THE ECONOMIC IMPACTS OF SELECTED PROFESSIONALS ON
THE ECONOMY OF THE STATE OF NEVADA

UNIVERSITY OF NEVADA, RENO
THE ECONOMIC IMPACTS OF SELECTED PROFESSIONALS
ON THE ECONOMY OF THE STATE OF NEVADA

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INTRODUCTION

Recently additional attention has been given to the national health care industry because many national, state and local leaders realize that quality health care is vital to economic viability at the national, state and local level. Just as quality health care is vital to our nation, it is imperative to the State of Nevada and to its local communities. A viable health sector not only increases local quality of life, but also acts as a necessary input for future economic growth. Other professionals’ businesses such as veterinarians and lawyers also add to the vitality of the local economy.

For many professions in the health industry, Nevada students must attend professional schools outside of the state to obtain necessary training. Nevada students seeking to become physician assistants, optometrists, pharmacists or veterinarians must go out of the state to obtain professional school training. To assist Nevada students with tuition for these professional schools, the professional student exchange program (PSEP) of the Western Interstate Commission on Higher Education (WICHE) has been used. In return for a grant of 75 percent of support fee assistance, the professional agrees to return to practice in Nevada for as many years as the support fees were provided. The healthcare access program (HCAP) of WICHE also assists Nevada students with tuition both in-state and out-of state for certain professions if the student is willing to work two years with medically underserved populations in Nevada. For this analysis, impacts of medical professions, such as dentists, physician assistants, nurses, physical therapists, optometrists, veterinarians and pharmacists are to be estimated for the state of Nevada as well as impacts of lawyers, a profession that has also benefited from WICHE support.

The overall objective of this study is to derive the economic impacts of selected medical professions on Nevada’s economy. Specific objectives are:

1. Review concepts of community economics and multipliers, and
2. Estimate economic impacts of professions, such as dentists, physician assistants, physical therapists, pharmacists, nurses, optometrists, lawyers or veterinarians on the state of Nevada.
Some Basic Concepts of Community Economics and Income and Employment Multipliers

Figure 1 illustrates the major flows of goods, services and dollars in any economy. The foundation of a community’s economy is those businesses which sell some or all of their goods and services to buyers outside of the community. Such a business is a basic industry. The flow of products out of, and dollars into, a community are represented by the two arrows in the upper right portion of Figure 1. To produce these goods and services for “export” outside the community, the basic industry purchases inputs from outside of the community (upper left portion of Figure 1), labor from the residents or “households” of the community (left side of Figure 1), and inputs from service industries located within the community (right side of Figure 1). The flow of labor, goods, and services in the community is completed by households using their earnings to purchase goods and services from the community’s service industries (bottom of Figure 1). It is evident from the interrelationships illustrated in Figure 1 that a change in any one segment of a community’s economy will have reverberations throughout the entire economic system of the community.

Consider the spending of professionals, such as dentists, physician assistants, physical therapists, pharmacists, nurses, optometrists, lawyers or veterinarians and their employees. The professions (basic industry) pay employees and thus dollars go to households. Likewise, profession offices purchase goods from other businesses and dollars flow to other businesses. This increases income in the “households” segment of the economy. Since earnings increase, households increase their purchases of goods and services from businesses within the “services” segment of the economy. This in turn increases these businesses’ purchases of labor and inputs. Thus, the change in the economic base works its way throughout the entire local economy.
Figure 1: Overview of Community Economic System
IMPACTS OF SELECTED MEDICAL PROFESSIONS
ON THE STATE OF NEVADA ECONOMY

The total state-wide economic impacts of professions such as dentists, physician
assistants, physical therapists, pharmacists, nurses, optometrists, lawyers or veterinarians,
were derived using the IMPLAN microcomputer input-output model. IMPLAN was
developed by the U.S. Forest Service and is a model which can be used to derive state-
wide economic impacts (Siverts et al., 1983). It is currently maintained and updated by
Minnesota IMPLAN Group, Inc (Minnesota IMPLAN Group, Inc., 2004).
Dentists:

In past years the WICHE program supported students in out-of-state dental schools. Recently, the state of Nevada opened a new dental school in Las Vegas. Nevada students may now use the WICHE program for tuition assistance to attend dental school inside the state in return for two years of service with a medically underserved population.

Information as to costs of an average dental operation was obtained from the American Dental Association (2003). For a new solo dentist operation, an average of 4.9 employees would be employed as dental assistants and office personnel. Using the American Dental Association information, an average solo operation for a newly established dentist had $366,550 in total output. Using the IMPLAN software, it was calculated that overall economic impact of a solo dentist’s office in the state of Nevada was total economic activity of $619,470, employment of 8.5 people, and total income impacts of $391,238.

Table 1. State-Wide Economic Impacts of a Solo Dental Office.

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Type II Multiplier</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Activity</td>
<td>$366,550</td>
<td>1.69</td>
<td>$619,470</td>
</tr>
<tr>
<td>Employment</td>
<td>4.9</td>
<td>1.73</td>
<td>8.5</td>
</tr>
<tr>
<td>Income</td>
<td>$281,466</td>
<td>1.39</td>
<td>$391,238</td>
</tr>
</tbody>
</table>

Total output and employment are from the American Dental Association (2005, 2006). Secondary impacts and income are calculated with Nevada 2003 IMPLAN input-output model software.
Physician Assistant:

A Nevada student seeking to become a physician assistant will have to attend professional school outside the state of Nevada. For those attending professional school outside the state, the WICHE program may be used for tuition assistance and support fees.

Information on physician assistants was obtained from the American Academy of Physician Assistants (AAPA) 2005 Physician Assistant Census Report. According to the AAPA, almost six in ten respondents (57%) are employed by physician group or solo practices and 22 percent are employed by hospitals. Since an average physician assistant practice could not be estimated, the average salary of a new physician assistant was used to derive impacts. The AAPA (2006) indicated that the mean income nationally for a new graduate is $68,116. Using the national average starting salary and the IMPLAN microcomputer input-output software, statewide impacts were estimated.

For an average salary of $68,116, total medical sector output would be $124,817. Therefore the total economic impact on the Nevada economy of a starting physician assistant is $210,941. (See Table 2.) From a one employee increase, total employment increases by 1.73 jobs. With an average starting salary of $68,116, the total income impacts to the state would be $94,681.

| Table 2. State-Wide Economic Impacts of a Physician Assistant. |

<table>
<thead>
<tr>
<th>Economic Activity</th>
<th>Direct</th>
<th>Type II Multiplier</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>$124,817</td>
<td>1.69</td>
<td></td>
<td>$210,941</td>
</tr>
<tr>
<td>Employment</td>
<td>1</td>
<td>1.73</td>
<td>1.73</td>
</tr>
<tr>
<td>Income</td>
<td>$68,116</td>
<td>1.39</td>
<td>$94,681</td>
</tr>
</tbody>
</table>

Physical Therapists:

In past years, the WICHE program has supported physical therapy students out of state. Nevada has a new school of physical therapy at the University of Nevada, Las Vegas. Currently, Nevada students may attend professional physical therapy school inside the state. The WICHE program can be used for tuition assistance when the student is willing to commit to two years of service with an underserved population.

According to the Bureau of Labor Statistics, sixty percent of physical therapists are employees of hospitals or physical therapy firms. Some are self-employed and sometimes contract out their services. Others work for nursing homes and outpatient care centers. Wage and salary data for average starting salaries of physical therapists was obtained from the Nevada Department of Employment, Training and Rehabilitation (2005). According to Harris and Seung (1996), American Physical Therapy Association data shows that when an average firm hires a physical therapist, an assistant is also hired, so there is a two employee increase. However, since Harris and Seung suggest that national data may also be skewed upward we follow their methodology, using only one new employee hire to find economic impacts.

The wage and salary survey for 2005 shows that the average starting salary for a physical therapist in Nevada was $54,251. For this average salary, total medical sector output would be $99,411. (See Table 3.) The total impact on the Nevada economy would be $168,005. For a one employee increase, total employment increased by 1.73 full and part-time employees. Total income impacts would be $75,409.

| Table 3. State-Wide Economic Impacts of a Physical Therapist |
|---------------------------------|----------------|----------------|
| Economic Activity               | Direct $99,411| Type II Multiplier 1.69 | Total $168,005 |
| Employment                      | 1.73          | 1.73          |                  |
| Income                          | $54,251       | 1.39          | $75,409          |

Pharmacists:
Since the state of Nevada does not have a professional school for pharmacy, Nevada students must attend professional pharmacy school outside the state. The WICHE program can be used for tuition assistance and support using either the professional student exchange program or the healthcare access program.

Most pharmacists work as employees of pharmacies in drugstore chains, grocery stores, and so forth. Some pharmacists work in hospitals. Most are salaried employees, according to the Bureau of Labor Statistics. Information on a starting pharmacist’s salary was obtained from the Nevada Department of Employment, Training and Rehabilitation. The average annual starting salary of a pharmacist in Nevada was $78,506. However, according to Harris and Seung (1996), a new pharmacist results in the hiring of a total of four new employees by the retail establishment. Using average employment income in the Health and Personal Care Store Sector as given in IMPLAN, a total of $117,130 would be paid to the 4 employees. Output by the pharmacy to support that level of employee compensation would be $269,490. The total impacts to the Nevada economy for a starting pharmacist, including multiplier effects, are estimated to be $433,880. (See Table 4.) The total employment impact, including indirect and induced impacts, is 5.56 employees. Using average employee compensation for 4 employees in the Health and Personal Care Store Sector, total income impacts would be $167,500.

Table 4. State-Wide Economic Impacts of a Pharmacist

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Type II Multiplier</th>
<th>Total</th>
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</thead>
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<tr>
<td>Economic Activity</td>
<td>$269,490</td>
<td>1.61</td>
<td>$433,880</td>
</tr>
<tr>
<td>Employment</td>
<td>4.0</td>
<td>1.39</td>
<td>5.56</td>
</tr>
<tr>
<td>Income</td>
<td>$117,132</td>
<td>1.43</td>
<td>$167,500</td>
</tr>
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</table>

Optometrists:

Since the state of Nevada does not have a professional school for optometry, Nevada students must attend professional optometry school outside the state. The WICHE program can be used for tuition assistance and support using either the professional student exchange program or the healthcare access program.

Approximately 75 percent of optometrists are in either group or solo private practice, according to the BLS Occupational Handbook. According to the 2003 American Optometric Association Economic Survey (2003), more than six of ten respondents indicated that they were either in a solo practice or in a two-member group or partnership. The median number of full-time equivalent support staff positions per practice was reported to be four. Median practice gross income was reported to be $480,000 in 2002. Assuming a two optometrist practice, gross income would then be $240,000 per optometrist with 2 support staff per optometrist. The reported median income for self-employed optometrists was $114,500 with an additional median of 17.3 percent of gross income going to support staff. Total employment income per optometrist was estimated to be $156,020, given the AOA Survey data and assuming two optometrists per office. Therefore, the total impacts to the Nevada economy for a self-employed optometrist are estimated to be $405,600. (See Table 5.) Total income impacts would be $139,203 and total employment impacts would be 5.19 jobs.

Table 5. State-Wide Economic Impacts of an Optometrist

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Type II Multiplier</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Economic Activity</td>
<td>$240,000</td>
<td>1.69</td>
<td>$405,600</td>
</tr>
<tr>
<td>Employment</td>
<td>3</td>
<td>1.73</td>
<td>5.19</td>
</tr>
<tr>
<td>Income</td>
<td>$156,020</td>
<td>1.39</td>
<td>$216,868</td>
</tr>
</tbody>
</table>

Total output, employment and income data from 2003 AOA Economic Survey (2003). Secondary impacts were calculated with Nevada 2003 IMPLAN input-output model software.
Nurses:

The state of Nevada has several nursing schools Nevada students may attend. The WICHE program can be used for tuition assistance using the healthcare access program. Nurses agree to work two years in a medically underserved region in Nevada in return for tuition assistance.

Nurses are almost all salaried workers at hospitals, nursing homes, physician’s offices, home health care services and elsewhere. Twenty to twenty-five percent of nurses work part-time. Information on an entry level nurse’s salary was obtained from the Nevada Department of Employment, Training and Rehabilitation. The average annual starting salary of a registered nurse in Nevada was $47,440. Output associated with the salary would be $86,930. Therefore, the total impacts to the Nevada economy for a starting nurse are estimated to be $146,912. (See Table 6.) With an average starting salary of a nurse, total income impacts would be $82,071.

Table 6. State-Wide Economic Impacts of a Nurse

<table>
<thead>
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<th></th>
<th>Direct</th>
<th>Type II Multiplier</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Economic Activity</td>
<td>$86,930</td>
<td>1.69</td>
<td>$146,912</td>
</tr>
<tr>
<td>Employment</td>
<td>1</td>
<td>1.73</td>
<td>1.73</td>
</tr>
<tr>
<td>Income</td>
<td>$47,440</td>
<td>1.39</td>
<td>$65,942</td>
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Direct salary information obtained from the Nevada Department of Employment, Training and Rehabilitation (2003). Secondary impacts calculated with Nevada 2003 IMPLAN input-output model software.
Veterinarians:

Since the state of Nevada does not have a professional school for veterinarians, Nevada students must study veterinary medicine outside the state. The WICHE program can be used for tuition assistance and support using the professional student exchange program.

According to information from the Economic Report on Veterinarians & Veterinary Practices (American Veterinary Medical Association, 2005 Edition) about 70 percent of veterinarians own or are employed by a private practice. About 75 percent of these private practices are either predominantly or exclusively involved in small animal care with a median of two veterinarians per practice. The average exclusive small animal practice has total revenues of $639,000. The average full time equivalent support staff required for a practice that predominantly serves small animals is 7.5 or 3.75 per each veterinarian in a two veterinarian office. Associated income for one-half the practice’s total revenue of $319,500 is $111,633. Therefore, the total impacts to the Nevada economy for a veterinarian in a two-man small animal private practice are estimated to be $536,760 with employment impacts of 6.6 and income impacts of $178,128. (See Table 7.)

Table 7. State-Wide Economic Impacts of a Veterinarian

<table>
<thead>
<tr>
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<th>Direct</th>
<th>Type II Multiplier</th>
<th>Total</th>
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</thead>
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<tr>
<td>Economic Activity</td>
<td>$319,500</td>
<td>1.68</td>
<td>$536,760</td>
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<tr>
<td>Employment</td>
<td>4.75</td>
<td>1.39</td>
<td>6.60</td>
</tr>
<tr>
<td>Income</td>
<td>$111,633</td>
<td>1.60</td>
<td>$178,128</td>
</tr>
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</table>

Lawyers:

The state of Nevada did not have an accredited law school until 2003. Until this time, Nevada law students had to attend law school outside the state. The WICHE program was used for tuition assistance and support using the professional student exchange program.

Approximately three quarters of all lawyers are in private practice, according to the Bureau of Labor Statistics. Income of lawyers in private practice varies widely depending on whether the lawyer is a partner in a law firm or in solo practice. According to the American Bar Association’s Young Lawyer’s Division 2000 survey, only about 22 percent of young lawyers were in solo firms or were partners in their law firm. Over 75 percent of the young lawyers worked for larger firms with 5 or more lawyers, largely as employees.

Information on an average new lawyer’s income was obtained from the Nevada Department of Employment, Training and Rehabilitation. The average annual starting salary of a lawyer in Nevada was $63,984. This would require $148,164 of total output. Therefore, total impacts to the Nevada economy for a typical new lawyer are estimated to be $253,999 with total income impacts of $95,976. (See Table 8.)

Table 8. State-Wide Economic Impacts of a Lawyer

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Type II Multiplier</th>
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</thead>
<tbody>
<tr>
<td>Economic Activity</td>
<td>$148,164</td>
<td>1.71</td>
<td>$253,999</td>
</tr>
<tr>
<td>Employment</td>
<td>1.0</td>
<td>1.81</td>
<td>1.81</td>
</tr>
<tr>
<td>Income</td>
<td>$63,984</td>
<td>1.50</td>
<td>$95,976</td>
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Direct salary information obtained from the Nevada Department of Employment, Training and Rehabilitation (2003). Secondary impacts calculated with Nevada 2003 IMPLAN input-output model software.
CONCLUSION

For many professions in the health industry, Nevada students must attend professional schools outside the state of Nevada. To assist Nevada students with tuition and support for these professional schools, the WICHE program has been used. For some other health professions with professional schools in Nevada, the WICHE program helps provide in-state as well as out-of-state tuition grants in return for two years of service in a medically underserved area. From the analysis, the state of Nevada realizes substantial economic impacts from its support of students in professional schools for dentists, physician assistants, nurses, physical therapists, optometrists, veterinarians, lawyers and pharmacists. These professions not only increase the quality of health care within the state, they also increase the quality of life in the state and have been shown to be necessary inputs for future economic growth.
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