

# **The Economic Impacts of the University of Idaho WWAMI Program**

**Sponsored by the University of Idaho**

**Steven Peterson\***  
**Research Economist and Instructor**  
**College of Business and Economics**  
**University of Idaho**  
**Moscow, Idaho**

**August 27, 2008**

\* The author is solely responsible for the findings of this study and they do not necessarily reflect the views of the University of Idaho or any other individuals or organizations.

# Executive Summary

## Overview of Study

- This report summarizes the results of the economic impacts and contributions of the University of Idaho WWAMI program to the Moscow (Latah County), Boise (Ada County), and Idaho economies.
- The study was sponsored by the University of Idaho, initiated in May 2008, and completed in August 2008. The principle investigator was Steven Peterson, Research Economist and Instructor, College of Business and Economics, University of Idaho.
- The WWAMI Medical Education Program provides medical school access and physician education for the states of Washington, Wyoming, Alaska, Montana and Idaho (WWAMI) through a cooperative program with the University of Washington School of Medicine (UWSOM). WWAMI provides education to 20 University of Idaho first year medical students in Moscow, Idaho. In addition, in various locations throughout Idaho, the WWAMI and WWAMI-affiliated programs provide training for approximately 23 third and fourth year medical students and 70 doctors-in-training (residents) at the graduate medical education level. In total, there are approximately 113 students/doctors-in-training during any time period in Idaho under the WWAMI umbrella. The WWAMI program also generates a substantial annual flow of research dollars to the University of Idaho (UI) Moscow campus and to research projects statewide.

## Direct WWAMI Economic Contributions (Inputs to Study)

### **Physician and Staff Contributions to Idaho's Economy**

- The University of Idaho joined WWAMI in 1972 and *cumulatively* the program has produced 436 doctors of which 217 have practiced in Idaho, as of 2007. In addition, 87 medical graduates from other WWAMI states have established practices in Idaho. WWAMI-affiliated graduate medical education training programs (residencies) have produced 212 practicing Idaho doctors. In all, WWAMI has contributed 516 doctors to Idaho, or approximately 13% of Idaho's physicians. There are an estimated 3 support staff and personnel per doctor or 1,548 additional jobs attributed to WWAMI doctors. In all, WWAMI has contributed 2,064 physicians, nurses, and staff workers in Idaho.

### **Program Revenues and Expenditures**

- WWAMI had a current annual operating budget for FY2007-FY2008 of approximately \$3.5 million of which approximately 50% accrues to Idaho. The balance is paid to the WWAMI program for the second year schooling at the University of Washington and to support program development expenditures and infrastructure over the last two years of medical school in Idaho. Idaho's portion includes \$942,892 of program expenditures at the University of Idaho (Moscow campus). WWAMI also has an office/program in Boise, Idaho with an approximate budget of \$421,160 per year. There are additional WWAMI revenues (expenditures) in Idaho from the third and fourth year medical student training programs.

- WWAMI contributed approximately \$3,065,160 in research (FY2007) (mostly federal dollars originating on the Moscow, Idaho campus) creating substantial local economic impacts.
- Statewide, WWAMI contributed an *additional* \$2,000,000 (FY 2007) in research projects throughout Idaho, creating economic impacts.

### **Student Community Expenditures**

- First year WWAMI students spend an average of \$19,107 per year in Moscow, Idaho (excluding tuition and fees) for living expenses (or a total of \$382,140 for all students annually).
- Third and fourth year students spend an average of \$21,018 per year in locations throughout Idaho for living expenses (or total of \$483,407 annually for all students).
- WWAMI doctors-in-training (residents) spent an average of \$45,000 per year in locations throughout Idaho for living expenses (or a total of \$3,150,000 annually for all residents).

### **Results of Study (Outputs of Study)**

WWAMI contributes to Idaho's state and local economies in two primary ways :

- 1) *Economic impacts* resulting from the flow of expenditures from the WWAMI education and doctors-in-training (residency) programs. These expenditures occur in Moscow, Boise, and statewide. The flow of expenditures include the WWAMI education programs; medical students and doctors-in-training spending in their respective communities; and research dollars (mostly federal) from WWAMI faculty. These expenditures constituted the inputs to regional (county) and state (IMPLAN) input/output models which provide estimations of the economic impacts.
- 2) *Annual contributions to Idaho's economy from wage and salary earnings*; employment; sales; and indirect business taxes (mostly property and sales taxes) from active WWAMI physicians and their staff.

#### **1) Economic Impacts of WWAMI Program, Research, and Student Expenditures Grand Total (Figure 1):**

**Total State and Local Economic Impacts: \$17.78 million in sales; \$8.74 million wage and salary earnings; 195 jobs; and \$504,079 in taxes (indirect business taxes which are mostly property and sales taxes). These include the direct, indirect, and induced impacts (i.e. multiplier effects) and represent new dollars to their respective economies. Or put differently, the economies would shrink by the magnitude of the impacts in the absence of the WWAMI program.**

Moscow (Subtotal): Impacts of WWAMI Program, Research, and Student Expenditures

:

The WWAMI program contributes a total of: \$6.21 million sales; \$3.52 million earnings; 63 jobs; \$161,122 taxes. Included in these impacts are:

- Faculty Operations (Moscow): \$1.36 million sales; 892,792 earnings; 14 jobs; \$29,311 in taxes.
- First year Student Spending (Moscow): \$540,371 sales; \$150,603 earnings; 6 jobs; \$33,504 taxes.
- UI Faculty Research (Moscow): \$4.31 million sales; \$2.49 million earnings; 43 jobs; \$98,308 taxes.

Boise (Subtotal): Impacts of WWAMI Program

The WWAMI program contributes a total of: \$822,219 sales; \$369,451 in earnings; 5 jobs; \$22,157 in taxes.

Figure 1

### Economic Impacts of the WWAMI Program on Idaho Economies

*Include the Direct, Indirect, and Induced Effects (i.e. Multiplier Effects)*

Activity	Economy	Sales	Earnings	Employment	Taxes
Faculty/Operations	Moscow	\$ 1,360,833	\$ 882,792	14	\$ 29,311
First Year Student Spending	Moscow	\$ 540,371	\$ 150,603	6	\$ 33,504
UI Research (Grants/Contracts)	Moscow	\$ 4,306,192	\$ 2,488,977	43	\$ 98,308
<b>Sub-Total</b>	<b>Moscow</b>	<b>\$ 6,207,396</b>	<b>\$ 3,522,372</b>	<b>63</b>	<b>\$ 161,122</b>
Faculty/Operations	Boise	\$ 822,219	\$ 369,451	5	\$ 22,157
<b>Sub-Total</b>	<b>Boise</b>	<b>\$ 822,219</b>	<b>\$ 369,451</b>	<b>5</b>	<b>\$ 22,157</b>
UI Research (Grants/Contracts)	Statewide	\$ 3,438,926	\$ 1,780,657	45	\$ 89,532
Third/Fourth Year Student Spending	Statewide	\$ 779,688	\$ 216,102	8	\$ 46,632
Doctors in Residency (Spending)	Statewide	\$ 6,533,877	\$ 2,852,942	73	\$ 184,636
<b>Sub-Total</b>	<b>Statewide</b>	<b>\$ 10,752,490</b>	<b>\$ 4,849,701</b>	<b>126</b>	<b>\$ 320,799</b>
<b>Total Economic Impacts (Programs)</b>		<b>\$ 17,782,105</b>	<b>\$ 8,741,524</b>	<b>195</b>	<b>\$ 504,079</b>

Figure 2

### Annual Contributions to the Idaho Economy by Physicians Who Graduated From or Were Affiliated with the WWAMI Program

Activity	Economy	Sales	Earnings	Employment	Taxes
WWAMI Idaho Physicians	Idaho	\$ 110,262,676	\$ 62,762,849	304	\$ 838,427
Previous WWAMI Residents/Physicians	Idaho	\$ 69,998,341	\$ 39,843,903	212	\$ 532,261
Office/Nursing Support	Idaho	\$ 95,184,203	\$ 54,180,000	1,548	\$ 723,771
<b>Total Physician Contributions</b>	<b>Idaho</b>	<b>\$ 275,445,221</b>	<b>\$ 156,786,752</b>	<b>2,064</b>	<b>\$ 2,094,459</b>
<b>Grand Total WWAMI Contributions</b>	<b>Idaho</b>	<b>\$ 293,227,326</b>	<b>\$ 165,528,276</b>	<b>2,259</b>	<b>\$ 2,598,538</b>

State of Idaho (Subtotal): Impacts of WWAMI Research, and Student/Physician Expenditures

The WWAMI program contributes a total of \$10.75 million sales; \$4.85 million in earnings; 126 jobs; \$320,799 in taxes. Included in these impacts are:

- UI Research (Statewide): \$3.44 million sales; \$1.78 million earnings; 45 jobs; \$89,532 taxes.
- Third/Fourth Year Student Spending (Statewide): \$779,688 sales; \$216,102 earnings; 8 jobs; \$46,632 taxes.
- Doctors in Residency (Statewide): \$6.53 million sales; \$2.85 million earnings; 73 jobs; \$184,636 taxes.

## 2) Annual Contributions to the Economy from WWAMI Practicing Physicians and their Staff (Figure 2):

Included in these contributions are:

- WWAMI Idaho Physicians: \$110.26 million sales; \$67.76 million earnings; 304 jobs; \$838,427 taxes.
- WWAMI Physicians (Doctors-in-Training: Residency): \$69.99 million sales; \$39.84 million earnings; 212 jobs; \$532,261 in taxes.
- Office/Nursing Support: \$95.18 million sales; \$54.18 million in earnings; 1,548 jobs; \$723,771 taxes.

**Total State Annual Contributions: \$275.45 million in sales; \$156.79 million wage and salary earnings; 2,064 jobs; and \$2.09 million in property and sales taxes.**

**Grand Total WWAMI Economic Impacts and Physician/staff Contributions to Idaho's Local and State Economies: \$293.23 million in sales; \$165.53 million wage and salary earnings; 2,259 jobs; and \$2.6 million in taxes (mostly property and sales taxes).<sup>1</sup>**

<sup>1</sup> Since the economic impacts and the physician contributions involve different methodologies in their estimations, the grand total is presented for the purposes of illustration. See main report for discussion.

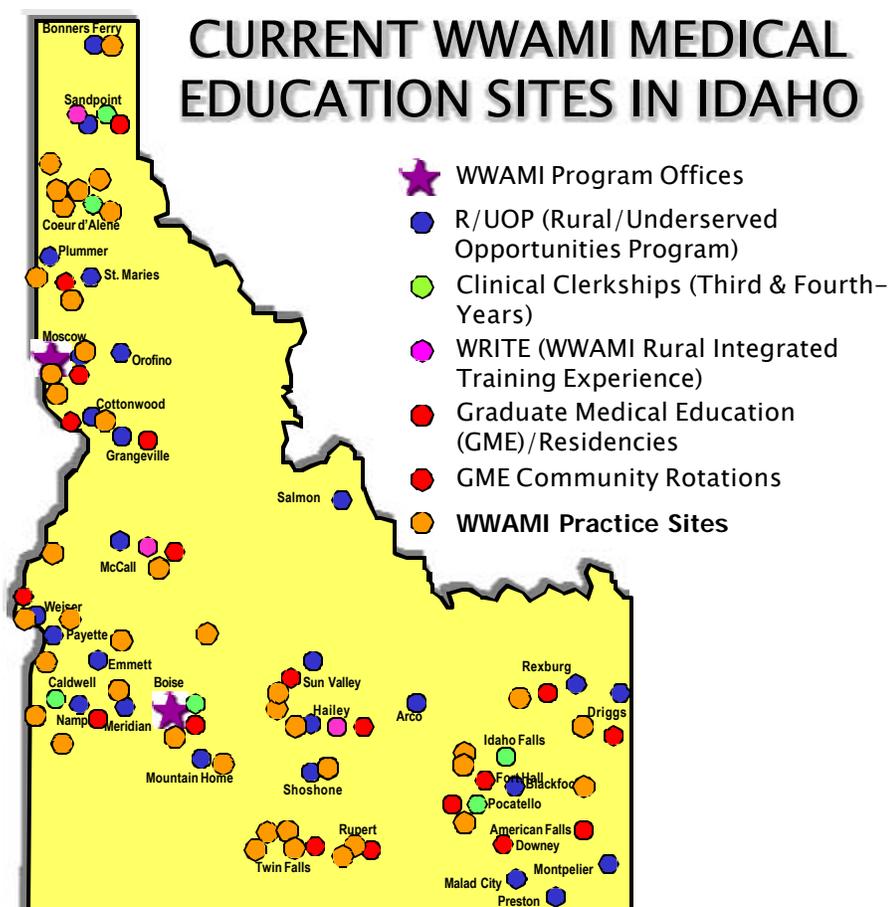
## Table of Contents

# The Economic Impacts of the WWAMI Program on the Latah County, ADA County, and Idaho Economies

By Steven Peterson

<b>Introduction</b> .....	<b>8</b>
Overview of WWAMI Program.....	8
Overview of WWAMI’s Contribution to Idaho’s Economy .....	9
<b>Data, Methodology and Assumptions of Study: Economic Impacts</b> .....	<b>9</b>
Program Revenues and Expenditures .....	10
Research Grants and Contracts .....	10
WWAMI Student Expenditures .....	10
Economic Models .....	12
Economic Base Theory .....	12
Economic Impacts.....	14
Direct WWAMI Employees.....	14
Multipliers .....	15
<b>Data, Methodology and Assumptions of Study: WWAMI Physician and Staff Contributions to Idaho’s Economy</b> .....	<b>15</b>
WWAMI Students.....	15
Average WWAMI Physician Salaries and Total Salary Contributions to Idaho.....	16
WWAMI Physician Staff Salary and Employment Contributions to Idaho.....	18
WWAMI Sales and Tax Contributions to the Idaho Economy .....	18
<b>Results of Study</b> .....	<b>19</b>
1) Economic Impacts .....	19
2) Contributions to the Economy from WWAMI Practicing Physicians and Staff .....	21
Grand Total Economic Impacts and Annual Physician and Staff Contributions.....	22
<b>Health Care Challenges: Past, Present, and Future</b> .....	<b>23</b>
Geography and Economic Regions of Idaho.....	23
Idaho’s Changing Face: From the Past, Challenges of the Future .....	25
Idaho’s Changing Face: Health Care Challenges .....	25
National Health Care Challenges .....	26
WWAMI’s Role in Idaho’s Health Care Industry .....	26
<b>Notes and Sources</b> .....	<b>27</b>
<b>Figures and Tables</b>	
Figure 1: Basic Economic Terminology and Definitions.....	11
Figure 2: Average Overall Idaho Physician Wages.....	17
Figure 3: Average Overall Physician Salaries from (Doctors-in Training) Residency.....	19
Figure 4: Results: WWAMI Economic Impacts .....	20
Figure 5: Results: WWAMI Physician/Staff Contributions to the Economy .....	20
Figure 6: Economic Regions of Idaho.....	24

# WWAMI Idaho



# **The Economic Impacts of the WWAMI Program on the Latah County, Ada County, and Idaho Economies**

**By Steven Peterson**

## **Introduction**

This report is a study of the economic impacts of the WWAMI Medical Education Program on the Latah County, Ada County, and Idaho economy. It was sponsored by the University of Idaho, initiated in May 2008, and completed in August 2008. The author of the study is Steven Peterson, Research Economist and Instructor, College of Business and Economics, University of Idaho.<sup>1</sup> This study expands a partial analysis of the economic impacts of the WWAMI program conducted in a 2004 previous study: *The Economic Impacts of University of Idaho on the Latah County and Idaho Economies*, sponsored by the University of Idaho.<sup>2</sup>

### Overview of WWAMI Program

The WWAMI Medical Education Program provides medical school access and physician education for the states of Washington, Wyoming, Alaska, Montana and Idaho through a cooperative program with the University of Washington School of Medicine (UWSOM). WWAMI provides education to 20 University of Idaho first year medical students in Moscow, Idaho. In addition, in various locations throughout Idaho, the program provides training for approximately 23 third and fourth year medical students and graduate medical education (residency training) for approximately 70 doctors. In total, there are approximately 113 students/doctors-in-training dur-

ing any time period in Idaho under the umbrella of WWAMI-affiliated programs. The WWAMI program also generates a substantial annual flow of research dollars to the Moscow campus and to research projects statewide.

### Overview of WWAMI's Contribution to Idaho's Economy

WWAMI contributes to Idaho's state and local economies in two primary ways:

1) Economic Impacts resulting from the flow of expenditures from the WWAMI education and doctors-in-training (residency) programs. These expenditures occur in Moscow, Boise, and statewide. The flow of expenditures include the WWAMI education programs; medical student and doctors-in-training (residents) spending in their respective communities; and research dollars (mostly federal) from WWAMI faculty. These expenditures constituted the inputs to regional (county) and state input/output models which provide estimations of the economic impacts.

2) Practicing physicians in Idaho who received training as a medical student and/or doctor-in-training (resident) through the WWAMI program (and their staffs) contribute substantial annual wage and salary earnings, and employment, sales, and property taxes to Idaho's economy.

### **Data, Methodology and Assumptions of Study: Economic Impacts**

This section of the report outlines the data, methodology, and assumptions of the estimation of the economic impacts from the following expenditures: 1) WWAMI education and training programs; 2) Research grants and contracts; and 3) Student/doctors-in-training (residents) community expenditures. Economic impacts were estimated for Boise, Moscow, and the state of Idaho. Basic economic terminology and definitions can be seen in **Figure 1**.

Figure 1 (Terms)

- **Export activity:** Any product or service whose sales bring money into a community from outside. Sales of wood products to a firm in another state would be an example of export activity. Out of region tourists is another example.
- **Sales:** Total transactions in dollars from direct and indirect economic activity.
- **Wage and salary earnings:** Wage and salary earnings, proprietor's income, and fringe benefits accruing to employees and workers.
- **Value-added (value-output):** This is a local measure of Gross Domestic Product (at the county level). Value added is a measure of total economic net production and activity.
- **Jobs:** Total employment resulting from economic activity. The economic model reports these as full-time and part-time jobs.
- **Indirect taxes:** All taxes generated from economic activity excluding personal and corporate income taxes. These consist of mostly sales taxes and property taxes.
- **Base industries:** Any economic activity that brings money into the local economy from the outside is considered a base industry. For example, Ada County base industries include high-technology companies, medical services, retail services, federal government, as well as other manufacturing and service firms.
- **Nonbase industries:** Any economic activity within a region that support's local consumers and businesses within the base sector, re-circulating incomes generated within the region. These activities include shopping malls that serve the local population, business and personal services consumed locally, and local construction contracts. Nonbase industries support the base industries.
- **Economic impacts:** Economic impacts measure the magnitude or importance of the expenditures of base (export) industries. Our economic model estimates multipliers for each industry. If you have a multiplier of 1.5, for example, every dollar of *base* expenditures creates \$1.5 dollars of new spending in the community. The total multiplier effect has three components: direct spending, indirect spending, and induced spending.
- **Direct spending (effects):** This represents the actual sales, income, and jobs from operations.
- **Indirect effects:** These are the downstream economic effects on sales, income, jobs, and indirect taxes in the regional economy from direct spending. For example, a medical center purchases goods and services in the community, which supports other area businesses. They in turn purchase even more goods and services as the effects ripple through the economy. These are part of the multiplier effects of direct spending.
- **Induced effects:** These are downstream effects of employee and consumer spending on the economy. They are part of the multiplier effects.
- **Full-time equivalent jobs:** The economic model is measuring full-time equivalent jobs. The actual number of workers for any given firm depends on the full-time/part-time worker mix.

### Program Revenues and Expenditures

WWAMI had a current annual operating budget for FY2007-FY2008 of approximately \$3.5 million, of which \$942,892 was dedicated to the first-year program on the Moscow, Idaho campus. The balance was paid to WWAMI for the following programs: 1) Second year schooling at the University of Washington; 2) Other overall program costs; 3) Third-year and fourth-year training costs for Idaho WWAMI students; and 4) WWAMI's office/program in Boise, Idaho with an approximate budget of \$421,160 per year.<sup>3</sup> Overall, approximately 50% of the state-appropriated funding is spent in Idaho.

### Research Grants and Contracts

In addition to program revenues, WWAMI created approximately \$3,065,160 in federal research grants (FY2007) originating on the Moscow, Idaho campus, supporting substantial local economic impacts. Statewide, WWAMI contributed an additional \$2,000,000 (FY 2007) in research projects throughout Idaho, creating economic impacts.

### WWAMI Student Expenditures

First year WWAMI students spend an average of \$19,107 per year in Moscow, Idaho (not including fees and tuition) for living expenses (or a total of \$382,140 for all 20 students annually). Like students in other professional, post-bachelor's degree programs, WWAMI students are typically in their early twenties and can be categorized as nontraditional. Many have spouses, some with children. Thus, the average living cost is higher than the typical college student. In comparison, the University of Idaho estimates the average annual undergraduate

expenditures of \$12,738 and \$15,838 for law students (excluding fees and tuition). Some recent analyses suggest that this may understate the true annual student expenditure average, especially for nontraditional students.<sup>4</sup>

It is estimated that 23 third and fourth year students spend an average of \$21,018 per year (10% higher than first year medical students) in locations throughout Idaho for living expenses (or total of \$483,407 annually for all students).

Finally, 70 WWAMI doctors-in-training (residents) receive and spent an average of \$45,000 per year in locations throughout Idaho for living expenses (or a total of \$3,150,000 annually for all students).<sup>5</sup>

### Economic Models

The economic impacts are estimated using IMPLAN input/output economic models. County models were constructed for Ada County (Boise), Latah County (Moscow); and a model for the state of Idaho. Price indexes were applied to adjust the data to FY2009. For a mathematical discussion of the economic models see: M. C. Guaderrama, N. Meyer, and R. G. Taylor, *Developing Coefficients and Building Input–Output Models*.

### Economic Base Theory

This part of the analysis (economic impacts) is founded on economic base theory. An economy (county or state) has two types of industries: base industries and nonbase industries. Any economic activity that brings money into the local economy from the outside is considered a base industry. Base industries can include high-technology companies, medical services, re-

tail trade services, federal government operations, as well as other manufacturing and service firms. Firms providing services to individuals living outside the region's trade center, such as medical and legal services, are included in the region's base. Payments from state and federal governments (including Social Security, Medicare, university funding, and welfare payments) are sources of outside income to businesses and residents. These are counted as part of the economic base.

Nonbase industries are defined as economic activity within a region that support local consumers and businesses within the base sector. They re-circulate incomes generated within the region from the base industries. Such activities include shopping malls that serve the local population, business and personal services consumed locally, medical services consumed locally, and local construction contracts. Nonbase industries support the base industries.

Economic base analysis is important for identifying the vital export industries of a region. All economic activity is allocated to the base industries.

Nonbase industries, on the other hand, are important for keeping money within a region and stimulating local economic activity for residents. Keeping income in the community *enhances* the multiplier effects of the export industries. In this respect, nonbase industries can function in the same manner as an export industry. The overall effect of import substitution can be viewed as an analogous increase in the demand for exports. Ultimately, however, nonbase industries depend on the base industries for their survival. Our economic models are founded on economic base theory.

### Economic Impacts

Economic impacts measure the magnitude or importance of the expenditures of basic (export) industries. Our economic model estimates multipliers for each industry. Suppose you have a (hypothetical) multiplier of 2.0. Every dollar of direct expenditures creates \$2.0 dollars of total new spending in the community economy.

Impacts are apportioned into two levels. The first level is the direct impact of WWAMI expenditures on each respective county economy – the jobs, payroll and earnings, value-added, and sales that are directly created by export businesses. The second is comprised of two parts: a) the impacts on other regional businesses that provide goods or services to WWAMI – the indirect impacts - and b) the effect of employee and related consumer spending on the economy -- the induced impacts. The indirect and induced impacts are the so-called “ripple” or multiplier effects in each respective economy. The multiplier or ripple effects are driven by the exports of an economy. Exports, the new money coming into an economy, set off a web of transactions as each business seeks to fulfill the demands of their customers. Impacts upon the economy are comprised of the magnitude of the multiplier(s) and the magnitude of the exports. The sum of the direct and indirect (and induced) effects measures the total impact of an industry to an economy.

### Direct WWAMI Employees

The total direct employment of WWAMI on the Moscow campus is 6.5 full-time equivalent (FTE) employees (FY2009). This total *does not* include employment counted elsewhere in the UI originating from WWAMI expenditures, research expenditures from grants and contracts, or employment from outside vendors. The WWAMI Boise office has 3 employees.

## Multipliers

The IMPLAN models generate multipliers for each respective individual industry, and thus will vary for each type of analysis. Overall, the *average* sales (output) multiplier for most state-wide analyses (State of Idaho) was 2.26. For Ada County (Boise) the average sales multiplier was 2.17. For Latah County, the average multiplier was 1.75. The magnitude of these multipliers is within economic standards for economies of their respective economic size and composition.

## **Data, Methodology and Assumptions of Study:**

### **WWAMI Physician and Staff Contributions to Idaho's Economy**

This analysis estimates the annual contributions of WWAMI-related physicians and staff to the Idaho economy; as measured in earnings, sales, and taxes (i.e. indirect business taxes which are mostly sales taxes and property taxes). This analysis is a *size* measure as opposed to an economic impact assessment. (It does not distinguish between basic and nonbasic activity and multipliers *are not* employed.)

## WWAMI Students

The WWAMI program at the University of Idaho has graduated 436 students since its inception in 1972. Of these, approximately fifty percent (217 students) are practicing or have practiced in Idaho. In addition, 87 Idaho physicians are WWAMI graduates from other participating states; which sum to 304 WWAMI doctors practicing in Idaho.

WWAMI also contributes to or is affiliated with several graduate medical education programs (residencies) in Idaho. They have produced 212 doctors who currently reside and practice in Idaho. In total, WWAMI has contributed 516 doctors in the state of Idaho, approximately 13% Idaho's total doctors.<sup>6</sup>

#### Average WWAMI Physician Salaries and Total Salary Contributions to Idaho

The average yearly salary for each specialty in Idaho was estimated using the most current data available. Idaho's average physician salaries are equivalent to the entry level wages at the national level, and below the U.S. averages. The average overall Idaho physician wage is estimated at \$179,528 (**Figure 2**). Total wage and salary contribution by WWAMI Idaho physicians is about \$54,576,391 per year.<sup>7</sup> Adding an approximate 15% fringe benefit rate increases the total to \$62,762,849.

There are three doctors-in-training (residency programs) in Idaho associated with the WWAMI program: 1) An internal medicine residency in Boise; 2) A family medicine program in Boise; and 3) A family medicine program in Pocatello. The Boise internal medicine residency program has produced 63 internal medicine physicians that ultimately opened practices in Idaho. Of these graduates, 42 doctors are currently practicing internal medicine and 21 are practicing in related specialties. (Note: in 2006, WWAMI also developed a new psychiatry residency in Seattle and Boise, but has yet to graduate its first class of residents.)

The Boise family medicine residency program has produced 118 doctors practicing in Idaho; and the Pocatello program has produced 21 doctors practicing in Idaho. A Pulmonary Fellowship has produced an additional 10 doctors working in Idaho (**Figure 3**). Applying the average salary per specialty to these 212 doctors practicing in Idaho produces an additional

Figure 2

## WWAMI Specialists Practicing in Idaho

Specialty	Number of Doctors	Percent of Total	Average Salary	Total Earnings
Anesthesiology	17	5.5%	\$ 171,240	\$ 2,878,726
Cardiology	4	1.4%	\$ 258,000	\$ 1,084,313
Dermatology	6	1.8%	\$ 195,000	\$ 1,092,719
Diagnostic Radiology	18	6.0%	\$ 201,000	\$ 3,660,608
Emergency Medicine	13	4.1%	\$ 192,000	\$ 2,420,793
Endocrinology	3	0.9%	\$ 152,200	\$ 426,441
Family Medicine	92	30.4%	\$ 152,780	\$ 14,126,166
General Surgery	8	2.8%	\$ 226,000	\$ 1,899,650
Internal Medicine	41	13.4%	\$ 178,470	\$ 7,250,652
OB/Gyn	15	5.1%	\$ 204,320	\$ 3,148,599
Oncology	1	0.5%	\$ 226,000	\$ 316,608
Orthopedic Surgery	13	4.1%	\$ 256,000	\$ 3,227,724
Otolaryngology	7	2.3%	\$194,000	\$ 1,358,894
Pathology	1	0.5%	\$ 169,000	\$ 236,756
Pediatrics	3	0.9%	\$ 204,320	\$ 572,473
Physical Medicine	3	0.9%	\$ 152,200	\$ 426,441
Plastic Surgery	1	0.5%	\$ 149,000	\$ 208,737
Psychiatry	4	1.4%	\$ 148,000	\$ 622,009
Pulmonary Medicine	3	0.9%	\$ 215,000	\$ 602,396
Radiology	20	6.6%	\$ 201,000	\$ 4,020,000
Urology	3	0.9%	\$ 261,000	\$ 731,281
Other	28	9.2%	\$ 152,200	\$ 4,264,406
Total	304	100.0%	\$ 179,528	\$ 54,576,391

Figure 3

## Doctors Practicing in Idaho From WAMI Doctors-in -Training (Residency) Programs

Program	Specialty	Location	Number of Doctors	Percent of Total	Average Salary	Total Earnings
Internal Medicine	Internal Medicine	Boise	42	19.8%	\$ 178,470	\$ 7,495,740
Internal Medicine	Other Specialties	Boise	21	9.9%	\$ 179,272	\$ 3,764,712
Family Medicine	Family Medicine	Boise	118	55.7%	\$ 152,780	\$ 18,028,040
Family Medicine	Family Medicine	Pocatello	21	9.9%	\$ 152,780	\$ 3,208,380
Pulmonary Fellowship	N/A	Boise	10	5%	\$ 215,000	\$ 2,150,000
Total			212	100%	\$ 163,429	\$ 34,646,872

\$34,646,872 wage and salary income from WWAMI residency programs (or \$39,843,903 with fringe benefits).<sup>8</sup> The magnitude of these estimations are a function of (and sensitive to) the assumed average physician salary and the average salary of the support staff.

#### WWAMI Physician Staff Salary and Employment Contributions to Idaho

It is estimated that the average Idaho doctor has three support staff: a nurse or nurse assistant; a bookkeeper or accountant; and a receptionist. The average salary of a support staff member is approximately \$35,000 including fringe benefits. The WWAMI program's 516 doctors practicing in Idaho produce an estimated 1,548 support employees (3 per doctor) and \$54,180,000 in wage and salary earnings.<sup>9</sup>

#### WWAMI Sales and Tax Contributions to the Idaho Economy

Using parameters from the economic input/output model (IMPLAN); the tax contributions to the Idaho economy can be estimated from WWAMI physician and staff earnings (i.e. indirect business taxes which is mostly property and sales taxes). The earnings-to-sales ratio is 1.757 (averaging across all health care sectors except hospitals). Applying (multiplying) this ratio to total wage and salary WWAMI earnings of \$156.79 million produces \$275.45 million in sales.<sup>10</sup>

The same procedure is utilized to estimate taxes (indirect business taxes) which are defined as all taxes except personal and corporate income taxes. At the local and regional level, they are mostly composed of property and sales taxes. The IMPLAN sales to indirect business taxes parameter is 0.0076. Applying (multiplying) this ratio to \$275.45 million in sales creates \$2,094,459 in indirect business taxes.<sup>11</sup>

## Results of Study

There are two primary analyses of this study: 1) Economic impacts of the WWAMI program, students, and research expenditures, and 2) Annual contributions to Idaho's economy from WWAMI physicians and their staff. The economic impacts are reported first **(Figure 4)**.

### 1) Economic Impacts

**The WWAMI economic impacts are reported for Moscow, Boise, and statewide (from geographically diffused expenditures on research and doctors-in-training/residency programs).**

*Grand Total: Economic Impacts of the WWAMI Program, Research, and Student Expenditures*

In total, the WWAMI program contributes \$17.78 million in sales; \$8.74 million wage and salary earnings; 195 jobs; and \$504,079 in taxes to Idaho's local and regional economies. These include the direct, indirect, and induced impacts (i.e. multiplier effects) and represent new dollars to their respective economies. Or put differently, the economies would shrink by the magnitude of the impacts in the absence of the WWAMI program. (Note: taxes refer to

**Figure 4**  
**Economic Impacts of the WWAMI Program on Idaho Economies**

*Include the Direct, Indirect, and Induced Effects (i.e. Multiplier Effects)*

Activity	Economy	Sales	Earnings	Employment	Taxes
Faculty/Operations	Moscow	\$ 1,360,833	\$ 882,792	14	\$ 29,311
First Year Student Spending	Moscow	\$ 540,371	\$ 150,603	6	\$ 33,504
UI Research (Grants/Contracts)	Moscow	\$ 4,306,192	\$ 2,488,977	43	\$ 98,308
<b>Sub-Total</b>	<b>Moscow</b>	<b>\$ 6,207,396</b>	<b>\$ 3,522,372</b>	<b>63</b>	<b>\$ 161,122</b>
Faculty/Operations	Boise	\$ 822,219	\$ 369,451	5	\$ 22,157
<b>Sub-Total</b>	<b>Boise</b>	<b>\$ 822,219</b>	<b>\$ 369,451</b>	<b>5</b>	<b>\$ 22,157</b>
UI Research (Grants/Contracts)	Statewide	\$ 3,438,926	\$ 1,780,657	45	\$ 89,532
Third/Fourth Year Student Spending	Statewide	\$ 779,688	\$ 216,102	8	\$ 46,632
Doctors in Residency (Spending)	Statewide	\$ 6,533,877	\$ 2,852,942	73	\$ 184,636
<b>Sub-Total</b>	<b>Statewide</b>	<b>\$ 10,752,490</b>	<b>\$ 4,849,701</b>	<b>126</b>	<b>\$ 320,799</b>
<b>Total Economic Impacts (Programs)</b>		<b>\$ 17,782,105</b>	<b>\$ 8,741,524</b>	<b>195</b>	<b>\$ 504,079</b>

**Figure 5**  
**Annual Contributions to the Idaho Economy**  
**by Physicians Who Graduated From or Were Affiliated with the WWAMI Program**

Activity	Economy	Sales	Earnings	Employment	Taxes
WWAMI Idaho Physicians	Idaho	\$ 110,262,676	\$ 62,762,849	304	\$ 838,427
Previous WWAMI Residents/Physicians	Idaho	\$ 69,998,341	\$ 39,843,903	212	\$ 532,261
Office/Nursing Support	Idaho	\$ 95,184,203	\$ 54,180,000	1,548	\$ 723,771
<b>Total Physician Contributions</b>	<b>Idaho</b>	<b>\$ 275,445,221</b>	<b>\$ 156,786,752</b>	<b>2,064</b>	<b>\$ 2,094,459</b>
<b>Grand Total WWAMI Contributions</b>	<b>Idaho</b>	<b>\$ 293,227,326</b>	<b>\$ 165,528,276</b>	<b>2,259</b>	<b>\$ 2,598,538</b>

See Note 18 for Disclaimer and Limitations of Study.

*indirect business taxes* which are composed mostly of property and sales taxes.) The following break-down the economic impacts by region and type of program (expenditures):

*Moscow (Subtotal): Impacts of WWAMI Program, Research, and Student Expenditures*

The WWAMI program contributes a total of \$6.21 million sales; \$3.52 million earnings; 63 jobs; and \$161,122 in taxes to the Latah County (Moscow) economy. Included in these impacts are:

Faculty and Staff Operations: \$1.36 million sales; 892,792 earnings; 14 jobs; \$29,311 in taxes.

First-Year Student Spending: \$540,371 sales; \$150,603 earnings; 6 jobs; \$33,504 taxes.

UI Faculty Research: \$4.31 million sales; \$2.49 million earnings; 43 jobs; \$98,308 taxes.

*Boise (Subtotal): Impacts of WWAMI Boise Program Office*

The Boise faculty and operations create \$822,219 sales; \$369,451 in earnings; 5 jobs; \$22,157 in taxes in Ada County (Boise).

*State of Idaho (Subtotal): Impacts of WWAMI Research, and Student/Physician Expenditures*

The WWAMI program contributes *statewide* in Idaho: \$10.75 million sales; \$4.85 million in earnings; 126 jobs; \$320,799 in taxes. Included in these impacts are:

UI Statewide Research Programs (Excluding Moscow): \$3.44 million sales; \$1.78 million earnings; 45 jobs; \$89,532 taxes.

Third/Fourth Year Student Spending: \$779,688 sales; \$216,102 earnings; 8 jobs; \$46,632 taxes.

Doctors-in-Training (Residents): \$6.53 million sales; \$2.85 million earnings; 73 jobs; \$184,636 taxes.

## 2) Contributions to the Economy from WWAMI Practicing Physicians and Staff

**The annual wage and salary contributions, sales, and taxes by WWAMI physicians and staff are reported:**

### *Grand Total State and Local Annual Physician and Staff Contributions to Idaho's Economy*

The 516 WWAMI physicians and 1,548 staff members (totaling 2,046) contribute annually \$275.45 million in sales; \$156.79 million wage and salary earnings; 2,064 jobs; and \$2.09 million in property and sales taxes. These *include* the following:

Physicians (304) from WWAMI Education Program: \$110.26 million sales; \$67.76 million earnings; 304 jobs; \$868,111 taxes.

Physicians (212) from WWAMI-affiliated Residency Programs (Doctors-in-Training): \$69.99 million sales; \$39.84 million earnings; 212 jobs; \$551,105 in taxes.

Office/Nursing Support (1,548): \$95.18 million sales; \$54.18 million in earnings; 1,548 jobs; \$1.32 million taxes.

### *Grand Total Economic Impacts and Annual Physician and Staff Contributions*

The Grand Total Economic Impacts and Physician Contributions to Idaho's Local and State Economies: \$293.23 million in sales; \$165.53 million wage and salary earnings; 2,259 jobs; and \$2.6 million in property and sales taxes.<sup>12</sup>

## Health Care Challenges: Past, Present, and Future

### Geography and Economic Regions of Idaho

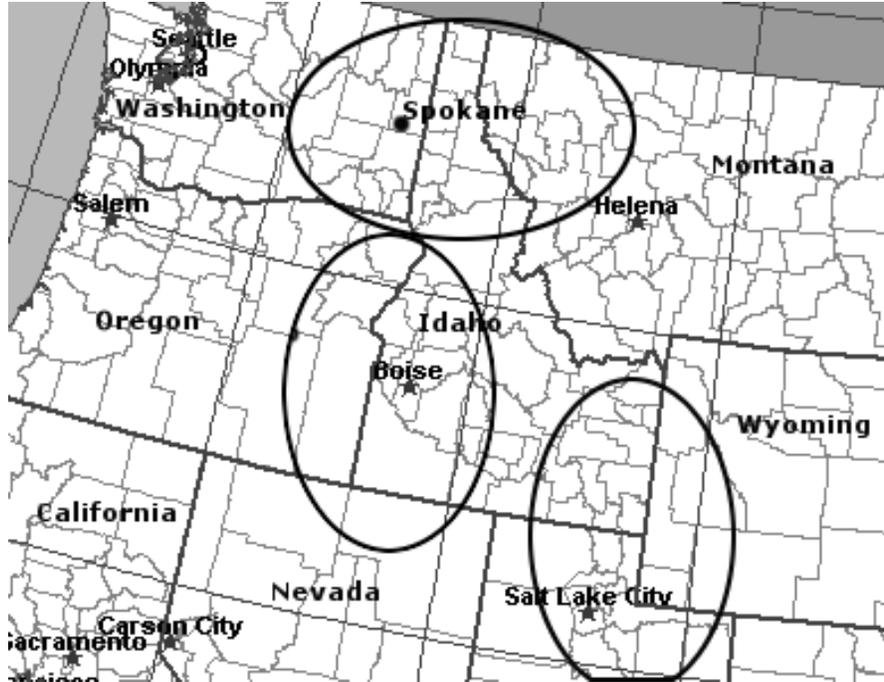
The diversity of Idaho is reflected in the relationship between its political boundaries and its economic boundaries. Politically and geographically, Idaho was not configured by economic regions. In fact, the U.S. Department of Commerce's Bureau of Economic Analysis divides the State of Idaho into three integrated economic regions. The regional economic area for northern Idaho is centered in the Spokane, Washington-Coeur d'Alene, Idaho corridor which includes north Idaho, eastern Montana, and a portion of southern Canada. The University of Idaho is situated in Latah County, and is included in the Spokane, Washington-Coeur d'Alene, Idaho economic region (**Figure 6**).

Boise is the center of the state and dominates the economic area of southwestern Idaho and includes eastern Oregon, a portion of northern Nevada and western Utah.

The economy of southeastern Idaho is centered in Salt Lake City, Utah. It includes the cities of Pocatello, Idaho Falls, and the regions of western Wyoming and southern Montana.

Spokane, Washington; Boise, Idaho; and Salt Lake City, Utah, all represent the "central place" of the surrounding hinterlands. The central place is the focus of economic activity for each hub. It is where major industries are located, where the majority of shopping and retail trade establishments exist, and where medical centers and other vital services are situated.

Figure 6



### Idaho's Changing Face: From the Past, Challenges of the Future

Idaho is ranked 11<sup>th</sup> in the nation in land area (14<sup>th</sup> land and water) with 82,751 square miles. Idaho's 2007 population was 1,499,402; or about 18.12 persons per square mile, ranking 44<sup>th</sup> in the nation. Idaho is one of the fastest growing states in the U.S., increasing approximately 15.9% (in population) from 2000 to 2007, ranking 5<sup>th</sup> in the nation.<sup>13</sup>

Idaho has two economies: One urban — one rural. The rural economy is based on agriculture, wood products, and other natural resource industries. The urban economy is based on rapidly growing high technology, service industries, tourism, and other emerging industries. The urban economy has experienced high growth while the rural regions have been growing slowing, and in some cases, declining. Overall, Idaho's nine urban counties have 70% of the state's population, up from 59% in 1969. Population density reflects the dynamics of the state: Ada County (Boise) had 195 persons per square mile compared to Clark County, 0.4 persons per square mile in 2006.

There are substantial differences in income and earnings as well. Idaho's 2006 per capita income (\$29,920) was 81% of the U.S. (\$36,714), and it ranked 44<sup>th</sup> in the nation. Ada County-Boise (\$40,445) was 110% of the U.S. In contrast, Idaho County (the largest county geographically) had a per capita income of \$23,753 or 59% of Ada County, 65% of the U.S., and 79% of the state of Idaho.<sup>14</sup>

### Idaho's Changing Face: Health Care Challenges

Idaho's geographic and economic mix creates some unique health care challenges. Idaho has significant, often isolated, rural populations with relatively low average incomes,

needing affordable health care services. At the same time the urban regions are facing rapid, and in some cases, explosive population growth. In these regions, health care providers are scrambling to keep up with demand. One important feature of the WWAMI program is that it trains and encourages its graduates to serve both urban and rural regions of the state.

In 2004 Idaho was ranked 49<sup>th</sup> in the nation in per capita personal health care expenditures (\$4,444), due to average lower costs of operations, lower costs of living, and lower average per capita incomes. In 2003-2005 Idaho was ranked 17<sup>th</sup> in the nation from the percent of the population without health insurance (16.5%).<sup>15</sup>

#### National Health Care Challenges

Health Care expenditures were 5.3% of GDP in 1960, 13.8% in 2000, 16.3% in 2007, and projected to reach 20% of GDP by 2020. In 2008, per capita health care expenditures are \$6,629. Average annual medical inflation was 4.6% per year from 1990 to 2007 versus 2.8% for overall inflation or 68% higher than overall inflation.<sup>16</sup> The historic annual cost increases in health care are not sustainable and suggest that changes in the structure of health care services may be inevitable.

#### WWAMI's Role in Idaho's Health Care Industry

WWAMI has contributed about 13% of Idaho's doctors. Idaho, however, is in need of more doctors, ranking 49<sup>th</sup> in the nation in physicians per capita. One important issue is that WWAMI has been admitting approximately 20 new students per year, largely unchanged since 1972.<sup>17</sup> Idaho's population, however, has increased 96% since 1972. Based upon the data in this report, significantly increasing WWAMI enrollment would be one cost effective means to increase Idaho's doctors and help address Idaho's health care needs in the future.

## Notes

<sup>1</sup> The author is solely responsible for the findings of this study and they do not necessarily reflect the views of the University of Idaho or any other individuals or organizations.

<sup>2</sup> Peterson, Steve, Jim Nelson and Ismail Genc, “The Economic Impacts of the University of Idaho on Idaho’s Economy (by County and by College)” Sponsored by the University of Idaho, March 2005.

<sup>3</sup> Suzanne Allen’s position is 80% time. She is a practicing physician in Boise for the additional 20% time, creating additional regional revenues.

<sup>4</sup> University of Idaho, <<http://www.uihome.uidaho.edu/uihome/admissions/undergraduate/costs.aspx>>

<sup>1</sup> Peterson, Steve, et al., “The Economic Impacts of the University of Idaho on Idaho’s Economy.” It was found in this study that the estimates of student spending have a wide confidence interval. Students typically do not keep accurate records of their spending which creates problems in surveys of student spending. Op. cit.

Note: The same estimate of student expenditures were used for UI law students on a similar analysis conducted for the College of Law in July 2008.

<sup>5</sup> M. C. Guaderrama, N. Meyer, and R. G. Taylor, Developing Coefficients and Building Input–Output Models, University of Idaho Department of Agricultural Economics and Rural Sociology, September 2000.

See also: Miller, Ronald E., and Peter D. Blair. 1985. Input-Output Analysis: Foundations and Extensions. Englewood Cliffs, NJ: Prentice-Hall.

Minnesota IMPLAN Group, Inc. (1999). IMPLAN Professional User’s Guide, Analysis Guide, and Data Guide. MIG, Inc., Stillwater, Minnesota.

<sup>6</sup> Source: WWAMI Assistant Dean in Idaho, Suzanne Allen, MD, MPH, who also directs the Clinical Education Program in Boise.

<sup>7</sup> Bureau of Labor Statistics, U.S. Department of Labor, [http://www.bls.gov/oes/current/oes\\_id.htm](http://www.bls.gov/oes/current/oes_id.htm), Also: Allied-Physicians salary survey, [http://www.allied-physicians.com/salary\\_surveys/physician-salaries.htm](http://www.allied-physicians.com/salary_surveys/physician-salaries.htm).

<sup>8</sup> Unless otherwise specified, wage and salary earnings include proprietor’s income and fringe benefits.

<sup>9</sup> Allen, Suzanne, op.cit.

<sup>10</sup> More specifically:  $1.756814381 * \$156,786,752 = \$275,445,221$ . The sales-to-earnings ratio includes proprietor's income in the earnings total.

<sup>11</sup> More formally:  $\$275,445,221 * 0.007603903 = \$2,094,459$ .

<sup>12</sup> These summaries are for the purposes of illustration only and must be carefully interpreted. The methodology for estimating economic impacts differs from the methodology of the size measures of the annual contributions of physicians and staff on Idaho's economy. In addition, the economic impacts are linked to specific geographic regions; caution should be employed when summing spatially.

<sup>13</sup> U.S. Department of Commerce, Bureau of the Census.

<sup>14</sup> Regional Economic Information System (REIS), U.S. Department of Commerce, <<http://www.bea.gov/bea/regional/reis/>>.

<sup>15</sup> State Health Facts, Kaiser Family Foundation, <http://www.statehealthfacts.org/profileind.jsp?cat=4&sub=47&rgn=14>.

See also Health 2007, National Center for Health Statistics, Department of Health and Human Services, <<http://www.cdc.gov/nchs/hs.htm>>.

<sup>16</sup> U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index; calculation:  $(4.6/2.8) - 1 = 68\%$ .

<sup>17</sup> REIS Op. Cit.; S. Allen, Op. Cit.

<sup>18</sup> Disclaimer and Limitations of Study: 1) The annual economic contributions to Idaho's economy by WWAMI physicians and their staff are sensitive to the estimated average salaries employed in the analysis; and to the sales and tax parameters. 2) The economic impacts are sensitive to the magnitude of the IMPLAN multipliers; the degree that WWAMI expenditures are *basic* to their respective regions; and to the accuracy to the direct expenditures of the WWAMI program and estimated student spending. The author is solely responsible for the findings of this study and they do not necessarily reflect the views of the University of Idaho or any other individuals or organizations.