitals. These contributions were measured collectively for the hospital sector in Oregon and each county. The economic contributions of the OAHHS member hospitals are reported for individual counties and the State of Oregon in Exhibit 8. Note that these values do not represent potential spillover effects.[8]

[8] Spillover effects arise from goods and services purchased outside the given study area. For example, a Hospital in Lane County may buy goods and services from Multnomah County, or vice versa. These spillover effects are not calculated in this study.

Exhibit 8. Economic Contributions of OAHHS Hospitals, by County, 2017

	Jobs			Gross State Product		
County	Direct	Secondary	Total	Direct	Secondary	Total
Baker	214	133	347	21,826,953	6,638,626	28,465,579
Benton	2,168	1,602	3,770	253,064,981	112,707,489	365,772,469
Clackamas	5,223	4,520	9,743	551,197,048	343,972,615	895,169,663
Clatsop	994	733	1,727	101,180,798	46,129,019	147,309,817
Coos	1,384	1,585	2,969	273,283,854	98,841,940	372,125,794
Crook	173	109	282	19,411,454	6,358,444	25,769,898
Curry	281	178	459	24,599,703	9,538,743	34,138,447
Deschutes	3,907	4,135	8,042	431,404,158	288,690,301	720,094,459
Douglas	1,176	906	2,082	126,626,052	55,245,125	181,871,177
Grant	287	114	401	20,238,906	5,441,406	25,680,311
Harney	198	77	275	13,564,778	3,744,081	17,308,859
Hood River	526	422	948	60,275,611	25,811,991	86,087,602
Jackson	4,568	4,400	8,968	414,741,876	278,266,365	693,008,241
Jefferson	174	80	254	15,323,623	4,235,392	19,559,015
Josephine	1,139	900	2,039	116,643,377	55,622,627	172,266,004
Klamath	1,409	1,088	2,497	128,668,368	59,913,509	188,581,877
Lake	223	82	305	15,804,484	3,831,187	19,635,671
Lane	4,925	4,733	9,658	503,429,975	331,024,054	834,454,029
Lincoln	838	598	1,436	90,177,346	36,410,402	126,587,748
Linn	1,817	1,254	3,071	185,113,352	77,403,582	262,516,934
Malheur	475	255	730	35,352,933	13,155,234	48,508,167
Marion	5,115	4,266	9,381	525,553,810	305,100,838	830,654,648
Morrow	116	25	141	11,599,807	1,912,646	13,512,454
Multnomah	20,526	16,602	37,128	2,024,269,407	1,559,379,601	3,583,649,007
Polk	154	83	237	17,070,084	4,782,345	21,852,429
Tillamook	484	274	758	39,122,271	15,639,412	54,761,683
Umatilla	950	558	1,508	89,114,373	35,756,529	124,870,902
Union	713	434	1,147	66,764,988	22,579,241	89,344,229
Wallowa	185	117	302	20,052,710	6,552,114	26,604,825
Wasco	802	502	1,304	69,078,102	31,715,142	100,793,244
Washington	6,076	5,142	11,218	613,270,554	443,220,440	1,056,490,994
Yamhill	1,142	752	1,894	119,708,539	47,797,812	167,506,351
State of Oregon	**68,362**	**69,477**	**137,839**	**6,997,534,275**	**5,547,413,013**	**$12,544,947,288**

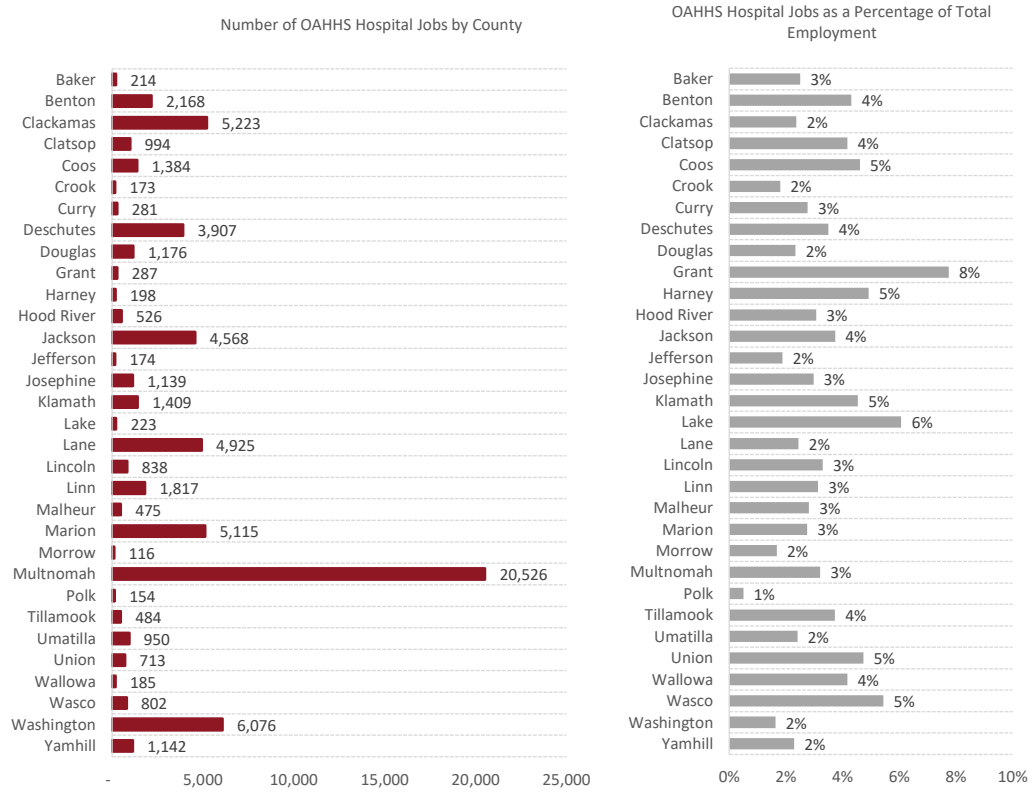
Sources: Created with data from AHA 2017 and the IMPLAN economic impact model
Note: County totals will not sum to the state total due to leakages

OAHHS hospitals directly employed 68,362 people in 2017. Through supply-chain and consumption-driven effects, OAHHS hospitals are associated with another 69,477 secondary jobs in other sectors of the Oregon economy. In total, 137,839 jobs are linked to economic activity generated by OAHHS hospitals in 2017.

The hospital sector directly created $7.0 billion in economic activity as gross state product (GSP) in 2017. Through supply-chain and consumption-driven effects, the hospital sector is associated with another $5.5 billion in secondary GSP from other sectors of the Oregon economy. In total, $12.5 billion of Oregon's GSP is linked to economic activity generated by the hospital sector in 2017.

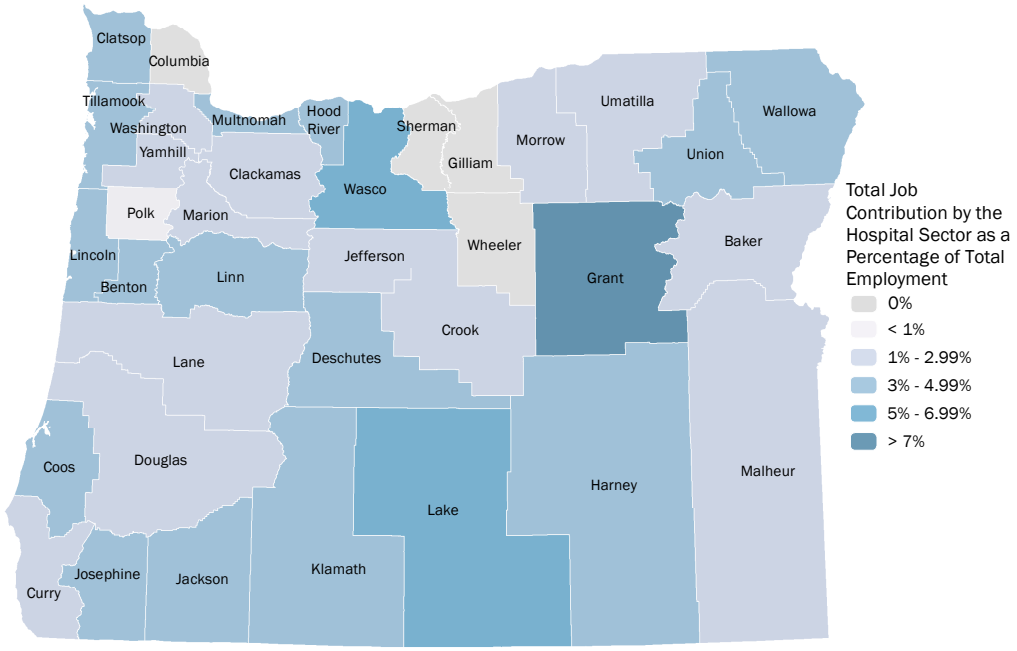
Exhibit 9 shows the total job contribution by OAHHS member hospitals and the total job contribution as a percentage of total employment in the county. These percentages show the relative importance of hospitals in each county. The highest number of hospital jobs are in Multnomah County, but the highest percentage of hospital jobs out of total jobs is in Grant County. The percentage of jobs in OAHHS hospitals as a percent of total employment in the county is represented in a map in Exhibit 10.

Exhibit 9. Total Employment Contributions, 2017



Sources: Created with data from AHA 2017 and the IMPLAN economic impact model

Exhibit 10. Direct and Secondary Job Contribution by County



Source: AHA 2017

By contributing to economic activity and employee compensation, hospitals also contribute to state and local tax revenues. Exhibit 11 shows the amount of tax revenue generated by hospitals for each Oregon county. Hospitals directly supported $255.8 million in revenue for state and local tax jurisdictions. Secondary spending and activities that are linked to the hospital sector generated another $437.9 million in state and local tax and fee revenue. In total, the economic activity directly and indirectly linked to the hospital sector supported a total of $693.7 million in tax and fee revenue for state and local tax jurisdictions in 2017.

IMPLAN estimates taxes incurred directly, indirectly, and through induced spending and employment. IMPLAN has only limited accuracy for tax rates by industrial classification, asset classes and geography for the secondary effects, and the results should be read as illustrative and not construed to be the detailed analysis. See technical appendix for further explanation of how tax revenues are calculated.

Exhibit 11. State and Local Taxes paid by OAHHS Hospitals, by County, 2017

County	State & Local Taxes		
	Direct	Secondary	Total
Baker	756,297	668,985	1,425,283
Benton	8,544,738	10,370,845	18,915,583
Clackamas	20,738,444	28,875,878	49,614,322
Clatsop	3,599,175	3,944,689	7,543,864
Coos	11,133,034	8,736,777	19,869,811
Crook	680,824	641,847	1,322,672
Curry	932,667	933,089	1,865,756
Deschutes	15,817,880	23,754,951	39,572,831
Douglas	4,481,383	4,899,804	9,381,187
Grant	723,269	605,082	1,328,351
Harney	513,612	428,215	941,827
Hood River	2,566,827	2,367,947	4,934,774
Jackson	15,459,026	26,710,010	42,169,035
Jefferson	523,618	398,738	922,357
Josephine	3,894,127	5,218,101	9,112,228
Klamath	4,444,972	5,779,436	10,224,409
Lake	574,091	478,759	1,052,850
Lane	18,248,603	26,418,193	44,666,795
Lincoln	3,071,521	3,021,996	6,093,517
Linn	6,840,823	7,314,152	14,154,975
Malheur	1,099,673	1,287,915	2,387,588
Marion	19,255,929	24,937,671	44,193,600
Morrow	408,703	185,867	594,570
Multnomah	60,736,434	105,306,590	166,043,024
Polk	587,279	443,027	1,030,306
Tillamook	1,383,804	1,365,267	2,749,072
Umatilla	3,517,660	3,295,740	6,813,400
Union	2,667,761	2,487,942	5,155,703
Wallowa	706,737	692,714	1,399,451
Wasco	2,597,197	2,791,120	5,388,317
Washington	22,700,544	34,132,538	56,833,081
Yamhill	4,425,250	4,594,494	9,019,744
Grand Total	255,824,276	437,892,791	693,717,067

Sources: Created with data from AHA 2017 and the IMPLAN economic impact model
Note: County totals will not sum to the state total due to leakages

IMPLAN calculates multipliers for each economic effect calculated for this analysis: output, labor income, gross state product, and employment. The size of the multiplier is not a measure of the amount of activity or the importance of a given industry for the economy. It is an estimation of what would happen if that industry's sales to final demand ratio increased or decreased.

In other words, multipliers can be used to gauge the interdependence of sectors: the larger the output multiplier, the greater the interdependence of the sector on the rest of the regional economy. For example, the hospital sector has a greater interdependence with other sectors in Deschutes County (multipliers range from 1.67 to 2.06) relative to Morrow County (1.16 to 1.22). The more hospital suppliers in a local area, the larger the multipliers will be.

Multipliers are calculated by dividing the total contribution by the direct contribution of the hospitals in that county. In employment terms, if the multiplier is 2.02, it means that for every 10 jobs at the hospital, an additional 10.2 jobs are supported in other sectors in the study area. Similarly, for GSP, if the multiplier is 1.5, for every $1 million in hospital's contribution to GSP, an additional $500,000 in production by other firms reacting to purchases by hospitals and their employees.

The hospital sector job multiplier of 2.02 exceeds the weighted average job multiplier for all industries in Oregon of 1.81. Statewide multipliers are higher than the county multipliers. This is due to indirect and induced spillover effects, which are not captured in the individual county models. The economic multipliers are shown for each county and the state of Oregon in Exhibit 12.

Exhibit 12. Economic Multipliers of the Hospital Sector, 2017

County	Employment	Gross State Product	Output	State & Local Taxes
Baker	1.62	1.30	1.35	1.88
Benton	1.74	1.45	1.51	2.21
Clackamas	1.87	1.62	1.66	2.39
Clatsop	1.74	1.46	1.50	2.10
Coos	2.15	1.36	1.49	1.78
Crook	1.63	1.33	1.37	1.94
Curry	1.64	1.39	1.42	2.00
Deschutes	2.06	1.67	1.74	2.50
Douglas	1.77	1.44	1.50	2.09
Grant	1.40	1.27	1.29	1.84
Harney	1.39	1.28	1.28	1.83
Hood River	1.80	1.43	1.50	1.92
Jackson	1.96	1.67	1.72	2.73
Jefferson	1.46	1.28	1.33	1.76
Josephine	1.79	1.48	1.54	2.34
Klamath	1.77	1.47	1.53	2.30
Lake	1.37	1.24	1.26	1.83
Lane	1.96	1.66	1.69	2.45
Lincoln	1.71	1.40	1.46	1.98
Linn	1.69	1.42	1.45	2.07
Malheur	1.54	1.37	1.38	2.17
Marion	1.83	1.58	1.61	2.30
Morrow	1.22	1.16	1.19	1.45
Multnomah	1.81	1.77	1.74	2.73
Polk	1.54	1.28	1.35	1.75
Tillamook	1.57	1.40	1.42	1.99
Umatilla	1.59	1.40	1.42	1.94
Union	1.61	1.34	1.39	1.93
Wallowa	1.63	1.33	1.39	1.98
Wasco	1.63	1.46	1.49	2.07
Washington	1.85	1.72	1.73	2.50
Yamhill	1.66	1.40	1.46	2.04
State of Oregon	**2.02**	**1.79**	**1.83**	**2.30**

Sources: Created with data from AHA 2017 and the IMPLAN economic impact model

The largest urban hospitals in Oregon, known as DRG hospitals, pay provider taxes in Oregon.[9] There are 28 DRG hospitals in Oregon that paid provider tax. The DRG hospitals paid $542 million in provider tax which was then matched at prescribed Federal Medical Assistance Percentage (FMAP) rates to create about $1.7 billion in federal funds for Oregon's Medicaid program.[10]

3.2 Congressional District Results

Exhibit 13 reports the economic contributions of the hospital sector across Oregon's five Congressional Districts. For this analysis, hospital employment from the 2017 AHA survey was aggregated based upon their respective congressional districts. In Oregon, congressional districts mostly align with the existing county political boundaries. ECO used IMPLAN to build multipliers for each of the congressional districts.

Exhibit 13. Economic Contributions of OAHHS Hospitals, by Congressional District, 2017

Congressional District	Jobs			Gross State Product		
	Direct	Secondary	Total	Direct	Secondary	Total
First	9,648	7,922	17,570	967,877,994	656,879,705	1,624,757,700
Second	16,059	14,200	30,259	1,559,344,611	918,026,483	2,477,371,095
Third	19,090	15,353	34,443	1,906,957,345	1,383,655,984	3,290,613,329
Fourth	11,751	10,132	21,883	1,228,404,153	672,135,097	1,900,539,250
Fifth	11,814	10,069	21,883	1,234,365,498	739,916,408	1,974,281,906
State of Oregon	**68,362**	**69,477**	**137,839**	**6,997,534,275**	**5,547,413,013**	**$12,544,947,288**

Sources: Created with data from AHA 2017 and the IMPLAN economic impact model
Note: Congressional District totals will not sum to the state total due to leakages

Because the Congressional Districts are larger in area than counties the economic multipliers will be higher due to capturing a larger share of leakages compared to a smaller geography, such as a county.[8] The State of Oregon total, however, remains unchanged.

[9] These are typically large, urban hospitals that receive payments based on the prospective Diagnostic Related Group (DRG) system

[10] Oregon Health Authority. Oregon Hospital Provider Tax Paid & Federal Matching Dollars - CY 2017.

4 Community Benefits

4.1 Community Benefit Expenditures

In addition to calculating the economic activity supported from hospital operations in Oregon, ECO calculated the economic contributions from hospital community benefit expenditures. Examples of community benefit expenditures include providing free or discounted care to low-income individuals, conducting education or research to promote community health, or donating funds and/or services to community groups.

ECO used the Oregon Health Authority's (OHA) data on community benefit expenditures for fiscal year 2017 to calculate the impacts shown in Exhibit 14.

Exhibit 14. Economic Contributions of Community Expenditures by Hospitals in Oregon, 2017 ($M)

Type of Impact	Direct	Secondary	Total
Jobs	13,906	14,133	28,039
Output	$2,320	$1,935	$4,255
Gross State Product	$1,404	$1,113	$2,517
Labor Income	$1,190	$671	$1,861

Sources: ECONorthwest using data from the Oregon Health Authority and the IMPLAN economic impact model

Hospitals in Oregon spent $2.3 billion on hospital services, clinics and hotlines, community health research, health profession education, and other community programs in fiscal year 2017 (the most recent year with data available). From this spending, $1.4 billion in wages and benefits were paid to hospital employees across all places where community spending took place.

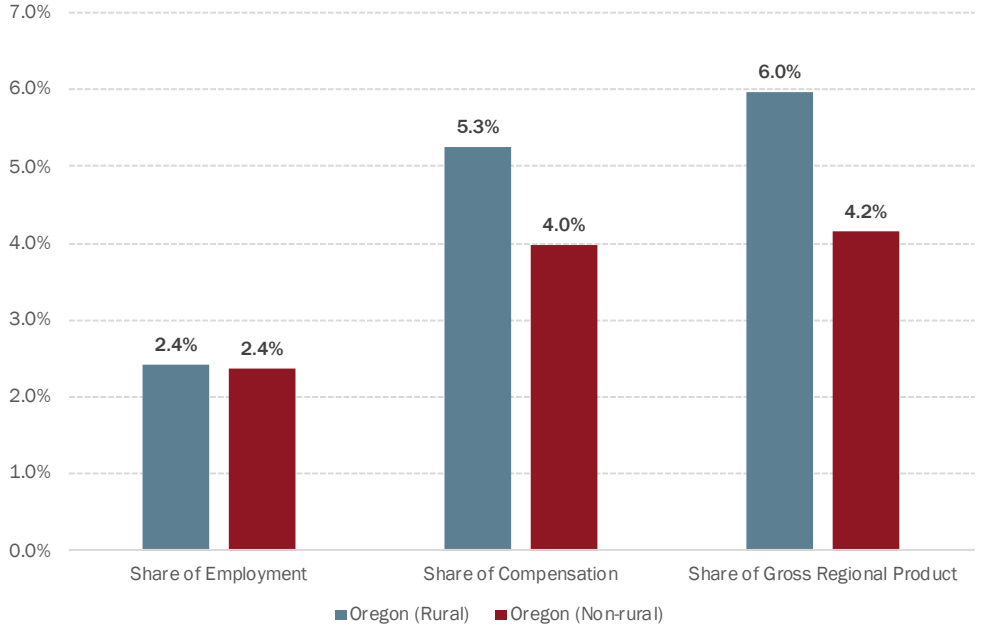
This spending directly supported 13,906 jobs across all places where community spending took place. Spending on community health services bought other goods and services in Oregon, which supported an additional $1.9 billion in output and 14,133 jobs. When the direct and secondary activity is added together, this results in 28,039 jobs and over $4.2 billion in economic output.

4.2 Rural Communities

Out of the 62 OAHHS hospitals, 32 are classified as rural.[11] These hospitals provide essential health care services to 35 percent of Oregonians[12] and ensure access necessary for critical medical services, while providing economic stability to the counties they serve. Because they are more remote, these hospitals provide services to their community that otherwise would incur high travel costs.

For rural counties, hospitals can represent a large share of economic activity and, in some cases, hospitals are the largest private employer in the county. Exhibit 15 compares hospital employment, worker compensation, and economic output as a share of the total for that indicator in rural Oregon and non-rural Oregon for 2017. As the figure displays, employment at hospitals is similar in rural counties in the state, but represents a higher proportion of worker compensation and economic output.[13]

Exhibit 15. Comparison of Hospital Economic Indicators in Rural and Non-Rural Oregon, 2017



Source: ECONorthwest using data from the IMPLAN economic impact model

[11] https://www.oahhs.org/rural/overview.html

[12] https://www.oregon.gov/omb/Topics-of-Interest/Pages/Rural-Health.aspx

[13] Rural counties include those which have been designated by the Office of Rural Health Policy. There are 23 rural counties in Oregon.

Rural communities have long struggled with access to care and increasing healthcare costs. Ensuring access to services for rural areas, which can have higher rates of vulnerable populations, can provide benefits to the community beyond local jobs and wages by ensuring residents are not required to travel long distances to access services.

In rural counties in Oregon, employment growth in the last decade has been higher for the health care and social services sector compared with total employment. Exhibit 16 shows health care employment and total employment from 2004 to 2016. On average during this time period the growth in rural jobs in health care has averaged 1.3 percent while total employment has grown only 0.4 percent. The only year during this time period when growth has been negative was 2011, which was the year after the 2010 passing of the Affordable Care Act.

Exhibit 16: Select rural county job growth in health care and total employment, 2004 – 2016

Source: Bureau of Economic Analysis
Note: Some rural counties were removed from this time series due to missing data

Appendix A: Technical Appendix

Measuring Economic and Fiscal Contributions

Economists have developed several approaches to measure the contributions of organizations on the communities in which they operate. The most common method estimates the contribution associated with the company's spending on payroll, goods and services, and capital projects.

Input-Output Modeling Framework

The expenditure approach is typically conducted within an input-output modeling framework. Input-output models are mathematical representations of the economy that show how different parts (or sectors) are linked to one another. The strengths of the input-output modeling framework include:

- 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;
- a reasonably comprehensive picture of the economic activities within a region, with 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;
- model construction using secondary source data that are gathered and vetted by government agencies; and
- the ability to cost-effectively create input-output or economic impact models for any region.

Input-output models that rely on survey or primary source data are expensive to construct. As a result, special modeling techniques have been developed to estimate the necessary empirical relationships. These techniques use a combination of national technological relationships and state- and county-level measures of economic activity, and have been packaged into IMPLAN.

The IMPLAN Economic Impact Model

IMPLAN has been developed and distributed by the Minnesota IMPLAN Group, Inc., since 1993. The IMPLAN modeling system is widely used and well respected. In general terms, the IMPLAN model works by tracing how spending associated with an industry circulates through an economy or study area.

That is, changes in one sector or multiple sectors trigger changes in demand and supply throughout the economy. Initial changes in the model propagate through the economy via supply- and demand-chain linkages, altering the equilibrium quantities of inputs and outputs and associated jobs, income, and value-added. These multiplier effects continue until the initial change in final demand leaks out of the economy in the form of savings, taxes, and imports.

Classifying Economic Contributions

Depending on the activity being analyzed, economic contributions (or impacts) can be classified by phases, types, and measures.

Impacts by Type

Economic impact analysis employs specific terminology to identify the different types of economic impacts. The four terms of interest are as follows.

1. *Direct Impacts* are those associated with the payroll and employment. They also include the direct output of the activities associated with the organization, which is estimated using an expenditure approach that sums labor and non-labor operating expenses.
2. *Indirect Impacts* are the goods and services purchased for operations. This spending generates the first round of indirect impacts. Suppliers will also purchase additional goods and services; this spending leads to additional rounds of indirect impacts. Because they represent interactions among businesses, these indirect effects are often referred to as supply-chain impacts.

3. *Induced Impacts* are the purchases of goods and services from household incomes. The direct and indirect increases in employment and income enhance the overall purchasing power in the economy, thereby inducing further consumption- and investment-driven stimulus. Employees at the organization, for example, will use their income to purchase groceries or take their children to the doctor. These induced effects are often referred to as consumption-driven impacts.
4. *Secondary Impacts* are the sum of indirect and induced impacts or, simply, the economic effects on sectors outside of direct work on the project.

Impact Measures

The IMPLAN model reports the following measures of economic impacts:

1. *Jobs*, according to IMPLAN's methodology, are measured in terms of full-year-equivalents (FYE). One FYE job equals work over twelve months in a given industry (this is the same definition used by the Bureau of Labor Statistics (BLS). For example, two jobs that last six months each in 2015 count as one FYE job in 2015. A job can be full-time or part-time, seasonal, or permanent; IMPLAN counts jobs based on the duration of employment, not the number of hours per week worked. Job impacts from operations are for one year of normal operations.
2. *Output* represents the value of goods and services produced, and is the broadest measure of economic activity
3. *Gross State Product* ("GSP") measures the value added in production. It includes personal income, other income, and indirect business taxes.
4. *State and local taxes and fees* include production business taxes; personal income taxes; social insurance (employer and employee contributions) taxes; and various other taxes, fines, licenses, and fees paid by businesses and households.

The primary inputs into these models were full- and part-time employment data for hospitals in Oregon, as reported in the AHA Survey

for the 2017 calendar year.[14,15] The American Hospital Association Survey 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.

Tax Impacts Reported by IMPLAN

IMPLAN generates estimates of fiscal impacts for each spending activity. The impacts on taxing districts must be carefully interpreted, and understood the difference from a more detailed and accurate fiscal impact analysis. IMPLAN allocates taxes paid by sector based on the relationship of labor income in each of the 536 sectors. Furthermore, the taxes are distributed among counties based on the amount of labor income in each sector.

Lastly, the taxes are distributed among types of tax according to the Annual Census of Government Finances distribution. Marginal impacts, or activities run in an IMPLAN model, will use the same distribution of taxes as the base dataset in that year to estimate the impact to state and local taxes. In summary, the tax impacts are not based on rates or levies, but on the actual tax collected by the government for the year of the data set.

Income Tax

The income taxes paid to state and local governments are estimated by taking the percentage of total employee compensation that goes towards state and local government in a specific geography. It does not take into account actual income tax rates and brackets. It also does not incorporate actual wages for individuals, but rather, the total employee compensation as a whole. A similar process exists for proprietor income.

Other Taxes

The indirect, or supply-chain, tax impacts are also estimates based on amount of actual taxes received by governments. The distribution of taxes is the same in IMPLAN whether the impacted industry was computers, tourism, tobacco, or forest products. Logically, forest products or mining would have a higher proportion of severance taxes compared to

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[14] The hospitals are classified under the three-digit North American Industry Classification System ("NAICS") code #622 Hospitals. This sector maps directly to IMPLAN sector #482.

[15] For more information, see http://www.ahadata.com/ahadata/html/AHASurvey.html.

computers or tobacco, but that would not show up in the tax impact report.

While the total amounts paid to government are industry and institution-specific, the detailed distribution of those payments amongst the various types of taxes is the same for all industries and institutions. For example, while tourism has a greater effect on sales and lodging taxes, mining is heavily weighted towards severance taxes, and liquor or tobacco sales are heavily weighted towards excise taxes. This level of specificity is not captured in the tax impact report.