Prague Municipal Hospital
Medical Service Area-
Economic Impact of the Health Sector

Oklahoma State Department of Health,
Office of Rural Health

Oklahoma Cooperative Extension Service,
Oklahoma State University

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The Economic Impact of the Health Sector
On the Economy of the
Prague Municipal Hospital Medical Service Area

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RURAL DEVELOPMENT
OKLAHOMA COOPERATIVE EXTENSION SERVICE
OKLAHOMA STATE UNIVERSITY

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Medical facilities have a tremendous medical and economic impact on the community in which they are located. This is especially true with health care facilities, such as hospitals and nursing homes. These facilities not only employ a number of people and have a large payroll, but they also draw into the community a large number of people from rural areas that need medical services. The overall objective of this study is to measure the economic impact of the health sector on the economy of the Prague Municipal Hospital medical service area. The specific objectives of this report are to:

1. summarize the direct economic activities of the health sector;
2. review concepts of community economics and multipliers; and
3. estimate the secondary impacts of the health sector on the economy of the Prague Municipal Hospital medical service area.

No recommendations will be made in this report.

County Demographic and Economic Data

The population for the Prague Municipal Hospital medical service area will be illustrated in this section. The medical service area consists of the southern portion of Lincoln County, the northern part of Seminole County, and the western part of Okfuskee County. The population for Prague, Sparks, and Meeker in Lincoln County; Little in Seminole County; and Boley and Paden in Okfuskee County are presented in Table 1. The population of the town of Prague was 2,317 in 1990 and is estimated to have increased 0.6 percent to 2,332 according to the Census Estimates for 1999. The community of Sparks has increased 8.9% in population from 202
**Table 1**  
Population of Prague Municipal Hospital  
Medical Service Area, Oklahoma

<table>
<thead>
<tr>
<th>County</th>
<th>City/Region</th>
<th>1990 Population</th>
<th>1999 Population</th>
<th>% Change '90 - '99</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln County</td>
<td>Meeker</td>
<td>1,009</td>
<td>1,013</td>
<td>0.4%</td>
</tr>
<tr>
<td></td>
<td>Prague</td>
<td>2,317</td>
<td>2,332</td>
<td>0.6%</td>
</tr>
<tr>
<td></td>
<td>Sparks</td>
<td>202</td>
<td>220</td>
<td>8.9%</td>
</tr>
<tr>
<td></td>
<td>Remainder of rural area</td>
<td>n/a</td>
<td>2,794 *</td>
<td></td>
</tr>
<tr>
<td>Okfuskee County</td>
<td>Boley</td>
<td>904</td>
<td>872</td>
<td>-3.5%</td>
</tr>
<tr>
<td></td>
<td>Paden</td>
<td>405</td>
<td>416</td>
<td>2.7%</td>
</tr>
<tr>
<td></td>
<td>Remainder of rural area</td>
<td>n/a</td>
<td>699 *</td>
<td></td>
</tr>
<tr>
<td>Seminole County</td>
<td>Rural area includes town of Little</td>
<td>n/a</td>
<td>548 *</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>8,894</td>
<td></td>
</tr>
</tbody>
</table>

**SOURCES:** Population data from the U. S. Bureau of the Census, 1990;  
*Households counted from Oklahoma State Department of Transportation maps, 1992; persons per household calculated from Woods & Poole, 1999.
in 1990 to an estimated 220 in 1999. The community of Meeker has increased 0.4% in population from 1,009 in 1990 to an estimated 1,013 in 1999. The remainder of the medical service area in Lincoln County, calculated by counting households from Oklahoma Department of Transportation maps and persons per household from Woods & Poole, has an estimated population of 2,794 in 1999. The community of Boley in Okfuskee County has decreased 3.5% in population from 904 in 1990 to an estimated 872 in 1999. Paden’s population has increased from 405 in 1990 to an estimated 416 in 1999, an increase of 2.7%. The remainder of the rural area in Okfuskee County that is part of the medical service area consists of an estimated population of 699 as calculated by counting households from Oklahoma Department of Transportation maps and persons per household from Woods & Poole. The estimated rural population of the medical service area located in Seminole County that also includes the town of Little, calculated by counting households from Oklahoma Department of Transportation maps and persons per household from Woods & Poole, is 548 for 1999. The population in the medical service area is estimated to be 8,894 in 1999 according to the U. S. Census Bureau, Population Estimates Branch. In summary, the populations of Prague, Meeker and Sparks in Lincoln County have increased slightly. The population of Boley in Okfuskee County has decreased slightly. The population of Paden in Okfuskee County has increased slightly.

The Direct Economic Activities

Employment and payroll are the important direct economic activities created in the Prague Municipal Hospital medical service area from the health sector. The health sector is divided into the following five components:

- Hospitals
- Doctors and Dentists (includes other medical professionals)
• Nursing and Protective Care
• Other Medical and Health Services (includes home health care and county health departments)
• Pharmacies

The total health sector in the Prague Municipal Hospital medical service area employs 259 full-time equivalent employees and has an estimated payroll of $5,146,000 (Table 2). The health sector in the Prague Municipal Hospital medical service area is typical of many rural areas, with one hospital, two physicians, one physician assistant, two dentists, one optometrist, two nursing homes, a hospice, a home health agency, ambulance service, and three pharmacies. The Hospital component employs 30 people with an annual payroll of $764,000. The Doctors, Dentists, and Other Professionals component employs 18 full-time equivalent employees with an annual payroll of $720,000. The Nursing and Protective Care Component employs 173 people with an annual payroll of $2,696,000. The Other Medical and Health Component has a total of 23 employees totaling a payroll of $473,000. The Pharmacies Component includes 15 employees and has an annual payroll of $493,000. It should be noted that many rural communities have a large number of elderly, and the ranchers and farmers often retire in the towns. Thus, Nursing and Protective Care facilities are an important component of the health sector.

In summary, the health sector is vitally important as a community employer and important to the community's economy. The health sector definitely employs a large number of residents. The health sector and the employees in the health sector purchase a large amount of goods and services from businesses in the Prague Municipal Hospital medical service area. These impacts are referred to as secondary impacts or benefits to the economy. Before the secondary impacts of the health sector are discussed, basic concepts of community economics will be discussed.
### Table 2
**Direct Economic Activities of Health Sector**
in Prague Municipal Hospital Medical Service Area

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Employees</th>
<th>Estimated Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>30</td>
<td>$764,000</td>
</tr>
<tr>
<td>Prague Municipal Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctors, Dentists, and Other Professionals</td>
<td>18</td>
<td>$720,000</td>
</tr>
<tr>
<td>(includes 2 primary care physicians, 1 physician assistant, 2 dentists, 1 optometrist)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing and Protective Care</td>
<td>173</td>
<td>$2,696,000</td>
</tr>
<tr>
<td>(includes 2 nursing homes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Medical and Health</td>
<td>23</td>
<td>$473,000</td>
</tr>
<tr>
<td>(includes one home health agency, hospice, and ambulance service)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacies (3)</td>
<td>15</td>
<td>$493,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>259</td>
<td>$5,146,000</td>
</tr>
</tbody>
</table>

**SOURCE:** Local survey and estimated from research
Some Basic Concepts of Community Economics and Income and Employment Multipliers

Figure 1 illustrates the major flows of goods, services, and dollars of any economy. The foundation of a community's economy are those businesses that 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, for instance, the closing of a hospital. The services section will no longer pay employees and dollars going to households will stop. Likewise, the hospital will not purchase goods from other businesses and dollar flow to other businesses will stop. This decreases income in the "households" segment of the economy. Since earnings would decrease, households decrease their purchases of goods and services from businesses within the "services" segment of the economy. This, in turn, decreases these businesses' purchases of labor and inputs. Thus, the change in the economic base works its way throughout the entire local economy.
Figure 1.
Community Economic System
The total impact of a change in the economy consists of direct, indirect, and induced impacts. Direct impacts are the changes in the activities of the impacting industry, such as the closing of a hospital. The impacting business, such as the hospital, changes its purchases of inputs as a result of the direct impact. This produces an indirect impact in the business sectors. Both the direct and indirect impacts change the flow of dollars to the community's households. The households alter their consumption accordingly. The effect of this change in household consumption upon businesses in a community is referred to as an induced impact.

A measure is needed that yields the effects created by an increase or decrease in economic activity. In economics, this measure is called the multiplier effect. A Type III multiplier is used in this report. It is defined as:

Type III\(^1\) - is the ratio between direct employment, or that employment used by the industry initially experiencing a change in final demand and the direct, indirect, and induced employment.

A Type III employment multiplier of 3.0 indicates that if one job is created by a new industry, 2.0 jobs are created in other sectors due to business (indirect) and household (induced) spending.

**Secondary Impacts of Health Sector on the Economy of the Prague Municipal Hospital Medical Service Area**

Employment and income multipliers for the area have been calculated by use of the IMPLAN model. It was developed by the U.S. Forest Service\(^2\) and is a model that allows for development of county multipliers. The Type III employment multipliers for the five

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\(^1\) The Type III multiplier is a modified Type II multiplier and is calculated slightly differently than normal Type II methodology. Researchers feel it is more accurate. For specific reasons and how to calculate, see [1].

\(^2\) For complete details of model, see [1] and [2].
components of the health sector are shown in Table 3, column 3. The Type III employment multiplier for the hospital component is 1.64. This indicates that for each job created in that sector, 0.64 jobs are created throughout the area due to business (indirect) and household (induced) spending. The Type III employment multipliers for the other health sector components are also shown in Table 3, column 3. The Type III income multiplier for the hospital sector is 1.46 (Table 3, column 6). This indicates that for each dollar created in that sector, 0.46 dollars is created throughout the area due to business (indirect) and household (induced) spending. The Type III income multipliers for the other four health sector components are also given in Table 3, column 6.

Applying the employment multipliers to the employment for each of the five health sector components yields an estimate of each component’s employment impact on the Prague Municipal Hospital medical service area (Table 3, columns 2, 3, and 4). For example, the hospital has 30 employees. Applying the Type III employment multiplier of 1.64 to the employment number of 30 brings the total employment impact of the hospital to 49 employees (30 x 1.64 = 49). The Doctors & Dentists component has a direct impact of 18 employees and with the application of the Type III multiplier of 1.7, the total impact comes to 31 employees. The Nursing and Protective Care component has a direct effect of 173 employees and an employment multiplier of 1.59, to bring the total impact to 275 employees. The Other Medical & Health Services component has a direct effect of 23 employees, an employment multiplier of 1.62 and a total employment impact of 37 employees. The Pharmacy component has 15 employees and a total impact of 23 employees, applying the employment multiplier of 1.56. The total employment impact of the health sector in the Prague Municipal Hospital medical service area is estimated at 415 employees (Table 3, total of column 4).
Table 3  

Economic Impact of the Health Sector  
on Employment and Income in Prague Municipal Hospital Medical Service Area

<table>
<thead>
<tr>
<th>Health Sector Component</th>
<th>(2) Employment</th>
<th>(3) Multiplier</th>
<th>(4) Employment Impact</th>
<th>(5) Income</th>
<th>(6) Multiplier</th>
<th>(7) Income Impact</th>
<th>(8) Retail Sales</th>
<th>(9) One Cent Sales Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals</td>
<td>30</td>
<td>1.64</td>
<td>49</td>
<td>$764,000</td>
<td>1.46</td>
<td>$1,115,440</td>
<td>$201,132</td>
<td>$2,011</td>
</tr>
<tr>
<td>Doctors &amp; Dentists</td>
<td>18</td>
<td>1.70</td>
<td>31</td>
<td>$720,000</td>
<td>1.36</td>
<td>$979,200</td>
<td>$176,566</td>
<td>$1,766</td>
</tr>
<tr>
<td>Nursing &amp; Protective Care</td>
<td>173</td>
<td>1.59</td>
<td>275</td>
<td>$2,696,000</td>
<td>1.66</td>
<td>$4,475,360</td>
<td>$806,979</td>
<td>$8,070</td>
</tr>
<tr>
<td>Other Medical &amp; Health Services</td>
<td>23</td>
<td>1.62</td>
<td>37</td>
<td>$473,000</td>
<td>1.64</td>
<td>$775,720</td>
<td>$139,875</td>
<td>$1,399</td>
</tr>
<tr>
<td>Pharmacies</td>
<td>15</td>
<td>1.56</td>
<td>23</td>
<td>$493,000</td>
<td>1.76</td>
<td>$867,680</td>
<td>$156,457</td>
<td>$1,565</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>259</strong></td>
<td><strong>415</strong></td>
<td></td>
<td><strong>$5,146,000</strong></td>
<td></td>
<td><strong>$8,213,400</strong></td>
<td><strong>$1,481,009</strong></td>
<td><strong>$14,811</strong></td>
</tr>
</tbody>
</table>
Applying the income multipliers to the income (payroll) for each of the five health sector components yields an estimate of each component’s income impact on the Prague Municipal Hospital medical service area (Table 3, columns 5, 6, and 7). The Hospital component has a total payroll of $764,000; applying the Type III income multiplier of 1.46 brings the total Hospital income impact to $1,115,440 ($764,000 \times 1.46 = $1,115,440). The Doctors and Dentists component has a total income impact of $979,200 based on the application of the income multiplier of 1.36 to the payroll of the Doctors and Dentists component of $720,000. The Nursing & Protective Care component has a payroll of $2,696,000, a multiplier of 1.66 resulting in an income impact of $4,475,360. The Other Medical & Health Services has an income impact of $775,720 based on the direct payroll of $473,000 and the income multiplier of 1.64. The Pharmacies component has an income impact of $867,680 based on the direct payroll of $493,000 and the income multiplier of 1.76. The total income impact of the health sector in the Prague Municipal Hospital medical service area is projected to be $8,213,400 (Table 3, total of column 7).

Income also has an impact on retail sales. If the county ratio between retail sales and income continues as in the past several years, then direct and secondary retail sales generated by the health sector and its employees equals $1,481,009 (Table 3, total of column 8). Each of the five health sector components’ income impacts is utilized to determine the retail sales and a 1-cent sales tax collection for each component. Then the five components are totaled to determine the direct and secondary retail sales generated by the health sector. A 1-cent sales tax collection is estimated to generate $14,811 in the Prague Municipal Hospital medical service area as a result of the total health sector impact (Table 3, total of column 9). This estimate is probably low, as many health care employees will spend a larger proportion of their income in local
establishments that collect sales tax. The bottom line is that the health sector not only contributes greatly to the medical health of the community, but also to the economic health of the community.

**Summary**

The economic impact of the health sector upon the economy of the Prague Municipal Hospital medical service area is tremendous. The health sector employs a large number of residents, similar to a large industrial firm. The secondary impact occurring in the community is extremely large and measures the total impact of the health sector. If the health sector increases or decreases in size, the medical health of the community as well as the economic health of the community are greatly effected. For the attraction of industrial firms, businesses, and retirees, it is crucial that the area have a quality health sector. Often overlooked is the fact that a prosperous health sector also contributes to the economic health of the community.
References
