



# Economic Impacts of the National College of Natural Medicine in Portland, Oregon

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## 1. INTRODUCTION AND KEY FINDINGS

The National College of Natural Medicine (“NCNM”) commissioned ECONorthwest<sup>1</sup> to measure the economic impacts of NCNM’s activities on the three-county Portland metropolitan area. Universities frequently use economic impact studies to demonstrate the contributions of their activities to the local economy, and economists have developed several approaches to measure these impacts. The most common approach estimates the economic impacts associated with the college’s spending on operations and capital, as well as that of its students.

Using detailed operating costs, capital spending, and student spending data from NCNM, ECONorthwest used the IMPLAN economic impact model to trace how these expenditures circulate through the Portland metropolitan economy.<sup>2</sup> Impacts are reported for the college’s 2011 fiscal year. (All dollars are reported in 2011 dollars.)

The economic impacts associated with NCNM in FY2011 include:

- **Direct spending consisting of \$10.1 million in payroll, \$6.6 million in non-payroll operating costs, \$1.0 million in capital spending, and almost \$11.8 million in off-campus student spending.**
  - NCNM directly employed 267 persons (183 FTE) in FY2011, and provides employment opportunities across a wide range of occupations, including instructors (104 jobs), medical staff (16 jobs), and college services/administrative staff (147 jobs).
  - The average annual wage for NCNM staff was \$47,300 in FY2011.
- **NCNM’s total economic impacts in Portland consist of \$55.9 million in economic activity, including \$25.4 million in personal income and 613 jobs. (See Table ES1.)**
  - The direct impacts of NCNM are based on the spending, payroll, and jobs at the college and clinics, and spending by students in the local community. The direct impacts consist of \$25.8 million in output, including \$14.2 million in personal income and 366 jobs. (As discussed previously, 267 jobs are at the college. Thus, student spending directly supports almost 100 jobs in Portland.)
  - Indirect or “supply-chain” impacts are linked to NCNM purchases of goods and services from other local businesses, as well as additional purchases among

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<sup>1</sup> ECONorthwest is a consulting firm incorporated in the state of Oregon that specializes in economics and financial analysis. ECONorthwest has a staff of over 45 economists, policy analysts, and planners, with offices in Seattle, Portland, and Eugene. Alec Josephson, senior economist and ECONorthwest’s Director of Economic Impact Analyses, was the project manager and author of this report. He received valuable research and economic modeling assistance from Tessa Krebs, economist. All questions regarding this report should be directed to Mr. Josephson at 503-222-6060 or josephson@portland.econw.com.

<sup>2</sup> NCNM is located in Portland, Oregon. This analysis uses a three-county definition of the Portland metropolitan economy consisting of Multnomah, Washington, and Clackamas counties.

businesses.<sup>3</sup> In FY2011, the indirect impacts amounted to \$10.9 million in sales, \$4.2 million in personal income, and 85 jobs. These impacts benefited a wide range of industry sectors, including: real estate, construction, utilities, insurance, printing, office and janitorial suppliers, and professional services.

- **Induced** or “consumption-driven” impacts are attributed to the income and purchasing power of employees who are directly or indirectly affected by NCNM. The combination of NCNM’s labor-intensive operations and well-compensated employees who work and live locally, will tend to generate substantial induced impacts. This is complemented by indirect jobs that are relatively high paying. The induced impacts in Portland amount to \$19.2 million in economic activity, including \$7.0 million in personal income and 163 jobs.

**Table ES1: Economic Impacts of NCNM, by Type, FY2011**

Impact Measure	Direct	Indirect	Induced	Total
Output	\$25,815,000	\$10,883,700	\$19,160,700	\$55,859,400
Personal Income	\$14,228,200	\$4,263,400	\$6,953,300	\$25,444,900
Jobs	366	85	163	613

Sources: ECONorthwest using NCNM data and the IMPLAN economic impact model.

- **Spending associated with NCNM has a “multiplier effect” that benefits workers and business owners in other sectors of the Portland economy.** All of the impact measures described in Table ES1 can be summarized across direct, indirect, and/or induced impact categories using mathematical formulae to measure and explain what economists refer to as the “multiplier effect.” In essence, economic multipliers provide a shorthand way to better understand the linkages between an activity and other sectors of the economy. All else considered, larger economic multipliers suggest greater interdependence between an activity—in this case, NCNM—and the rest of the economy.
  - **NCNM’s output multiplier is 2.2.** Thus, every million dollars in spending attributed to NCNM generates another \$1.2 million dollars in spending elsewhere in Portland.
  - **NCNM’s personal income multiplier is 1.8.** As such, every million dollars in income directly generated by NCNM is linked to another \$800,000 in income for workers in other sectors of the Portland economy.
  - **NCNM’s employment multiplier is 1.7.** Thus, every ten direct jobs attributed to NCNM are linked, on average, to another 7 jobs elsewhere in Portland.

As the preceding discussion indicates, NCNM benefits the Portland economy by purchasing a wide variety of goods and services, and generating spending, income, and jobs for others that might not otherwise occur. This last point is what economists refer to as “net impacts” and is crucial for understanding the true benefits of the college on the Portland economy. The net impacts of a college are determined by the level and type of expenditures it makes; the source of funds used to finance those expenditures; and the types of educational services it provides. For

<sup>3</sup> In this analysis, indirect impacts also include the direct and indirect impacts from NCNM capital spending. This is discussed in greater detail in the methodology section of the report.

NCNM, almost all of the college revenues come from tuition, college sales, and private gifts and contracts. Moreover, NCNM is the only accredited naturopathic medicine college in the state of Oregon and, in its absence, it is likely that faculty and students would find employment and academic opportunities elsewhere. Given these two important considerations...

*The National College of Natural Medicine brings **new** spending to the community that “but for” the college would accrue elsewhere. In this regard, the economic contributions of the college represent **net gains** to the Portland economy.*

In addition to these economic impacts, NCNM benefits local communities by providing free- or low-cost health care services at its clinics in Portland, and by teaching health care providers who practice in Oregon. In particular, in FY2011:

- **NCNM operated the NCNM Clinic on its campus and also 18 community clinics throughout Portland that provide free- or low-cost medical care by naturopathic physicians and Chinese medicine practitioners.<sup>4</sup> Together, they served an estimated 33,000 patients.** In addition to numerous non-economic benefits, these health care services also generate economic benefits not explicitly included in those reported previously.
  - According to our IMPLAN model, the average output per worker in the three-county Portland area is \$389 per day. Thus, every 1,000 worker-days saved, by improved health outcomes attributed to the NCNM clinics, is linked to potentially \$389,000 in direct output and \$145,000 in income for workers and small business owners.
  - By providing free- or low-cost medical care, NCNM “frees up” purchasing power to be spent elsewhere. According to our IMPLAN model, every \$1 million in consumer spending on non-medical goods and services generates \$1.3 million in output, \$440,000 in personal income, and 11 jobs in Portland.<sup>5</sup>
- **From a long-term perspective, NCNM increases human capital development.** When graduates stay and practice in Oregon, this investment in human capital benefits local communities, improves the graduate’s lifetime earnings power, and increases state and local tax revenues through higher contributions over time.
  - According to a survey conducted by NCNM in 2010, approximately 51 percent (224) of survey respondents have medical practices in the state of Oregon.

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<sup>4</sup> NCNM currently operates 20 community clinics.

<sup>5</sup> These impacts are on a gross basis. That is, they don’t consider foregone spending on medical services from other providers.

## 2. BACKGROUND

The National College of Natural Medicine (NCNM) was established in 1956 in Portland, Oregon, and is the oldest accredited naturopathic medical college in North America. NCNM is accredited with the Northwest Commission on Colleges and Universities,<sup>6</sup> the Council on Naturopathic Medical Education, and the Accreditation Commission for Acupuncture and Oriental Medicine. It is currently one of only seven accredited naturopathic colleges in North America.<sup>7</sup>

NCNM offers four different degree programs, including: Doctor of Naturopathic Medicine, Master of Science in Oriental Medicine, Master of Acupuncture and Master of Science in Integrative Medicine Research, as well as a number of certificate programs. NCNM currently has an enrollment of 550 students, and employs 267 faculty and staff. The faculty to student ratio averages 12:1 in the School of Naturopathic Medicine and 6:1 in the School of Classical Chinese Medicine.<sup>8</sup>

In addition to the school's unique educational opportunities, in FY2011, NCNM also operated its campus-based NCNM Clinic and provided services at 18 community clinics in the Portland area. These clinics provide low-cost medical care by naturopathic physicians and Chinese medicine practitioners to an estimated 33,000 patients yearly. In coordination with other agencies, NCNM clinics provide a valuable benefit to those in the local communities they serve.

NCNM also operates the Helfgott Research Institute, a non-profit research center of natural medicine. Helfgott was established in 2003 and provides students with the opportunity to participate in research at state-of-the-art facilities. Numerous Helfgott Institute research projects have received National Institutes of Health grants, awards, and press coverage. Projects include studies investigating carpal tunnel syndrome, psoriasis, osteoporosis, cancer, diabetes and insomnia.

## 3. ECONOMIC IMPACT METHODS AND TERMINOLOGY

Economists have developed several approaches to measure the contributions or economic impacts of universities on the communities in which they operate. The most common method estimates the economic impacts associated with the college's spending on payroll, goods and services, and capital projects, as well as local spending by students and visitors. This method is oftentimes referred to as the "expenditure approach."

The expenditure approach is typically conducted within an input-output modeling framework.<sup>9</sup> Input-output models provide a comprehensive picture of the economic activities in a given area

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<sup>6</sup> The NWCCU is one of six U.S. regional accrediting bodies authorized and recognized by the U.S. Department of Education.

<sup>7</sup> According to the Association of Accredited Naturopathic Medical Colleges.

<sup>8</sup> The faculty to student ratio is the average of the lecture and clinic class ratios.

<sup>9</sup> Although initially inspired by Quesnay's "Tableau Economique," and the Marxian and Walrasian analysis of general equilibrium, input-output analysis was first put to practical use by Wassily Leontief in the late 1930s. While at Harvard, Leontief used his input-output system to construct an empirical model of the United States economy. This research gave rise to his 1941 classic, "Structure of American Industry, 1919-1929." For his research, Leontief was awarded the Nobel Prize in Economics in 1973.



using mathematical relationships that describe the interactions of local industries with each other, with households as suppliers of the factors of production, with industries outside of the region, and with final users of goods and services.

Input-output models that rely on survey or primary source data are expensive to construct and are generally not available for state and regional economies. As a result, special modeling techniques have been developed to estimate the necessary empirical relationships from a combination of national technological relationships, and state- and county-level measures of economic activity. These modeling techniques and data have been packaged into the IMPLAN (for Impact Analysis for PLANning) modeling software. This is the modeling system ECONorthwest used in this analysis.

### **3.A. The IMPLAN Economic Impact Model**

IMPLAN has been developed and distributed by the Minnesota IMPLAN Group, Inc., since 1993. Currently there are over 1,500 public and private users of the IMPLAN modeling software. The IMPLAN model is widely used and well respected. The United States Department of Agriculture (USDA) recognized the IMPLAN modeling framework as “*one of the most credible regional impact models used for regional economic impact analysis*” and, following a review by experts from seven USDA agencies, selected IMPLAN as its analysis framework for monitoring job creation associated with the American Recovery and Reinvestment Act (ARRA) of 2009.<sup>10</sup>

IMPLAN provides both the structure and flexibility necessary to incorporate primary source data into the economic impact model. This is particularly important in this analysis where ECONorthwest used detailed payroll, non-payroll operating costs, capital spending, and student spending data provided by NCNM to build custom expenditure functions of their operations. This detailed expenditure approach allows for customization of the inputs that go into the IMPLAN model and, as a result, provides the most reliable estimate of economic and fiscal impacts.

The IMPLAN model is based on a well-structured, input-output modeling framework that relies on government-vetted data for the Portland area and the state. This analysis uses 2010 baseline IMPLAN data—the most current year available.

### **3.B. Types of Impacts**

Economic impact analysis employs specific terminology to identify the different types of economic impacts. The *direct* impacts include the output (basically expenditures), payroll, and jobs associated with NCNM. In order to provide educational services, NCNM employs professors, research faculty, administrators, and classified staff working in clerical, technical, service, and maintenance positions. These employees and their incomes represent the direct impacts of the college.

*Indirect* impacts occur as businesses or institutions buy from other businesses. NCNM, for example, will purchase electricity, water and sewer services, facilities maintenance and construction repair services, and a host of other goods and services necessary to operate. The construction contractor will, in turn, purchase fuels and lease equipment. These purchases of

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<sup>10</sup> See excerpts from an April 9, 2009 letter to MIG, Inc., from John Kort, Acting Administrator of the USDA Economic Research Service, on behalf of Secretary Vilsack, at [www.implan.com](http://www.implan.com).

goods and services by businesses from other businesses *indirectly* generate sales, jobs, and income for others.

*Induced* impacts result from the increased income and purchasing power of households who are either directly or indirectly affected by NCNM spending. The college professor, for instance, will take their family to dinner or purchase health care services for their children. Employees for the construction contractor who repairs NCNM facilities will spend their income in much the same way. This spending *induces* sales, jobs, and income for workers and businesses in other sectors of the economy.

This cycle of spending does not go on forever. It continues until the initial spending (or change in “final demand”) eventually leaks out of the local economy as a result of taxes, savings or purchases of non-locally produced goods and services or “imports.”

### 3.C. Economic Impact Measures

The IMPLAN model reports the following measures of economic impacts:

- **Output** represents the value of goods and services produced, and is the broadest measure of *economic activity*. (Personal income is a subset of output and the two should not be added together.)
- **Personal income** (or labor income) consists of employee compensation and proprietary income.
  - Employee Compensation (wages) includes workers’ wages and salaries, as well as other benefits such as health, disability, and life insurance; retirement payments; and non-cash compensation.
  - Proprietary Income (business income) represents the payments received by small-business owners or self-employed workers. Business income would include, for example, income received by private business owners, doctors, accountants, lawyers, etc.
- **Jobs** include both full- and part-time employment.

### 3.D. Gross vs. Net Economic Impacts

The economic impacts of a college, such as NCNM, can best be explored by posing the following hypothetical question:

*How would economic activity in Portland change if the National College of Natural Medicine did not exist?*

One answer would be to assess the impacts associated with NCNM’s expenditures regardless of where the revenues originated or what would happen to their students if the college did not exist. These *gross* impacts represent an upper-bound estimate of the economic activity that can be traced back to the college, but do not necessarily reflect or measure the creation of new jobs or income. It could be the case, for instance, that some of the college’s revenues come from state government or that some of their students would have gone to another college in Oregon. In each case, the college may have diverted economic activity away from other Oregon businesses (in economics, this is referred to as a “substitution effect”).

This analysis counts as impacts only the economic activity that is truly attributable to the existence of NCNM. Implicit in this analysis is the assumption that all of the spending associated with the college would be lost to the Portland economy if NCNM did not exist, i.e., most of the faculty, staff, and students would relocate outside of Portland to work or study. This assumption is reasonable, given:

- Nearly all of NCNM’s revenues come from tuition and fees, private gifts and contracts, and college sales. Alternatively, only 3 percent of NCNM’s revenues come from government grants and contracts, and only a small fraction of this government funding comes from the state of Oregon.
- NCNM is the only accredited naturopathic college in Oregon. Therefore, the college attracts many out-of-state students to Portland, and keeps local students in Portland. If NCNM did not exist, many students who now attend NCNM may not pursue a degree in Oregon, but rather a similar type of degree outside of the state. Moreover, many faculty members would find academic opportunities elsewhere.

**Table 1: NCNM Revenues (FY2011)**

Source	Amount	Percent of Total
Tuition and fees	\$13,623,452	70%
Private gifts and contracts	\$1,889,699	10%
Gov’t grants and contracts	\$556,398	3%
Sales and services - clinics	\$2,556,493	13%
Bookstore	\$564,024	3%
Event revenue	\$5,165	0%
Other revenue	\$337,963	2%
<b>Total All Sources</b>	<b>\$19,533,194</b>	<b>100%</b>

Source: NCNM Financial Statements, page 4.

So, to answer the question as it relates to NCNM in Portland...

*The National College of Natural Medicine brings **new** spending to the community that, “but for” the college, would accrue elsewhere. In this regard, the economic contributions of the college represent **net gains** to the Portland economy.*

#### 4. ECONOMIC IMPACT MODELING INPUTS AND RESULTS

This section reports the economic impacts associated with NCNM’s spending and activities in Portland. It begins by summarizing the spending and activities associated with the college. It then provides additional details for each major expenditure category. These expenditures form the inputs into the economic impact model. It concludes by providing economic impact results for each major activity, and discussing additional economic benefits not explicitly included in the economic impact results.

##### 4.A. Modeling Inputs

Table 2 summarizes the major expenditures associated with NCNM. The college’s direct expenditures on employee payroll and operating goods and services represented 57 percent of total FY2011 spending, while spending by students—on all items other than tuition—comprised 40 percent of total spending. The college’s capital outlays amounted to 3 percent of total expenditures in 2011.



**Table 2: NCNM Activities and Expenditures (FY2011)**

Major Expenditure / Category	Amount
<b>Operating Expenditures</b>	
Payroll	\$10,093,857
Non-Payroll	\$6,561,400
Total Operating	\$16,655,257
<b>Non-Operating Expenditures</b>	
Capital Spending	\$990,536
Student Spending	\$11,812,350
Total Non-Operating	\$12,802,886
<b>Total All Expenditures</b>	<b>\$29,458,143</b>

Sources: NCNM Financial Statements, and student enrollment and spending data.

Note: Non-payroll operating expenditures do not include depreciation or student scholarships.

In FY2011, NCNM operating expenditures totaled \$16.7 million, including \$10.1 million in payroll and \$6.6 million in non-payroll spending. In FY2011, NCNM employed 267 instructors, medical personnel, researchers and staff.<sup>11</sup> This included 111 full-time and 156 part-time employees. After converting all jobs to full-time equivalents (FTEs), ECONorthwest estimates that the average annual income for NCNM employees in FY2011 was \$47,300.

In addition to payroll, NCNM spent approximately \$6.6 million on goods and services in FY2011. Table 3 reports NCNM's major non-labor operating expenditures, by major category, in descending order. Many of these expenditures benefit local businesses and their employees. Expenditures on professional services, lab fees, business support services, and facility support and maintenance services will have a particularly potent local effect. Indeed, based on our economic impact model, we estimate that over 70 percent of NCNM's non-labor operating expenses directly benefit workers and businesses in Portland.

**Table 3: NCNM Non-Labor Operating Expenses, by Major Expense Category (FY2011)**

Operating Expense Category	Amount	Percent of Total
Professional services and fees (including lab fees)	\$1,373,319	21%
Cost of good sold	\$982,451	15%
Insurance	\$976,430	15%
Rent, lease and interest expense	\$714,950	11%
Business support services	\$621,852	9%
Facility support services and maintenance	\$607,506	9%
Public services and miscellaneous	\$407,577	6%
Teaching and office supplies	\$312,270	5%
Utilities	\$290,338	4%
Taxes, licenses, dues and subscriptions	\$274,707	4%
Total All Expenses	\$6,561,400	100%

Source: NCNM Financial Statements, Function Expenses

Note: Non-payroll operating expenditures do not include depreciation or student scholarships.

In 2011, NCNM's capital spending totaled almost \$1 million, 91 percent of capital spending on building improvements and 9 percent on the acquisition of equipment. Because NCNM's primary function is to provide educational services, by definition, there are no direct impacts associated with capital spending, in that capital expenditures generally facilitate, rather than directly generate, output.

<sup>11</sup> Direct employment does not include student employment.

NCNM enrolled 550 students during the 2010–2011 school year. According to estimates by the NCNM Financial Aid Office, the average student is expected to spend \$21,012 per year on living expenses. The NCNM campus does not provide student housing, therefore, all living expenses are captured at off-campus establishments. In addition, the economic impacts do not include student spending on tuition and other college-provided goods and services, as these expenditures represent revenue to NCNM and their inclusion would double count their effects. Based on student enrollment and spending data, ECONorthwest estimates that total student spending during the school year amounted to \$11.8 million. The main beneficiaries of student spending are owners of real estate, eating and drinking establishments, retailers, and personal services providers.

#### 4.B. Modeling Results

Table 4 reports the economic impacts for each major spending category and for the college for FY2011. In total, NCNM spending and activities are associated with \$55.9 million in economic activity, including \$25.4 million in personal income and 613 full- and part-time jobs in Portland in FY2011.<sup>12</sup>

**Table 4: NCNM Economic Impacts, by Major Activity (FY2011)**

Major Activity / Impact Measure	Direct	Indirect	Induced	Total
<b>Operations</b>				
Output	\$16,655,300	\$6,673,800	\$13,467,000	\$36,796,000
Personal Income	\$10,093,900	\$2,620,300	\$4,903,100	\$17,617,300
Jobs	267	53	115	434
<b>Capital Spending</b>				
Output	\$0	\$1,194,300	\$509,600	\$1,703,900
Personal Income	\$0	\$517,100	\$183,500	\$700,600
Jobs	0	9	4	13
<b>Student Spending</b>				
Output	\$9,159,700	\$3,015,700	\$5,184,200	\$17,359,600
Personal Income	\$4,134,300	\$1,126,000	\$1,866,600	\$7,127,000
Jobs	99	23	44	166
<b>All Activities</b>				
Output	\$25,815,000	\$10,883,700	\$19,160,700	\$55,859,400
Personal Income	\$14,228,200	\$4,263,400	\$6,953,300	\$25,444,900
Jobs	366	85	163	613

Sources: ECONorthwest using NCNM data and the IMPLAN economic impact model.

NCNM’s operations generated the largest economic impacts. Based on our expenditure approach and data provided by NCNM, the direct operating impacts amounted to \$16.7 million in output, including \$10.1 million in personal income and 267 jobs in FY2011. This direct spending generated additional supply-chain or indirect impacts amounting to \$6.7 million in economic activity, \$2.7 million in personal income, and 53 jobs. As discussed previously, much of NCNM’s non-labor operating expenditures are captured by Portland-area businesses. To this, we add the fact that the average annual income for employees at indirectly affected businesses was almost \$50,000. This, combined with the labor-intensive operations of the college, generates

<sup>12</sup> ECONorthwest used IMPLAN’s Multi-Regional Input-Output (“MRIO”) component to measure the geographic spillover effects for other parts of the state. The spillover was modest across all economic impact measures, so they are not reported here.

rather sizeable consumption-driven or induced impacts consisting of \$13.5 million in output, \$4.9 million in personal income, and 115 jobs.

Student spending also contributed to the Portland economy. In total, ECONorthwest estimates that the Portland economy captured \$9.2 million (77 percent) of the \$11.8 million in spending by NCNM students during the 2011 school year. Similar to operations, this spending will have ripple effects for other sectors. In total, approximately \$17.4 million in output, \$7.1 million in personal income, and 166 jobs in Portland are linked back to NCNM student spending in 2011.

As the preceding discussion indicates, all of the impact measures reported in Table 4 can be summarized across direct, indirect, and/or induced impact categories using mathematical formulae to measure and explain what economists refer to as the “multiplier effect.” In essence, economic multipliers provide a shorthand way to better understand the linkages between an activity and other sectors of the economy. All else considered, larger economic multipliers suggest greater interdependence between an activity—in this case, NCNM—and the rest of the economy. Table 5 reports the economic impact multipliers for operations, student spending, and all NCNM activities.

**Table 5: NCNM Economic Impact Multipliers, by Major Activity (FY2011)**

Major Activity	Output	Personal Income	Jobs
Operations	2.2	1.7	1.6
Capital	NA	NA	NA
Student Spending	1.9	1.7	1.7
All Activities	2.2	1.8	1.7

Sources: ECONorthwest using NCNM data and the IMPLAN economic impact model.

Note: Economic multipliers not calculated for capital spending due to no direct impacts.

- **NCNM’s output multiplier is 2.2.** Thus, every million dollars in spending attributed to NCNM generates another \$1.2 million dollars in spending elsewhere in Portland.
- **NCNM’s personal income multiplier is 1.8.** As such, every million dollars in income directly generated by NCNM is linked to another \$800,000 in income for workers in other sectors of the Portland economy.
- **NCNM’s employment multiplier is 1.7.** Thus, every ten direct jobs attributed to NCNM are linked, on average, to another 7 jobs elsewhere in Portland.

#### 4.C. Other Economic Benefits

NCNM provides other economic benefits that are not explicitly included in the economic impact results reported previously. This report discusses additional economic benefits from: 1) free- or low-cost clinic services, and 2) alumni who practice in Oregon.

##### 4.C.1. NCNM Clinics

In FY2011, NCNM operated the NCNM Clinic on its campus, as well as 18 community clinics throughout the Portland area that provide free- or low-cost medical care by naturopathic physicians and Chinese medicine practitioners. Together, they served an estimated 33,000 patient visits. In addition to numerous non-economic benefits, these donation-based clinics help to

reduce worker absences due to illness and allow patients to spend money that would have been spent on medical services to be dispersed elsewhere in the economy.

From an economic perspective, lost worker-days due to illness, reduces worker and business productivity. Businesses can adjust to lost worker-days by substituting labor and/or changing production processes, but not at a zero cost. For workers, lower productivity ultimately shows up in the form of lost or foregone earnings. More importantly, much like unemployment, lost worker-days results in foregone output that is lost forever.

- According to our IMPLAN model, the average output per worker in the three-county Portland area is \$389 per day. Thus, every 1,000 lost workers-days can, potentially, result in the loss of \$389,000 in output. To put this into context, NCMN clinics served 33,000 patient visits in FY2011. If, by some combination, half of those visits translate into a worker-day saved, then NCMN clinics are associated with \$6.4 million in additional output in Portland. This translates into \$2.4 million in additional income for workers and small business owners.

NCMN clinics provide services on a donation basis. That is, patients make a donation to NCMN for the services they receive based on their individual willingness and ability to pay. This, potentially, frees up consumer spending for other non-medical goods and services.

- According to our IMPLAN model, every \$1 million in consumer spending on non-medical goods and services generates \$1.3 million in output, \$440,000 in personal income, and 11 jobs in Portland. Thus, if the average NCMN patient saved \$30 per visit, then approximately \$990,000 in purchasing power would have been “freed up” in FY2011 to be spent elsewhere. This spending translates into almost \$1.3 million in economic activity, including \$480,000 in income for workers and small business owners in Portland.

#### **4.C.2. NCMN Alumni**

From a long-term perspective, NCMN increases human capital development. Numerous studies have documented that higher education significantly improves a graduate’s lifetime earning power. That increased earning power benefits the graduate, other economic actors who provide goods and services to the graduate, and the state’s budget through higher tax contributions over time. According to a survey conducted by NCMN in 2010, approximately 51 percent (224) of survey respondents have medical practices in the state of Oregon.

In addition, the college is alma mater to over 2,000 alumni who practice in nearly every state and Canadian province, as well as in many foreign countries. Approximately 50 percent of the licensed naturopathic physicians practicing in the United States are graduates of NCMN.