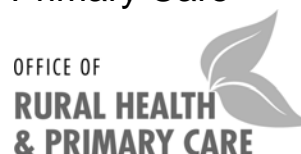


# Economic Impact of Cook Hospital and Related Health Sectors of St. Louis County

November 10, 2011



Minnesota Department of Health-  
Office of Rural Health and Primary Care



*The health care sector is often the largest rural employer and frequently is directly responsible for 10 to 15 percent of jobs. A strong health care sector promotes job growth within other industries and attracts retirees and young families. This report measures the primary and secondary impact of health care jobs and income for St. Louis County.*

*St. Louis County is in central Minnesota. The county has 6,247.40 square miles with a population density of 32.0 people per square mile, compared to 61.8 people per square mile statewide. There are 84,879 households. The Cook Hospital service area of 7,500 people includes surrounding cities and townships primarily in St. Louis County.*

### **Health Care's Economic Impact**

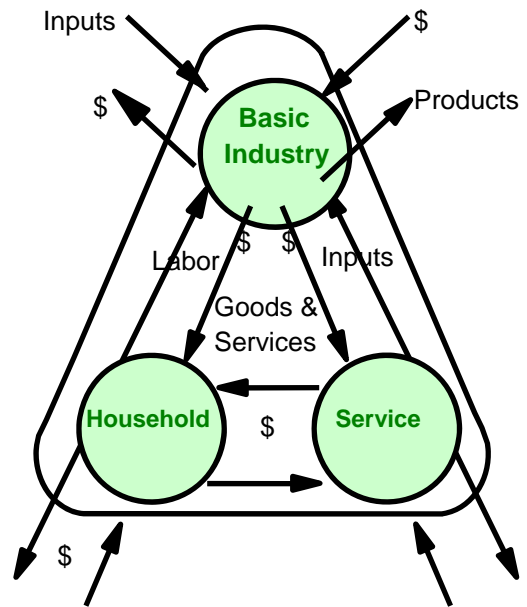
The health care industry has a tremendous impact on a community's economy and quality of life. This is especially true with hospitals, clinics and nursing homes. These facilities purchase goods and services from other local businesses and employ a number of people who shop at local businesses and pay taxes.

The health care sector includes five components:

- Hospitals
- Doctors and dentists (includes chiropractors, optometrists)
- Nursing and protective care (nursing and group homes)
- Other medical and health services (includes home health care, veterinarians, rehabilitation and the county health departments)
- Pharmacies.



**Figure 1. Community Economic System**



The actual employment, income and sales of goods and services the industry provides are key aspects of the overall local economic impact. Some of the goods and services are sold to buyers outside of the community, which creates a flow of dollars into the community (Figure 1).

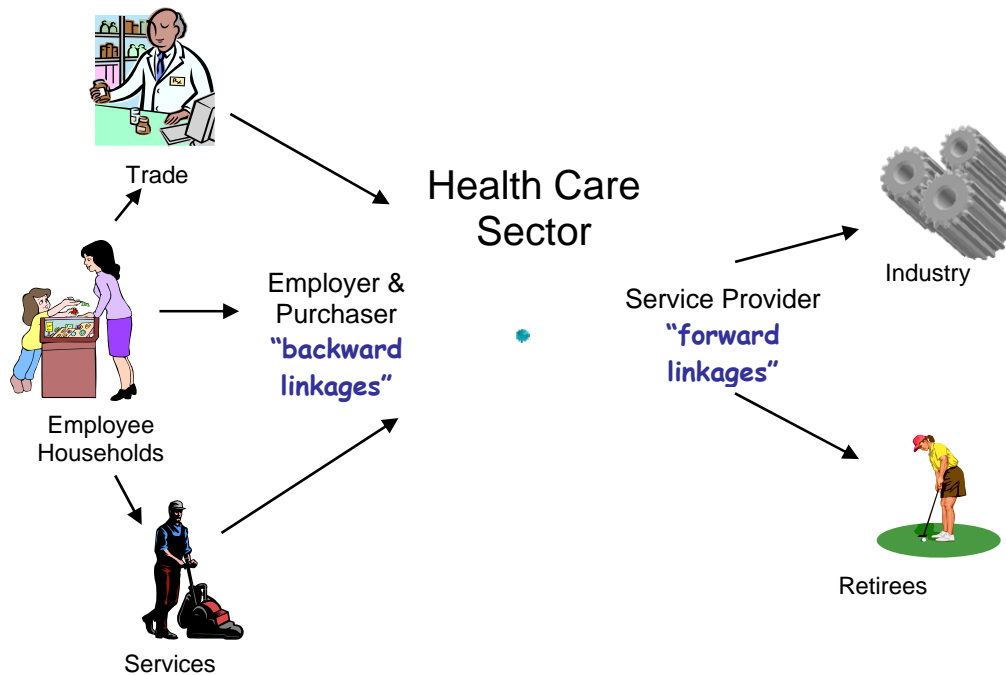
To produce these goods and services for export, the basic industry purchases inputs from outside the community, labor from the households and inputs from service industries located in the community. The flow of labor, goods and services in the community is completed when households use their earnings to purchase goods and services from the community's service industries such as health care.

This theory can be demonstrated by considering the impact of a hospital closing. The service sectors will no longer pay employees, and dollars going to households will stop. The hospital will not purchase goods, halting the flow of dollars to other businesses. This decreases income in the "Household" segment of the economy. When earnings drop, households decrease their purchases of goods and services from businesses within the "Service" segment of the economy. In turn, these businesses decrease their purchases of labor and inputs. The change works its way throughout the entire local economy.

An economic change includes direct, indirect and induced impacts. Direct impacts are the changes in the activities of the impacting industry, such as the hospital opening a new birthing center service. The impacting business (hospital), changes its purchases of inputs. 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. This change is referred to as an induced impact.

There are four major roles, including financial and non-financial linkages, for health care in rural economic development: 1) keeping local health care dollars at home and addressing supply-demand gaps, 2) attracting external patients as an export-based industry, 3) helping recruit businesses and workers, and 4) promoting a healthy and productive workforce.

**Figure 2. The Linkages of the Health Care Sector**



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.<sup>a</sup> It is defined as the ratio between employment of the industry initially experiencing a change and the direct, indirect and induced employment. For example, an employment multiplier of 2.0 indicates that if one job is created by a new industry, one other job is created in other sectors due to business (indirect) and household (induced) spending.

<sup>a</sup> Employment and income multipliers have been calculated using the IMPLAN model. The U.S. Forest Service developed IMPLAN as a model that allows for development of county multipliers. A Type SAM multiplier is used in this report. Type SAM multipliers are calculated using a “social accounting matrix” methodology that accounts for commuting, social security tax payments, household income taxes and savings. Type SAM multipliers separate the effects of market income such as employment payrolls, from government expenditures such as social security payments. Thus, Type SAM multipliers give estimates that are more accurate than the earlier Type II and Type III multipliers. Also see References [1].

## Economic Potential

Job creation is vital to rural economic development. It is also important to note that the health sector is growing. Nationally, employment in health care services increased by 28 percent from 1990 to 2000, and by more than 200 percent since 1970 (Table 1). Table 1 illustrates how health services, as a share of gross domestic product (GDP), have increased over time. In 1970, Americans spent \$73.1 billion on health care, which accounted for 7 percent of the GDP. In 2000, health care costs ballooned to nearly \$1.3 trillion, or about 13.2 percent of the GDP. Capturing this economic growth can only help a rural community.

The secondary impact of increased health care spending, such as higher retail sales in non-health areas or new housing starts, may also have a sizeable impact on the community.

**Table 1. National Health Expenditures and Employment Data 1970-2007**

<b>Year</b>	<b>Total Expenditures (\$ Billion)</b>	<b>Per Capita Expenditures (\$)</b>	<b>Expenditures as a Percent of GDP</b>	<b>Health Sector Employment (million jobs)</b>	<b>Annual Increase in Employment</b>
<b>1970</b>	73	348	7.0	3,053	
<b>1980</b>	246	1,067	8.8	5,278	5.6%
<b>1990</b>	696	2,736	12.0	7,814	4.0%
<b>2000</b>	1,300	4,637	13.2	10,103	1.3%
<b>2009</b>	2,500	8,086	17.6	13,109	3.0%

Centers for Medicare and Medicaid Services, National Health Expenditures and Selected Economic Indicators, and Bureau of Labor Statistics (BLS)

U.S. health care spending decelerated in 2009, increasing 4.0 percent compared to 4.7 percent in 2008. Total health expenditures reached 2.5 trillion, which translates to \$8,086 per person or 17.6 percent of the nation's Gross Domestic Product (GDP).

## Determining Importance of Health Care to Your Economy

First, determine the health services your community uses and the expenditures for those services.

Table 2 shows the 2009 Minnesota per capita expenditures by major categories of health care.

The estimated population of the Cook Hospital market area is 7,500 consisting mainly of St.

Louis County and surrounding townships. The last column multiplies the per capita expenditures by that estimated service area population to arrive at the estimated economic impact of providing services in St. Louis County: \$38,767,500 (Detailed analysis in Appendix)

**Table 2. Estimated Potential Expenditures**

Health Services	2009 Minnesota Per Capita (\$) <sup>b</sup>	Percent Primary Care	Primary Care Per Capita (\$)	Market Area Potential Expenditures(\$) <sup>c</sup>
Hospital Care	2,839	61% <sup>2</sup>	1,725	12,937,500
Physician and Other Professional Services	2,005	75% <sup>3</sup>	1,504	11,280,000
Home Health Care	172	100% <sup>4</sup>	172	1,290,000
Nursing Home Care	671	100% <sup>5</sup>	671	5,032,500
Dental Services	458	75% <sup>3</sup>	343	2,572,500
Pharmaceutical Drugs/ Other Non-Durables	1,005	75% <sup>3</sup>	754	5,655,000
Medical Durables	126	-- <sup>3</sup>	--	--
Other Personal Health Care	810	-- <sup>3</sup>	--	--
<b>Total</b>	<b>\$8,086</b>	<b>69%</b>	<b>\$5,169</b>	<b>\$38,767,500</b>

Centers for Medicare and Medicaid Services<sup>1</sup> Numbered footnotes are presented in **Appendix**.

<sup>b</sup> Per capita expenditures are 1998 data adjusted for inflation using the GDP implicit price deflator.

<sup>c</sup> Based on per capita amounts and a market area population estimate of 7,500 people.

By comparing the potential impact with local data, your community can determine if there is an opportunity to expand health care and bring more health dollars into the local economy. For example, the hospital will have an annual estimate of total billings. If this figure is below the potential, there may be room to expand hospital services and retain more dollars in your community. An example of a service that can be provided completely within the service area is nursing homes. If there are waiting lists at existing facilities, or residents are using facilities outside the service area, there is a potential to expand locally.

Another economic potential is the growth in health-related occupations. Statewide, health care represented 255,660 jobs in 2009, or about 8 percent of all jobs in the state. Health-related jobs are expected to increase 24 percent by 2019. When both employment increases and replacements are considered, total openings through 2019 are expected to be 105,514. Health care jobs are roughly two-thirds professional and technician positions, and one-third service and related occupations. Employment projections are not available on a county basis, but for the northeast region health care represented 18,852 jobs in 2009 and is expected to increase 24.43 percent by 2019.

### Economic Indicators

Table 3 shows economic indicators for St. Louis County, Minnesota and nationwide. The average per capita income in St. Louis County was \$36,485 compared to \$41,854 for Minnesota. An estimated 14.6 percent of St. Louis County’s population was below the poverty rate compared to the state rate of 10.8 percent. The data indicates that 24.3 percent of total personal income for St. Louis County came from transfer payments (income subsidy such as Social Security, Medicare or Medicaid).

**Table 3. Economic Indicators for St. Louis County, Minnesota and the Nation**

Indicator	County	Minnesota	Nation
Total Personal Income (2009)	\$7,215,588 billion	\$224,670,738 billion	\$12,225 trillion
Per Capita Income (2009)	\$36,485	\$41,854	\$39,635
Civilian Labor Force (2011) <sup>d</sup>	100,090	2,981,725	140.1 million
Unemployment (2011)	6,921	205,273	13.9 million
Unemployment Rate (2011)	6.5%	6.9%	9.1%
Poverty Rate (2010)	14.6%	10.8%	14.7%
Transfer Dollars (2009)	\$1,758,429 billion	\$35.764 billion	\$1.875 trillion
<b>Transfer Dollars as Percentage of Total Personal Income (2008)</b>	<b>24.3%</b>	<b>13.6%</b>	<b>15.3%</b>

U.S. Bureau of Economic Analysis, Bureau of Labor Statistics, and Census Bureau

<sup>d</sup>Labor force estimates are from the U.S. Bureau of Labor Statistics Current Population Survey. Employed persons holding more than one job are only counted once.

## Population

St. Louis County experienced a population gain of 1.2 percent from 1990 to 2000 (compared to 12.4 percent gain statewide), reaching 200,528 (Table 4). The St. Louis County population is projected to decrease slightly through 2015.

**Table 4. Selected Demographic Data for St. Louis County and Minnesota**

Selected Item	St. Louis County	County Percent	State Percent
<b>Population Change (1980-1990)</b>	222,229→198,213	-8.9	+7.4
<b>(1990-2000)</b>	198,213→200,528	+1.2	+12.4
<b>Population Projections:</b>	Year 2005 = 198,103 Year 2010 = 200,226 Year 2015 = 199,130		
<b>Population by Race (2010)</b>			
<b>White</b>	186,212	93.0	85.3
<b>Native American<sup>e</sup></b>	4477	2.2	1.1
<b>Asian</b>	1,838	0.9	4.0
<b>Black</b>	2,739	2.5	5.2
<b>Other<sup>f</sup></b>	445	2.3	1.9
<b>Two or more races<sup>g</sup></b>	4,515	2.3	2.4
<b>Hispanic ethnic background<sup>h</sup></b>	2409	3.8	4.7

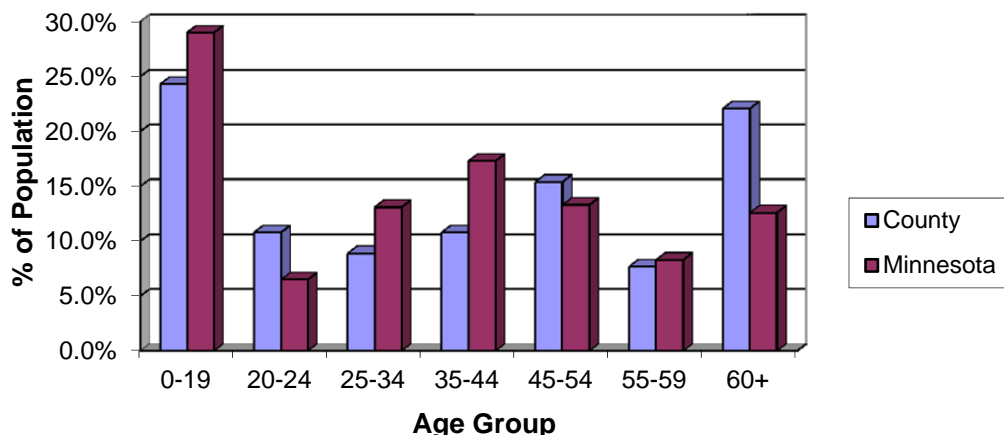
SOURCE: U.S. Census Bureau, 2000 data available from Minnesota Planning, Minnesota State Demographer's Office estimates for 2005-2015.

<sup>e</sup> Native American includes American Indian and Alaska Natives <sup>f</sup> Other defined as: Asian Americans, Native Hawaiian, Pacific Islander and all others. <sup>g</sup> Two or more races indicate a person is included in more than one race group.

<sup>h</sup> Hispanic is not a race group but rather a description of ethnic origin; Hispanics are included in all four race groups.

The age range of the St. Louis County population generally reflects the rest of Minnesota (Figure3).

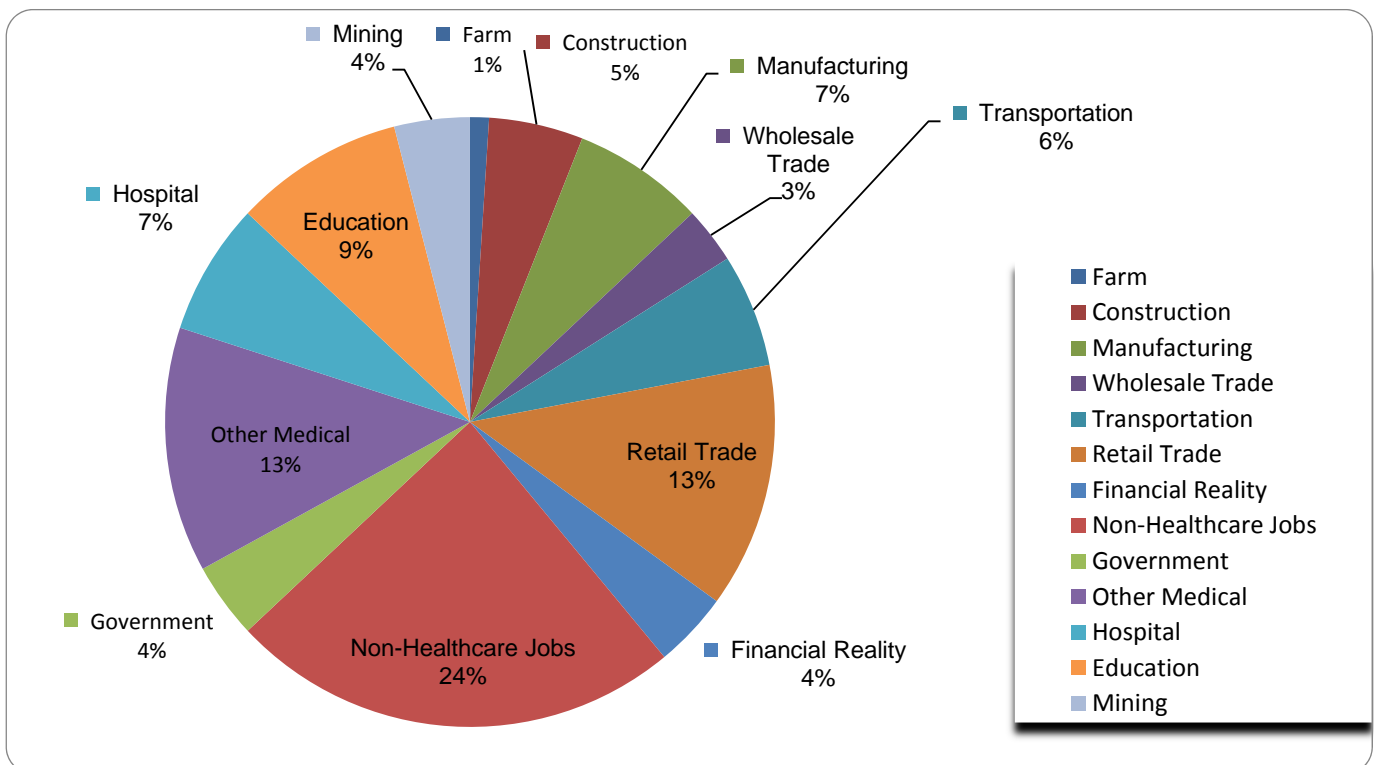
**Figure 3. Population by Age Group for St. Louis County and Minnesota**



## Employment

Total employment in St. Louis County was 100,090 in 2010 and health care services accounted for 20 percent (Figure 4). The sectors with the largest employment are still non-health care services, manufacturing and retail trade, making up over half of St. Louis County’s economic base.

**Figure 4. Employment by Sector for St. Louis County**



Bureau of Economic Analysis, Regional Economic Information System, 2009

In 2009, the total health sector in St. Louis County employed 20,176 individuals and produced a payroll of \$912,144,000. The county has three critical access hospitals, five perspective payment system hospital, 18 nursing homes, 68 home care agencies, and 94 assisted living facilities. Cook Hospital employs 128 people with an annual payroll of \$4,764,629. Cook Hospital is a 14-bed, acute care, critical access hospital with a fully-staffed emergency room open 24 hours a day, seven days a week, serving a 2,500 square mile region of wilderness and recreational territory. Services at the hospital include primary care, surgery, emergency care and rehabilitation.

Many rural communities have a large number of elderly people and farmers who often retire in the towns. Thus, nursing and protective care facilities are an important component of the health sector.

The St. Louis County health sector purchased goods and services totaling \$866,536,800 in 2009. Together with payroll, health sector expenditures amounted to \$1,778,680,800 in 2009.

**Table 5. Direct Economic Activities of the Health Sector in St. Louis County, Minnesota 2009**

Component	Estimated Employees	Estimated Expenditures
Hospital	6545	\$349,497,000
Doctors and Dentists (Includes physician offices, plus chiropractors, optometrists, and visiting specialists)	4844	351,690,000
Nursing and Protective Care (Nursing homes and supervised living facilities)	6593	149,440,000
Other Medical and Health Services	791	28,025,000
Home Health Care Services	534	8,632,000
Pharmacies	869	24,860,000
<b>TOTAL EMPLOYEES AND PAYROLL</b>	<b>20,176</b>	<b>\$912,144,000</b>
Expenditures for Goods and Services Other Than Payroll		\$866,536,800
<b>TOTAL EXPENDITURES</b>		<b>\$1,778,680,800</b>

SOURCE: Local survey and 2009 IMPLAN data estimated from U.S. Census Bureau County Business Patterns and U.S. Bureau of Economic Analysis reports, indexed to 2009 dollars.

## The Impact

The employment and income impacts for St. Louis County have been calculated using IMPLAN<sup>i</sup> multipliers (See Reference [1]). A multiplier is the ratio between employment or income from one industry and the sum of its direct, indirect and induced effects, defined here as the total impact on the rest of the local economy. Table 6 summarizes the employment and income impact of the health care industry in St. Louis County.

**Table 6.**  
**2009 Economic Impact of Health Sector on Employment and Income in St. Louis County**

<b>Health Sector Component</b>	<b>Employment</b>	<b>Type SAM Multiplier<sup>i</sup></b>	<b>Employment Impact</b>	<b>Estimated Expenditures</b>	<b>Type SAM Multiplier<sup>j</sup></b>	<b>Income Impact</b>
Hospitals	6544	1.61	10,535	\$349,497,000	1.36	\$475,315,920
Doctors and Dentists	4844	1.71	8283	351,690,000	1.28	450,016,320
Nursing and Protective Care	6593	1.25	8241	149,440,000	1.33	198,755,000
Other Health Services	790	1.61	1273	28,025,000	1.52	42,598,000
Home Health Care Services	534	1.19	635	8,632,000	1.35	11,653,200
Pharmacies and Related	869	1.25	1086	24,860,000	1.47	36,544,200
<b>TOTALS</b>	<b>20,176</b>		<b>30,053</b>	<b>\$912,144,000</b>		<b>\$1,214,882,640</b>
Health-Related as Percent of St. Louis County Total Expenditures Other Than Payroll	20.1%		30%			
				\$866,536,800		\$1,299,805,200
				<b>\$1,778,680,800</b>		<b>\$2,514,687,840</b>
<b>TOTAL EXPENDITURES</b>						
Percent of St. Louis County Total Economic Output				20.6%		26.5%

<sup>i</sup> A Type SAM employment multiplier is calculated using the formula: (direct employment in these industries + employment generated indirectly in input supplier firms additional employment induced by the employees' consumer spending)/(direct employment). A type SAM income multiplier is calculated in a similar fashion. <sup>j</sup>2000 IMPLAN Data Base indexed to 2009 dollars; 2000 Minnesota County Business Patterns, U.S. Bureau of Economic Analysis, Regional Economic Information System.

The **total employment impact** of the health care sector in St. Louis County is **30,043 jobs**.

- There are approximately 20,176 actual jobs in the health care industry in St. Louis County.
- The health care sector supports approximately 9,867 additional jobs in St. Louis County through the multiplier effect.
- The combined effect represents 30 percent of St. Louis County's total employment.

The total **income impact** of the health care industry in St. Louis County is **\$1.2 billion**.

- The health care industry provides approximately \$912 million in income annually in St. Louis County.
- The health care sector generates approximately \$300 million in additional income in St. Louis County through the multiplier effect.
- The \$866 million spent in the health care sector of St. Louis County has created another \$433 million of spending in other sectors of the county's economy. Therefore, the combined effect represents 26.5 percent of the county's total economic output.



**Table 7. Economic Impact of the Health Sector on Employment and Income for Cook Hospital in St. Louis County, 2010**

<b>Health Sector Component</b>	<b>Employment</b>	<b>Type SAM Multiplier<sup>k</sup></b>	<b>Employment Impact</b>	<b>Estimated Expenditures</b>	<b>Type SAM Multiplier<sup>a</sup></b>	<b>Income Impact</b>
<b>Cook Hospital</b>	128	1.61	206	\$4,764,629	1.36	\$6,479,896
<b>Expenditures Other Than Payroll</b>				<b>\$6,575,712</b>		<b>\$9,863,568</b>
<b>TOTAL EXPENDITURES</b>				<b>\$11,340,341</b>		<b>\$16,343,464</b>

<sup>k</sup>Type SAM employment multiplier is calculated using the formula: (direct employment in these industries + employment generated indirectly in input supplier firms + additional employment induced by the employees' consumer spending)/(direct employment). A type SAM income multiplier is calculated in a similar fashion. SOURCE: 2009 IMPLAN Data Base indexed to 2006 dollars; 2010 Minnesota County Business Patterns, U.S. Bureau of Economic Analysis, Regional Economic Information System.



***Every health care service provided locally benefits the community twice. It improves the health of the people and it improves the health of the economy.***

The **total employment impact** of the health care sector for Cook Hospital in St. Louis County is 206 **jobs**.

- There are approximately 128 actual jobs at Cook Hospital in St. Louis County.
- Approximately 78 additional jobs are supported through the multiplier effect.
- The **total income impact** of Cook Hospital in St. Louis County is **\$6.47 million**.
- Cook Hospital provides approximately \$4.76 million in income annually in St. Louis County.
- Approximately \$1.71 million in additional income is supported by the multiplier effect.
- The \$6.57 million spent in the health care sector for Cook Hospital has created another \$3.2 million of spending in other sectors of the county's economy.
- The overall impact due to Cook Hospital is **\$16.3 million**.
- On the average, Minnesota Critical Access Hospitals have seen at least a 5 percent greater economic impact since becoming a Critical Access Hospital.

### **The Next Steps**

The economic impact of the health sector upon the economy of St. Louis County and the rest of the Cook Hospital service area is significant. The health sector employs a large number of residents, similar to a large industrial firm. The secondary impact occurring in the community illustrates the total impact of the health sector. If the health sector increases or decreases in size, the medical health, and the economic health of the community are greatly affected. For the retention and attraction of industrial firms, businesses and retirees, it is crucial that the area have a quality health sector.

A prosperous health sector contributes to the **economic** health of the community:

- Ten new jobs in the health care sector creates six non-health care jobs
- \$100 of income earned in the health sector leads to another \$36 earned in other sectors  
One dollar spent on health care, leads to another \$.50 spent in other sectors
- The overall economic impact of health care in St. Louis County is estimated at **\$2.5 billion**.

These impacts are secondary to the essential health services provided to the population.

Taking advantage of the economic benefits of health care begins with examining your health care system's potential and answering the question, "Are local health care dollars 'outmigrating' to the next largest community?" When you have these facts, ask if you have a strong health care system that is well supported by the community. If you want to retain the businesses and residents in your area, while attracting new ones to expand your economic base, collaboration is critical. Active community participation in the health care decision-making process can make a huge difference and reap economic and health rewards for the community.

## Appendix, Footnotes for Table 2

<sup>1</sup> The Centers for Medicare and Medicaid (CMS) develops the per capita expenditure for health care annually. The data are secondary sources that are tabulated for other purposes. National health expenditures reported here include spending by type of expenditure (e.g., hospital care, physician care, dental care, and other professional care; home health; drugs and other medical non-durables; vision products and other medical durables; nursing home care and other personal health expenditures. Not included are non-personal expenditures for such items as public health, research, construction of medical facilities and administration). The primary care percentages are adapted from an Oklahoma study<sup>[2]</sup>.

<sup>2</sup> This estimate is extrapolated from Kentucky's experience. Kentucky's Medicaid program offers a wider range of services than required by Medicaid. To restrain Medicaid cost increases, Kentucky established a primary care gatekeeper program several years ago. This program is thought to have an impact on appropriate utilization of care, but not felt to be fully effective. People who are Kentucky Medicaid eligible may use health care more appropriately than individuals insured through commercial insurance plans. A 1996 study compared local to non-local use by 300,500 Medicaid eligible people who reside in 49 rural counties in southeast Kentucky. The aggregate of the 49 counties retained 61 percent of all hospital *expenditures*. Measuring by expenditure is important, particularly in hospital care, because tertiary care is far more expensive. This percentage was applied to Table 2. Other examples of hospital expenditure retention include a rural county of 50,000 in the western part of Kentucky with two large hospitals. These hospitals reported an aggregate retention of 96 percent of all inpatient admissions (expenditure data was not available). A small, 71-bed hospital in a county with 17,000 people retained 64 percent of all admissions. A very large 288-bed hospital in a county of 30,000 retained 77 percent of all admissions. This county has as a large sub-specialty complement of physicians.

<sup>3</sup> The federal Bureau of Primary Health Care (BPHC) required that applicants for Community/Migrant Health Centers (C/MHC) grants (330 clinics) develop a needs assessment to justify staffing of the clinic with physicians, midlevels, dentists, optometrists, pharmacists and other providers. To help support the needs assessment and ensure consistency in those assumptions, BPHC provided a formula, based on age and sex of the service area population that determined the total number of all ambulatory care visits. The formula estimates that 75 percent of all ambulatory care visits would be to primary care physicians. Note that these estimates use visits as the denominator. The problem with applying the use rates in Table 2 to estimate expenditure retention is that a visit to a sub-specialist costs more than a visit to a primary care provider. However, the difference in expenditure is not as great as comparing a hospital stay for a simple appendectomy with a hospital stay for open-heart surgery. Although it may overstate the potential expenditure, the BPHC rate was applied here.

<sup>4</sup> Home health care is low technology care and can easily be offered by rural-based providers.

<sup>5</sup> Nursing home care is low technology care, yet very expensive. In Kentucky, the average annual cost per patient excluding physician services and drugs is \$35,000 per patient year. Nursing home costs may vary significantly by state.

## References

[1] Minnesota IMPLAN Group, Inc. IMPLAN Professional Version 2.0 User's Guide, 1725 Tower Drive West, Suite 140, Stillwater, Minnesota 55082, [www.implan.com](http://www.implan.com).

[2] Eilrich, F. C. St. Clair and G.A. Doeksen. The Importance of the Health Care Sector on the Economy of Atoka County, Oklahoma, Rural Development, Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma.

