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## Conference Paper

# The economic impact of the education and health sector on a rural community's economy

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The Economic Impact of the Education and Health Sector  
on a Rural Community's Economy

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## **The Economic Impact of the Education and Health Sector on a Rural Community's Economy**

The delivery of education and health services in rural counties is huge. Not only do these services provide a large number of jobs, but they often impact many other jobs. In many rural counties, the education system is the largest employer with hospitals as the second largest employer. Because of this fact, plus the knowledge that education and health services often impact business and industrial location decisions, the overall objective of this paper is to measure the economic impact of the education and health sectors on the local economy.

To help local decision-makers understand this connection and its importance, this report will discuss and demonstrate the relationship between the education and health sectors and economic development in Atoka County. Specifically, the report:

- discusses the role the education and health sectors plays in rural development;
- measure the employment, income, retail sales and sales tax impact of the education sector in Atoka County; and
- measure the employment, income, retail sales, and sales tax impact of the health sector on the Atoka County economy.

### **EDUCATION AND HEALTH SERVICES AND RURAL DEVELOPMENT**

The nexus between education and health care services and rural development is often overlooked. At least two primary areas of commonality exist. A strong education and health care system can help attract and maintain business and industry growth, and attract and retain retirees.

**Table 1**  
**Services that Impact Rural Development**

Type of Growth	Services Important to Attract Growth
Industrial and Business	Health and Education
Retirees	Health and Safety

**Business and Industry Growth**

Studies have found that quality-of-life (QOL) factors are playing a dramatic role in business and industry location decisions. Among the most significant of those QOL factors are education and health care services, which are important for at least three reasons. First, as noted by a member of the Board of Directors of a community economic development corporation, good health and education services are imperative to industrial and business leaders as they select a community for location. Employees and participating management may offer strong resistance if they are asked to move into a community with substandard or inconveniently located health and education services.

Secondly, when a business or industry makes a location decision, it wants to ensure that the local labor force will be productive, and key factors in productivity is education and good health. Thus, investments in education and health care services can be expected to yield dividends in the form of increased labor productivity.

The cost of health care services is the third factor that is considered by business and industry in development decisions. A 1990 site selection survey concluded that corporations are taking a serious look at health care costs. Sites that provide health care services at a low cost are sometimes given priority. In fact, 17 percent of the respondents indicated that their companies used health care costs as a tie-breaking factor between comparable sites.

## **Education and Health Services and Attracting Retirees**

A strong and convenient health care system is important to retirees, a special group of residents whose spending and purchasing can be a significant source of income for the local economy. Many rural areas have environments (e.g., good climate and outdoor activities) that enable them to be in a good position to attract and retain retirees. The amount of spending embodied in this population, including the purchasing power associated with Social Security, Medicare, and other transfer payments, is substantial. Additionally, middle and upper income retirees often have substantial net worth. Although the data are limited, several studies suggest health services may be a critical variable that influences the location decision of retirees. For example, one study found that four items were the best predictors of retirement locations: safety, recreational facilities, dwelling units, and health care. Another study found that nearly 60 percent of potential retirees said health services were in the “must have” category when considering a retirement community. Only protective services were mentioned more often than health services as a “must have” service.

### **County Demographic and Economic Data**

The population and employment for Atoka County will be illustrated in this section. Atoka County is a rural county located in Southeast Oklahoma, U.S.A. **(Figure 1)** The populations for Atoka County are presented in **Table 2**. The population of Atoka County was 12,778 in 1990 according to the U.S. Census Bureau and is reported to have grown to 13,879 in 2000. The population of the City of Atoka was 3,298 in 1990 and is reported to have decreased to 2,988 by 2000. The communities of Caney, Stringtown, and Tushka have all increased slightly from 1990 to 2000. The rural areas of Atoka County have increased considerably from



8,622 in 1990 to 9,951, according to the 2000 Census. In summary, the population of Atoka County has increased, predominantly in the smaller communities and in the unincorporated rural areas. Employment data for Atoka County are presented in **Table 3**; data is for 1999 from the Bureau of Economic Analysis, Regional Economic Information System. The industry sectors with the largest employment are farms (1,284), retail trade (934), services (1,019), and state and local government (1,175). Atoka county has a farm, government, retail trade, and services economic base.

**Table 2**  
**Population of Atoka County, Oklahoma**

	1990 Census Population	2000 Census Population
Atoka County .....	12,778 .....	13,879
Atoka .....	3,298 .....	2,988
Caney .....	184 .....	199
Stringtown.....	366 .....	396
Tushka.....	256 .....	345
Wardville.....	52 .....	NA
Balance of Atoka County.....	8,622 .....	9,951

SOURCE: Population data from the U. S. Bureau of the Census, 1990 and 2000.

**Table 3**  
**Employment in Atoka County, Oklahoma**

<b>EMPLOYMENT</b>		
	<u><b>1999</b></u>	<u><b>2000</b></u>
TOTAL EMPLOYMENT .....	6,022.....	6,175
 By Type:		
Wage and Salary .....	3,470.....	n/a
Proprietors.....	2,552.....	n/a
Farm .....	1,195.....	n/a
Nonfarm .....	1,357.....	n/a
 By Industry:		
Farm.....	1,284.....	1,279
Nonfarm.....	4,738.....	4,896
Private.....	3,425.....	3,596
Ag. serv., for., fish., and other .....	(D).....	141
Mining .....	(D).....	56
Construction .....	250.....	268
Manufacturing .....	415.....	478
Transportation and public utilities .....	314.....	295
Wholesale trade .....	124.....	172
Retail trade.....	934.....	992
Finance, insurance, and real estate .....	154.....	131
Services.....	1,019.....	1,063
Government and government enterprises.....	1,313.....	1,300
Federal, civilian.....	71.....	78
Military.....	67.....	66
State and local.....	1,175.....	1,156

SOURCE: 1999 data is from the Bureau of Economic Analysis, Regional Economic Information System; 2000 data is from Woods & Poole Economics Year 2000 .

## The Direct Economic Activities

Employment and payroll are the important direct economic activities created in Atoka County from the education and health sectors. The education and health sectors are divided into the following seven components:

- Secondary and Primary Education
- State and Local Government (Technology Center)
- 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 education sector in Atoka County employs 352 full-time equivalent employees and has an estimated payroll of \$9,303,413 (**Table 4**). The primary and secondary schools employ 332 and have a payroll of \$8,659,257. The Technology Center school employs 20 and has a payroll of \$644,156.

The total health sector in Atoka County employs 539 full-time equivalent employees and has an estimated payroll of \$10,355,317 (**Table 4**). The health sector in Atoka County is typical of many rural areas, with one hospital, two physician offices, two dental offices, two nursing homes, and two pharmacies. The Hospital component employs 120 people with an annual payroll of \$2,406,564. The Doctors and Dentists (& Other Medical Professionals) component employs 67 full-time equivalent employees, with an annual payroll of \$2,615,000. The Nursing and Protective Care Component employs 192 people with an annual payroll of \$2,526,000. The Other Medical and Health Services component employs 144 employees, with an annual payroll cost of \$2,382,000. The Pharmacies component has a total of 16 employees totaling a payroll of \$425,753. It should be noted that many rural communities have a large number of elderly, and

**Table 4**  
**Direct Economic Activities of the Education and Health Sectors**  
**in Atoka County, Oklahoma**

Component	Estimated Employees	Estimated Payroll
<u>Education</u>		
Secondary and Primary Schools	332	\$8,659,257
Technology Center	<u>20</u>	<u>\$644,156</u>
Education Totals	352	\$9,303,413
<u>Health</u>		
Hospital (1) (Includes the Hospital Home Health and the Atoka County EMS)	120	\$2,406,564
Doctors and Dentists (Includes 2 physicians, 2 optometrists, 2 dentists, and 1 chiropractor)	67	\$2,615,000
Nursing & Protective Care (2)	192	\$2,526,000
Other Medical & Health Services (Includes 4 home health agencies, county health dept., and 2 DME suppliers)	144	\$2,382,000
Pharmacies (2)	<u>16</u>	<u>\$425,753</u>
Health Totals	539	\$10,355,317
<b>EDUCATION AND HEALTH TOTALS</b>	<b><u>891</u></b>	<b><u>\$19,658,730</u></b>

SOURCE: Local survey and estimated from research

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 education and health sectors are vitally important as a community employer and important to the community's economy. The sectors definitely employ a large number of residents. The education and health sectors and the employees in the education and health sectors purchase a large amount of goods and services from businesses in Atoka 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 Incomer and Employment Multipliers**

**Figure 2** 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 2**. To produce these good and services for "export" outside the community, the basic industry purchases inputs from outside the community (upper left portion of **Figure 2**), labor from the residents or "ho useholds" of community (left side of **Figure 2**), and inputs from service industries located within the community (right side of **Figure 2**). 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 2**). 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 multiplier is used in this report. It is defined as:

Type III<sup>1</sup> - 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.

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<sup>1</sup> 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].

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 Education Sector on the Economy of Atoka County, Oklahoma**

Employment and income multipliers for Atoka have been estimated by use of the IMPLAN model. It was developed by the U.S. Forestry Service and is a model which allows for development of county multipliers. The employment multipliers for the two education sectors are presented in column 3 in **Table 5**. The employment multipliers for elementary and secondary schools is 1.56. This indicates that for each job created in that sector, .56 jobs are created throughout the county due to business (indirect) and household (individual) spending. The income multiplier for the elementary and secondary schools is 1.71 (**Table 5**, column 6). This indicates that for each dollar of income created in that sector .71 dollars are created throughout the area due to business (indirect) and household (individual spending). The employment and income multipliers for the technology center are also presented in **Table 5**.

Applying the employment in income multipliers to both education sectors yields the total impact of the education sector on the Atoka County economy. The total impact on employment is that the education sector directly employs 352 and thus creates 194 secondary jobs for a total of 546 jobs in Atoka County. Likewise for income, the education sector has a payroll of \$9,303,413, which generates secondary payroll of \$6,283,344, for a total of \$15,586,757.

The impact on retail sales and sales tax collection is presented in columns 8 and 9 of **Table 5**, respectively. The total amount of retail sales generated by the education sector are estimated at \$6,292,373. A 1-cent sales tax collection is estimated to generate \$62,923.

**Table 5**  
**Economic Impact of the Education Sector**  
**On Employment and Income in Atoka County, Oklahoma**

(1) Education Sector Component	(2) Employment	(3) Multiplier	(4) Employment Impact	(5) Income	(6) Multiplier	(7) Income Impact	(8) Retail Sales	(9) One-Cent Sales Tax
Elementary And Secondary Schools	332	1.56	517	\$8,659,257	1.71	\$14,807,329	\$5,977,718	\$59,777
Technology Center	<u>20</u>	1.43	<u>29</u>	<u>644,156</u>	<u>1.21</u>	<u>\$779,457</u>	<u>\$314,655</u>	<u>\$3,479</u>
<b><u>TOTALS</u></b>	<b><u>352</u></b>		<b><u>5.46</u></b>	<b><u>\$9,303,413</u></b>		<b><u>\$15,586,757</u></b>	<b><u>\$6,292,373</u></b>	<b><u>\$62,923</u></b>

## **Secondary Impacts of Health Sector on the Economy of Atoka County, Oklahoma**

Similar employment and income multipliers for the area have been calculated for the health sector. The employment multipliers for the five components of the health sector are shown in **Table 6**, column 3. The employment multiplier for the hospital component is 1.70. This indicates that for each job created in that sector, 0.70 jobs are created throughout the area due to business (indirect) and household (induced) spending. The employment multipliers for the other health sector components are also shown in **Table 6**, column 3. The income multiplier for the hospital sector is 1.47 (**Table 6**, 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 income multipliers for the other four health sector components are also given in **Table 6**, 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 Atoka County (**Table 6**, columns 2, 3, and 4). For example, the hospital has employment of 120 employees; applying the employment multiplier of 1.70 to the employment number of 120 brings the total employment impact of the hospitals to 204 employees ( $120 \times 1.70 = 204$ ). The Doctors and Dentists component has a direct impact of 67 employees and with the application of the multiplier of 1.79, the total impact comes to 120 employees. The Nursing and Protective Care component has a direct effect of 192 employees and an employment multiplier of 1.54, to bring the total impact to 296 employees. The Other Medical & Health Services component has a direct

**Table 6**  
**Economic Impact of the Health Sector**  
**on Employment and Income in Atoka County, Oklahoma**

(1) Health Sector Component	(2) Employment	(3) Type III Multiplier	(4) Employment Impact	(5) Income	(6) Type III Multiplier	(7) Income Impact	(8) Retail Sales	(9) One Cent Sales Tax
Hospitals	120	1.70	204	\$2,406,564	1.47	\$3,537,649	\$1,428,149	\$14,281
Doctors & Dentists	67	1.79	120	\$2,615,000	1.34	\$3,504,100	\$1,414,605	\$14,146
Nursing & Protective Care	192	1.54	296	\$2,526,000	1.66	\$4,193,160	\$1,692,779	\$16,928
Other Medical & Health Services	144	1.62	233	\$2,382,000	1.62	\$3,858,840	\$1,557,814	\$15,578
Pharmacies	<u>16</u>	1.49	<u>24</u>	<u>\$425,753</u>	1.61	<u>\$685,463</u>	<u>\$276,721</u>	<u>\$2,767</u>
TOTALS	<u>539</u>		<u>877</u>	<u>\$10,355,317</u>		<u>\$15,779,212</u>	<u>\$6,370,068</u>	<u>\$63,700</u>

SOURCE: 1998 IMPLAN Data Base; local data for hospital employment and income; 1999 County Business Patterns for pharmacy employment and payroll

\*Since the communities in the county have different sales tax rates, the amount of collections generated by a One-cent sales tax is presented.

effect of 144 employees, an employment multiplier of 1.62, and a total employment impact of 233 employees. The Pharmacies component has 16 employees and a total impact of 24 employees, applying the employment multiplier of 1.49. The total employment impact of the health sector in Atoka County is estimated at 877 employees (**Table 6**, 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 Atoka County (**Table 6**, columns 5, 6, and 7). The Hospital component has a total payroll of \$2,406,564; applying the income multiplier of 1.47 brings the total Hospital income impact to \$3,537,649 ( $\$2,406,564 \times 1.47 = \$3,537,649$ ). The Doctors and Dentists have a total income impact of \$3,504,100, based on the application of the income multiplier of 1.34 to the payroll of the Doctors and Dentists component of \$2,615,000. The Nursing & Protective Care component has a payroll of \$2,526,000, a multiplier of 1.66, resulting in an income impact of \$4,193,160. The Other Medical & Health Services has an income impact of \$3,858,840, based on the direct payroll of \$2,382,000 and the income multiplier of 1.62. The Pharmacies has an income impact of \$685,463, based on the direct payroll of \$425,753 and the income multiplier of 1.61. The total income impact of the health sector in Atoka County is projected to be \$15,779,212 (**Table 6**, 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 employee's equals \$6,370,068 (**Table 6**, 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 \$63,700 in Atoka County as a result of the total health sector impact (**Table 6**, 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 education and health sectors upon the economy of Atoka County is tremendous. Both sectors employ 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 education and health sectors. If the health sector increases or decreases in size, 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 quality education and health sectors. Often overlooked is the fact that prosperous education and health sectors also contributes to the economic health of the community.

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