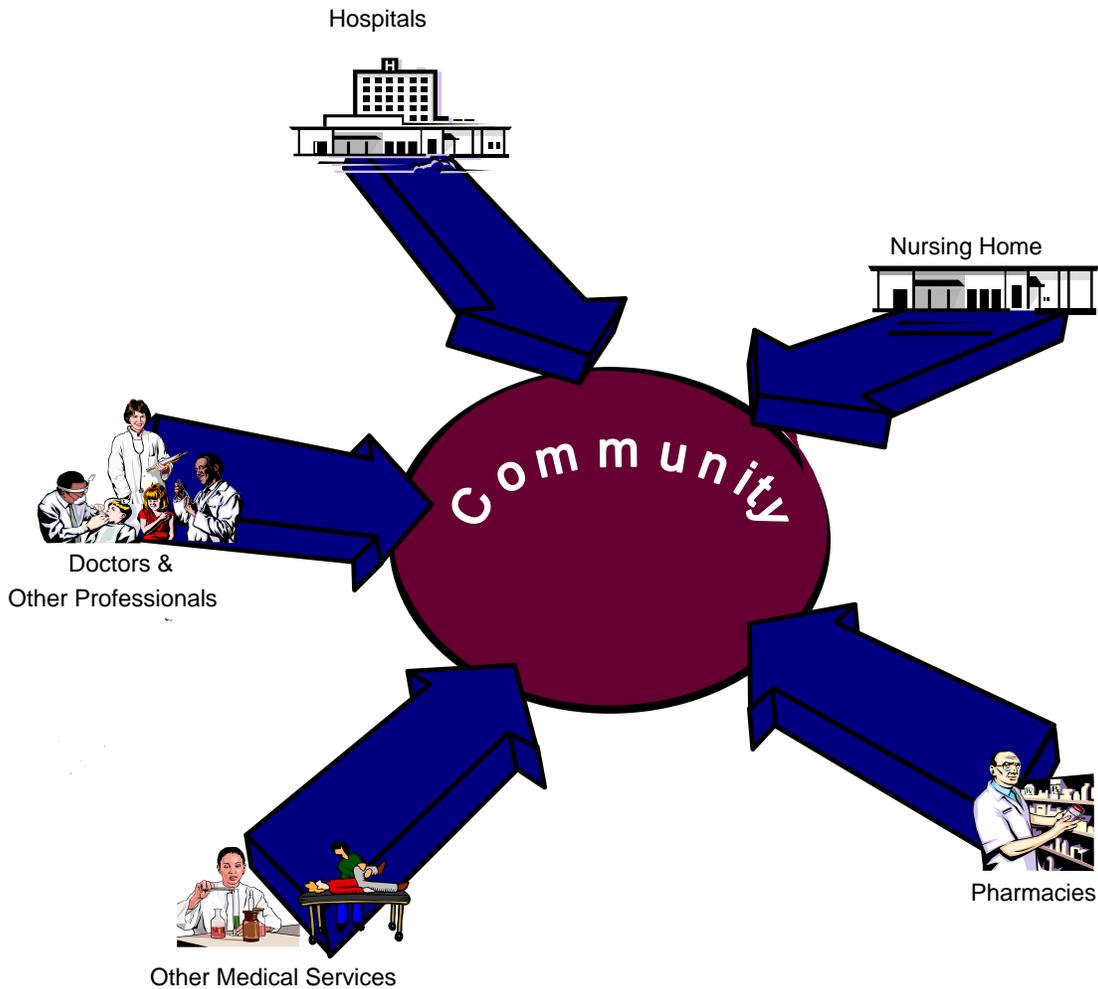


The Economic Impact of the Health Sector on the Roger Mills Memorial Hospital Medical Service Area



**Oklahoma Office of Rural Health
Center for Rural Health
OSU Center for Health Sciences**

**Oklahoma Cooperative Extension Services
Oklahoma State University**

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**Community Health Engagement Process documents available online at:
www.okruralhealthworks.org**

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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 large number of people and have a significant payroll, but they also draw a large number of people from rural areas that need medical services into the community. The overall objective of this study is to measure the economic impact of the health sector on the Roger Mills Memorial Hospital medical service area. The specific objectives of this report are to:

1. Review economic trends of the health sector for the U.S.;
2. Identify population for the medical service area of Roger Mills Memorial Hospital;
3. Summarize the direct economic activities of the health sector;
4. Review concepts of community economics and multipliers; and
5. Estimate the secondary and total impacts of the health sector on the Roger Mills Memorial Hospital medical service area.

No recommendations will be made in this report.

National Trends in Health Care

The health care sector is an extremely fast growing sector, and based on the current demographics, there is every reason to expect this trend to continue. Data in **Table 1** provide selected expenditure and employment data for the United States. Several highlights from the national data are:

Table 1
United States Health Expenditures and Employment Data
1970-2004; Projected for 2005, 2010 & 2015

United States Data									
Year	Total Health Expenditures (\$\$ Billions)	Per Capita Health Expenditure (\$\$)	Health Expenditures as % of GDP (%)	Health Sector Employment (000)	Ave. Annual Employment Increase (%)	Health & Social Asst. Employment (000)	Ave. Yrly Employment Increase (%)		
1970	\$75.1	\$357	7.2%	3,052					
1980	254.9	1,106	9.1%	5,278	7.3%				Emp.
1990	717.3	2,821	12.4%	7,814	4.8%	N/A	N/A		Based
2000	1,358.5	4,729	13.8%	10,103	2.9%	N/A	N/A		on
2001	1,474.2	5,079	14.6%	10,381	2.8%	N/A	N/A		SIC ¹
2002	1,607.9	5,485	15.4%	10,673	2.8%	N/A	N/A		
2003	1,740.6	5,879	15.9%	N/A	N/A	14,759	N/A		Emp.
2004	1,877.6	6,280	16.0%	N/A	N/A	15,052	2.0%		Based
Projections									
2005	2,016.0	6,683	16.2%						on
2010	2,879.4	9,148	18.0%						NAICS ²
2015	4,031.7	12,320	20.0%						

SOURCES: Bureau of Labor Statistics; Bureau of Economic Analysis; Centers for Medicare & Medicaid Services, National Health Expenditures 1970-2004 and National Health Expenditure Projections 2005-2015, website:

<http://www.cms.hhs.gov/NationalHealthExpendData>, data as of February 2006

N/A - Not Available

¹ Based on Standard Industrial Classification (SIC) codes for health sector employment and health & social assistance employment.

² Based on North American Industrial Classification System (NAICS) for health and social assistance employment.

- In 1970, health care services as a share of the national gross domestic product (GDP) were 7.2 percent. This increased to 16.0 percent in 2004;
- Per capita health expenditures increased from \$357 in 1970 to \$6,280 in 2004; and
- Employment in the health sector increased 250 percent from 1970 to 2002.

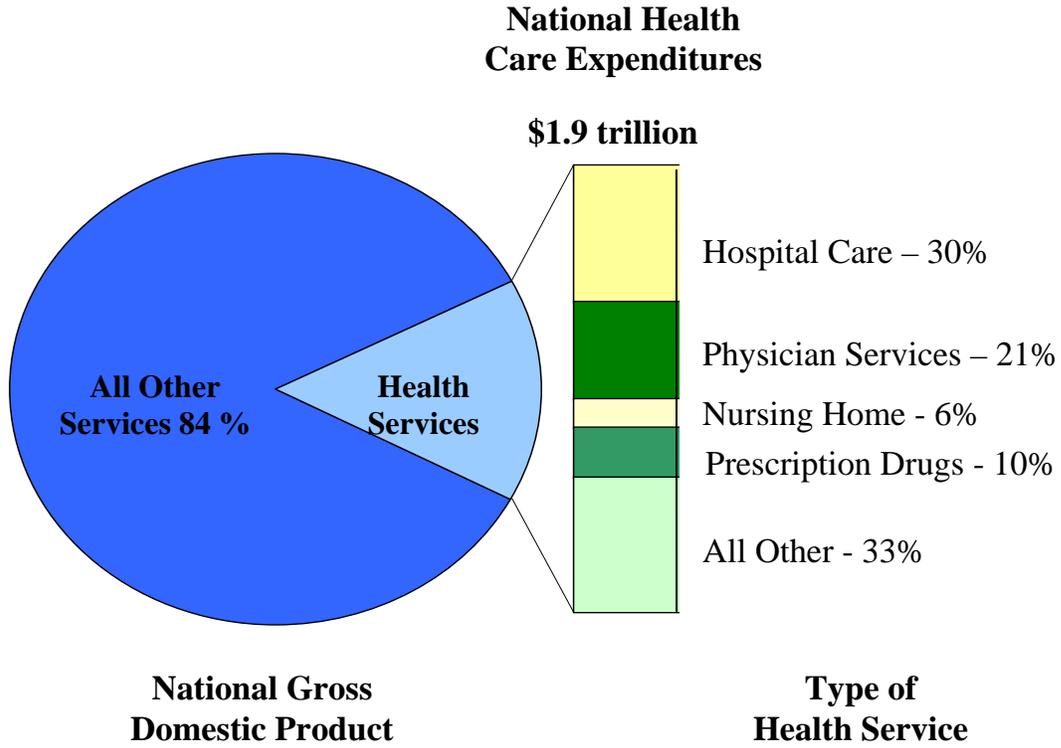
In addition, the Center for Medicare and Medicaid Services, National Health Expenditures, projects substantial increases in health care expenditures from 2004 through 2015; in fact, it is predicted that health care expenditures will account for 18.0 percent of GDP by 2010 and increase up to 20.0 percent of GDP in 2015. Per capita health care expenditures are projected to increase to almost \$9,148 in 2010 and up to \$12,320 in 2015. Total health expenditures are projected to increase to over \$4 trillion in 2015. Of the 16.0 percent of GDP or \$1.9 trillion spent on health care in 2004, 30 percent of the expenditures were for hospital care and another 21 percent were for physician services (**Figure 1**).

Roger Mills Memorial Hospital - Medical Service Area Population

The Roger Mills Memorial Hospital medical service area is delineated in **Figure 3**. The primary medical service area is all of Roger Mills including the cities Cheyenne, Hammon, Reydon, and Strong. According to the U.S. Census Bureau, the 2005 census population estimates of this primary medical service area was 3,311 (**Table 2**). The hospital located in Roger Mills also draws patients from a secondary medical service area that includes portions of Ellis County, Custer County, and Dewey County. This secondary medical service area includes the cities of Arnett, Butler, Leedey, and Camargo. The population of the secondary medical service area was 1,275 based on the 2005 census estimates. **Table 2** also shows population trends for the medical service area and the State of Oklahoma between 2000 and 2005. Roger Mills County (along with several neighboring counties) experienced a population loss over this period while the state of Oklahoma experienced population growth.

Figure 1.

**National Health Expenditures
as a Percent of GDP and by Health Service Type, 2004**



SOURCE: National Health Expenditures 1970-2004; website:

<http://www.cms.hhs.gov/NationalHealthExpendData>, data as of February 2006

Figure 2.
Roger Mills County and
the City of Cheyenne
in the State of Oklahoma

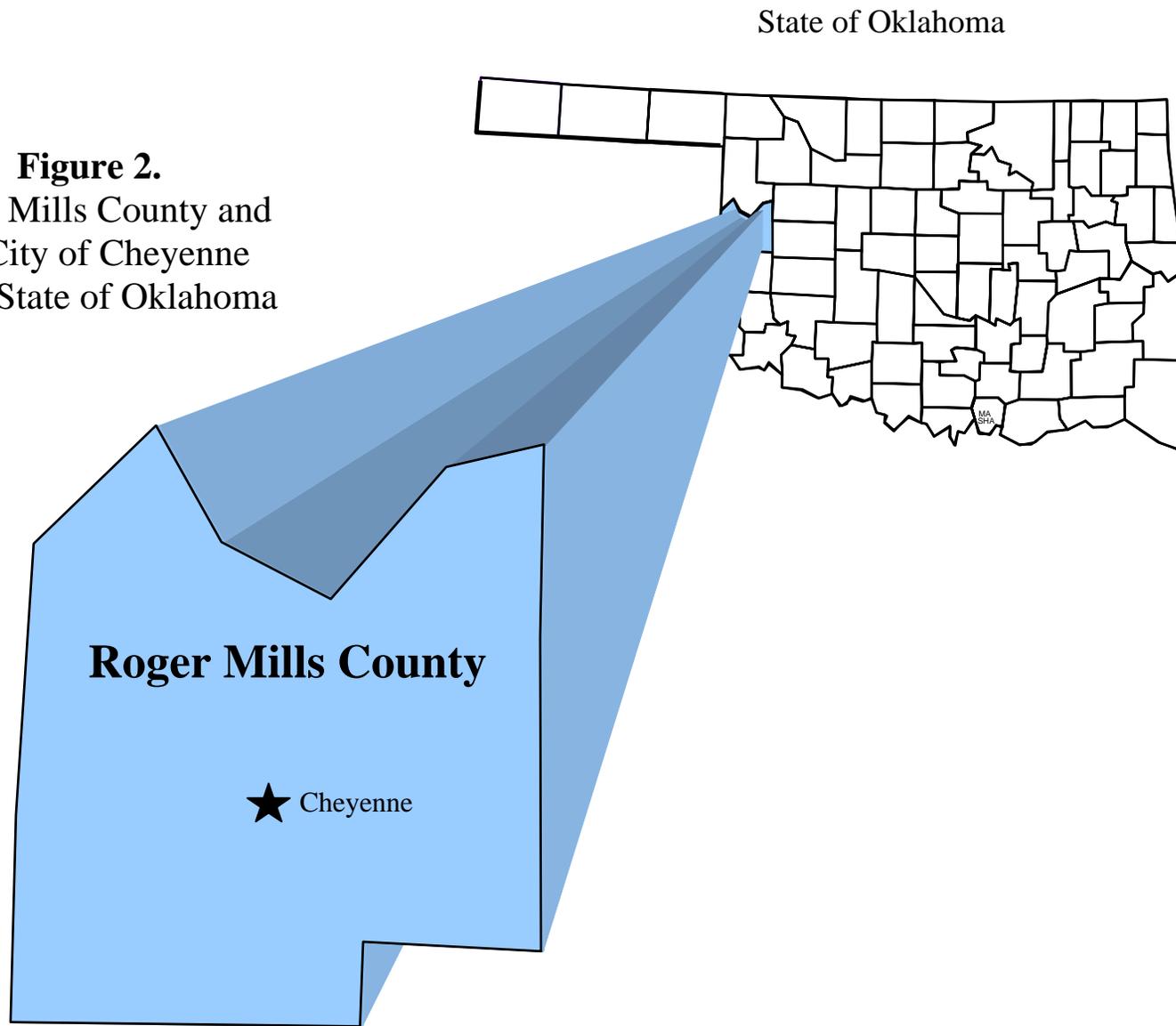


Table 2
Population of the State of Oklahoma and
Roger Mills Memorial Hospital Medical Service Area

Medical Service Area	2000 Population	2005 Population	% Change 2000-2005
State of Oklahoma	3,450,654	3,547,884	2.8%
Primary Medical Service Area			
<i>Roger Mills County</i>			
Cheyenne	778	733	-5.8%
Hammon	469	454	-3.2%
Reydon	177	171	-3.4%
Strong	42	41	-2.4%
Remainder of Roger Mills County	<u>1,970</u>	<u>1,912</u>	-2.9%
Total	3,436	3,311	
Secondary Medical Service Area			
<i>Ellis County</i>			
Arnett	520	497	-4.4%
<i>Dewey County</i>			
Leedey	345	333	-3.5%
Camargo	115	111	-3.5%
<i>Custer County</i>			
Butler	<u>345</u>	<u>334</u>	-3.2%
Total	1,325	1,275	

SOURCE: Population data from the U.S. Bureau of Census, 1990, 2000; U. S. Bureau of the Census, Population Estimates Branch, 2005.

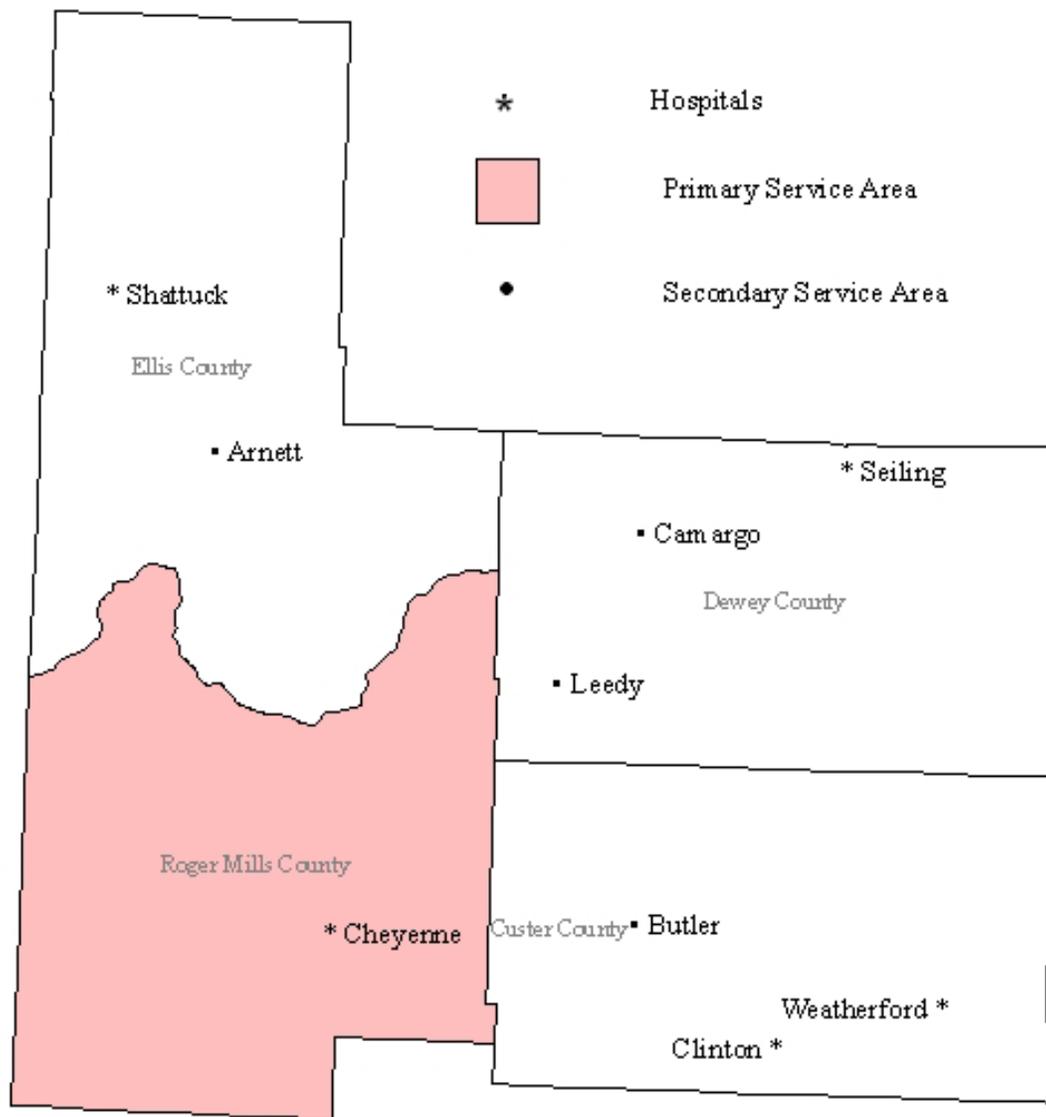


Figure 3
Roger Mills Memorial Hospital Medical Service Area

The Direct Economic Activities

The health sector creates employment and payroll impacts, which are important direct economic activities for the Roger Mills Memorial Hospital medical service area. The health sector is divided into the following three components:

- Hospital (includes Roger Mills Memorial Hospital and the EMS service)
- Other Medical and Health Services (includes two physicians, on physicians assistant, one pharmacy, and one dental office)

The health sector in the Roger Mills Memorial Hospital medical service area employs 109 full-time and part-time employees and has an estimated payroll of \$2,527,153 (**Table 3**). The health sector in Roger Mills Memorial Hospital is typical of many rural counties, with one hospital, an EMS service, two physicians, one physician’s assistant, one pharmacy with three pharmacists, and one dental office.

Table 3
Direct Economic Activities of the Health Sector
in the Roger Mills Memorial Hospital Medical Service Area

Component	Full-Time & Part-Time Employment	Total Payroll with Benefits
Hospital Includes Roger Mills Memorial Hospital and the EMS service.	95	\$1,385,670
Other Medical & Health Services Includes two physicians, one physicians assistant, one pharmacy with three pharmacists, and one dental office.	<u>14</u>	<u>\$1,141,483</u>
Totals	<u>109</u>	<u>\$2,527,153</u>

SOURCE: Local survey and estimates from research.

The hospital component provides 95 full and part-time jobs with an estimated annual payroll of \$1,385,670 (including benefits). The Other Medical and Health Services component employs 14 total full-time and part-time employees with an estimated annual payroll of \$1,141,483, which includes two physicians, one physician's assistant, one pharmacy with three pharmacists, and one dental office.

The health sector is vitally important as both a community employer and a source of income to the community's economy. The health sector employs a large number of residents. These residents, along with businesses in the health sector, purchase a large amount of goods and services from businesses in the Roger Mills Memorial Hospital 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 reviewed.

Basic Concepts of Community Economics and Income and Employment Multipliers

Figure 4 illustrates the major flows of goods, services, and dollars of any economy. The foundations of a community's economy are those businesses that sell some or all of their goods and services to buyers outside of the community. Such a business is a basic industry. The two arrows in the upper right portion of **Figure 4** represent the flow of products out of, and dollars into, a community. 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 4**), labor from the residents or "households" of the community (left side of **Figure 4**), and inputs from service industries located within the community (right side of **Figure 4**). Households using their earnings to purchase goods and services from the community's service industries complete

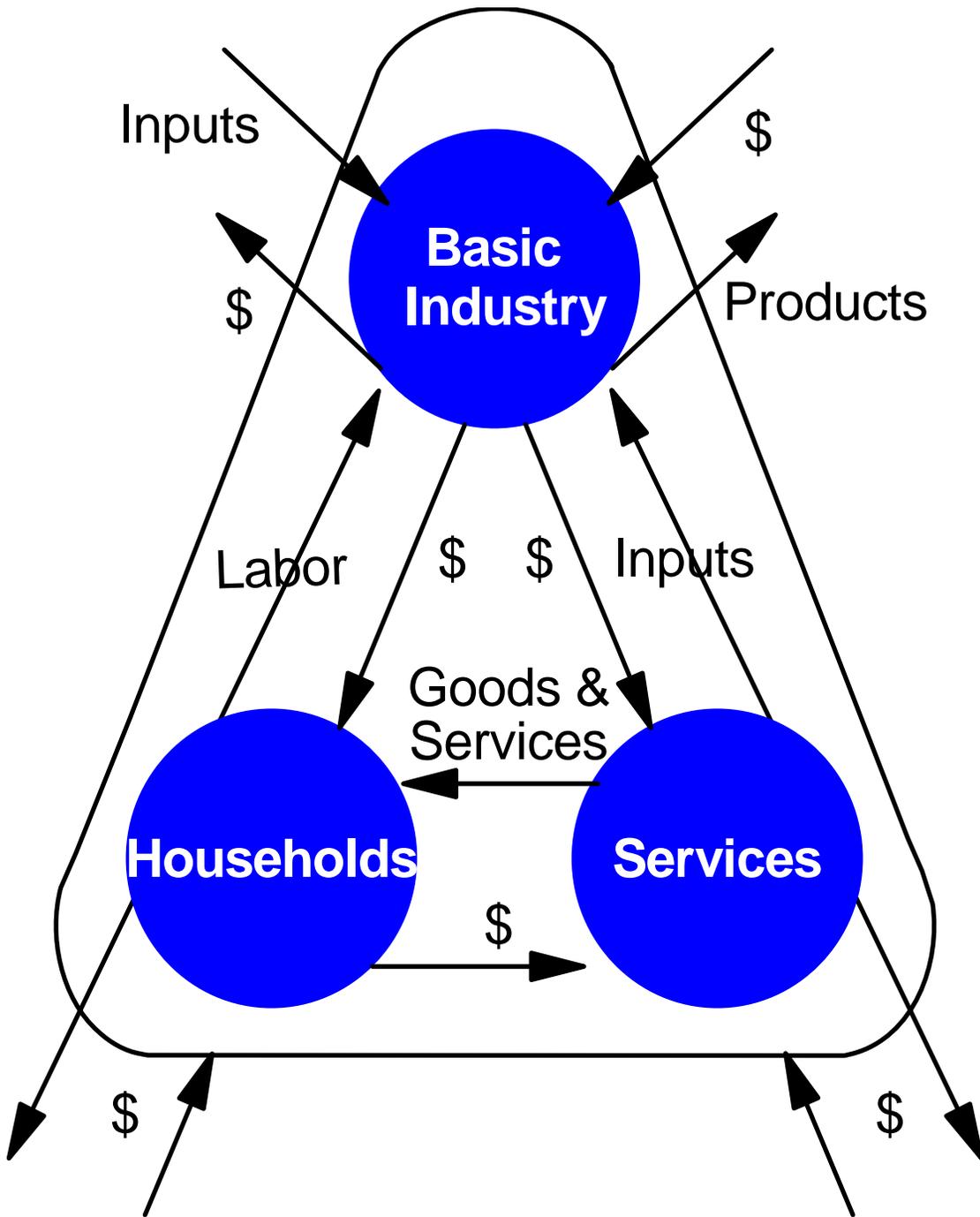


Figure 4
Community Economic System

the flow of labor, goods, and services in the community (bottom of **Figure 4**). It is evident from the relationships illustrated in **Figure 4** that a change in any one segment of a community's economy will cause 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 the dollars flowing into households from these jobs will stop. Likewise, the hospital will not purchase goods from other businesses, and the 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' purchase 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 purchase 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. The multipliers used in this report are defined as:

“...the ratio between direct employment (or income), or that employment (or income) used by the industry initially experiencing a change in final demand and the direct,

indirect, and induced employment (or income).”

An 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 the Health Sector on the Economy of Roger Mills Memorial Hospital

Employment and income multipliers for the area have been calculated by use of the IMPLAN model. It was developed by the U.S. Forest Service¹ and is a model that allows for development of multipliers for various sectors of an economy. The employment multipliers for the components of the health sector are shown in **Table 4**, column 3. The employment multiplier for the hospital component is 1.22. This indicates that for each job in that component, an additional 0.22 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 4**, column 3. The income multiplier for the hospital component is 1.34 (**Table 4**, column 6). This indicates that for each dollar in that component, an additional 0.34 dollars are created throughout the area due to business (indirect) and household (induced) spending. The income multipliers for the other health sector components are also shown in **Table 4**, column 6.

Applying the employment multipliers to the employment for each component yields an estimate of the impact on the economy (**Table 4**, columns 2, 3, and 4). For example, the hospital has a direct employment of 95 full-time and part-time employees; applying the employment multiplier of 1.22 to the employment number of 95 brings the total employment impact of the hospital to 116 employees ($68 \times 1.07 = 73$). The Other Medical and Health Services component has 14 full-time and part-time employees and an employment multiplier of 1.19, for a total

¹For complete details of model, see [1], [2], and [3].

Table 4
Roger Mills Memorial Hospital Health Sector Impact
on Employment and Income, and Retail Sales and Sales Tax

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Health Sectors	Employment			Income			Retail	1 Cent
	Employed	Multiplier	Impact	Income	Multiplier	Impact	Sales	Sales Tax
Hospitals	95	1.22	116	\$1,385,670	1.34	\$1,856,798	\$427,063	\$4,271
Other Medical & Health Services	<u>14</u>	1.19	<u>17</u>	<u>\$1,141,483</u>	1.13	<u>\$1,289,876</u>	<u>\$296,671</u>	<u>\$2,967</u>
Total	109		133	\$2,527,153		\$3,146,674	\$723,735	\$7,237

SOURCE: 2004 IMPLAN database, Minnesota IMPLAN Group, Inc.; Local data for employment, employee compensation and proprietor's income; income estimated based on state average incomes if local data not available

employment impact of 17. The total employment impact of the health sector in the Roger Mills Memorial Hospital medical service area is estimated to be 133 employees (**Table 4**, total of column 4).

Applying the income multipliers to the income (payroll including benefits) for each of the health sector components yields an estimate of each component's income impact on the Roger Mills Memorial Hospital medical service area (**Table 4**, columns 5, 6, and 7). The hospital has a total payroll of \$1,385,670; applying the income multiplier of 1.34 brings the total hospital income impact to \$1,856,798 ($\$1,385,670 \times 1.34 = \$1,856,798$). The Other Medical and Health Service component has a total payroll of \$1,141,483 and an income multiplier of 1.13, leading to a total income impact of \$1,289,876. The total income impact of the health sector on the economy of Roger Mills Memorial Hospital medical service area is projected to be \$3,146,674 (**Table 4**, total of column 7).

Income also has an impact on retail sales, and the health sector has its own distinct effect on these retail sales. The local retail sales capture ratio is used to estimate the effect of the health sector on retail sales. This ratio indicates the percentage of personal income spent locally on items that generate local sales tax. If the county ratio between retail sales and income continues as it has in the past several years (around 23.0%), then direct and secondary retail sales generated by the health sector equals \$723,735 (**Table 4**, total of column 8). Each of the components' income impacts is utilized to determine the retail sales and a one-cent sales tax collection for each component. A one-cent sales tax collection is estimated to generate \$7,237 in the Roger Mills Memorial Hospital medical service area economy as a result of the health sector income impact (**Table 4**, total of column 9). This estimate is probably low, as many health care employees tend to spend a larger proportion of their income in local establishments that collect

sales tax. The bottom line is that the health sector in Roger Mills Memorial Hospital medical service area 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 on the economy of Roger Mills Memorial Hospital 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 is a testament to the importance 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, is greatly affected. For the attraction of industrial firms, businesses, and retirees, it is crucial that the area have a quality health sector. The fact that a prosperous health sector also contributes to the economic health of the community is often overlooked.

For additional information, contact your local county extension office.

References

- [1] IMPLAN Professional Version 2.0 Social Accounting & Impact Analysis Software – USER’S GUIDE, ANALYSIS GUIDE, DATA GUIDE, MIG, Minnesota IMPLAN Group, 2nd Edition, June 2000.
- [2] Palmer, Charles and Eric Siverts, IMPLAN ANALYSIS GUIDE. U.S. Department of Agriculture, Forest Service Land Management Planning Systems Section, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado, 1985.
- [3] Siverts, Eric, Charles Palmer, Ken Walters, and Greg Alward, IMPLAN USER'S GUIDE, U.S. Department of Agriculture, Forest Service, Systems Application Unit, Land Management Planning, Fort Collins, Colorado, 1983.