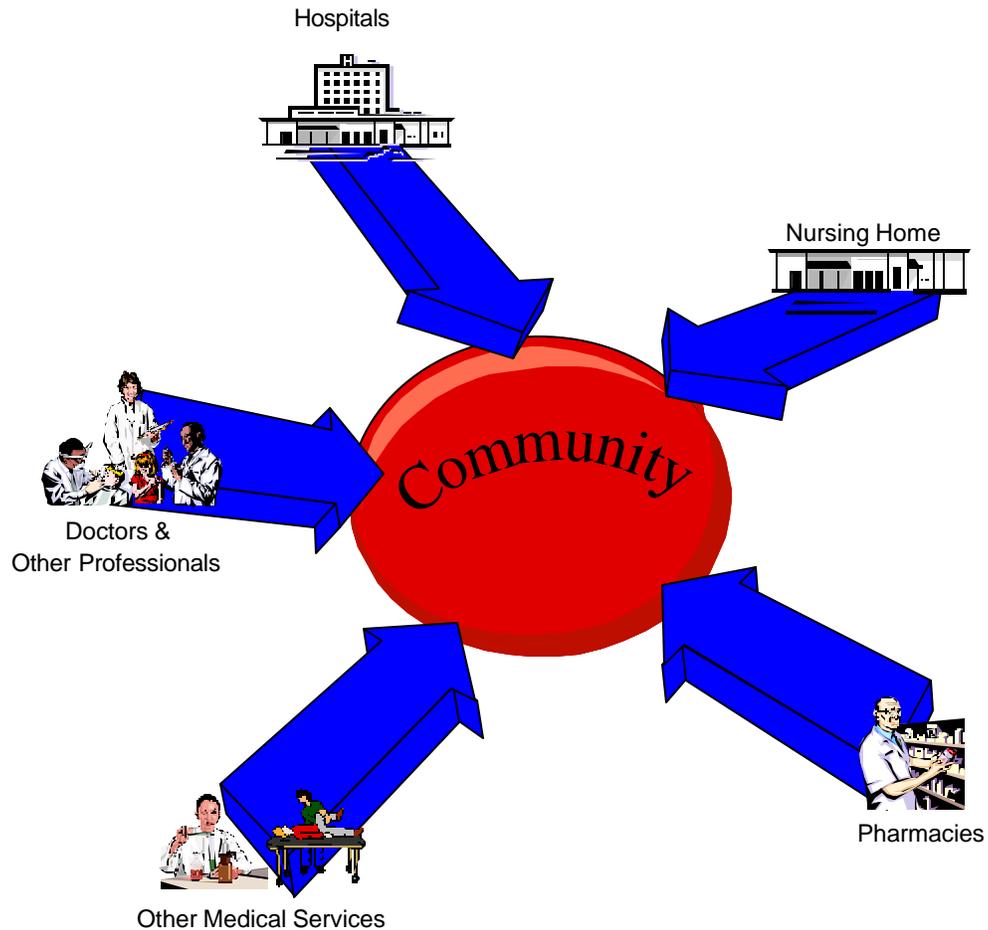


Stroud Economic Impact of the Health Sector



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The Economic Impact of the Health Sector
on the Economy of Stroud in Lincoln County, Oklahoma

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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, nursing homes and assisted living facilities. 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 Stroud in Lincoln 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 Stroud economy.

No recommendations will be made in this report.

County Demographic and Economic Data

The population for Stroud and surrounding communities in Lincoln County are presented in **Table 1**. The population of Stroud was 2,660 in 1990 according to the U.S. Census Bureau and is estimated to be 2,840 in 1998 according to the U. S. Census Bureau, Population Estimates Branch. The nearest communities in Lincoln County are Kendrick and Davenport; Davenport increased in population from 979 to 1,010 from 1990 to 1998 and Kendrick increased in population from 171 (1990 U.S. Census) to 180 (1998 Estimates). Lincoln County shows an estimated loss of population from 29,216 (1990 Census) to 21,400 (1998 Estimates). The rural

Table 1
Population of Stroud and Surrounding Communities in Oklahoma

	1990 Population ¹	1998 Estimated Population ²
Lincoln County.....	29,216	21,400
Agra town.....	334	360
Carney town.....	558	560
Chandler city.....	2,596	2,640
Davenport town.....	979	1,010
Fallis town.....	49	50
Kendrick town.....	171	180
Meeker town.....	1,003	1,020
Prague city.....	2,308	2,360
Sparks town.....	202	220
Stroud city.....	2,660	2,840
Tryon town.....	514	550
Warwick town.....	160	170
Wellston town.....	912	970
Balance of Lincoln County.....	16,770	18,450

¹ SOURCE: Population data from the U. S. Bureau of the Census, 1990.

² SOURCE: Population data from the U. S. Bureau of the Census, Population Estimates Branch, 1998.

area in Lincoln County is growing, from 16,770 (1990 Census) to 18,450 (1998 Estimates). In summary, the population of Stroud and the two closest communities of Kendrick and Davenport and the rural area of Lincoln County are estimated to have increased from 1990 to 1998 even though the population of the county is estimated to have decreased during this same period.

Employment data for Lincoln County are presented in **Table 2**; data are actual data for 1997 from the Bureau of Economic Analysis, Regional Economic Information System and are estimated data for 1999 from Woods and Poole Economics. In 1997, the largest employment categories are services (2,300), retail trade (2,072), and farming (1,883). In 1999, the employment categories are basically the same; with 2,460 in the services sector, 2,070 in the retail trade sector, and 1,710 in farming. Lincoln County has a large services and retail trade base combined with a strong farm base.

The Direct Economic Activities

Employment and payroll are the important direct economic activities created in the Stroud health sector. The health sector is divided into the following five components:

- Hospitals
- Medical Professionals (includes Doctors, Dentists, and others)
- Nursing and Protective Care
- Other Medical and Health Services (includes home health care and county health departments)
- Pharmacies

The total health sector in Stroud employs 306 full-time equivalent employees and has an estimated payroll of \$4,786,000 (**Table 3**). The health sector in Stroud is typical of many rural areas, with three health clinics, one optometrist, one chiropractor, and two nursing homes. Stroud currently has a small hospital component due to the damage from the May 3, 1999,

Table 2
Employment in Lincoln County, Oklahoma

EMPLOYMENT		
	1997 ¹	1999 ²
TOTAL EMPLOYMENT	12,044	12,160
By Type:		
Wage and Salary	7,138	7,207
Proprietors	4,906	4,953
Farm	1,808	1,825
Nonfarm	3,098	3,128
By Industry:		
Farm	1,883	1,710
Nonfarm	10,161	10,430
Private	8,639	8,920
Ag. serv., for., fish., and other	194	180
Mining	315	410
Construction	822	830
Manufacturing	851	1,130
Transportation and public utilities	789	620
Wholesale trade	365	340
Retail trade	2,072	2,070
Finance, insurance, and real estate	931	880
Services	2,300	2,460
Government and government enterprises	1,522	1,510
Federal, civilian	80	80
Military	157	150
State and local	1,285	1,280

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

² SOURCE: 1999 employment data is estimated data from Woods & Poole 1999.

Table 3
Direct Economic Activities of Health Sector
in Stroud, Oklahoma

Component	Estimated Employees	Estimated Payroll
Hospital (includes Stroud Municipal Hospital*)	4	\$80,000
Doctors and Other Medical Professionals (includes three health clinics, one optometrist, and one chiropractor)	51	\$1,320,000
Nursing and Protective Care (includes 2 nursing homes)	85	\$1,043,000
Other Medical and Health Services (includes emergency medical service, five home health care, and one county Health department)	157	\$2,183,000
Pharmacy (includes one pharmacy)	<u>9</u>	<u>\$160,000</u>
TOTAL	<u>306</u>	<u>\$4,786,000</u>

SOURCE: Local survey and estimated from research

* Under renovation from tornado damage

tornado; the hospital is currently under renovation. The Doctors and Other Medical Professionals component employs 51 full-time equivalent employees with an annual payroll of \$1,320,000. This includes three health clinics, an optometrist, and a chiropractor. The Nursing and Protective Care Component employs 85 people with an annual payroll of \$1,043,000. This component includes two nursing homes. The Other Medical and Health Services component employs 157 employees with an annual payroll cost of \$2,183,000. Included in this component are the emergency medical (ambulance) service, five home health care agencies, and the county health department. The Pharmacies component has a total of 9 employees totaling a payroll of \$160,000. It should be noted that many rural communities have a large number of senior citizens, 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 Stroud. 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

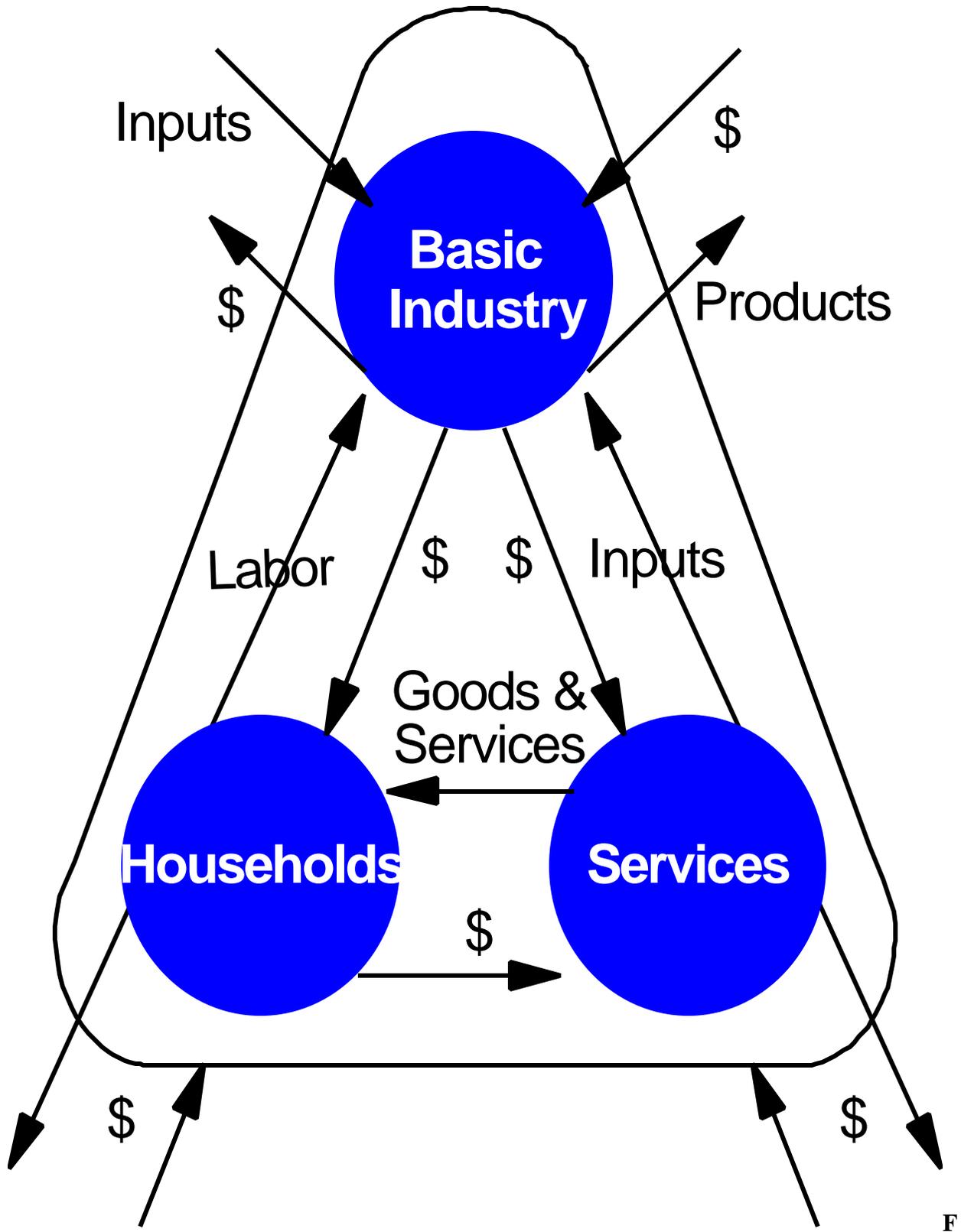


Figure 1. Community Economic System

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 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 III¹ -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 Stroud, Lincoln 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 Service² 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 1.64. This indicates that for each job created in that sector, 0.64 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

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 Stroud, Lincoln County, Oklahoma

(1) Health Sector Component	(2) Employment	(3) Multiplier	(4) Employment Impact	(5) Income	(6) Multiplier	(7) Income Impact	(8) Retail Sales	(9) One Cent Sales Tax
Hospitals	4	1.64	7	\$80,000	1.46	\$116,800	\$29,200	\$292
Doctors & Other Other Medical	51	1.70	87	\$1,320,000	1.36	\$1,795,200	\$448,800	\$4,488
Nursing & Protective Care	85	1.59	135	\$1,043,000	1.66	\$1,731,380	\$432,845	\$4,328
Other Medical & Health Services	157	1.62	254	\$2,183,000	1.64	\$3,580,120	\$895,030	\$8,950
Pharmacies	<u>9</u>	1.56	<u>14</u>	<u>\$160,000</u>	1.76	<u>\$281,600</u>	<u>\$70,400</u>	<u>\$704</u>
TOTALS	<u>306</u>		<u>497</u>	<u>\$4,786,000</u>		<u>\$7,505,100</u>	<u>\$1,876,275</u>	<u>\$18,762</u>

SOURCE: 1994 IMPLAN data base

1.46 (**Table 4**, column 6). This indicates that for each dollar created in that sector, 0.46 dollars are created throughout the area due to business (indirect) and household (induced) spending. The Type III income multipliers for the other 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 total employment impact on the Stroud economy (**Table 4**, columns 2, 3, and 4). For example, the Hospital sector has employment of 4 employees; applying the Type III employment multiplier of 1.64 to the employment number of 4 brings the total employment impact of the Hospital sector to 7 employees ($4 \times 1.64 = 7$). The Doctors and Other Medical Professionals has a Type III employment multiplier of 1.70; applying the multiplier to the direct employment of 51 results in a total employment impact of 87 due to the Doctors and Other Medical Professionals component. The Nursing and Protective Care component has a direct effect of 85 employees and an employment multiplier of 1.59, to bring the total impact to 135 employees. The Other Medical & Health Services component has a direct effect of 157 employees, an employment multiplier of 1.62, and a total employment impact of 254 employees. The Pharmacies component has 9 employees and a total impact of 14 employees, applying the employment multiplier of 1.56. The total employment impact of the health sector in Stroud is estimated at 497 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 Stroud (**Table 4**, columns 5, 6, and 7). The Hospital component has a payroll of \$80,000; applying the Type III income multiplier of 1.46 brings the total impact to \$116,800 ($\$80,000 \times 1.46 = \$116,800$). The Doctors and Other Medical Professionals have a total income impact of \$1,795,200 based on the application of the income

multiplier of 1.36 to the payroll component of \$1,320,000. The Nursing & Protective Care component has a payroll of \$1,043,000, a multiplier of 1.66, resulting in an income impact of \$1,731,380. The Other Medical & Health Services has an income impact of \$3,580,120, based on the direct payroll of \$2,183,000 and the income multiplier of 1.64. The Pharmacies has an income impact of \$281,600 based on the direct payroll of \$160,000 and the income multiplier of 1.76. The total income impact of the health sector in Stroud is projected at \$7,505,100 (**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 \$1,876,275 (**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 \$18,762 in Stroud 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 Stroud is tremendous. The health sector employs a significant number of residents. The secondary impact occurring in the community 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

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