Economic Impact of the Health Sector on the Economy of Johnston County, Oklahoma

Oklahoma Office of Rural Health
Oklahoma State Department of Health
Oklahoma Cooperative Extension Service
Oklahoma State University

November 1999
The Economic Impact of the Health Sector
on the Economy of Johnston County, Oklahoma

Cheryl F. St. Clair - Extension Associate, OSU, Stillwater
(405) 744-6081

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

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

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

Virginia McCarthick & Jody R. House – Johnston County Extension, Tishomingo
(580) 371-9533

RURAL DEVELOPMENT
OKLAHOMA COOPERATIVE EXTENSION SERVICE
OKLAHOMA STATE UNIVERSITY

November 1999
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 Johnston County, Oklahoma. 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 Johnston County economy.

No recommendations will be made in this report.

County Demographic and Economic Data

The populations for Johnston County are presented in Table 1. The population of Johnston County was 10,032 in 1990 according to the U.S. Census Bureau and is estimated to be 10,300 in 1998 according to the U. S. Census Bureau, Population Estimates Branch. The population of Tishomingo, the county seat, according to the 1990 Census was 3,116 and the 1998 population is estimated to be 3,030, representing a decrease. The other communities in Johnston County have all increased in population from the 1990 U.S. Census to the 1998 Estimates. The rural areas in Johnston County have shown the largest growth, increasing from 4,977 (1990
### Table 1

Population of Johnston County, Oklahoma

<table>
<thead>
<tr>
<th></th>
<th>1990 Population(^1)</th>
<th>1998 Estimated Population(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnston County</td>
<td>10,032</td>
<td>10,300</td>
</tr>
<tr>
<td>Bromide town</td>
<td>137</td>
<td>150</td>
</tr>
<tr>
<td>Mannsville town</td>
<td>396</td>
<td>390</td>
</tr>
<tr>
<td>Milburn town</td>
<td>264</td>
<td>280</td>
</tr>
<tr>
<td>Mill Creek town</td>
<td>336</td>
<td>350</td>
</tr>
<tr>
<td>Ravia town</td>
<td>404</td>
<td>430</td>
</tr>
<tr>
<td>Tishomingo city</td>
<td>3,116</td>
<td>3,030</td>
</tr>
<tr>
<td>Wapanucka town</td>
<td>402</td>
<td>420</td>
</tr>
<tr>
<td>Balance of Johnston County</td>
<td>4,977</td>
<td>5,300</td>
</tr>
</tbody>
</table>


Census) to 5,300 (1998 Estimates). In summary, the population of Johnston County has increased from 1990 to 1998, predominantly in the rural area.

Employment data for Johnston County are presented in Table 2; data is for 1997 from the Bureau of Economic Analysis, Regional Economic Information System. The sectors with the largest employment are government & government enterprises (934), services (725), manufacturing (688), and retail trade (461).

**The Direct Economic Activities**

Employment and payroll are the important direct economic activities created in the Johnston County 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 Johnston County employs 294 full-time equivalent employees and has an estimated payroll of $7,340,100 (Table 3). The health sector in Johnston County is typical of many rural areas, with one hospital, four physicians, two dentists, one county health department, and three pharmacies. The Hospital component employs 65 people with an annual payroll of $2,160,000. The Doctors and Dentists component employs 85 full-time equivalent employees with an annual payroll of $2,822,200. The Nursing and Protective Care Component employs 108 people with an annual payroll of $1,507,900. The Other Medical and Health Services component employs 25 employees with an annual payroll cost of $450,000. The
Table 2
Employment in Johnston County, Oklahoma

<table>
<thead>
<tr>
<th>EMPLOYMENT¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL EMPLOYMENT ............................................................................................... 4,223</td>
</tr>
</tbody>
</table>

By Type:

Wage and Salary ........................................................................................................ 2,778
Proprietors............................................................................................................... 1,445
Farm.......................................................................................................................... 621
Nonfarm.................................................................................................................... 824

By Industry:

Farm .............................................................................................................................. 722
Nonfarm ................................................................................................................... 3,501
Private .................................................................................................................... 2,567
Ag. serv., for., fish., and other ................................................................. 53
Mining.................................................................................................................. 172
Construction ......................................................................................................... 131
Manufacturing ...................................................................................................... 688
Transportation and public utilities ................................................................. 125
Wholesale trade ................................................................................................... 125
Retail trade .......................................................................................................... 461
Finance, insurance, and real estate ................................................................. 87
Services .............................................................................................................. 725
Government and government enterprises ......................................... 934
Federal, civilian ........................................................................................................ 49
Military ............................................................................................................... 52
State and local .................................................................................................... 833

¹ SOURCE: Employment data is 1997 data from the Bureau of Economic Analysis, Regional Economic Information System.
Table 3
Direct Economic Activities of the Health Sector
in Johnston County, Oklahoma

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Employees (Full-Time-Equivalent)</th>
<th>Estimated Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnston Memorial Hospital</td>
<td>65</td>
<td>$2,160,000</td>
</tr>
<tr>
<td>Doctors and Dentists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physicians (4) &amp; Nurse Practitioner (1)</td>
<td>18</td>
<td>$760,000</td>
</tr>
<tr>
<td>Dentists (2)</td>
<td>11</td>
<td>$350,000</td>
</tr>
<tr>
<td>Optometrists (1)</td>
<td>3</td>
<td>$130,000</td>
</tr>
<tr>
<td>Chickasaw Health Clinic (9)*</td>
<td>53</td>
<td>$1,582,200</td>
</tr>
<tr>
<td>Subtotal</td>
<td>85</td>
<td>$2,822,200</td>
</tr>
<tr>
<td>Nursing &amp; Protective Care (2)</td>
<td>108</td>
<td>$1,507,900</td>
</tr>
<tr>
<td>Other Medical &amp; Health Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Health Care (1)</td>
<td>20</td>
<td>$300,000</td>
</tr>
<tr>
<td>County Health Department</td>
<td>5</td>
<td>$150,000</td>
</tr>
<tr>
<td>Subtotal</td>
<td>25</td>
<td>$450,000</td>
</tr>
<tr>
<td>Pharmacies (3)</td>
<td>11</td>
<td>$400,000</td>
</tr>
<tr>
<td>TOTALS</td>
<td>294</td>
<td>$7,340,100</td>
</tr>
</tbody>
</table>

* Includes 5 Physicians, 1 Optometrist, 2 Pharmacists, and 1 Dentist

SOURCE: Local survey and estimated from research
Pharmacies component has a total of 11 employees totaling a payroll of $400,000. 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 Johnston 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 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
Figure 1.
Community Economic System
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 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 Johnston 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 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 1.43. This indicates that for each job created in that sector, 0.43 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 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.

1The 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].

2For complete details of model, see [1] and [2].
Table 4
Economic Impact of the Health Sector
on Employment and Income in Johnston County, Oklahoma

<table>
<thead>
<tr>
<th>Health Sector Component</th>
<th>(2) Employment</th>
<th>(3) Multiplier</th>
<th>(4) Impact</th>
<th>(5) Income</th>
<th>(6) Multiplier</th>
<th>(7) Impact</th>
<th>(8) Retail Sales</th>
<th>(9) One Cent Sales Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals</td>
<td>65</td>
<td>1.43</td>
<td>93</td>
<td>$2,160,000</td>
<td>1.35</td>
<td>$2,916,000</td>
<td>$507,093</td>
<td>$5,071</td>
</tr>
<tr>
<td>Doctors &amp; Dentists</td>
<td>85</td>
<td>1.55</td>
<td>132</td>
<td>$2,822,200</td>
<td>1.43</td>
<td>$4,035,746</td>
<td>$701,816</td>
<td>$7,018</td>
</tr>
<tr>
<td>Nursing &amp; Protective Care</td>
<td>108</td>
<td>1.41</td>
<td>152</td>
<td>$1,507,900</td>
<td>1.76</td>
<td>$2,653,904</td>
<td>$461,514</td>
<td>$4,615</td>
</tr>
<tr>
<td>Other Medical &amp; Health Services</td>
<td>25</td>
<td>1.43</td>
<td>36</td>
<td>$450,000</td>
<td>1.77</td>
<td>$796,500</td>
<td>$138,511</td>
<td>$1,385</td>
</tr>
<tr>
<td>Pharmacies</td>
<td>11</td>
<td>1.39</td>
<td>15</td>
<td>$400,000</td>
<td>1.60</td>
<td>$640,000</td>
<td>$111,296</td>
<td>$1,113</td>
</tr>
<tr>
<td>TOTALS</td>
<td>294</td>
<td>428</td>
<td></td>
<td>$7,340,100</td>
<td></td>
<td>$11,042,150</td>
<td>$1,920,230</td>
<td>$19,202</td>
</tr>
</tbody>
</table>

SOURCE: 1994 IMPLAN Data Base

*Since the communities in the county have different sales tax rates, the amount of collections generated by a one cent sales tax is presented.*
Applying the employment multipliers to the employment for each of the five health sector components yields an estimate of each component’s total employment impact on the Johnston County economy (Table 4, columns 2, 3, and 4). For example, the hospital has employment of 65 employees; applying the Type III employment multiplier of 1.43 to the employment number of 65 brings the total employment impact of the hospitals to 93 employees (65 x 1.43 = 93). The Doctors and Dentists component has a direct impact of 85 employees and with the application of the Type III multiplier of 1.55, the total impact comes to 132 employees (85 x 1.55 = 132). The Nursing and Protective Care component has a direct effect of 108 employees and an employment multiplier of 1.41, to bring the total impact to 152 employees (108 x 1.41 = 152). The Other Medical & Health Services component has a direct effect of 25 employees, an employment multiplier of 1.43, and a total employment impact of 36 employees (25 x 1.43 = 36). The Pharmacies component has 11 employees and a total impact of 15 employees, applying the employment multiplier of 1.39 (11 x 1.39 = 15). The total employment impact of the health sector in Johnston County is estimated at 428 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 Johnston County (Table 4, columns 5, 6, and 7). The Hospital component has a total payroll of $2,160,000; applying the Type III income multiplier of 1.35 brings the total Hospital income impact to $2,916,000 ($2,160,000 x 1.35 = $2,916,000). The Doctors and Dentists have a total income impact of $4,035,746 ($2,822,200 x 1.43 = $4,035,746), based on the application of the income multiplier of 1.43 to the payroll of the Doctors and Dentists component of $2,822,200. The Nursing & Protective Care component has a payroll of $1,507,900, a multiplier of 1.76, resulting in an
income impact of $2,653,904 ($1,507,900 x 1.76 = $2,653,904). The Other Medical & Health Services has an income impact of $796,500, based on the direct payroll of $450,000 and the income multiplier of 1.77. The Pharmacies has an income impact of $640,000, based on the direct payroll of $400,000 and the income multiplier of 1.60. The total income impact of the health sector in Johnston County is projected at $11,042,150 (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 $1,920,230 (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 $19,202 in Johnston 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 Johnston 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
