Economic Impact of the Health Sector on the Economy of the Tri-County Medical Service Area in Carter, Jefferson, and Stephens Counties, Oklahoma

Oklahoma Office of Rural Health
Oklahoma State Department of Health

Oklahoma Cooperative Extension Service
Oklahoma State University

September 1999
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on the Economy
of the Tri-County Medical Service Area
in Carter, Jefferson, and Stephens Counties, Oklahoma

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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 who need medical services. The overall objective of this study is to measure the economic impact of the health sector on the economy of the Tri-County medical service area in western Carter County, eastern Jefferson County, and southern Stephens 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 the Tri-County medical service area’s economy.

No recommendations will be made in this report.

**County Demographic and Economic Data**

The population and employment for the three counties in the Tri-County medical service area will be illustrated in this section. Data is not typically available in less than the county unit.

Populations for Carter County are presented in Table 1a. The population of Carter County was 42,919 in 1990 according to the U.S. Census Bureau and is estimated to be 44,500 in 1998 according to the U. S. Census Bureau, Population Estimates Branch. The population of
Table 1a
Population of Carter County, Oklahoma

<table>
<thead>
<tr>
<th></th>
<th>1990 Population</th>
<th>1998 Estimated Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carter County</td>
<td>42,919</td>
<td>44,500</td>
</tr>
<tr>
<td>Ardmore City</td>
<td>23,079</td>
<td>23,440</td>
</tr>
<tr>
<td>Dickson Town</td>
<td>942</td>
<td>960</td>
</tr>
<tr>
<td>Gene Autry Town</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td>Healdton City</td>
<td>2,872</td>
<td>2,880</td>
</tr>
<tr>
<td>Lone Grove City</td>
<td>4,114</td>
<td>4,480</td>
</tr>
<tr>
<td>Ratliff City Town</td>
<td>157</td>
<td>170</td>
</tr>
<tr>
<td>Springer Town</td>
<td>485</td>
<td>520</td>
</tr>
<tr>
<td>Tatums Town</td>
<td>176</td>
<td>180</td>
</tr>
<tr>
<td>Wilson City</td>
<td>1,639</td>
<td>1,730</td>
</tr>
<tr>
<td>Balance of Carter County</td>
<td>9,358</td>
<td>10,040</td>
</tr>
</tbody>
</table>

Ardmore, the county seat, according to the 1990 Census was 23,079 and the 1998 population is estimated to be 23,440, representing an increase. The next largest community in Carter County is Lone Grove, with a 1990 population of 4,114 and a 1998 estimated population of 4,480. The City of Healdton has a slight increase from 2,872 in 1990 to 2,880 estimated in 1998. In summary, the population of Carter County is increasing and is expected to continue on an upward trend in the future.

Jefferson County (Table 1b) shows a decrease in population from 7,010 in 1990 to 6,600 in 1998. The largest city in the county is Waurika and the City of Waurika has had the largest decrease in population from 2,088 to 1,820, from 1990 to 1998. The trend appears to be continuing downward.

The population of Stephens County (Table 1c) increased from 1990 (42,299) to 1998 (43,400). All the communities in the county and the rural area (balance of county) increased from 1990 to 1998, except for the City of Comanche. The City of Comanche decreased from 1,695 in 1990 to 1,670 in 1998. The trend of the county is to continue to increase in population at a slow rate.

The next three tables show the employment in the three counties in the Tri-County medical service area.

Employment data for Carter County are presented in Table 2a; data is for 1997 from the Bureau of Economic Analysis, Regional Economic Information System. The sectors with the largest employment are services (7,241), retail trade (5,279), and manufacturing (3,156). Carter County has a manufacturing, retail trade, and services economic base.
## Table 1b
Population of Jefferson County, Oklahoma

<table>
<thead>
<tr>
<th></th>
<th>1990 Population</th>
<th>1998 Estimated Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson County</td>
<td>7,010</td>
<td>6,600</td>
</tr>
<tr>
<td>Addington Town</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Cornish Town</td>
<td>164</td>
<td>170</td>
</tr>
<tr>
<td>Hastings Town</td>
<td>164</td>
<td>140</td>
</tr>
<tr>
<td>Ringling Town</td>
<td>1,250</td>
<td>1,230</td>
</tr>
<tr>
<td>Ryan Town</td>
<td>945</td>
<td>920</td>
</tr>
<tr>
<td>Sugden Town</td>
<td>65</td>
<td>70</td>
</tr>
<tr>
<td>Terral Town</td>
<td>469</td>
<td>410</td>
</tr>
<tr>
<td>Waurika City</td>
<td>2,088</td>
<td>1,820</td>
</tr>
<tr>
<td>Balance of Jefferson County</td>
<td>1,765</td>
<td>1,730</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1990 Population</th>
<th>1998 Estimated Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephens County</td>
<td>42,299</td>
<td>43,400</td>
</tr>
<tr>
<td>Bray Town</td>
<td>925</td>
<td>990</td>
</tr>
<tr>
<td>Central High Town</td>
<td>781</td>
<td>850</td>
</tr>
<tr>
<td>Comanche City</td>
<td>1,695</td>
<td>1,670</td>
</tr>
<tr>
<td>Duncan City</td>
<td>21,732</td>
<td>21,820</td>
</tr>
<tr>
<td>Empire City Town</td>
<td>219</td>
<td>230</td>
</tr>
<tr>
<td>Loco Town</td>
<td>160</td>
<td>170</td>
</tr>
<tr>
<td>Marlow City</td>
<td>4,416</td>
<td>4,450</td>
</tr>
<tr>
<td>Velma Town</td>
<td>661</td>
<td>710</td>
</tr>
<tr>
<td>Balance of Stephens County</td>
<td>11,710</td>
<td>12,540</td>
</tr>
</tbody>
</table>

Table 2a
Employment in Carter County, Oklahoma

<table>
<thead>
<tr>
<th>EMPLOYMENT¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL EMPLOYMENT</td>
</tr>
</tbody>
</table>

By Type:

- Wage and Salary: 20,700
- Proprietors: 6,100
- Farm: 1,070
- Nonfarm: 5,030

By Industry:

- Farm: 1,187
- Nonfarm: 25,613
- Private: 22,590
  - Ag. serv., for., fish., and other: 270
  - Mining: 1,834
  - Construction: 1,221
  - Manufacturing: 3,156
  - Transportation and public utilities: 1,366
  - Wholesale trade: 1,002
  - Retail trade: 5,279
  - Finance, insurance, and real estate: 1,221
  - Services: 7,241
- Government and government enterprises: 3,023
  - Federal, civilian: 124
  - Military: 223
  - State and local: 2,676

¹ SOURCE: Employment data is 1997 data from the Bureau of Economic Analysis, Regional Economic Information System.
Jefferson County is illustrated in Table 2b. The total employment in the county is 3,346. The County has a large employment in the services sector. Government also employs a large number of employees. Retail trade and manufacturing follow close behind.

Stephens County has employment of 21,484 (Table 2c). The industry with the largest number of employees is the services industry. Next is the retail trade industry. Manufacturing is also fairly high.

The Direct Economic Activities

Employment and payroll are the important direct economic activities created in the Tri-County medical service area. 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 Tri-County medical service area employs 258 full-time equivalent employees and has an estimated payroll of $5,859,372 (Table 3). The health sector in the Tri-County area is typical of many rural areas, with one hospital, six physicians, one dentist, one county health department, and two pharmacies. The Hospital component employs 21 people with an annual payroll of $735,372. The Doctors and Dentists component employs 31 full-time equivalent employees with an annual payroll of $1,340,000. The Nursing and Protective Care Component employs 132 people with an annual payroll of $1,980,000. The Other Medical and Health Services component employs 49 employees with an annual payroll cost of $1,079,000. The
Table 2b
Employment in Jefferson County, Oklahoma

<table>
<thead>
<tr>
<th>EMPLOYMENT(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL EMPLOYMENT</td>
</tr>
</tbody>
</table>

By Type:

- Wage and Salary: 2,089
- Proprietors: 1,257
- Farm: 504
- Nonfarm: 753

By Industry:

- Farm: 591
- Nonfarm: 2,755
- Private: 2,227
  - Ag. serv., for., fish., and other: 74
  - Mining: 74
  - Construction: 194
  - Manufacturing: 484
  - Transportation and public utilities: 94
  - Wholesale trade: 82
  - Retail trade: 487
  - Finance, insurance, and real estate: 139
  - Services: 599
- Government and government enterprises: 528
  - Federal, civilian: 41
  - Military: 34
  - State and local: 453

\(^1\) SOURCE: Employment data is 1997 data from the Bureau of Economic Analysis, Regional Economic Information System.
Table 2c
Employment in Stephens County, Oklahoma

<table>
<thead>
<tr>
<th>EMPLOYMENT¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL EMPLOYMENT .......................................................... 21,484</td>
</tr>
</tbody>
</table>

By Type:

Wage and Salary ................................................................. 15,023
Proprietors .............................................................................. 6,461
Farm ..................................................................................... 1,214
Nonfarm .................................................................................. 5,247

By Industry:

Farm .................................................................................... 1,311
Nonfarm ............................................................................... 20,173
Private ................................................................................. 17,870
Ag. serv., for., fish., and other ........................................... 239
Mining ............................................................................... 1,757
Construction ..................................................................... 981
Manufacturing .................................................................. 3,293
Transportation and public utilities .................................... 623
Wholesale trade ................................................................. 547
Retail trade ................................................................. 3,861
Finance, insurance, and real estate ................................... 1,188
Services ............................................................................. 5,381
Government and government enterprises ....... 2,303
Federal, civilian ............................................................... 102
Military ........................................................................... 220
State and local ............................................................... 1,981

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Employees</th>
<th>Estimated Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercy Health - Healdton</td>
<td>21</td>
<td>$735,372</td>
</tr>
<tr>
<td>Physicians (6)</td>
<td>26</td>
<td>$1,175,000</td>
</tr>
<tr>
<td>Dentists (1)</td>
<td>5</td>
<td>$165,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>31</strong></td>
<td><strong>$1,340,000</strong></td>
</tr>
<tr>
<td>Home Health Care (4)</td>
<td>46</td>
<td>$989,000</td>
</tr>
<tr>
<td>County Health Department</td>
<td>3</td>
<td>$90,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>49</strong></td>
<td><strong>$1,079,000</strong></td>
</tr>
<tr>
<td>Pharmacies (5)</td>
<td>25</td>
<td>$725,000</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>258</strong></td>
<td><strong>$5,859,372</strong></td>
</tr>
</tbody>
</table>

SOURCE: Local survey and estimated from research
Pharmacies component has a total of 25 employees totaling a payroll of $725,000. 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 Tri-County 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.

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\textsuperscript{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 Tri-County Medical Service Area, 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\textsuperscript{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 1.68. This indicates that for each job created in that sector, 0.68 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 1.47 (Table 4, column 6). This indicates that for each dollar created in that sector, 0.47 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.

\textsuperscript{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].

\textsuperscript{2}For complete details of model, see [1] and [2].
<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>21</td>
<td>1.68</td>
<td>35</td>
<td>$735,372</td>
<td>1.47</td>
<td>$1,080,997</td>
<td>$267,006</td>
<td>$2,670</td>
</tr>
<tr>
<td>Doctors &amp; Dentists</td>
<td>31</td>
<td>1.86</td>
<td>58</td>
<td>$1,340,000</td>
<td>1.34</td>
<td>$1,795,600</td>
<td>$443,513</td>
<td>$4,435</td>
</tr>
<tr>
<td>Nursing &amp; Protective Care</td>
<td>132</td>
<td>1.66</td>
<td>219</td>
<td>$1,980,000</td>
<td>1.81</td>
<td>$3,583,800</td>
<td>$885,199</td>
<td>$8,852</td>
</tr>
<tr>
<td>Other Medical &amp; Health Services</td>
<td>49</td>
<td>1.72</td>
<td>84</td>
<td>$1,079,000</td>
<td>1.65</td>
<td>$1,780,350</td>
<td>$439,746</td>
<td>$4,397</td>
</tr>
<tr>
<td>Pharmacies</td>
<td>25</td>
<td>1.62</td>
<td>41</td>
<td>$725,000</td>
<td>1.99</td>
<td>$1,442,750</td>
<td>$356,359</td>
<td>$3,564</td>
</tr>
<tr>
<td>TOTALS</td>
<td>258</td>
<td>437</td>
<td></td>
<td>$5,859,372</td>
<td></td>
<td>$9,683,497</td>
<td>$2,391,823</td>
<td>$23,918</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 employment impact on the Tri-County medical service area (Table 4, columns 2, 3, and 4). For example, the hospital has employment of 21 employees; applying the Type III employment multiplier of 1.68 to the employment number of 21 brings the total employment impact of the hospitals to 35 employees (21 x 1.68 = 35). The Doctors and Dentists component has a direct impact of 31 employees and with the application of the Type III multiplier of 1.86, the total impact comes to 48 employees (31 x 1.86 = 58). The Nursing and Protective Care component has a direct effect of 132 employees and an employment multiplier of 1.66, to bring the total impact to 219 employees (132 x 1.66 = 219). The Other Medical & Health Services component has a direct effect of 49 employees, an employment multiplier of 1.72, and a total employment impact of 84 employees (49 x 1.72 = 84). The Pharmacies component has 25 employees and a total impact of 41 employees, applying the employment multiplier of 1.62 (25 x 1.62 = 41). The total employment impact of the health sector in the Tri-County medical service area is estimated at 437 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 the Tri-County medical service area (Table 4, columns 5, 6, and 7). The Hospital component has a total payroll of $735,372; applying the Type III income multiplier of 1.47 brings the total Hospital income impact to $1,080,997 ($735,372 x 1.47 = $1,080,997). The Doctors and Dentists have a total income impact of $1,795,600 ($1,340,000 x 1.34 = $1,795,600), based on the application of the income multiplier of 1.34 to the payroll of the Doctors and Dentists component of $1,340,000.
The Nursing & Protective Care component has a payroll of $1,980,000, a multiplier of 1.81, resulting in an income impact of $3,583,800 ($1,980,000 x 1.81 = $3,583,800). The Other Medical & Health Services has an income impact of $1,780,350, based on the direct payroll of $1,079,000 and the income multiplier of 1.65. The Pharmacies has an income impact of $1,442,750, based on the direct payroll of $725,000 and the income multiplier of 1.99. The total income impact of the health sector in the Tri-County medical service area is projected at $9,683,497 (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 $2,391,823 (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 $23,918 in the Tri-County medical service area 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 the Tri-County 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
