



The Economic Impacts of Oregon Health & Science University

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Executive Summary

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As the only academic health center in Oregon, Oregon Health & Science University (“OHSU”) provides a wide variety of unique benefits to local and state residents, including:

- Training for healthcare professionals who will serve communities throughout Oregon.
- Access to high-quality healthcare services, especially for Oregon’s sickest and most vulnerable patients. In some cases this level of care is not available elsewhere in the state.
- Leading-edge research and development that results in new treatments, technologies and scientific knowledge.
- Outreach to Oregon residents, some of whom might not otherwise have access to important health information and services.

Oregon Health & Science University commissioned ECONorthwest to evaluate the impacts of OHSU’s activities on the metropolitan region (Multnomah, Washington, Clackamas and Clark counties) and on the state as a whole. This report describes the results of ECONorthwest’s research and analysis. It provides a broad qualitative overview of OHSU’s activities and health impacts on the community, and describes its economic impacts for the 2007 fiscal year. All dollar amounts are reported in 2009 dollars.

OHSU’s economic impacts can be explored by posing the following hypothetical question: ***How would economic activity change if OHSU did not exist?*** We consider this question in two ways: first, by examining the gross impacts associated with OHSU’s activities regardless of the source of funds or the reallocation of healthcare services to other providers; and second, by examining the net economic impacts associated with OHSU’s activities based on those that are funded by non-local sources or those that would leave the area in the absence of OHSU.

Within this framework, the net analysis starts with the gross impacts, but excludes the impacts that would still occur in the region in the absence of OHSU. In the case of patient care, for example, other local providers would have (or develop) the capacity to absorb some of the more routine care currently provided by OHSU, so that economic activity would remain in the region and would not be included in the net impact analysis.



In contrast, services that are unique to the region and the state, such as brain neurosurgery and medical education, would be redistributed to another state or elsewhere and, as a result, are included in the net impact analysis.

We also examine economic impacts in two geographic dimensions. First, we examine the economic impacts of OHSU on the Portland metropolitan area, where they are most direct and immediate. Second, we examine the economic impacts on the state as a whole, which is particularly important given OHSU's role as a statewide academic health center.

Regional and Statewide Economic Impacts

OHSU affects both the economy and the health of the Portland area and the entire state with its four primary activities: patient care, educational programs, research, and outreach to the public and to healthcare providers around the state.

OHSU's greatest economic impacts come from its operating expenditures, including payroll and purchases of goods and services. In support of its main activities, OHSU adds to the economy in a variety of other ways. OHSU's capital spending is a major source of economic impacts. OHSU attracts students from throughout the state and the nation, and these students contribute to the economy in the short term by spending money on goods and services, and in the longer term when they stay and work in the state. OHSU attracts millions of dollars in research grants and charitable contributions that otherwise would likely not accrue to Oregon. These grants and donations help fund operations, capital projects, and healthcare research. Research and development at OHSU leads to new patents, technology licensing and spin-off businesses; some of these enterprises remain local and generate economic activity.

A brief summary of OHSU's activities will help readers understand the basis of the economic impact analysis. But OHSU's activities also have many impacts that are not easily quantifiable. Throughout this report we endeavor to describe the scope and qualitative impacts of those activities throughout the state.

Summary of OHSU Activities

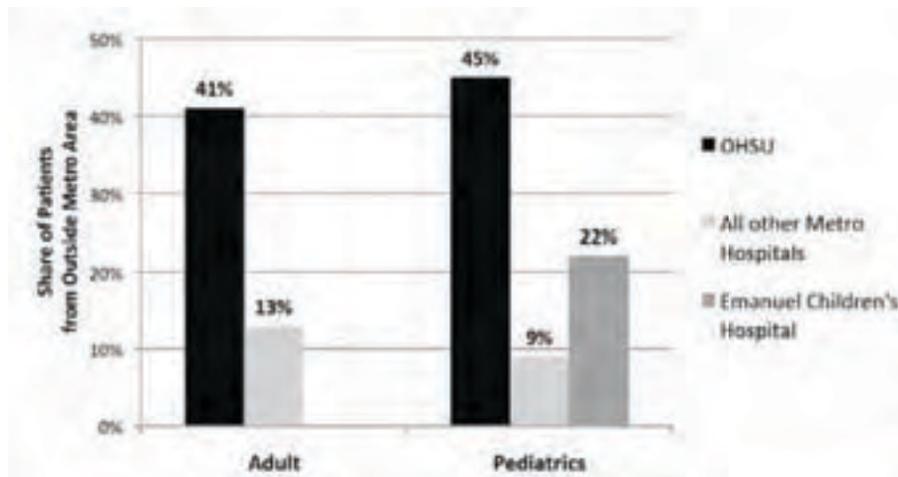
The largest proportion of OHSU's activities involve patient care, including OHSU Hospital, Doernbecher Children's Hospital, more than 80 primary and specialty care clinics, and clinical outreach programs throughout the state. OHSU offers specialized healthcare services that in some cases are either not readily available, or are not available at all at other hospitals and clinics in the state. Experts at OHSU frequently serve as consultants to community healthcare providers facing complex or non-routine cases, enabling



patients to stay in their own communities and allowing local doctors and hospitals to serve them.¹

Because many of OHSU's specialty services are not available elsewhere in Oregon, it serves a high share of patients from outside the metro area compared to other Portland hospitals. In 2007, 41 percent of OHSU's adult inpatients traveled from outside the four-county metropolitan area, compared to 13 percent at all other metro-area hospitals. For pediatric patients, 45 percent of OHSU's inpatients came from outside the metropolitan area, compared to 22 percent at Emanuel Children's Hospital (Oregon's only other children's hospital) and nine percent at all other Portland-area hospitals (see Figure 1).

Figure 1: Share of Inpatients from Outside the Metropolitan Area for OHSU Compared to Other Portland Hospitals in 2007



Source: 2007 patient discharge data provided by OHSU.

OHSU is a primary provider of healthcare for Oregon's low-income households. Because OHSU is a public entity, part of its mission is to provide healthcare to the underserved, including Oregonians who cannot afford healthcare or who do not have adequate insurance coverage. In addition, OHSU staff work to obtain health coverage for Oregonians who lack insurance by working with the Oregon Health Plan and other agencies. OHSU's specialty physicians also provide free care to uninsured patients through Project Access NOW, a cooperative effort that includes physicians throughout the Portland-metro area. OHSU was the first hospital in the region to achieve 100 percent participation in this program.

¹ OHSU's outreach activities improve community health by improving access to healthcare services in underserved areas and by disseminating health information to the public and to community healthcare providers. OHSU operates many outpatient clinics and centers offering unique services and outreach to residents throughout the state. OHSU also sponsors a variety of educational outreach programs, including continuing education to healthcare professionals throughout the state and clinical rotations in underserved areas.

Research at OHSU

Research at OHSU has led to many discoveries, which in some cases have been used to develop new drugs, devices, technologies and procedures that have health related benefits. One of the most prominent examples in recent years is the cancer drug Gleevec, which OHSU's Dr. Brian Druker helped to research and develop.

In fiscal year 2007, OHSU received more than \$300 million in research funding for more than 4,100 research projects and hundreds of clinical trials, with nearly all of this funding coming from outside the state. As such, the economic activity associated with research and development represents a net economic gain to Portland and the state. OHSU's academic and clinical research activities also attract relatively highly paid specialists to the area, and in some cases create access to specialty services for which residents might otherwise have to leave the state.

Licensed technology developed through research at OHSU not only generates revenue for the university, but also can lead to advances in healthcare, science and biomedical technology. In 2007, researchers filed 66 patent applications and disclosed 132 new inventions. Collaboration and innovative business partnerships facilitate the transfer of laboratory research into marketable products that benefit the public by improving health and healthcare practices and by contributing to economic growth.

According to OHSU's Technology & Research Collaborations Department, OHSU research has led to 37 start-up companies since 2000, and 68 since the early 1970s. While not all of these companies are still in existence, 25 are now, or at some point have been located in Oregon. Our net impact analysis includes the impacts associated with these start-up companies. Approximately \$189 million in direct spending by these companies on payroll, goods and services is included in the model.

Capital Expenditures

Between 2005 and 2007, OHSU spent an average of \$184 million per year on buildings, land, capital improvements and capital equipment.³ Nearly all of these expenditures were made for facilities in the Portland area. Some of this spending leaves the region, for example, when OHSU purchases a large piece of capital equipment from an out-of-state manufacturer, but a majority of it benefits local contractors and workers. Based on our analysis of OHSU's capital expenditures, we included \$132 million in the net economic impact analysis.



³ OHSU audited financial statements for fiscal years 2005-07.

Figure 1: Charitable Contributions to OHSU Entities

OHSU receives charitable contributions through three different but related entities: OHSU itself, the OHSU Foundation, and the Doernbecher Children’s Hospital Foundation. Combined, charitable contributions in 2007 totaled \$107 million.



Based on an analysis of the geographic origin and designated purpose of individual contributions performed by the OHSU Foundation staff, we assume that 84 percent of charitable contributions likely would be sent out of state if OHSU did not exist. We assume that the remainder of these contributions would be redistributed in the region. Therefore, the model includes approximately \$90 million of expenditures funded by charitable contributions.

Figure 2: Regional and State Economic Impacts of OHSU

OHSU benefits the regional and state economies by employing and training a large number of relatively high-wage workers; by providing high-level healthcare to residents throughout the state; by conducting leading-edge research and developing new technologies that generate business growth; and by spending money on capital projects that employ local workers and businesses. In addition, OHSU brings hundreds of millions of dollars in net new revenue into the Portland area and the state, including research grants, Medicare, Medicaid, donations, technology licensing fees, and other outside sources. To measure the regional and statewide impacts associated with OHSU activities, ECONorthwest constructed economic models (called input-output models) of the Portland and Oregon economies, and used OHSU’s expenditures as inputs into the modeling process. Below we describe some basic concepts of economic impact modeling.

The **total economic impact** is the sum of three types of impacts: direct, indirect and induced. **Direct impacts** include the output (as measured by expenditures), payroll, and jobs directly associated with OHSU’s operations. **Indirect impacts** occur as OHSU or its suppliers buy from other businesses. **Induced impacts** occur when workers who are directly or indirectly affected by OHSU’s operations spend their income on goods and services.

The economic impacts associated with OHSU can be measured in several ways. This report focuses on three of the most common and useful measures. **Output** is the largest measure of economic activity, and represents the value of goods and services produced. **Personal income** includes employee compensation, and self-employment and small business income. **Jobs** consist of the number of people working full- or part-time jobs. Finally, **multipliers** can be reported for output, personal income and jobs. The multiplier helps us understand the magnitude of the linkages between a given activity and

other sectors of the economy. The larger the multiplier is, the greater the interdependence between an activity (in this case, OHSU's operations) and the rest of the economy.

GROSS VS. NET IMPACTS

ECONorthwest worked with OHSU staff to assemble detailed spending data for all of OHSU's activities, including the geographic basis of the revenues and expenditures associated with various activities. We then identified the proportion of OHSU's spending that is a net gain to the region and the state (that is, spending that would not occur in the absence of OHSU), and the proportion that likely would remain in the region and be redistributed to other providers (and therefore is not included in the net impact analysis). These analytical components enable us to distinguish between gross and net economic impacts.

Gross impacts provide an upper bound estimate of economic impacts, tracing *all* the expenditures made by OHSU throughout the economy. However, as discussed above, some proportion of the services currently provided by OHSU, primarily those related to patient care, would still occur in the region and the state in the absence of OHSU. Without OHSU, many of the more routine cases would be absorbed by other local hospitals. However, the most complex cases likely would be sent to academic health centers or large hospitals in other states, resulting in the loss of that economic activity in Portland and in Oregon.

While *gross impacts* include all economic output, income and jobs associated with OHSU's spending, *net impacts* count only the economic activity that is new or additive to the economic region in question. In contrast to patient care, for which there are many providers in Portland and the state, economic activity associated with education (tuition spending, student spending, etc.), most research and significant foundation contributions likely would not occur in the absence of OHSU, and therefore count as additive to the Portland and state economies.

SUMMARY OF OHSU'S ECONOMIC IMPACTS

PORTLAND AREA IMPACTS

Table 1 shows a summary of the gross and net impacts of OHSU's activities in the Portland area. The expenditures associated directly with OHSU's activities (gross direct output) amount to \$1.601 billion, including \$935 million in income, and 13,925 full- and part-time jobs. When the total downstream impacts (indirect and induced impacts) of the initial spending are added, the total gross impacts grow to \$3.644 billion in output, including \$1.724 billion in personal income and 32,561 jobs. It is important to remember that these gross impacts are based on *all* OHSU expenditures, including those that would still occur in the absence of OHSU.

The net economic impacts—i.e., those that would not occur in the absence of OHSU—consist of \$1.038 billion in direct output, including \$580 million in personal income, and 8,617 jobs. As these expenditures circulate through the economy they

generate a total of \$2.377 billion in economic output, including \$1.097 billion in personal income, and 20,748 jobs.

Table 1: Total Gross and Net Economic Impacts in Portland’s Economy
(in 2009 dollars)

PORTLAND			
Type of Impact	Direct Impacts	Total Impacts	Multiplier
Gross Impacts			
Output	\$1,600,694,000	\$3,643,549,000	2.28
Personal Income	\$935,036,000	\$1,723,871,000	1.84
Jobs	13,925	32,561	2.34
Net Impacts			
Output	\$1,038,332,000	\$2,376,717,000	2.29
Personal Income	\$579,926,000	\$1,096,514,000	1.89
Jobs	8,617	20,748	2.41

Source: ECONorthwest IMPLAN analysis.

Note: By definition, gross impacts will always be larger than net impacts. However, there is no reason to *a priori* expect gross impact multipliers to always be larger than net impact multipliers. In this analysis, the impact multipliers represent a weighted average multiplier across all of OHSU's activities, and the counterfactual elements that convert gross impacts to net impacts are applied to OHSU activities that, themselves, have smaller economic impact multipliers. As a result, the net impact multipliers are slightly larger than the gross impact multipliers.

The net direct output circulates through the economy, adding value with each round of spending, creating a multiplier effect. By the time the original spending leaks out of the economy, the total net output in Portland is 2.29 times greater than the original net direct output. Put another way, for every dollar of expenditures made by OHSU, \$1.29 of additional output is created elsewhere in the economy, for a total of \$2.29 in net output. The multiplier for personal income is 1.89, meaning that for every dollar OHSU pays to its employees in wages and benefits, an additional \$0.89 in income is created elsewhere in the economy, for a total net impact of \$1.89 in income. Similarly, the jobs multiplier is 2.41, so for every net new job supported at OHSU, 1.41 jobs are created throughout the rest of the economy.

STATEWIDE IMPACTS

Table 2 shows the economic impacts of OHSU’s operations in Oregon’s economy. OHSU’s statewide direct expenditures (*gross* direct output) total \$1.625 billion, including personal income of \$950 million, and 14,123 jobs. These gross direct impacts are slightly greater than the Portland gross direct impacts because they include OHSU’s operations in LaGrande, Ashland, and other satellite locations. The total economic activity generated by OHSU’s initial spending, including the downstream impacts in the economy, amounts to \$3.856 billion in total *gross* output, including \$1.802 billion in personal income, and 34,614 jobs.

When we consider only the *net new* expenditures, the direct expenditures (net direct output) made by OHSU amount to just over \$1.001 billion, including \$555 million in personal income, and 8,251 jobs. As this activity circulates through the economy adding economic value with each round of spending, the total net impacts amount to \$2.351 billion in output, including \$1.072 billion in personal income, and 20,625 jobs.

Table 2: Total Gross and Net Economic Impacts in Oregon’s Economy
(in 2009 dollars)

OREGON			
Type of Impact	Direct Impacts	Total Impacts	Multiplier
Gross Impacts			
Output	\$1,625,395,000	\$3,855,706,000	2.37
Personal Income	\$949,568,000	\$1,802,402,000	1.90
Jobs	14,123	34,614	2.45
Net Impacts			
Output	\$1,000,518,000	\$2,350,761,000	2.35
Personal Income	\$554,981,000	\$1,072,026,000	1.93
Jobs	8,251	20,625	2.50

Source: ECONorthwest IMPLAN analysis.

Note: By definition, gross impacts will always be larger than net impacts. However, there is no reason to a priori expect gross impact multipliers to always be larger than net impact multipliers. In this analysis, the impact multipliers represent a weighted average multiplier across all of OHSU's activities, and the counterfactual elements that convert gross impacts to net impacts are applied to OHSU activities that, themselves, have smaller economic impact multipliers. As a result, the net impact multipliers are slightly larger than the gross impact multipliers.

On a gross basis, the statewide impacts are greater than the Portland impacts. However, on a net basis, OHSU’s statewide economic impacts are slightly smaller than for Portland because, by definition, spending that originates from inside the state but outside of Portland is net new to Portland but not net new to Oregon. As discussed above, a significant share of OHSU’s patients come from outside Portland. OHSU acts as a magnet for healthcare in Oregon because it provides access to unique equipment and services that are too expensive to be replicated in multiple locations throughout the state. While OHSU supports many activities that enable rural hospitals and providers to care for their patients in their communities, on balance there is a net transfer of economic resources into the Portland area from elsewhere in the state. Figure 2 shows the proportion of output that is counted as net new, and the proportion that is excluded from the net impact model.

Table 3: Net Indirect Output and Jobs Generated by OHSU Operations, by Industry Sector

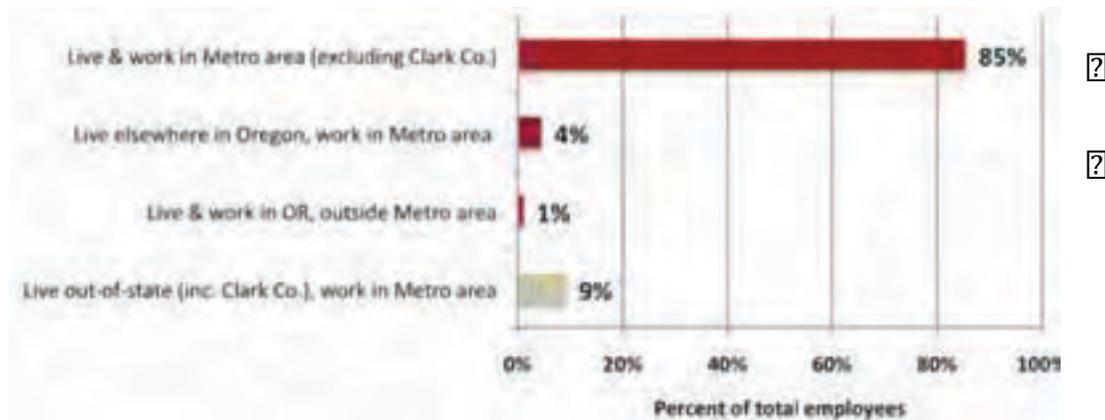
Industry Sector	Indirect Jobs	Percent of total
Professional and technical services	818	22%
Administrative and waste services	1,443	39%
Manufacturing	138	4%
Healthcare and social services	186	5%
Real estate and rentals and leasing	110	3%
Retail trade	275	7%
Construction	114	3%
Information	48	1%
Other Services	86	2%
Agriculture, forestry, fishing and hunting	440	12%
All other sectors	65	2%
TOTAL	3,723	100%

Source: ECONorthwest IMPLAN analysis.

In addition to its operating expenditures, over the last 3 years OHSU has spent more than \$445 million on capital and much of this went to local contractors. Similarly, student non-tuition spending on groceries, rent, and services benefits local businesses in much the same way.

OHSU also supports thousands of highly skilled workers who earn higher-than-average wages, spend money in the local and state economies, and contribute their intellectual capital and expertise to the civic life of the region. Figure 3 shows that 90 percent of OHSU employees live in Oregon. Household spending by OHSU employees drives induced economic impacts, and in 2007, these impacts amounted to \$557 million of economic output in the local economy, including \$209 million in personal income, and almost 5,200 jobs.

Figure 3: Percentage of OHSU Employees by Location of Residence and Employment, 2007



Source: OHSU payroll data.

SUMMARY

Oregon Health & Science University is the state's only academic health center, and is among the state's largest healthcare providers, educational institutions, research centers and employers. OHSU's health and economic impacts are substantial, and while its activities are centered in the Portland metropolitan area, its impacts reach throughout the state.

In answer to the hypothetical question that guided this study—*How would economic activity change if OHSU did not exist?*—ECONorthwest estimates that in the absence of OHSU, economic activity in Portland area would decrease by an estimated \$2.377 billion in economic output and 20,748 jobs in the Portland metropolitan. Economic activity in Oregon would decrease by an estimated \$2.351 billion in economic output and 20,625 jobs.

Looking toward the future, OHSU's economic impact is poised to grow over time. As the U.S. population ages, demand will rise for skilled healthcare providers. OHSU is well positioned to provide these workers. For patient care, net impacts will grow if OHSU continues to expand its ability to provide care and services that are unavailable elsewhere in the region. OHSU's proven ability to attract research funding and high-level researchers, and to translate research into clinical and scientific breakthroughs and marketable technology, promises to increase the importance of this powerful economic driver as well.