

Economic Impact of the Related Health Sectors of Cass County

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Produced by Rural Health Resource Center, Minnesota Center for Rural Health
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The Background of Rural Health Works

The healthcare industry has a tremendous economic impact on a community and also serves to improve quality of life. This is especially true with healthcare facilities such as hospitals, clinics, and nursing homes. These facilities not only employ a number of people and have large payrolls, they purchase goods and services from other local businesses. Healthcare employees also shop at local businesses and pay taxes. A strong healthcare sector promotes job growth within other industries and attracts retirees and young families.

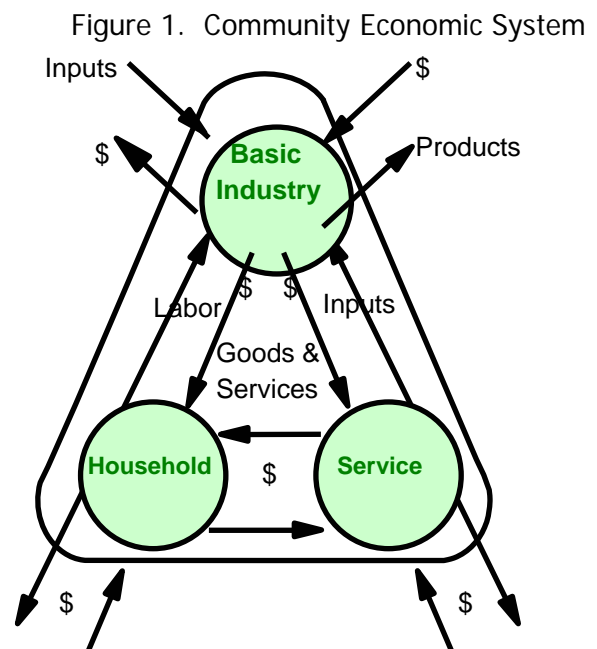
The Rural Health Works program offered by the Office of Rural Health and Primary Care, Minnesota Department of Health helps demonstrate the economic importance of the healthcare sector. It is often the largest rural county employer and frequently is directly responsible for 10 to 15% of jobs. This report measures the economic impact for Cass County in terms of direct healthcare jobs and income. It also estimates the secondary impact of the healthcare sector on the economy.

The Methodology of an Economic Impact Study

The healthcare 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

The actual employment, income, and sales of goods and services provided in the healthcare industry are key aspects of the industry's 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" outside the community, 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 healthcare.



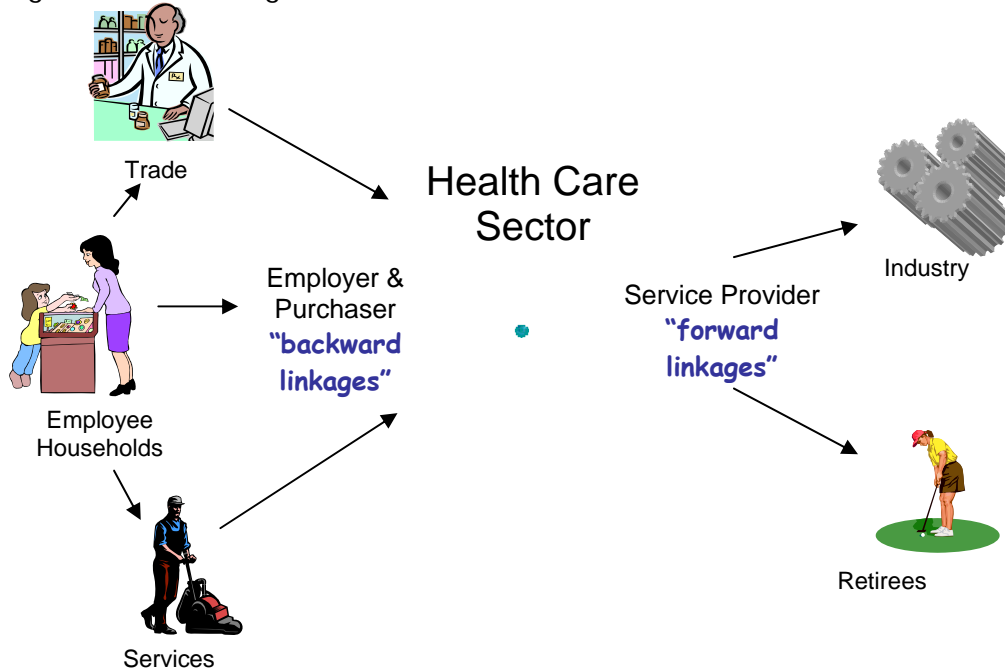
This theory can be demonstrated by considering the impact of a hospital closing. The services section will no longer pay employees and dollars going to households will stop. Likewise, the hospital will not purchase goods from other businesses and the dollar flow to other businesses will stop. This decreases 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'

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 opening of a new hospital service. The impacting business, such as a hospital birthing center, 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 this change in household consumption has upon businesses in a community is referred to as an induced impact (Figure 2).

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. Employment and income multipliers for the area have been calculated using the IMPLAN model. IMPLAN was developed by the U.S. Forest Service and is a model that allows for development of county multipliers^a. A Type SAM multiplier is used in this report. It is defined as 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. 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.

Figure 2. The Linkages of the Healthcare Sector



^a For complete details of the IMPLAN model and an explanation of different types of IMPLAN multipliers, see [1]. Type SAM multipliers are calculated using a "social accounting matrix" methodology that accounts for commuting, social security tax payments as well as 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 earlier versions described in the literature as Type II and Type III multipliers.

The Potential

A factor important to the success of rural economic development is job creation. Nationally, employment in healthcare services increased by 28% from 1990 to 2000, and by more than 200% since 1970 (Table 1). It is also important to note that the health sector is a growing sector. 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 healthcare, which accounted for 7.0 % of the GDP. In 2000, healthcare costs ballooned to nearly \$1.3 trillion, or about 13.2% of the GDP. Capturing this economic growth can only help a rural community.

Table 1. National Health Expenditures and Employment Data

1970-2000					
Year	Total Expenditures (\$ Billion)	Per Capita Expenditures (\$)	Expenditures as a Percent of GDP	Employment in Health Sector (million Jobs)	Annual Increase in Employment
1970	\$73	\$348	7.0	3,053	
1980	246	1,067	8.8	5,278	5.6%
1990	696	2,736	12.0	7,814	4.0%
2000	1,300	4,637	13.2	10,103	1.3%

SOURCE: Centers for Medicare and Medicaid Services, National Health Expenditures and Selected Economic Indicators, <cms.hhs.gov/statistics/nhc/projections-2001/t1.asp>, Bureau of Labor Statistics (BLS), <stats.bls.gov/data/home.htm>.

So, how can your community take advantage of the economic benefits of healthcare? Do you have a strong healthcare system that is well supported by the community, or are the healthcare dollars from your community "outmigrating" to the next largest community? Do you want to retain the businesses and residents in your area, while attracting new ones to expand your economic base? Active participation in the healthcare decision-making process in your community, by community citizens and leaders can make a huge difference and, hopefully, reap economic and health rewards for the entire community. The amount of this health spending retained by a rural community depends on several factors and may have a potentially large and immediate impact on the local economy, the number of jobs created, and the number of new residents moving into the community. The secondary impact of increased healthcare spending, such as higher retail sales in non-health areas or new housing starts, may also have a sizeable impact on the community.

How can you determine if healthcare is important or should be important to your community's economy? The first step is to determine what types of health services are used in your community, and what the expenditures are for those services. The first column of Table 2 shows the 2001 Minnesota per capita expenditures by major categories of health care. The estimated population of the Cass County market area, consisting mainly of Cass County and surrounding townships is 27,150. Column four multiplies the per capita expenditures by that estimated service area population to arrive at an estimated economic impact of providing those services in Cass County: \$79,386,600. (See Appendix A for a detailed description of how these numbers were derived.)

Table 2. Estimated Potential Personal Primary Care Expenditures for the Cass County and Related Health Sectors

Health Services	2001 Minnesota Per Capita ^a	Percent Primary Care	Primary Care Per Capita	Market Area Potential Expenditures ^b
Hospital Care	\$1,329	61% ²	\$811	\$22,018,650
Physician & Other Professional Services	1,428	75% ³	1,071	\$29,077,650
Home Health Care	94	100% ⁴	94	\$2,552,100
Nursing Home Care	439	100% ⁵	439	\$11,918,850
Dental Services	229	75% ³	172	\$4,669,800
Drugs & Other Non- Durables	449	75% ³	337	\$9,149,550
Medical Durables	74	-- ³	--	--
Other Personal Healthcare	<u>182</u>	<u>--</u> ³	<u>--</u>	<u>--</u>
Total	\$4,225	69%	\$2,924	\$79,386,600

SOURCE: Centers for Medicare and Medicaid Services <cms.hhs.gov/statistics/nhe/default.asp>

Numbered footnotes are presented in **Appendix A**.

a Per capita expenditures are 1998 data adjusted for inflation using the GDP implicit price deflator.

b Based on per capita amounts and a market area population estimate of 27,150 people.

By comparing the potential impact with actual local data, your community can determine how much health care is provided locally, and if there is an opportunity to expand these offerings, thus bringing 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. One simple way to determine if local needs are being met is to determine if there are waiting lists at existing facilities or if local residents are using facilities outside the service area. If residents are going outside the service area, then there is a potential to expand locally.

Every health care service provided locally benefits the rural community twice—first, it improves people’s health, and second, it improves the health of the local economy. Another perspective is the economic potential of the healthcare industry from the growth in health-related occupations. Statewide, healthcare represented 204,940 jobs in 2003, or about eight percent of all jobs in the state. Health-related jobs are expected to increase 17% percent by 2010. When both employment increases and replacements are considered, total openings through 2010 are expected to be 28,714. Healthcare jobs are made up of roughly two-thirds professional and technician positions, and one-third services and related occupations. Employment projections are not available on a county basis, but for the Central Planning Region healthcare represented 18,717,000 jobs in 2000 and is expected to increase 29.76% by 2010.

The People of Cass County

The population of Cass County was 27,150 in 2000. The county has experienced a positive population growth of 19.7% (compared to 12.4% statewide) during 1990 – 2000 (Table 3). County population is projected to increase slightly through 2015. A significant increase occurred in the county’s American Indian population during the last decade. White (non-

American Indian) people still represented the great majority of county population in 2000, while 11.5% of the population was American Indian in 2000.

Table 4. Selected Demographic Data for Cass County and the State of Minnesota

Selected Item	Cass County	County Percent	State Percent
Population Change (1980-1990)	21,050→21,791	+1.0	+7.4
(1990-2000)	21,791→27,150	+19.7	+12.4
Population Projections:	Year 2005 = 30,400		
	Year 2010 = 33,630		
	Year 2015 = 36,960		
Population by Race (2000)			
White	23,490	86.5	89.4
American Indian 1	3,110	11.5	1.1
Black	31	0.1	3.5
Other 2	82	0.3	4.2
Two or more races 3	399	1.4	1.7
Hispanic ethnic background 4	38	0.2	2.9

SOURCE: U.S. Census Bureau, 2000 data available from the Minnesota Planning Agency <www.mnplan.state.mn.us/demography/index.html>. The estimates for 2005-2015 are from the Minnesota State Demographer's Office.

1 Native American includes American Indian and Alaska Natives

2 Other defined as: Asian Americans, Native Hawaiian, Pacific Islander and all others.

3 Two or more races indicate a person is included in more than one race group.

4 Hispanic population is not a race group but rather a description of ethnic origin; Hispanics are included in all four-race groups.

In addition, the Cass County population is older than the State of Minnesota, with the elderly (aged 60+) representing 24.8% compared to 12.6% statewide (Figure 3).

Figure 3. Population by Age Group for Cass County and Minnesota

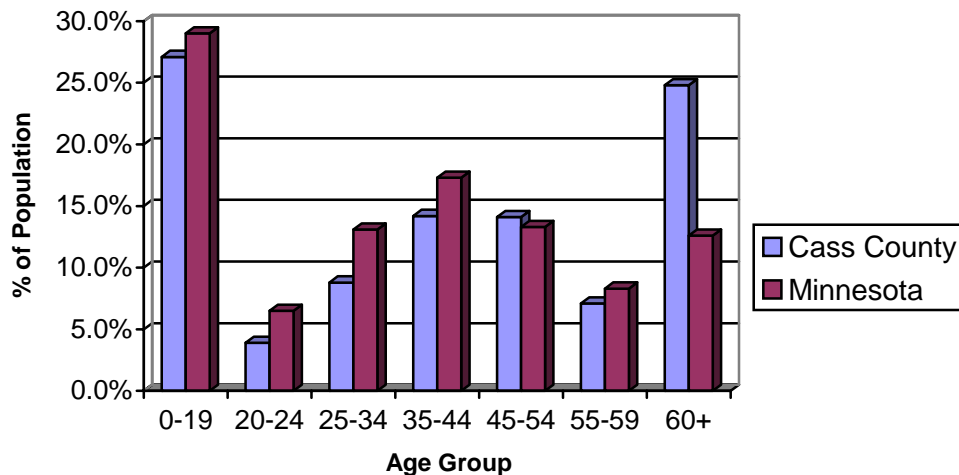


Table 5 shows economic indicators for Cass County and Statewide. The average per capita income in Cass County was \$26,164 compared to \$33,322 for Minnesota. An estimated 13.6% of Cass's County's population was below the poverty rate compared to the state rate of 6.9%. The data indicates that 22.7% of total personal income for Cass County came from transfer payments (income subsidy such as Social Security, Medicare, or Medicaid).

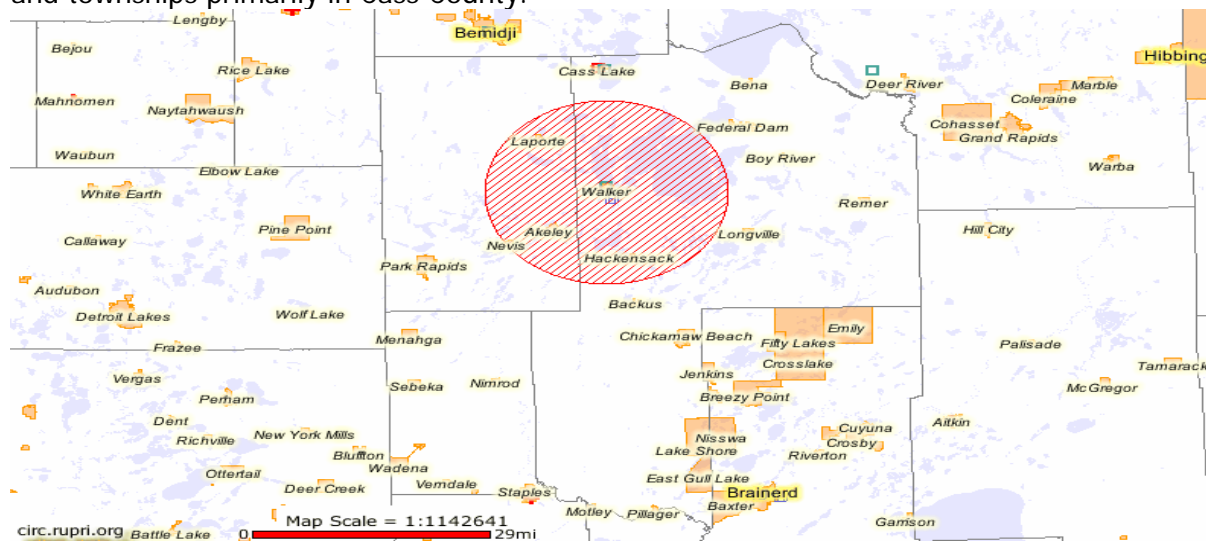
Table 5. Economic Indicators for Cass County, the State of Minnesota and the Nation

Indicator	County	State	Nation
Total Personal Income (2000)	\$667,603	\$157.4 billion	\$8.31 trillion
Per Capita Income (2002)	\$26,164	\$33,322	\$30,906
Civilian Labor Force (2001) a	13,151	2,814,357	135 million
Unemployment (2003)	1,070	129,535	7.9 million
Unemployment Rate (2003)	7.8%	4.5%	5.4%
Poverty Rate (2001)	13.6	6.9%	11.5%
Transfer Dollars (2000)	\$165,801	\$16.8 billion	\$1.07 trillion
Transfer Dollars as percentage of Total Personal Income (2000)	22.7%	10.7%	12.9%

SOURCE: U.S. Bureau of Economic Analysis <www.bea.doc.gov/bea/regional/reis/>, Bureau of Labor Statistics <www.bls.gov/data/home.htm>, and Census Bureau www.census.gov/hhes/www/poverty.html
 a 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.

The Place

Cass County is located in north central Minnesota. The county has a total of 2,018 square miles with a population density of 13.5 people per square mile (Minnesota 61.8 per square mile). There are 10,893 households. Cass County's service area of 27,150 includes surrounding cities and townships primarily in Cass County.



Employment data by industry for Cass County is presented in Figure 5; data is for 2000 from the Bureau of Economic Analysis, Regional Economic Information System. Total employment in the county was 11,658 in 2000. Healthcare services accounted for 6% of the employment in Cass County. The industry sectors with the largest employment are non-healthcare services, manufacturing, and retail trade which comprise over half of Cass County economic base.

Figure 5. Employment by Sector for Cass County



Employment and payroll are the important direct economic activities created in Cass County from the health sector. The total health sector in the County employs 11,658 employees and has an estimated 2003 payroll of \$14,507,000 (Table 6). The health sector in Cass County has one Indian Health Service (IHS) hospital, six physician offices, five Indian Health Service clinics, five dentists, three nursing homes, two home care agencies, nine pharmacies and assisted living facilities. Currently Cass County does not have a non IHS hospital. The Critical Access hospital that was created for use in the Rural Health Works study was based on the number of projected discharges per 1,000 population. In the year 2000, Cass County had 2,987 discharges. This hospital would employ 135 people with an annual payroll of \$3,422,898. Services at the hospital include family practice, cardiac rehab, emergency department, physical therapy, occupational therapy and speech therapy. It should be noted that many rural communities have a large number of elderly and farmers that often retire in the towns. Thus, Nursing and Protective Care facilities are an important component of the health sector. The health sector purchases goods and services from other sectors of the economy, totaling \$12,181,020 together with payroll, health sector expenditures amounted to \$26,688,020 in 2003.

Table 6. Direct Economic Activities of the Health Sector in the Cass County Service Area, Minnesota, 2003

Component	Estimated Employees	Estimated Expenditures
<u>Estimated Payroll</u>		
Hospital (Rural Health Works Study hospital)	135	\$3,422,898
Doctors and Dentists (Includes physician offices, plus chiropractors, optometrists, and visiting specialists)	122	3,615,000
Nursing & Protective Care (Nursing homes and supervised living facilities)	365	6,835,000
Other Medical & Health Services	10	206,000
Pharmacies	25	429,000
TOTAL EMPLOYEES AND PAYROLL	657	\$14,507,000
<u>Expenditures for Goods and Services other than Payroll</u>		\$12,181,020
TOTAL EXPENDITURES		\$26,688,020

SOURCE: From local survey and 2000 IMPLAN data estimated from U.S. Census Bureau County Business Patterns and U.S. Bureau of Economic Analysis reports, indexed to 2003 dollars.

The Impact

The employment and income impacts for Cass County have been estimated by calculating multipliers using a software system called IMPLAN. A multiplier is the ratio between actual 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 7 summarizes the industry employment impact and income impact that result from the presence of the health care industry in Cass County.

Table 7. Economic Impact of the Health Sector on Employment and Income in Cass County, Minnesota, 2003

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Health Sector Component	Employment	Type SAM Multiplier ^a	Employment Impact	Estimated Expenditures	Type SAM Multiplier ^a	Income Impact
Hospitals(Rural Health Works Study hospital)	135	1.36	184	\$3,422,898	1.35	\$4,620,912
Doctors & Dentists	122	1.61	196	3,615,000	1.16	4,193,400
Nursing & Protective Care	365	1.24	453	6,835,000	1.20	8,202,000
Other Health Services	10	1.74	17	206,000	1.51	311,060
Pharmacies and Related	25	1.19	30	429,000	1.16	497,640
TOTALS	657		880	\$14,507,898		\$17,825,012
Health-Related as % of Cass County Total	6.0 %		7.5 %			
<u>Expenditures Other Than Payroll</u>				\$12,181,020		\$14,617,224
TOTAL EXPENDITURES				\$26,688,918		\$32,442,236
% of Cass County Total Economic Output				4.1%		4.8%

SOURCE: 2000 IMPLAN Data Base indexed to 2003 dollars; 2000 Minnesota County Business Patterns, U.S. Bureau of Economic Analysis, Regional Economic Information System <www.bea.doc.gov/bea/regional/reis/>.

^a 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.

The **total employment impact** of the healthcare sector in Cass County is **880 jobs**.

- There are approximately 657 actual jobs in the healthcare industry in Cass County.
- Approximately 223 additional jobs are supported in Cass County by the healthcare sector through the multiplier effect.
- The combined effect represents 7.5% of Cass County's total employment.

The total **income impact** of the healthcare industry in Cass's County is **\$17,825,012 million**.

- The health care industry provides approximately \$14,507,898 million in income annually in Cass County.
- Approximately \$3.3 million in additional income in Cass County is supported by the healthcare sector through the multiplier effect.
- The \$12.1 million spent in the healthcare sector of Cass County has created another \$2.5 million of spending in other sectors of the County's economy. Therefore, the combined effect represents 4.8% of the county's total economic output.

The Next Steps

The economic impact of the health sector upon the economy of Cass County and the rest of the Cass County 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 is quite 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, 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. Often overlooked is the fact that a prosperous health sector contributes to the **economic** health of the community.

- 10 new jobs in the healthcare sector creates 4 non-healthcare jobs in Cass County
- \$100 of income earned in the health sector leads to another \$30 earned in other sectors of the County's economy
- One dollar spent on healthcare, leads to another \$.28 spent in other sectors
- The overall economic impact due to healthcare in Cass County is estimated at \$32.4 million

Benefits of Rural Health Works

The Rural Health Works program is designed to increase awareness of the vital economic role health care plays in rural communities. Promotion of the study may help increase support for local healthcare services by local residents and businesses. Moreover it may be used as a recruitment tool for healthcare providers and serve to develop healthcare workforce partnerships between educational institutions, workforce centers, the local chamber of commerce and the healthcare industry.

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 significant amount of goods and services from businesses in Cass County and the rest of the service area. These impacts are secondary benefits to the economy. Moreover, the health sector is a provider of essential services to an aging population in Cass County and is a source of expanding career opportunities.

Appendix A

Footnotes for Table 2

1 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 (i.e., 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 [2].

2 This estimate is extrapolation 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 with respect to appropriate utilization of care, but is not felt to be fully effective. Kentucky Medicaid eligible may use healthcare more appropriately than individuals insured through commercial insurance plans. A 1996 study compared local to non-local use by 300,500 Medicaid eligible who reside in 49 rural counties in Southeast Kentucky. The aggregate of the 49 counties retained 61% 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 large (50,000) rural county in the western part of Kentucky with two large hospitals. These hospitals reported an aggregate retention of 96% of all inpatient admissions (expenditure data were not available). A small, 71-bed hospital in a county with 17,000 people retained 64% of all admissions. A very large 288-bed hospital in a county of 30,000 retained 77% of all admissions. This county has as a large sub-specialty complement of physicians.

3 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, midlevel, dentists, optometrists, pharmacists, and other providers. To help support the needs assessment and assure consistency in needs assessment assumptions, BPHC provided a formula, based on age and sex of the service area population that derived the total number of all ambulatory care visits. The formula estimates that 75% 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 the 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.

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

5 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. Nursing home care can easily be provided in any rural community.

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.>

[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.