The Economic Impact of the Health Sector on the Economy of Murray County, Oklahoma

Oklahoma State Department of Health, Office of Rural Health

Oklahoma Cooperative Extension Service, Oklahoma State University

September 2000
The Economic Impact of the Health Sector on the Economy of Murray County, Oklahoma

Mary K. Lawler – Assistant Extension Specialist, OSU, Stillwater (405) 744-6081

Gerald A. Doeksan - Extension Economist, OSU, Stillwater (405) 744-6081

Deborah Sharp – Murray County Extension, Sulphur (580) 622-3016

Jack Frye - Area Extension Rural Development Specialist, Ada (580) 332-4100

Rod Hargrave – Coordinator, Oklahoma Flex Program, Oklahoma City (405) 271-8750

Val Schott - Director, Oklahoma Office of Rural Health, Oklahoma City (405) 271-8750

RURAL DEVELOPMENT
OKLAHOMA COOPERATIVE EXTENSION SERVICE
OKLAHOMA STATE UNIVERSITY

September 2000
The Economic Impact of the Health Sector
on the Economy of Murray County, Oklahoma

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 who need
medical services. The overall objective of this study is to measure the economic impact of the
health sector on the economy of Murray County. 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 Murray County’s economy.

No recommendations will be made in this report.

County Demographic and Economic Data

The population and employment for Murray County will be illustrated in this section.
The population for Sulphur, Davis, and surrounding communities in Murray County are
presented in Table 1. The population of the town of Davis was 2,543 in 1990 and is estimated to
be 2,612 according to the Census Estimates for 1998. The community of Dougherty remained
the same with a population of 138. The community of Hickory has decreased slightly
between 1990 and 1998 from 77 to 74. The community of Sulphur has increased in population
from 4,824 in 1990 to an estimated 4,882 in 1998. The remainder of Murray County has
increased in population from 4,460 in 1990 to 4,629 in 1998. The population of Murray County
was 12,042 in 1990 according to the U.S. Census Bureau and is estimated to be 12,335 in 1998.
<table>
<thead>
<tr>
<th>Medical Service Area</th>
<th>1990 Population</th>
<th>1998 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis</td>
<td>2,543</td>
<td>2,612</td>
</tr>
<tr>
<td>Dougherty</td>
<td>138</td>
<td>138</td>
</tr>
<tr>
<td>Hickory</td>
<td>77</td>
<td>74</td>
</tr>
<tr>
<td>Sulphur</td>
<td>4,824</td>
<td>4,882</td>
</tr>
<tr>
<td>Remainder of Murray County</td>
<td>4,460</td>
<td>4,629</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>12,042</strong></td>
<td><strong>12,335</strong></td>
</tr>
</tbody>
</table>

according to the U. S. Census Bureau, Population Estimates Branch. In summary, the population of Murray County has increased as has the population in Davis and Sulphur and in the unincorporated rural areas.

Employment data for Murray County are presented in Table 2. Data for employment by type for 1997 is from the Bureau of Economic Analysis, Regional Economic Information System, 2000. Data for total employment and by industry for both 1997 and 1999 are from Woods & Poole Economics, Inc., 2000. The industry sectors with the largest employment are state and local government (934), retail trade (689), services (607), and mining (513). Murray County has a government, retail trade, services, and mining economic base.

**The Direct Economic Activities**

Employment and payroll are the important direct economic activities created in Murray County 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 Murray County employs 360 full-time equivalent employees and has an estimated payroll of $10,236,566 (Table 3). The health sector in Murray County is typical of many rural areas, with one hospital, six physicians, three dentists, two optometrists, three chiropractors, three nursing homes, three home health agencies, a county health department, and five pharmacies. In addition, Murray County has a residential wellness center that employs three physicians, health educators, an exercise physiologist, physical therapists,
Table 2
Employment in Murray County, Oklahoma

<table>
<thead>
<tr>
<th></th>
<th>1997</th>
<th>1999</th>
</tr>
</thead>
</table>
| **TOTAL EMPLOYMENT**
  By Type:                  |       |      |
  Wage and Salary          | 4,058 | n/a  |
  Proprietors              | 1,667 | n/a  |
  Farm                     | 438   | n/a  |
  Nonfarm                  | 1,229 | n/a  |
|                          |       |      |
| **By Industry**          |       |      |
  Farm employment          | 596   | 523  |
  Nonfarm                  | 3,469 | 4,189|
  Private                  | 2,363 | 3,085|
    Ag. serv., forestry, fishing, and other | 13   | 34   |
    Mining                  | 230   | 513  |
    Construction            | 302   | 254  |
    Manufacturing           | 318   | 456  |
    Transportation and public utilities | 158 | 193 |
    Wholesale trade         | 60    | 107  |
    Retail trade            | 593   | 689  |
    Finance, insurance, and real estate | 83  | 232  |
    Services                | 606   | 607  |
  Government and government enterprises | 1,106 | 1,104 |
    Federal, civilian       | 112   | 107  |
    Military                | 93    | 63   |
    State and local         | 901   | 934  |


b 1997 data by type from Bureau of Economic Analysis, Regional Economic Information System, 2000.
### Table 3
Direct Economic Activities of Health Sector in Murray County, Oklahoma

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Employees</th>
<th>Estimated Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital (includes psychiatric unit)</td>
<td>70</td>
<td>$2,022,760</td>
</tr>
<tr>
<td>Doctors, Dentists, and Other Professionals (includes 3 primary care physicians, 3 dentists, 3 chiropractors, 2 optometrists; residential wellness center with 3 physicians, health educators, exercise physiologist, physical therapists, nutritionist, and nurses)</td>
<td>84</td>
<td>$3,632,500</td>
</tr>
<tr>
<td>Nursing and Protective Care (includes 3 nursing homes)</td>
<td>145</td>
<td>$2,483,000</td>
</tr>
<tr>
<td>Other Medical and Health (includes 3 home health care agencies, 3 massage therapists, naturopathic clinic, and the county health department)</td>
<td>41</td>
<td>$1,242,016</td>
</tr>
<tr>
<td>Pharmacies (5) (6.5 Pharmacists)</td>
<td>20</td>
<td>$856,290</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>360</strong></td>
<td><strong>$10,236,566</strong></td>
</tr>
</tbody>
</table>

SOURCE: Local survey and estimated from research
a nutritionist, and several nurses. The Hospital component employs 70 people with an annual payroll of $2,022,760. The Doctors, Dentists, and Other Professionals component employs 84 full-time equivalent employees with an annual payroll of $3,632,500. The Nursing and Protective Care Component employs 145 people with an annual payroll of $2,483,000. The Other Medical and Health Component has a total of 41 employees totaling a payroll of $1,242,016. The Pharmacies Component includes 20 employees and has an annual payroll of $856,290. 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 Murray County. 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.

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 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
Figure 1.
Community Economic System
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.

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 Murray County, Oklahoma**

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 which allows for development of county multipliers. The Type III employment multipliers for the five components of the health sector are shown in Table 4, column 3. The Type III employment multiplier for the hospital component is 1.59. This indicates that for each job created in that sector, 0.59 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 4, column 3. The Type III income multiplier for the hospital sector is 1.35 (Table 4, column 6). This indicates that for each dollar created in that sector, 0.35 dollars

---

\(^1\) 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].
<table>
<thead>
<tr>
<th>Health Sector Component</th>
<th>Employment</th>
<th>Multiplier</th>
<th>Employment Impact</th>
<th>Income</th>
<th>Multiplier</th>
<th>Income Impact</th>
<th>Retail Sales</th>
<th>One Cent Sales Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals</td>
<td>70</td>
<td>1.59</td>
<td>111</td>
<td>$2,022,760</td>
<td>1.35</td>
<td>$2,730,726</td>
<td>$849,240</td>
<td>$8,492</td>
</tr>
<tr>
<td>Doctors &amp; Dentists</td>
<td>84</td>
<td>1.68</td>
<td>141</td>
<td>$3,632,500</td>
<td>1.36</td>
<td>$4,940,200</td>
<td>$1,536,374</td>
<td>$15,364</td>
</tr>
<tr>
<td>Nursing &amp; Protective Care</td>
<td>145</td>
<td>1.53</td>
<td>222</td>
<td>$2,483,000</td>
<td>1.57</td>
<td>$3,898,310</td>
<td>$1,212,352</td>
<td>$12,124</td>
</tr>
<tr>
<td>Other Medical &amp; Health Services</td>
<td>41</td>
<td>1.58</td>
<td>65</td>
<td>$1,242,016</td>
<td>1.59</td>
<td>$1,974,805</td>
<td>$614,153</td>
<td>$6,142</td>
</tr>
<tr>
<td>Pharmacies</td>
<td>20</td>
<td>1.50</td>
<td>30</td>
<td>$856,290</td>
<td>1.78</td>
<td>$1,524,196</td>
<td>$474,016</td>
<td>$4,740</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>360</strong></td>
<td><strong>569</strong></td>
<td></td>
<td><strong>$10,236,566</strong></td>
<td></td>
<td><strong>$15,068,237</strong></td>
<td><strong>$4,686,135</strong></td>
<td><strong>$46,862</strong></td>
</tr>
</tbody>
</table>
are 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 4, 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 Murray County (Table 4, columns 2, 3, and 4). For example, the hospital has 70 employees. Applying the Type III employment multiplier of 1.59 to the employment number of 70 brings the total employment impact of the hospital to 111 employees (70 x 1.59 = 111). The Doctors & Dentists component has a direct impact of 84 employees and with the application of the Type III multiplier of 1.68, the total impact comes to 141 employees. The Nursing and Protective Care component has a direct effect of 145 employees and an employment multiplier of 1.53, to bring the total impact to 222 employees. The Other Medical & Health Services component has a direct effect of 41 employees, an employment multiplier of 1.58 and a total employment impact of 65 employees. The Pharmacy component has 20 employees and a total impact of 30 employees, applying the employment multiplier of 1.50. The total employment impact of the health sector in Murray County is estimated at 569 employees (Table 4, total of column 4).

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 Murray County (Table 4, columns 5, 6, and 7). The Hospital component has a total payroll of $2,022,760; applying the Type III income multiplier of 1.35 brings the total Hospital income impact to $2,730,726 ($2,022,760 x 1.35 = $2,730,726). The Medical Professionals have a total income impact of $4,940,200 based on the application of the income multiplier of 1.36 to the payroll of the Medical Professionals component of $3,632,500. The Nursing & Protective Care component has
a payroll of $2,483,000, a multiplier of 1.57 resulting in an income impact of $3,898,310. The Other Medical & Health Services has an income impact of $1,974,805 based on the direct payroll of $1,242,016 and the income multiplier of 1.59. The Pharmacies component has an income impact of $1,524,196 based on the direct payroll of $856,290 and the income multiplier of 1.78. The total income impact of the health sector in Murray County is projected to be $15,068,237 (Table 4, 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 $4,686,135 (Table 4, 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 $46,862 in Murray County as a result of the total health sector impact (Table 4, 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 Murray County 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
