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

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

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RURAL DEVELOPMENT
OKLAHOMA COOPERATIVE EXTENSION SERVICE
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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 Ellis 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 Ellis County’s economy.

No recommendations will be made in this report.

County Demographic and Economic Data

The population and employment for Ellis County will be illustrated in this section. The populations for Ellis County are presented in Table 1. The population of Ellis County was 4,497 in 1990 according to the U.S. Census Bureau and is estimated to be 4,300 in 1998 according to the U.S. Census Bureau, Population Estimates Branch. The population of the Town of Shattuck was 1,454 in 1990 and is estimated to have decreased to 1,400, according to the Census Estimates for 1998. The communities of Arnett, Fargo, and Gage have all decreased slightly from 1990 to 1998. The rural areas of Ellis County have decreased considerably from 1,724
<table>
<thead>
<tr>
<th></th>
<th>1990 Population</th>
<th>1998 Estimated Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ellis County</td>
<td>4,497</td>
<td>4,300</td>
</tr>
<tr>
<td>Arnett town</td>
<td>547</td>
<td>530</td>
</tr>
<tr>
<td>Fargo town</td>
<td>299</td>
<td>290</td>
</tr>
<tr>
<td>Gage town</td>
<td>473</td>
<td>440</td>
</tr>
<tr>
<td>Shattuck town</td>
<td>1,454</td>
<td>1,400</td>
</tr>
<tr>
<td>Balance of Ellis County</td>
<td>1,724</td>
<td>1,640</td>
</tr>
</tbody>
</table>


in 1990 to 1,640 in 1998, according to the 1998 Estimates. In summary, the population of Ellis County has decreased from 1990 to 1998.

Employment data for Ellis County are presented in Table 2; data is for 1997 from the Bureau of Economic Analysis, Regional Economic Information System. The industry sectors with the largest employment are state and local government (469), services (400), and retail trade (287). Ellis County has a government, services, and retail trade economic base.

The Direct Economic Activities

Employment and payroll are the important direct economic activities created in Ellis 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 Ellis County employs 189 full-time equivalent employees and has an estimated payroll of $4,275,044 (Table 3). The health sector in Ellis County is typical of many rural areas, with one hospital, six physician offices, one dental office, one nursing home, and two pharmacies. The Hospital component (which includes the hospital’s home health services) employs 114 people with an annual payroll of $2,720,150. The Doctors and Dentists (& Other Medical Professionals) component employs 20 full-time equivalent employees, with an annual payroll of $875,894. The Nursing and Protective Care Component employs 48 people
Table 2  
Employment in Ellis County, Oklahoma

<table>
<thead>
<tr>
<th>EMPLOYMENT¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL EMPLOYMENT ............................................................................................... 2,367</td>
</tr>
</tbody>
</table>

By Type:

- Wage and Salary ................................................................. 1,178
- Proprietors ........................................................................... 1,189
  - Farm ............................................................................. 665
  - Nonfarm ....................................................................... 524

By Industry:

- Farm ....................................................................................... 70
- Nonfarm ........................................................................... 1,597
  - Private ........................................................................ 1,083
    - Ag. serv., for., fish., and other ................................... (D)
    - Mining .................................................................... 41
    - Construction ................................................................. 65
    - Manufacturing ......................................................... 18
  - Transportation and public utilities .................................. 74
  - Wholesale trade ............................................................. 63
  - Retail trade .................................................................. 287
  - Finance, insurance, and real estate ................................. (D)
  - Services ....................................................................... 400
- Government and government enterprises .......................... 514
  - Federal, civilian ............................................................ 24
  - Military ..................................................................... 21
  - State and local ............................................................. 469

¹ SOURCE: Employment data is 1997 data from the Bureau of Economic Analysis, Regional Economic Information System.

(D) Not shown to avoid disclosure of confidential information, but the items are included in the totals.
### Table 3 (REVISED 2-10-00)
**Direct Economic Activities of Health Sector in Ellis County, Oklahoma**

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Employees</th>
<th>Estimated Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital (1)</td>
<td>114</td>
<td>$2,720,150</td>
</tr>
<tr>
<td>(Includes Other Medical &amp; Health Services)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctors and Dentists</td>
<td>20</td>
<td>$875,894</td>
</tr>
<tr>
<td>(Includes 6 Physician &amp; 1 Dental Office)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing &amp; Protective Care</td>
<td>48</td>
<td>$464,000</td>
</tr>
<tr>
<td>Other Medical &amp; Health Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Included in Hospital Component above)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacies (2)</td>
<td>7</td>
<td>$215,000</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>189</td>
<td><strong>$4,275,044</strong></td>
</tr>
</tbody>
</table>

**SOURCE:** Local survey and estimated from research
with an annual payroll of $464,000. The Other Medical and Health Services would include health department and home health agencies and any other services. No health department is located in Ellis County and the hospital’s home health agency is included in the Hospital component. No other services were reported by the county to be included in this component. The Pharmacies component has a total of 7 employees totaling a payroll of $215,000. 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 Ellis 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
Figure 1.
Community Economic System
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 \( \square \) - 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 Ellis 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 1.44. This indicates that for each job created in that component

\[ \text{Multiplier} = \frac{\text{Total Employment}}{\text{Direct Employment}} \]

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 4 (REVISED 2-10-00)
Economic Impact of the Health Sector
on Employment and Income in Ellis County, Oklahoma

<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>114</td>
<td>1.44</td>
<td>164</td>
<td>$2,720,150</td>
<td>1.29</td>
<td>$3,508,994</td>
<td>$614,074</td>
<td>$6,141</td>
</tr>
<tr>
<td>Doctors &amp; Dentists</td>
<td>20</td>
<td>1.56</td>
<td>31</td>
<td>$875,894</td>
<td>1.23</td>
<td>$1,077,350</td>
<td>$188,536</td>
<td>$1,885</td>
</tr>
<tr>
<td>Nursing &amp; Protective Care</td>
<td>48</td>
<td>1.40</td>
<td>67</td>
<td>$464,000</td>
<td>1.69</td>
<td>$784,160</td>
<td>$137,228</td>
<td>$1,372</td>
</tr>
<tr>
<td>Other Medical &amp; Health Services</td>
<td>0</td>
<td>1.43</td>
<td>0</td>
<td>0</td>
<td>1.57</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacies</td>
<td>7</td>
<td>1.37</td>
<td>10</td>
<td>$215,000</td>
<td>1.55</td>
<td>$333,250</td>
<td>$58,319</td>
<td>$583</td>
</tr>
<tr>
<td>TOTALS</td>
<td>189</td>
<td>272</td>
<td></td>
<td>$4,275,044</td>
<td></td>
<td>$5,703,753</td>
<td>$998,157</td>
<td>$9,982</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.

2 Other Medical & Health Services is included in Hospitals.
sector, 0.44 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 1.29 (Table 4, column 6). This indicates that for each dollar created in that sector, 0.29 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.

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 Ellis County (Table 4, columns 2, 3, and 4). For example, the hospital has employment of 114 employees; applying the Type III employment multiplier of 1.44 to the employment number of 114 brings the total employment impact of the hospitals to 164 employees (114 x 1.44 = 164). The Doctors and Dentists component has a direct impact of 20 employees and with the application of the Type III multiplier of 1.56, the total impact comes to 31 employees. The Nursing and Protective Care component has a direct effect of 48 employees and an employment multiplier of 1.40, to bring the total impact to 67 employees. The Other Medical & Health Services component is included with the Hospital component for Ellis County. The Pharmacies component has 7 employees and a total impact of 10 employees, applying the employment multiplier of 1.37. The total employment impact of the health sector in Ellis County is estimated at 272 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 Ellis County (Table 4,
columns 5, 6, and 7). The Hospital component along with the Other Medical & Health Services component has a total payroll of $2,720,150; applying the Type III income multiplier of 1.29 brings the total Hospital income impact to $3,508,994 ($2,720,150 x 1.29 = $3,508,994). The Doctors and Dentists have a total income impact of $1,077,350, based on the application of the income multiplier of 1.23 to the payroll of the Doctors and Dentists component of $875,894. The Nursing & Protective Care component has a payroll of $464,000, a multiplier of 1.69, resulting in an income impact of $784,160. The Other Medical & Health Services is included with the calculations of the Hospital component. The Pharmacies has an income impact of $333,250 based on the direct payroll of $215,000 and the income multiplier of 1.55. The total income impact of the health sector in Ellis County is projected to be $5,703,753 (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 $998,157 (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 $9,982 in Ellis 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 Ellis 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
