

# The Economic Value of the Health Care Industry In Sauk County, Wisconsin

**November 2000**

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This Study of the Economic Value of the Health Care Industry in Sauk County, Wisconsin is a

Collaborative Effort Between:

Sauk County Development Corporation

St. Clare Hospital and Health Services

Sauk Prairie Memorial Hospital

Reedsburg Area Medical Center

Rural Wisconsin Health Cooperative

Southwest Wisconsin Area Health Education Center

Wisconsin Network for Health Policy Research

Staff Paper 00.02

## **Executive Summary**

This study attempts to evaluate and quantify the importance of the health care industry on the economic well being of Sauk County, WI. It was estimated that the health care industry alone currently employs 2,907 people and generates \$160 million in total annual revenues and \$85.2 million in personal income. When taking into account the relationship between the health care industry and the rest of the county economy, one will observe that the importance of the health care industry is much greater than the above base estimates.

Our analysis used survey information, 1996 and 1998 Wisconsin Office of Health Care Information data, and 1997 census data to gain information on revenue and expenditures by establishments that provide local health care goods and services, and to better understand the trends in these transactions over time. In addition, we used the economic modeling software package IMPLANPro to quantify the impact that the health care industry has on the county economy in terms of total revenue, employment, and personal income. The analysis has produced the following findings.

- Over 90 percent of the Sauk County health care industry receive its largest revenue source from outside Sauk County – primarily private and public insurance companies.
- Sauk County hospitals have been able to serve a large segment of the market for Sauk County patients with 66 percent of Sauk County inpatients using local inpatient services and 71 percent of outpatients using local outpatient services.
- Every two dollars of revenue generated by the health care industry will generate an additional 80 cents of revenue in other Sauk County industries.
- Every two jobs created (or lost) in the Sauk County health care industry will cause the number of jobs in other industries to increase (or decrease) by one job.
- Every two dollars of personal income created in the Sauk County health care industry creates one dollar of personal income in other county industries.

Additionally, the study used IMPLANPro to examine five health care industry scenarios in order to evaluate how they would impact the economic health of the county. The first scenario analyzed how a 15 percent increase in utilization of all health care services would impact the Sauk County economy. The second scenario examined the effect of a 15 percent increase in hospital services utilization in the county. Scenario three again tested the effects of a 15 percent increase but this time looked at the increase in physician services utilization. The fourth examined the possibility of a 15 percent increase in the use of nursing home care. Finally, the impact of a

20 percent decline in the overall local health care sector was examined. Below are the some of the findings:

- An increase of 15 percent, or \$24 million, in county health care sector revenue (i.e. every sub-component) would produce \$30.9 million in additional total revenue, increase aggregate personal income by \$11.2 million, and spur the creation of 404 new jobs in the county
- An increase of 15 percent, or \$8.4 million, in county hospital revenue would represent about one-half of the revenue lost in 1998 due to Sauk County residents receiving inpatient care from hospitals outside the county. An increase such as this one would produce an additional \$10.7 million in total revenue, increase aggregate personal income by \$3.8 million, and spur the creation of 132 new jobs in the county economy.
- A 20 percent, or \$32 million, decline in health care sector revenue would result in a loss of \$41.2 million in total revenue, 539 jobs, and \$15 million in personal income – a substantial loss for the Sauk County economy.

Finally, several strategies were suggested for educating and Sauk County community about the importance of the health care sector to the Sauk County economy. Strategies proposed include:

1. Educate the public about how decisions made regarding what health care plan to contract with, and how these decisions will affect the viability of the local health care industry and ultimately the strength of the local economy.
2. Educate state and local government officials on how health policy making decisions may have significant impacts on local economies in the state.
3. Local hospital officials in partnership with the Sauk County Development Corporation (SCDC) could organize seminars for local businesses on topics such as “Getting the Best Buy for your Health Care Dollar” or “Thinking about the Impact of Your Health Care Expenditures on the Local Economy”.
4. Develop partnerships between the SCDC and local Sauk County municipalities looking to attract new businesses to Sauk County so that the municipalities are trained on how the health care sector can be used as a selling point to business interested in locating in Sauk County.

The study concludes that Sauk County’s health care sector is strong and vibrant despite changes in the statewide health care system structure over the past few years such as the emergence of managed care as a dominant force in rural areas. One can see that changes in the local health care delivery system affect not only the quality of life for local residents but also have county wide economic implications. It is hoped that Sauk County officials will use the

information in this study as a guide for future decisions regarding the health care sector and the Sauk County economy.

### Value of the Sauk County Health Care Sector<sup>1</sup>

	<b>Health Care Sector Alone (Direct Effects)</b>	<b>Health Care Sector With Linkages (Direct, Indirect, Induced Effects)</b>	<b>Health Care Sector with Linkages (Percent of County Totals)</b>
<b>Total Revenue</b>	\$160 Million	\$229.7 Million	8.3 %
<b>Employment</b>	2,907 Jobs	4,376 Jobs	11.5%
<b>Personal Income</b>	\$85.2 Million	\$127.8 Million	11.7%

Source: 1996 IMPLANPro Data

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<sup>1</sup> Income is allocated to the county in which it was generated. All income earned in Sauk County is allocated to the Sauk County economy.

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## **Introduction**

The health care sector is typically a vital segment of a rural county's economy. Sauk County needs to be aware of how patterns of consumption of health care services affect other segments of its economy. Overlooking these relationships could endanger the viability of firms in both health related and non-health related industries.

Most people think of health care services as meeting the health care needs of local residents without considering the fact that those health services often have a significant role in the overall economy. Sauk County's health care sector is no different. The rationale for maintaining a strong health care sector is analogous to the rationale used by many communities to strengthen their manufacturing or service sectors. Similar to these other sectors, the hospitals, physician offices, drug stores, and other health care establishments influence the local economy by bringing in money through non-local third party payments, making purchases from local suppliers, paying property taxes, and providing jobs to local residents.

The existence of a local health care sector provides an opportunity to keep health care dollars circulating within the county economy. As in other sectors, a contraction results in the loss of income and jobs in the affected sector as well as health related and non-related sectors. Thus, it is important for rural areas such as Sauk County to plan and strategize in order to maintain the benefits of its health care sector and maximize the potential positive impacts of the sector on its local economy.

The University of Wisconsin-Extension, through funding and assistance from the Sauk County Development Corporation, St. Clare Hospital and Health Services, Sauk Prairie Memorial Hospital, Reedsburg Area Medical Center, Rural Wisconsin Health Cooperative, Southwest Wisconsin Area Health Education Center, and the Wisconsin Network for Health Policy Research, has been asked to assess the role that health care plays in the Sauk County economy.

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This planning exercise has two primary objectives.

- Evaluate and quantify the importance of the health care industry on the economic well being of Sauk County.
- Develop a balanced plan of action that community leaders can use to retain health care dollars in Sauk County and improve their local economy

This paper will focus the first of these objectives.

## Context

The impact of expenditures and receipts in the health care sector are felt throughout the entire county economy. Measuring the linkages between various sectors within the regional economy captures these effects. Linkages occur as one firm or household buys goods and services from another. For example, suppose a health care firm buys medical supplies from a local provider. These two firms are linked through this monetary transaction. Similarly, the health care firm is linked to households through the purchase of labor. These two linkages are called backward linkages. They are named this because they represent monetary transactions for producing a good or service. The medical supplies firms and households supply inputs to the health care firm for producing medical care. Alternatively, linkages can occur where the households are consumers of health care services. These are called forward linkages. An example of this case would be when a patient goes to a physician's office for an annual examination. Both forward and backward linkages are measured by something called an economic multiplier.

Analysts use multipliers to describe and quantify the relationships, or linkages, among various firms within an economy. Multipliers can describe these relationships using several different economic indicators, such as industry output, personal income, and employment.

Traditionally in the health care sector, hospital services are evaluated through hospital utilization rates, the number of nursing home beds available, or the number of practicing physicians. However, in order to compare the economic activity of the health care sector with that of the rest of the economy, it is necessary to choose indicators that are comparable to other sectors.

This study will use the three indicators most commonly used in economic impact analysis: total revenue, employment, and personal income. By looking at total revenue, insight is gained about the total economic activity that is occurring within a specific sector as well as how it relates to the total economic activity throughout the county. Employment tells us the number of jobs in a sector or specified sub-sector of the economy. Understanding the distribution of jobs among various sectors throughout the county economy gives us a sense of how many persons are dependent on any particular sector. Finally, personal income is defined as the wages and profits earned from employment within various sectors of the county economy. With the personal income indicator, we get an idea of how much money an employee has to spend on goods and services, like housing, taxes, groceries, and health care.

## Methods

To describe and quantify the health care sector -- particularly its contribution to and impact on the total economy -- is the objective of this study. Three techniques (survey data, hospital utilization data, and input-output analysis) were used to achieve this objective.

Primary data acquired through surveys of local health care establishments can provide first-hand information on local/non-local split of expenditure and revenues. This information can then be used to develop a picture of the current local health care sector. Furthermore, provider concerns about the future of the local health care sector and how trends and external forces may affect its viability were also obtained through the surveys. The list of concerns will be used to develop strategies for improving and/or strengthening the local health care system.

Interviews were conducted with local health care businesses and organizations using a survey instrument specifically designed to understand the extent of local/non-local revenues and purchases by hospitals, physicians, pharmacies, and other health care service providers located in Sauk County. Over a three-month period in 1999, several trips were made to Sauk County in order to present and explain the survey to those health care establishments believed to be representative of the health care industry in Sauk County. Interviews took approximately 20 minutes to complete and were used to inform potential survey respondents about the study and answer questions they may have had about the survey. Typically the survey instrument was returned via mail.

Thirteen health care providers agreed to take part in the study out of 25 providers that were invited to participate. This group of health care establishments included hospitals, physicians, optometrists, chiropractors, pharmacies, nursing homes, and public health agencies located in Sauk County. We believe that those establishments that answered the survey are representative of the larger health care industry. The results of the survey will be described in detail and portions will be incorporated into an economic impact model.

It is useful to look at health care utilization data to understand where Sauk County residents are going to obtain health care and what role county hospitals play in providing that care. To do this, we used secondary data from the Wisconsin Office of Health Care Information (OHCI). The OHCI database contains hospital inpatient discharge files and ambulatory surgery data files. Inpatient data files contain one record per discharge, with up to 43 data elements per record. Ambulatory surgery data files contain one record with up to 37 data elements per record.



The main data elements are the following:

Hospital Identification Number	Primary and Secondary Payer
Patient Control Number	Principal Diagnosis Code
Patient Medical Record Number	Other Diagnosis Code
Discharge Date	External Cause Diagnosis Code
Patient Zip Code	Principal Procedure Code
Patient Birth Date	Date of Principal Procedure
Patient Gender	Other Procedure Codes
Admission Date	Attending Physician ID
Type of Admission	Other Physician ID
Patient Discharge Status (Inpatient Only)	Race and Ethnicity
Condition Codes (Inpatient Only)	Type of Bill
Adjusted Total Charges	Encrypted Case Identifier
Leave Days (Inpatient Only)	Certificate Number

For our study, we believed that a subset of these data elements would be useful for understanding some of the dynamics of the Sauk County health care sector. Specifically, we felt the OHCI data could provide useful information on the hospital services utilization patterns of Sauk County residents and market share information for hospitals in Sauk County. We used the 1996 and 1998 OHCI data sets to shed some light on these issues.<sup>2</sup>

Finally, we wanted to determine the size of the Sauk County health care sector and examine the linkages between the health care sector and other sectors within the Sauk County economy. To accomplish this we used input-output analysis. Input-output analysis captures all of the linkages involved in the production and consumption of goods and services. These linkages occur within the local economy as well as outside it (imports and exports). Input-output analysis also distinguishes between local and non-local purchases and is able to isolate local purchases so as to better understand how spending is cycled through the local economy. Input-output analysis derives multipliers to explain the relationship between various firms and households. Furthermore, these multipliers are utilized during impact analysis to help explain how a change in stimuli, such as personal income, affects the economy.

The package that was best able to accomplish our objective was IMPLANPro (a further discussion of IMPLANPro and Input-Output analysis can be found in Appendix A). IMPLANPro was selected because it allowed more flexibility in terms of available data and modeling capability. It also provided an excellent medium for data manipulation and impact analysis. IMPLANPro works from a set of secondary county-level data, such as total revenues (output), employment, personal income and a variety of other economic indicators. The version of IMPLANPro used for this study utilized 1996 data collected from a number of published sources including the Bureau of Census Economic Census, Bureau of Labor Statistics'

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<sup>2</sup> 1996 was the earliest year available and 1998 was the latest year available.

employment, ES202 employment security data, Bureau of Census County Business Patterns, and the Bureau of Economic Analysis Regional Economic Information System (REIS) data.

Three adjustments were made to improve the IMPLANPro data. IMPLANPro data was supplemented with information obtained through the Sauk County Health Care Sector Survey. Answers to questions about the percentage of expenditures made locally by health care establishments were used in order to adjust the IMPLANPro data to more accurately reflect the current trends in purchases by the health care sector. Secondly, because Drug Stores is not an independent sector but part of a larger Miscellaneous Retail Sector, employment numbers for the Drug Stores sub-sector were obtained from the 1997 County Business Patterns in order to estimate total revenue. Lastly, information for the Public Health Sector was obtained from the 1996 Census of Governments.

For the purposes of this study, six industry types comprise the health care sector. They are listed below along with a listing of the associated Standard Industrial Classification (SIC) codes:

**1. Doctors and Dentists**

This includes Offices and Clinics of Doctors of Medicine (8010); Offices and Clinics of Dentists (8020); Offices and Clinics of Doctors of Osteopathy (8030); and Offices and Clinics of Other Health Practitioners (8040).

**2. Nursing and Protective Care**

This includes Nursing and Protective Care Facilities (8050)

**3. Hospitals**

This includes Hospitals (8060).

**4. Drug Stores**

This includes Pharmacies and Drug Stores (partial 5900)

**5. Other Medical and Health Services**

This includes Medical and Dental Laboratories (8070); Home Health Care Services (8070); and Miscellaneous Health and Allied Services, not elsewhere classified (8090).

**6. Public Health Services**

Census of Government Function Code (32). This includes all government agencies concerned with the conservation and improvement of public health.

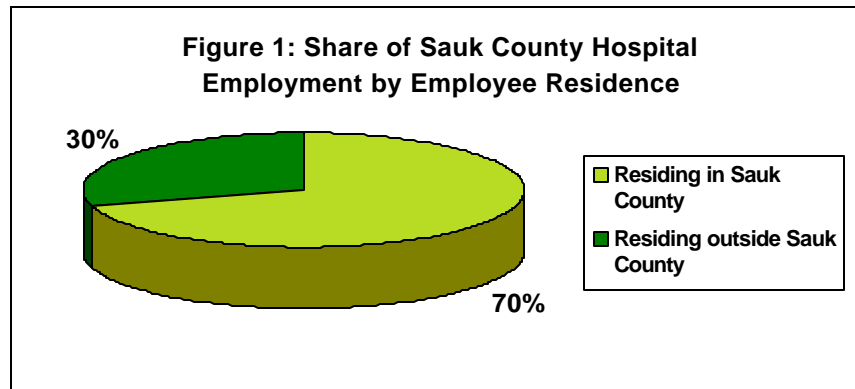
# Survey of Sauk County's Health Care Sector

## Hospital Employment

The first set of questions attempted to find out about the nature of these businesses and a little about their level of employment in 1998. Hospitals are the largest employer in Sauk County's health care sector. We used the questions from the survey to gain an idea of how important the hospitals are in terms of employment in Sauk County. We found that hospitals in Sauk County employed an average of approximately 310 full time equivalent (FTE) employees. In addition, an average 70 percent of a hospital's workforce resided in Sauk County. These results are shown in Table 1 and Figure 1.

**Table 1: Hospital Workforce Residence**

	Hospital A	Hospital B	Hospital C	Average
Employment	392	360	455	402
FTE Employment <sup>3</sup>	303	306	311	307
Percent Residing in Sauk County	42.5%	87.0%	81.3%	70.4%



Source: 1999 Sauk County Health Sector Economic Impact Survey

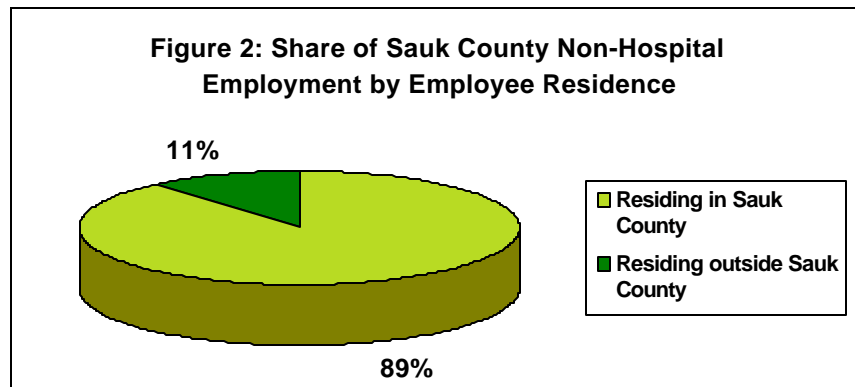
<sup>3</sup> Both full time equivalent employment (FTE) and total employment were obtained for the hospital sector. Only FTE employment was obtain for the non-hospital workforce.

## Non-Hospital Employment

Next we examined non-hospital employment. We found that non-hospital health care establishments in Sauk County employed an average of approximately 53 employees. In addition, an average of approximately 90 percent of the non-hospital workforce resided in Sauk County. These results are shown in Table 2 and Figure 2.

**Table 2: Non-Hospital Workforce Residence**

	Physicians <sup>4</sup>	Chiropractors	Pharmacies	Nursing Homes	Other	Average
FTE Employment	79	5	6	159	14	53
Percent Residing in Sauk County	87.3%	50%	72.5%	92.5%	72.6%	89%



Source: 1999 Sauk County Health Sector Economic Impact Survey

It is apparent that Sauk County health care establishments represent a significant source of employment for the county. Moreover, with the majority of their employees residing in Sauk County, these establishments represent an important local source of employment. Their impact on the local economy is much greater than if most of the employees resided outside the county.

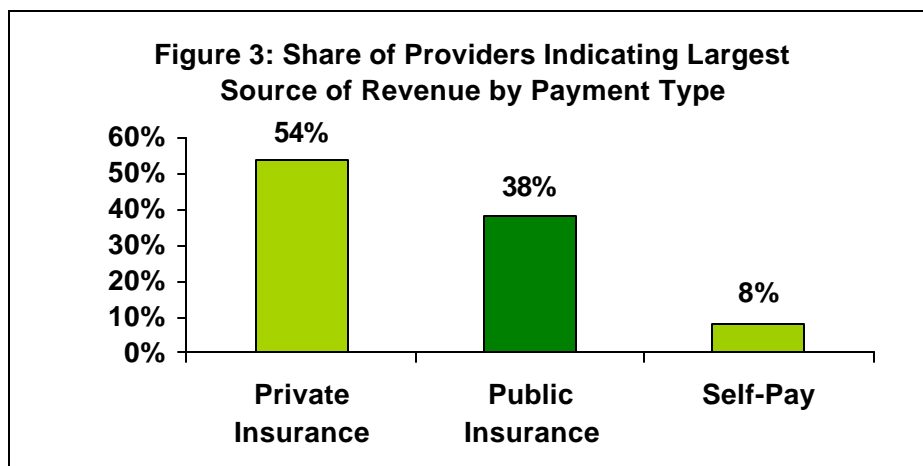
<sup>4</sup> One Physician establishment is actually a combination of four separate establishments which are part of a group health organization.

## Revenues

The second set of questions asked about total revenues for these health care establishments. The purpose of these questions was to gain information about the flow of money into Sauk County that can be attributed to the health care sector.

### Levels

Of the 13 health care establishments surveyed, seven responded that private insurance was their largest source of revenue. Four establishments responded that public insurance was their largest source and one health care provider received most of its revenue from direct payments from patients. Figure 3 displays the results in percentages.



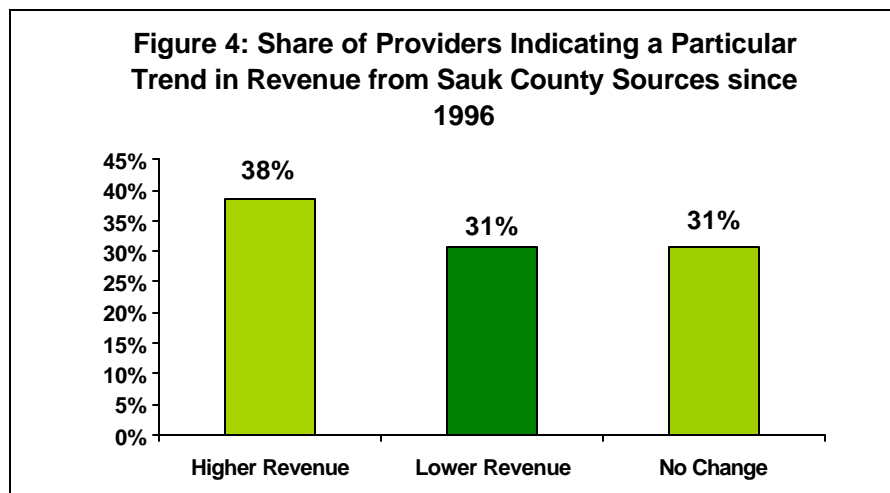
Source: 1999 Sauk County Health Sector Economic Impact Survey

Given that both public and private insurance are sources of revenue likely to be from outside Sauk County, this result would indicate that approximately 90 percent of the health care establishments that responded are likely to receive their largest revenue source from outside Sauk County. The amount of revenue coming from outside sources is high despite the fact that Unity Health Plans (a major insurance carrier in the area) is located inside Sauk County.

External revenue is an important ingredient for growth in small rural economies. Many economic development strategies attempt to improve the local economy through attracting revenue sources from outside the local jurisdiction (i.e. tourism, entertainment, and manufacturing). Assuming the share of revenue from outside the county is and would remain high, the Sauk County health care industry could be an important source for promoting future economic growth. However it must be cautioned that some of this revenue may come from insurance carriers outside the county who receive premium payments from establishments and workers from inside the county. In reality, the real economic impact comes from net revenue (revenue minus premium payments).

### Trends

The next couple of questions were asked in order to gain a better understanding of the trend in revenue from Sauk County sources over time. Four of the 13 establishments saw revenue from Sauk County decline over the past four years. This was despite Unity Health Plans being a major insurance carrier located in Sauk County. Four establishments saw no change in revenue from local sources and five establishments, including one hospital, saw local revenue increase since 1996. Of the five establishments that saw an increase in revenue from Sauk County sources, the average increase was over 25 percent. Of those that saw a decrease, the average decline was approximately 15 percent. The results are displayed as percentages in Figure 4.

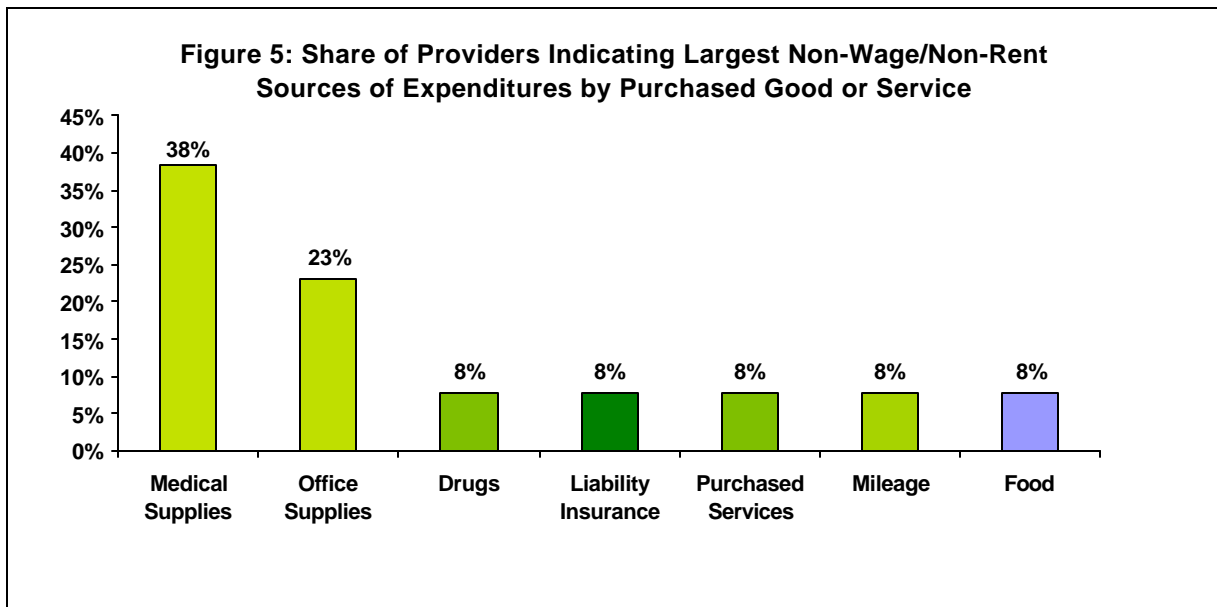


Source: 1999 Sauk County Health Sector Economic Impact Survey

## **Expenditures**

### Levels

In the case of expenditures, five establishments responded that medical supplies were their largest source of non-labor, non-building related expenditure. Three establishments responded that office supplies were their largest. And one health care provider each made the majority of its non-wage, non-rent expenditures for each of the following: drugs, liability insurance, purchased services, mileage, and food. The results are displayed in Figure 5.



Source: 1999 Sauk County Health Care Sector Economic Impact Survey

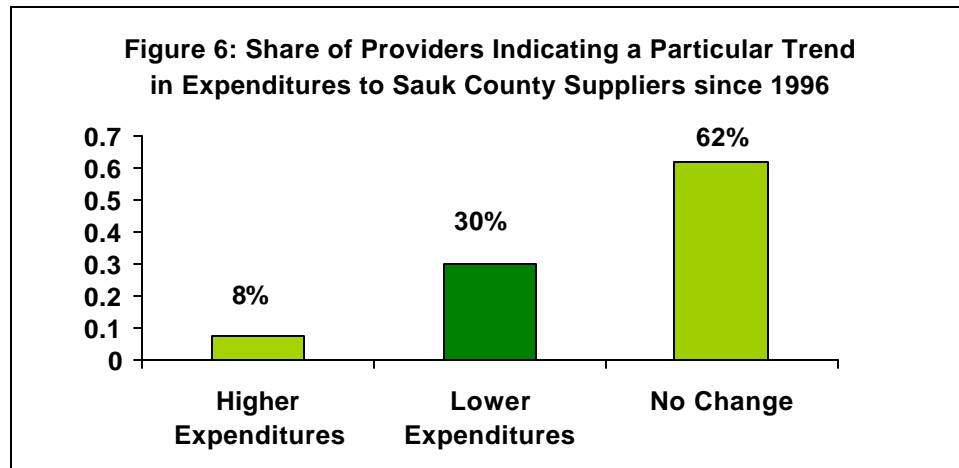
The respondents were then asked about the share of these expenditures that went to Sauk County suppliers. For medical supplies, less than 10 percent went to Sauk County suppliers. In addition an average of 44 percent of office supply expenditures, 70 percent of purchased services expenditures, 45 percent of drug expenditures, zero percent of liability insurance expenditures, 80 percent of mileage, and 20 percent of food expenditures were made to Sauk County suppliers. The structure of the survey questions made it impossible to determine the amount of expenditures actually going to Sauk County suppliers. However, from discussions with local health care providers during the interview process, it was learned that the overwhelming majority of supplies were purchased from outside the county.

### Trends

The final set of questions tried to find out about the trend in expenditures to Sauk County suppliers. As was stated above, the relative share of expenditures to Sauk County suppliers is low, however, we wanted to know if that share has gone up over time. If so there may be some potential to increase that share even more over the next five years. If it has decreased, that may indicate a need to better understand why it has gone down and what can be done to prevent further decline.

Eight of the 13 establishments saw no change in their expenditures made to Sauk County suppliers. Four establishments saw a decline in expenditures made to local suppliers and one saw an increase since 1996. Only one health care establishment increased its expenditures to Sauk County establishments. From these results we can assume that expenditures made by the health care sector to Sauk County businesses has not been increasing overall and in many cases is decreasing. Part of the decrease can be attributed to contracts that providers have with managed care firms which require supplies be purchased from out-of-county sources. In

addition, recent state contracts have also limited the amount of supplies that the Sauk County Public Health Department can purchase within the county<sup>5</sup>. The percentages are displayed in Figure 6.



Source: 1999 Sauk County Health Sector Economic Impact Survey

This section has provided some results of the survey that may be used to create strategies to strengthen the overall health care sector and increase its impact on Sauk County's overall economy. Next, we will look at the economic aspects of Sauk County hospital services utilization.

## Office of Health Care Information (OHCI) Utilization Data Analysis

### Geography of Hospital Utilization

The first set of questions dealt with geographical aspects of hospital utilization.

#### Inpatient Hospital Care

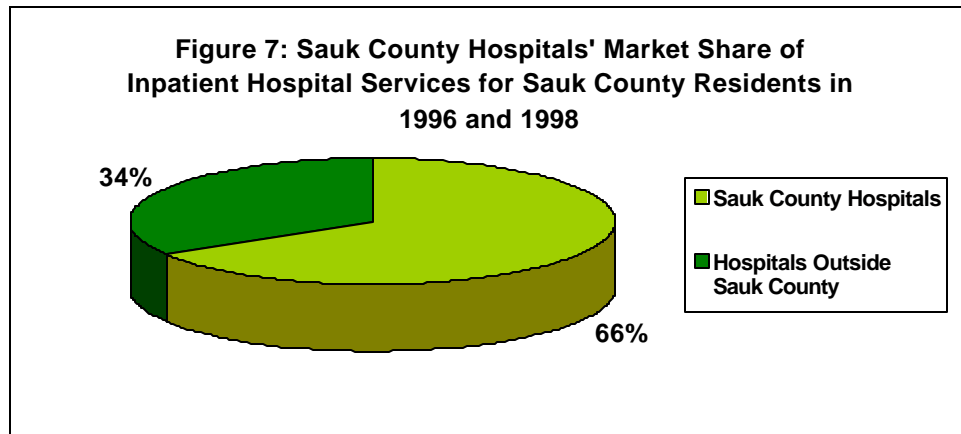
The first question asked "Where are Sauk County residents going for their inpatient care?" The results indicate that 66 percent of Sauk County residents were discharged from inpatient care after being treated at Sauk County hospitals in 1998. A discharge is defined as a patient being

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<sup>5</sup> The Sauk County Public Health Department is required to purchase supplies from vendors on an approved list. Thus they are constrained as far as from whom and where they can purchase supplies.

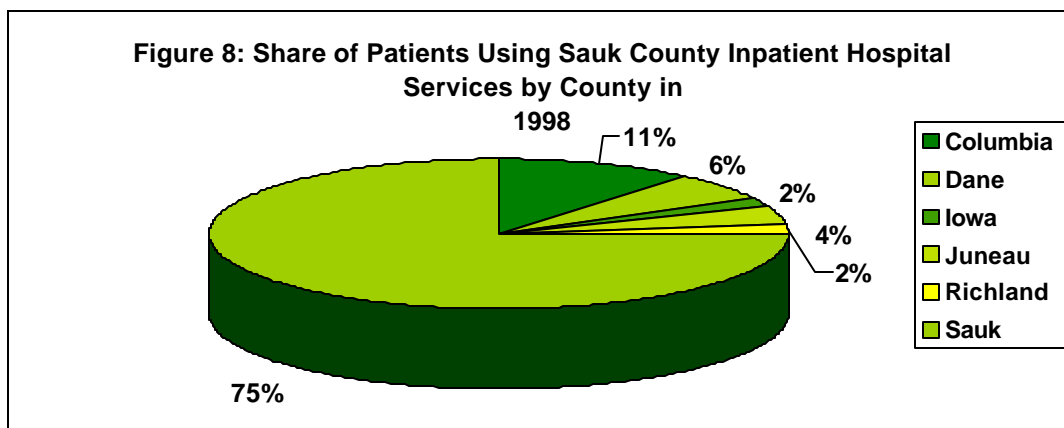


released from care after a stay for treatment of an injury or illness. Another 34 percent of Sauk County residents were discharged from hospitals outside Sauk County. The percentages were the same for 1996 meaning that the market share for Sauk County hospitals remained stable over that two-year span. So it can be concluded that Sauk County hospitals are able to provide inpatient services for a substantial share of Sauk County residents even in the era of managed care. One-third of Sauk County residents are seeking hospital services elsewhere. The results are shown in Figure 7.



Source: 1998 OHCI data

The second question asked what share of inpatients is coming to Sauk County from surrounding counties. Of the 6,159 discharges from Sauk County hospitals in 1998, 11 percent of the patients were from Columbia County, 6 percent from Dane County, 2 percent from Iowa County, 4 percent from Juneau County, 2 percent from Richland County, and the remainder from Sauk County. Thus approximately 25 percent of the inpatient caseload came from outside the county. Results for 1998 are displayed in Figure 8. The percentages were the same for 1996 meaning that the regional market share for Sauk County hospitals remained stable over that two-year span.



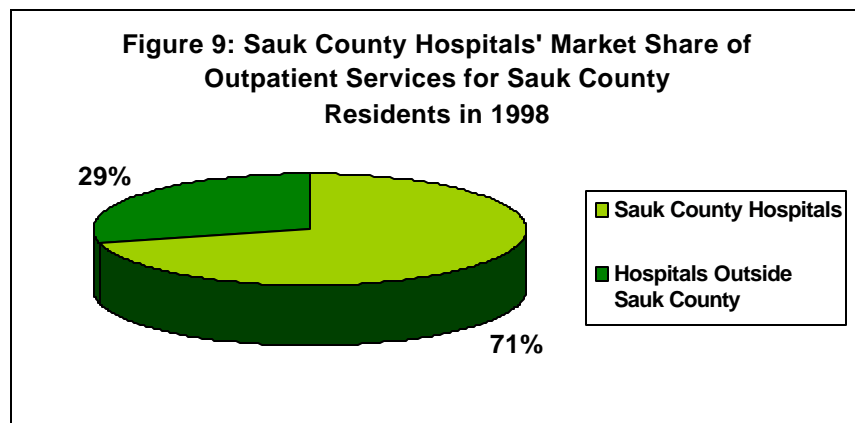
Source: 1998 OHCI data

It is apparent that the bulk of services go to Sauk County residents with Columbia County being the next largest user of Sauk County hospital inpatient services.

### Outpatient Hospital Care

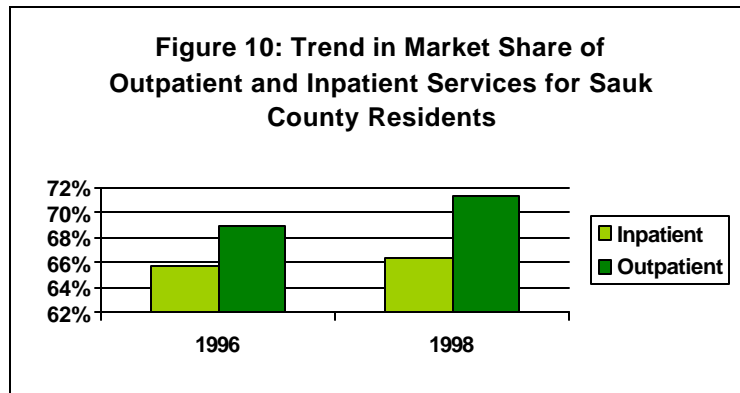
The analysis of outpatient care was identical to that conducted on inpatient service utilization.

First, we wanted to know where Sauk County residents are going for their outpatient care. In 1996, 69 percent of residents received their hospital outpatient services from Sauk County hospitals while 31 percent left the county for outpatient services. These percentages were only slightly different in 1998 when 71 percent of Sauk County residents were discharged from in-county hospital outpatient care and another 29 percent of Sauk County residents were discharged from hospitals outside Sauk County. This two percent difference is relatively small given that there are over 4,000 inpatient discharges and over 3,000 outpatient discharges from Sauk County hospital annually. Figure 9 shows the market share of outpatient services in 1998 for Sauk County Hospitals.



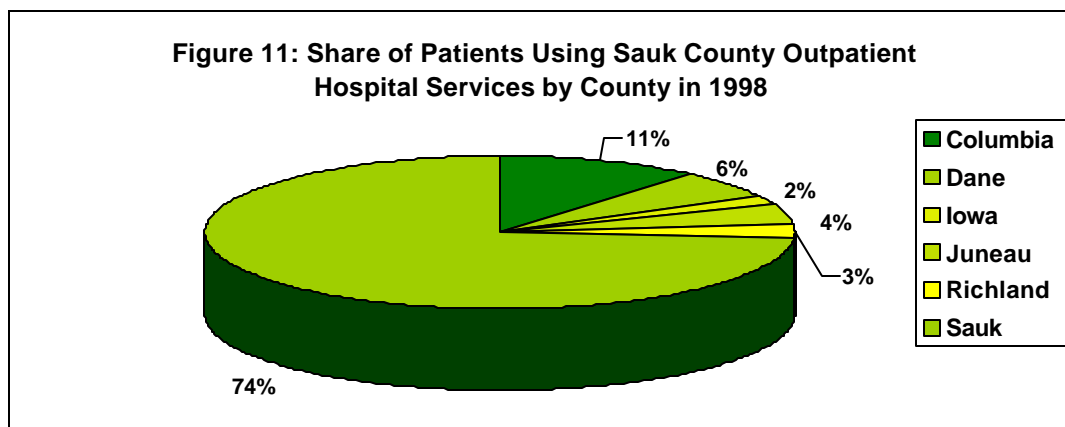
Source: 1998 OHCI data

Figure 10 displays the market share for the total Sauk County caseload in 1996 and 1998. Inpatient market share has remained steady at approximately 66 percent of the Sauk County caseload while outpatient market share has increased over time<sup>6</sup>. Outpatient market share has remained slightly above the inpatient share over the two-year span.



Source: 1996 and 1998 OHCI data

Next we tried to find out what share of outpatients is coming to Sauk County from surrounding counties. Of the 5,939 outpatient discharges in 1998 from Sauk County hospitals 11 percent were from Columbia County, 6 percent from Dane County, 2 percent from Iowa County, 4 percent from Juneau County, 3 percent from Richland County, and the remainder from Sauk County. Approximately 25 percent of the outpatient caseload came from outside the county. The geographic distribution was the same for both inpatient and outpatient care. Results for 1998 are displayed in Figure 11. The percentages were approximately the same for 1996.



Source: 1998 OHCI data

<sup>6</sup> It must be stressed that the increase in market share is over a two year period (1996-1998). It would have been useful to examine a longer period of data (i.e. 5 years) to better understand whether this is a long term trend or just a short down turn in market share. Unfortunately, due to data limitations we were constrained to a two-year time span.

Again, the bulk of services go to Sauk County residents with Columbia County the next largest user of Sauk County hospital outpatient services

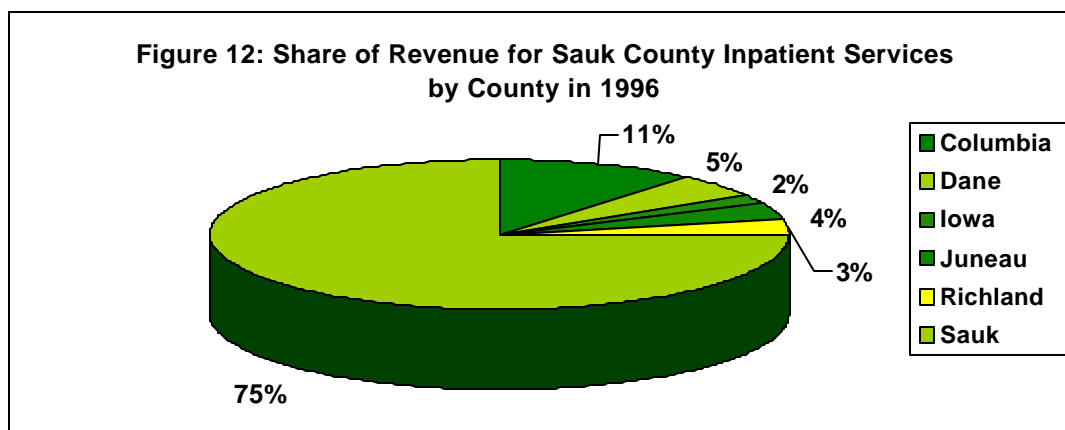
## ***Hospital Finance***<sup>7</sup>

### Geography of Hospital Revenue Sources

The final portion of the OHCI analysis examined what share of hospital revenue is due to utilization of inpatient and outpatient services by Sauk County residents and the trends in these revenue sources.

First we wanted to know what share of inpatient and outpatient revenue is due to patients coming to Sauk County hospitals from surrounding counties.

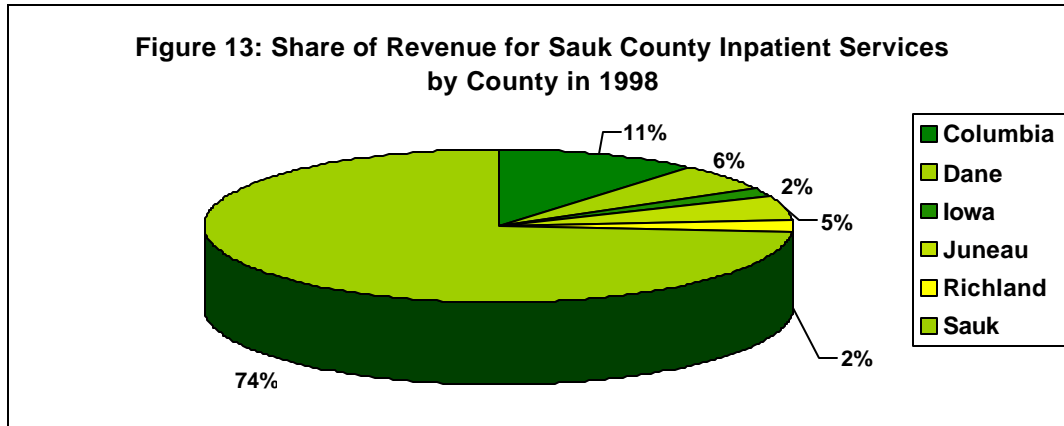
In 1996, Sauk County hospitals received \$34.3 million in inpatient revenue. Eleven percent of inpatient revenue came from Columbia County, 5 percent from Dane County, 2 percent from Iowa County, 4 percent from Juneau County, 3 percent from Richland County, and the remainder from Sauk County. Figure 12 displays these percentages showing that approximately 25 percent of inpatient services revenue is due to non-Sauk County residents.



Source: 1996 OHCI data

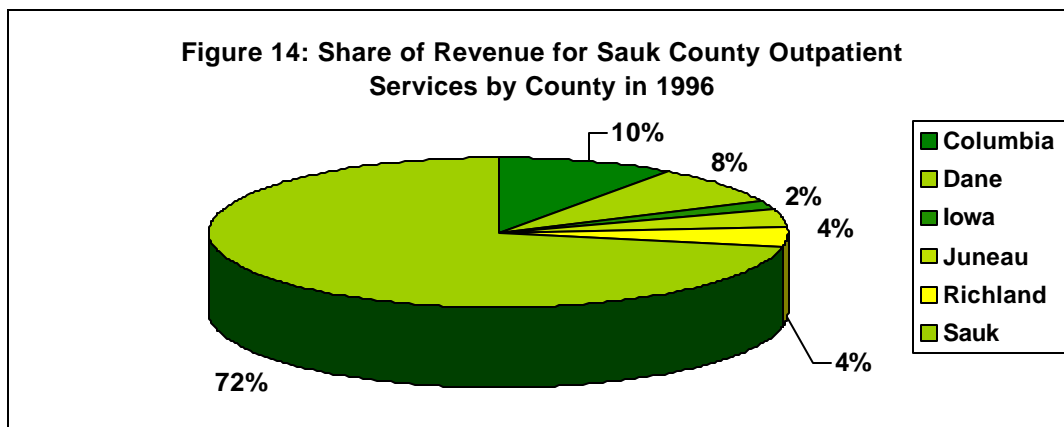
<sup>7</sup> All revenues and expenditure mentioned in this section are gross dollar amounts not adjusted for inflation.

The numbers are almost identical for 1998. Of the \$34.8 million that Sauk County's hospitals received in inpatient care revenue in 1998. Seventy-four percent of the revenue came from Sauk County, 11 percent from Columbia County, 6 percent from Dane County, 2 percent from Iowa County, 2 percent from Juneau County, and the remainder from Richland County. Thus approximately 26 percent of the inpatient care revenue was due to non-Sauk County residents. Results are displayed in Figure 13.



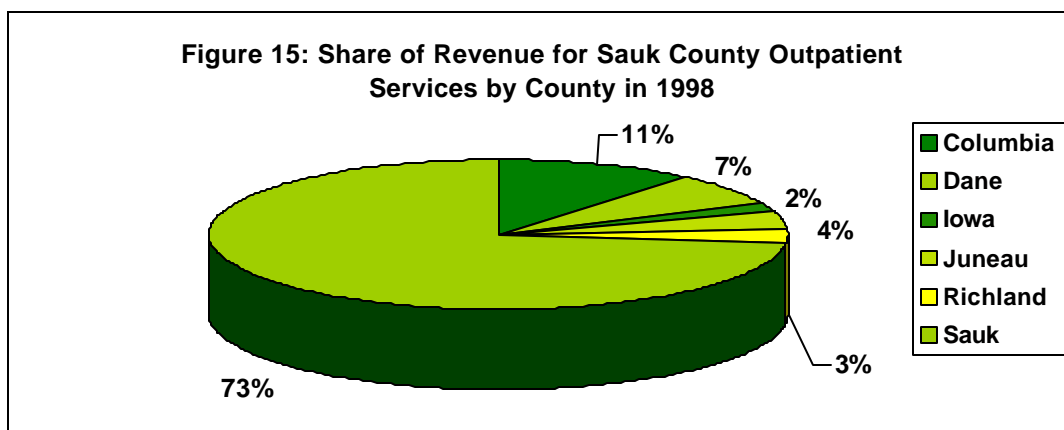
Source: 1998 OHCI data

In the case of hospital outpatient care, 28 percent of the \$7.8 million in outpatient revenue received in 1996 came from non-Sauk County residents as Figure 14 shows.



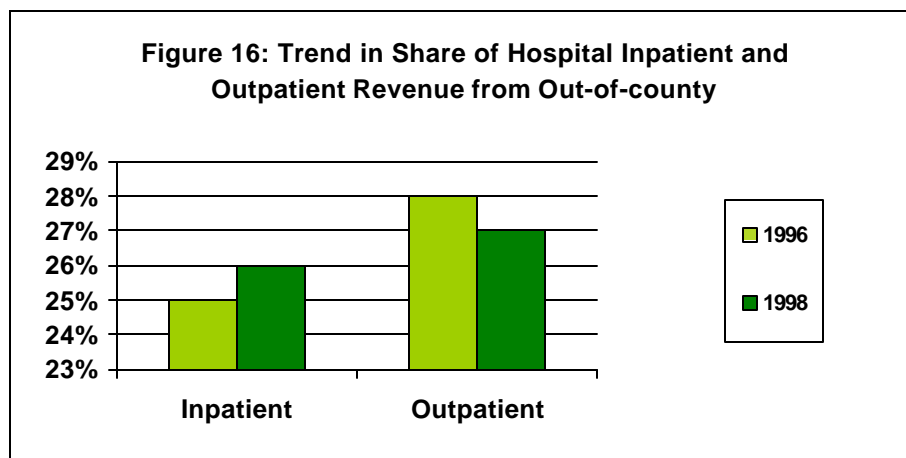
Source: 1996 OHCI data

Outpatient revenue increased from \$7.8 million in 1996 to \$10.9 million in 1998. The geographical breakdown was almost the same for both years with approximately 27 percent of \$10.9 million in outpatient revenue attributed to non-Sauk County residents. The 1998 percentages are shown in Figure 15.



Source: 1998 OHCI data

As Figure 16 clearly shows, the share of revenue from out-of-county patients was higher for outpatient care than inpatient care in both 1996 and 1998 by a small percentage. The share of inpatient revenue hovered in the mid-20 percent range and grew slightly between 1996 and 1998. We see a somewhat different pattern for outpatient care. While outpatient revenue from non-Sauk County residents hovered in the upper-20 percent range, it declined slightly over the two-year span.



Source: 1996 and 1998 OHCI data

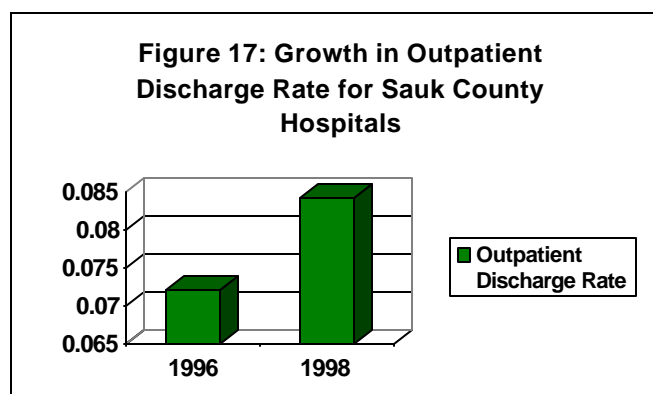
Although revenue and usage remained relatively constant over time, the mix of services received by Sauk County residents and/or non-Sauk County residents could have changed over the two-year span. In other words, out-of-county residents came to Sauk County in 1998 to receive the approximately the same number of outpatient procedures as in 1996, however they appear to have come to Sauk County in 1998 for slightly less expensive ones.

### Trends in Per Capita Hospital Discharge Rates and Per Capita Revenue

In 1996, there were a total of 4,678 hospital discharges for inpatient care accounting for \$25.8 million in revenue. The per capita discharge rate and dollar amount in 1996 was 0.08 and \$494.90 respectively<sup>8</sup>. In 1998, there were a total of 4,568 hospital discharges of Sauk County residents for inpatient care accounting for \$25.8 million in revenue. This represented 0.09 discharges and \$492.55 in inpatient revenue per Sauk County resident. Thus it can be concluded that utilization rates and revenues for inpatient care have remained relative stable over the two-year span.

The data for outpatient care paints a somewhat different picture. There were a total of 3,739 hospital discharges for outpatient care accounting for \$7.0 million in revenue 1996. The per capita discharge rate and dollar amount in 1996 was 0.072 and \$131.61 respectively. In 1998, there were a total of 4,399 hospital discharges of Sauk County residents for outpatient care accounting for \$8 million in revenue. These numbers represented 0.084 discharges and \$153.63 in outpatient revenue per Sauk County resident.

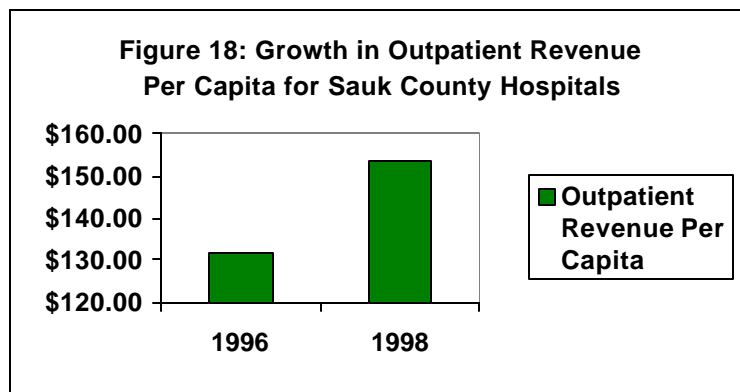
Examining Figure 17, we see that between 1996 and 1998 the outpatient discharge rate for Sauk County hospitals went up by 17 percent. There is a good explanation for this growth in hospital outpatient care relative to inpatient care over the two-year span. Cost-cutting measures of managed care firms have necessitated less expensive ways to provide care. Outpatient care is less expensive than inpatient care for certain minor surgical procedures. Recent medical technology improvements have allowed some procedures that used to require a short hospital stay to be conducted with the patient returning home the same day. Also, recent growth in the number of tourists visiting the area has contributed to the increase in hospital outpatient care.



Source: 1996 and 1998 OHCI data

<sup>8</sup> The per capita discharge rate was is defined as the number of discharges divided by the population in Sauk County for the year in question.

Figure 18 shows that revenue per capita for outpatient care also went up by 17 percent between 1996 and 1998.



Source: 1996 and 1998 OHCI data

So while utilization rates and revenues per person for inpatient care remained stable between 1996 and 1998, both of these indicators increased for outpatient care signifying significant growth in the outpatient services over time.

## IMPLANPro Analysis

### Importance of the Sauk County Health Care Sector

The Sauk County health care sector has a total revenue multiplier of 1.4, meaning that for every 1 dollar generated in the health care sector, total county revenue increases by \$1.40: the one dollar in the health care sector and an extra 40 cents in other sectors. Similarly, the employment multiplier is 1.5. Therefore, for every one health care job, .5 jobs are created at the county level; the original health care job and .5 of another job in another sector. Finally, the personal income multiplier is 1.5. This means that every one dollar in personal income created by the health care sector generates an additional 50 cents worth of personal income in other sectors because of indirect and induced spending by the health care sector.

Table 3 shows the current value of the Sauk County health care sector. Referring back to the Methods section, we stated that health care sector is made of six sub-components: 1) Doctors and Dentists, 2) Nursing and Protective Care, 3) Hospitals, 4) Drug Stores, 5) Other Medical and Health Services, and 6) Public Health Services. The first column represents the direct effects of the health care industry, while the second column includes indirect and induced effects as well as the direct effects<sup>9</sup>. By comparing these two columns we can better understand the

<sup>9</sup> See Appendix A for a definition of direct, indirect, and induced effects.

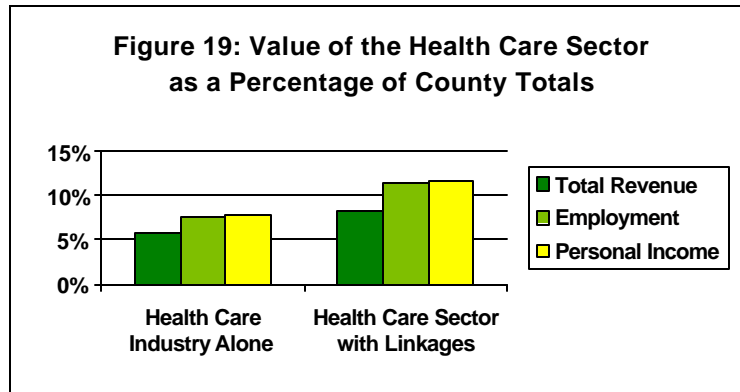


impact that health care has on the Sauk County economy. The same data is displayed as a percent of the county totals in Figure 19.

**Table 3: Value of the Sauk County Health Care Sector**

	<b>Health Care Sector Alone (Direct Effects)</b>	<b>Health Care Sector With Linkages (Direct, Indirect, Induced Effects)</b>	<b>Health Care Sector with Linkages (Percent of County Totals)</b>
<b>Total Revenue</b>	\$160 Million	\$229.7 Million	8.3%
<b>Employment</b>	2,907 Jobs	4,376 Jobs	11.5%
<b>Personal Income</b>	\$85.2 Million	\$127.8 Million	11.7%

Source: 1996 IMPLANPro data



Source: 1996 IMPLANPro data

## Scenarios

The advisory committee (Appendix C) was used extensively during the scenario development stage. After a number of discussions about the forces affecting health care services in Sauk County, the advisory committee agreed to five scenarios: Increased Health Services Utilization, Increased Hospital Utilization, Increased Physicians Utilization, Increased Nursing Home Utilization, and Decreased Health Care Utilization<sup>10</sup>.

<sup>10</sup>The IMPLANPro model assigns a regional purchasing coefficient to each industry in the county economy. A Regional Purchasing Coefficient (RPC) is an estimate of the percentage of purchases made locally (in Sauk County) by firms in the industry. The RPCs for the health care sector were the following: 92% for Doctors and Dentists, 90% for Nursing Homes, 90% for Hospitals, 83% for Drug Stores, 65% for Other Medical and Health Services, and 100% for Public Health Services. Based on our survey research the RPC estimates for percent of total purchases made locally were changed to the following: 50% for drug stores, 60% for Doctors and Dentists, 60% for Nursing Homes, 60% for Hospitals, 70% for Other Health Care Services, and 95% for Public Health.

We were focused on three indicators: total revenue, employment, and personal income. The data for the scenarios are presented in both numerical tables and stacked bar charts. The numerical tables report changes in raw numbers while the stacked bars provide a sense of how the change in revenue and employment is spread throughout the rest of the economy.

It is important to remember that when different sectors are stimulated, e.g., hospitals vs. physicians, that the different linkages of that sector will provide a different multiplier.

#### Scenario A: Increased Health Care Services Utilization

The Increased Health Care Services Utilization scenario asked the following question, “How would a 15 percent increase in the utilization of all local health care services affect the Sauk County economy?” A 15 percent increase was agreed upon because the advisory committee wanted to know the impact of a moderate increase in service utilization on the Sauk County economy. It was agreed that a reasonable simulation would be a 15 percent increase in each health care sector sub-component. To construct this analysis it was assumed that any increase in utilization would be represented as an increase in total revenue. Therefore, to measure the effect of a 15 percent increase in utilization, a 15 percent increase in total revenue was introduced in to the model. Such an introduction, alters demand and consumption behaviors in all sectors as well as households. This scenario could occur if, for instance, many elderly residents began moving into the county coupled with greater use of Sauk County health care services by out-of-county residents for inpatient and outpatient care<sup>11</sup>.

Looking at Table 4, we see that an increase of 15 percent, or \$24 million, in county health care sector (i.e. every sub-component of the health care sector) revenue produced \$30.9 million in additional total revenue, increased aggregate personal income by \$11.2 million, and spurred the creation of 404 new jobs in the county economy.

**Table 4: Total Effects of an Increase in Health Services Utilization**

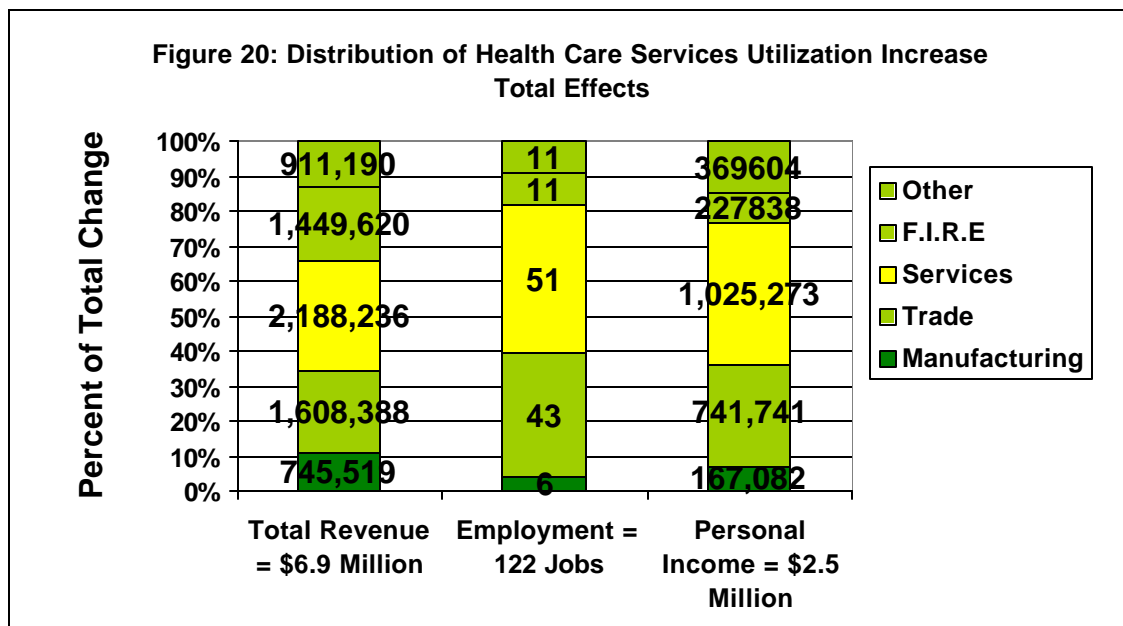
<b>Key Indicators</b>	<b>Effects of the Health Care Sector Alone</b>	<b>Total Effects</b>
<b>Total Revenue</b>	+ \$24 Million	+ \$30.9 Million
<b>Employment</b>	+ 282 Jobs	+ 404 Jobs
<b>Personal Income</b>	+ \$8.7 Million	+ \$11.2 Million

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<sup>11</sup> Many other potential scenarios could occur such as an increase in the utilization of all health care services due to more residents entering the county, a large increase in physician and hospital outpatient utilization, etc.

In addition to understanding the total effects of an increase, it is useful to know how the effects are played out over the different sectors of the economy. From Table 4, we can see that the 15 percent increase had a direct effect of an additional \$24 million in total revenue in the health care sector<sup>12</sup>. Moreover, we are aware that the total effect was a \$30.9 million increase in total county revenue. The question becomes “How was the extra \$6.9 million in county revenue distributed?” The distribution of this increase is presented in Figure 20.

What this figure tells us is that approximately 32 percent of the increase in total revenue was absorbed by the Services sector due to indirect and induced effects. Another 23 percent was captured by the Trade sector. The remainder was absorbed by the Finance, Insurance, and Real Estate (F.I.R.E), Manufacturing, and Other sectors<sup>13</sup>. We can also see that 51 percent of the employment and 40 percent of the personal income increases were captured by the Services sector. The Trade sector also experienced a significant increase in the three indicators. Thus the Services and Trade sectors had the largest amount of growth for all three indicators (total revenue, employment, and personal income).



<sup>12</sup> Part of the increase in revenue may be used by the health care sector to purchase goods and services from outside the county. The RPCs in the IMPLANPro model attempt to capture this.

<sup>13</sup> The sector named Other is composed of Agriculture, Mining, Construction, Government, and other smaller economic sectors not already mentioned.

*Scenario B: Increased Hospital Inpatient/Outpatient Services Utilization*

In the OHCI data analysis section, it was pointed out that 34 percent of Sauk County residents went outside the county for hospital inpatient services and 29 percent left the county to receive outpatient services in 1998. Often patients must go outside the county because of managed care health insurance plan restrictions or due to an inability to receive particular procedures locally. It would be interesting to see the effects on the county economy if a portion of those patients were able to utilize hospital services inside Sauk County instead of going elsewhere.

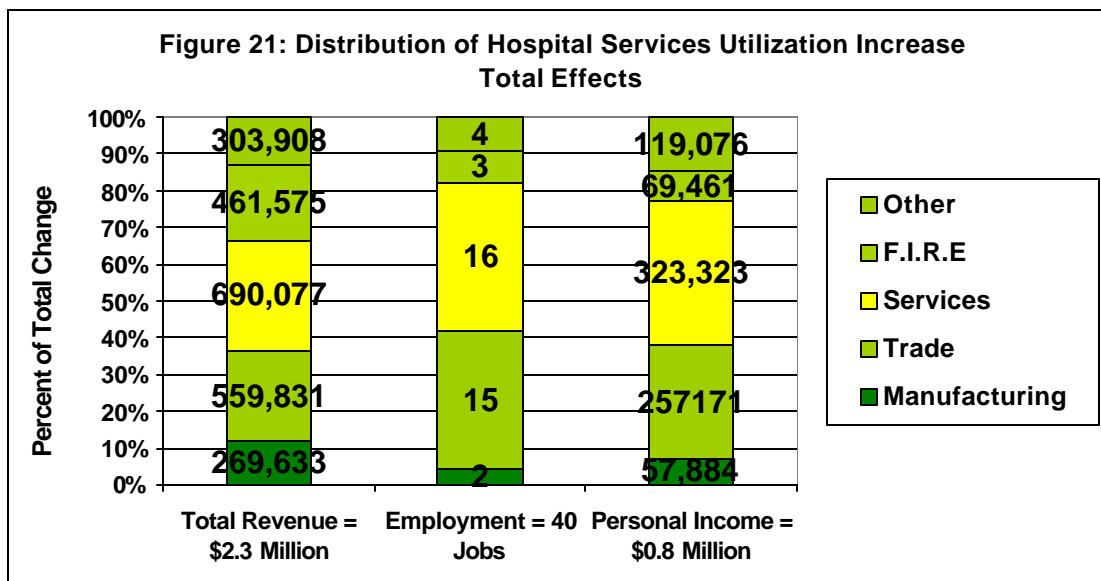
Specifically, the Increased Hospital Inpatient Services Utilization scenario asked the question, “How would a 15 percent increase in utilization of local hospital services affect Sauk County?” Table 5 shows the results of this scenario.

**Table 5: Total Effects of an Increase in Hospital Services Utilization**

<b>Key Indicators</b>	<b>Effects of the Hospital Sector Alone</b>	<b>Total Effects</b>
<b>Total Revenue</b>	+ \$8.4 Million	+ \$10.7 Million
<b>Employment</b>	+ 92 Jobs	+ 132 Jobs
<b>Personal Income</b>	+ \$3.0 Million	+ 3.8 Million

An increase of 15 percent, or \$8.4 million, in county hospital revenue would represent about one-half of the revenue lost in 1998 due to Sauk County residents receiving inpatient care from hospitals outside the county. An increase such as this one would produce an additional \$10.7 million in total revenue, increase aggregate personal income by \$3.8 million, and spur the creation of 132 new jobs in the county economy.

In addition to understanding the total effects of an increase, again it is useful to know how the effects are played out over the different sectors of the economy. We know that the 15 percent increase had a direct effect of an additional \$8.4 million in the health care sector and the total effect was a \$10.7 million increase in total county revenue. The question becomes “How was the extra \$2.3 million in county revenue distributed?” The distribution of this increase is presented in Figure 21. What this figure tells us is that approximately 30 percent of the increase in total revenue was absorbed by the Services sector. Another 25 percent was captured by the Trade sector. The rest of the increase went to the F.I.R.E, Manufacturing, and Other sectors. Again, the largest growth due to the increase in revenue was in the Services and Trade sectors. This is true for all three indicators.



### Scenario C: Increased Physician Service Utilization

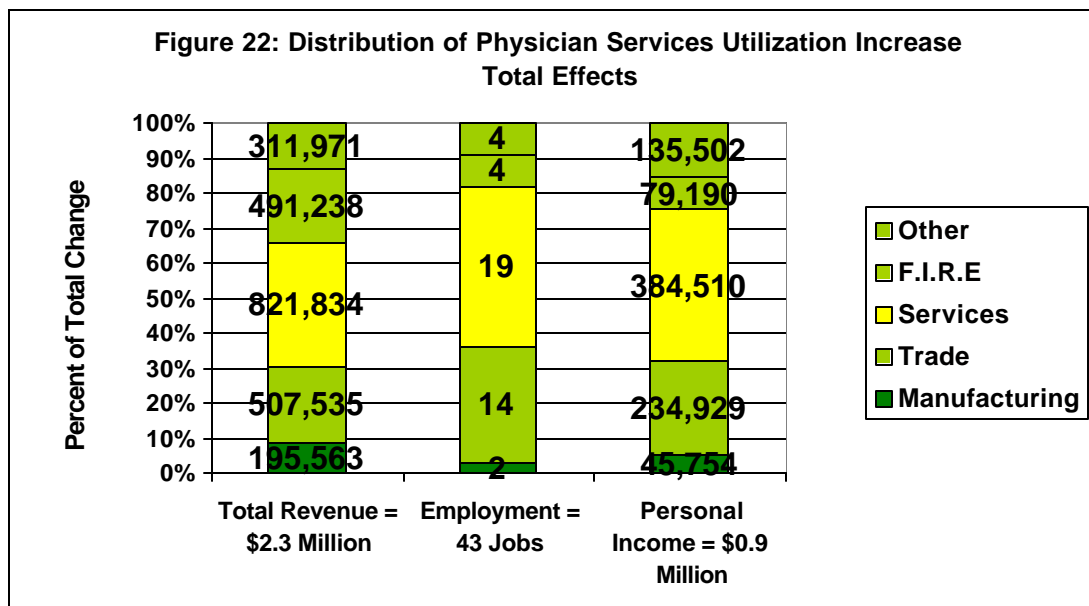
With the increase in number of people moving into rural areas such as Sauk County to take advantage of the quality of life and the aging of the baby boom generation, it is conceivable that the county population will become older and require a greater quantity of physician services. It is with this backdrop that we examined the doctors and dentists sub-sector to see what impact an increase in the utilization of physician services would have on the overall county economy.

To simulate the need for more physician services in the local community, we asked the question “How would a 15 percent increase in the utilization of physician services affect the Sauk County economy?” Again the increase was introduced as a 15 percent, or \$8.1 million, increase in total revenues. Table 6 shows the effect in terms our three economic indicators.

**Table 6: Total Effects of an Increase in Physician Services Utilization**

Key Indicators	Effects of the Doctors and Dentists Sector Alone	Total Effects
<b>Total Revenue</b>	+ 8.1 Million	+ \$10.4 Million
<b>Employment</b>	+ 54 Jobs	+ 97 Jobs
<b>Personal Income</b>	+ \$ 2.8 Million	+ \$3.7 Million

A 15 percent rise in total revenue in total revenue will add approximately \$3.7 million in personal income, 97 jobs, and \$10.4 million in total revenue to the county economy. Figure 22 shows how these additions to the local economy are distributed across the major industrial sectors. The Services and Trade sectors would receive the majority of the growth in the three indicators as in the previous two scenarios.



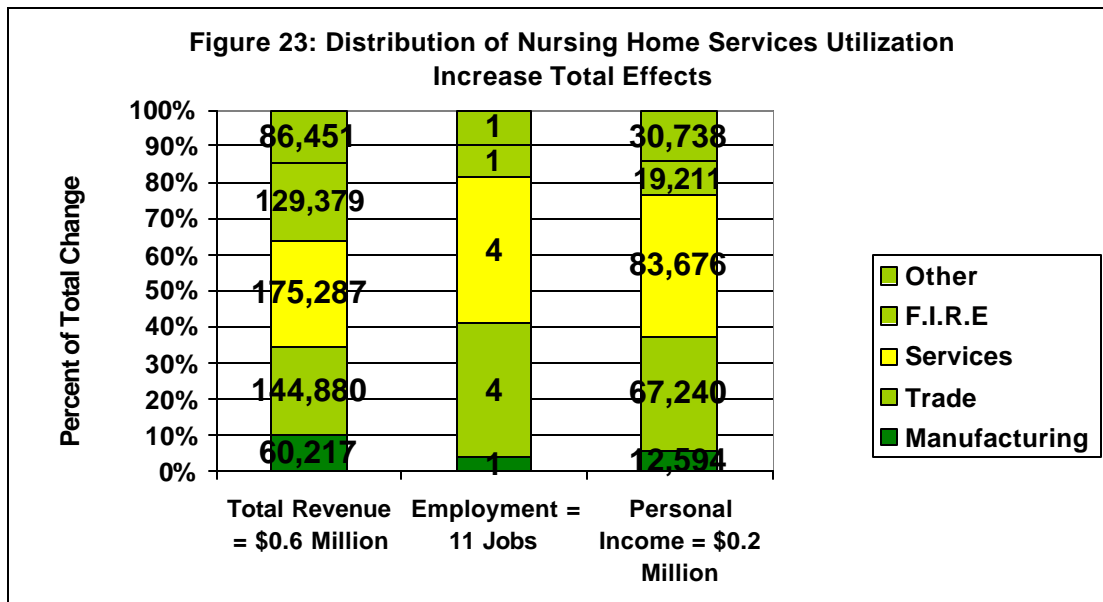
*Scenario D: Increased Nursing Home Services Utilization*

Along with an increased need for physician services, an aging population will require a greater number of nursing home facilities to care for the elderly. Therefore we conducted a simulation examining the effects of a 15 percent, \$2.1 million, increase in nursing home revenues on the Sauk County economy. Table 7 shows that a 15 percent, increase in nursing home utilization would bring an additional \$2.7 million in total revenues, 48 jobs, and \$1.0 million in personal income into the county economy.

**Table 7: Total Effects of an Increase in Nursing Home Services Utilization**

Key Indicators	Effects of the Nursing Home Sector Alone	Total Effects
Total Revenue	+ \$2.1 Million	+ \$2.7 Million
Employment	+ 37 Jobs	+ 48 Jobs
Personal Income	+ \$ 0.8 Million	+ \$1.0 Million

How the impact would be distributed across the different sectors is represented in Figure 23. The Services, Trade, and F.I.R.E sectors experienced the largest growth in the three indicators. The Services sector absorbed approximately 30 percent of the revenue increase and 40 percent of the employment and personal income increase in the county.



### Scenario E: Decreased Health Care Utilization

The final scenario looked at what would happen if the health care sector in Sauk County significantly declined in terms of the amount of services it provided and the number of people it could serve. These trends could take place if, for instance, one of the county's hospitals reduced the level of services provided, and in addition this precipitated the closing of several medical laboratories and therapy clinics that depended on the hospitals for their economic well-being. It is a real possibility that medical laboratories could be moved out of Sauk County for financial reasons not directly related to the level of hospital services provided locally. Recently, a major group health insurance plan decided to close its Sauk County laboratories and require all laboratory tests for its patients be conducted outside the county. Management of the health plan views the decision as cost-effective. To better understand the economic impact of decisions such as laboratory closings on the local economy, we posed the question "What would be the effect of a 20 percent decrease in total health care services utilization?"

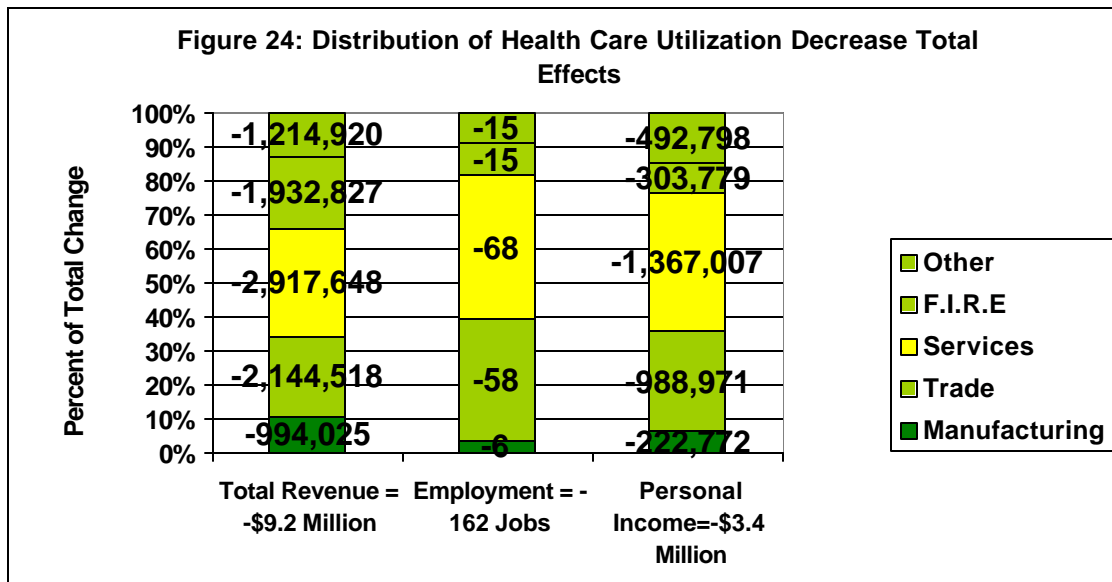
The decrease was introduced into the model as a 20 percent, or \$32 million, decrease in health care sector revenue (i.e. every sub-component). The 20 percent decrease, as shown in Table 8, would result in a loss of \$41.2 million in total revenue, 539 jobs, and \$15 million in personal income. This would represent a substantial loss for the Sauk County economy.

**Table 8: Total Effects of a Decrease in Health Care Services Utilization**

<b>Key Indicators</b>	<b>Effects of the Health Care Sector Alone</b>	<b>Total Effects</b>
<b>Total Revenue</b>	- \$32 Million	- \$41.2 Million
<b>Employment</b>	- 377 Jobs	- 539 Jobs
<b>Personal Income</b>	- \$11.6 Million	- \$15.0 Million

We can see the distribution of losses across the different sectors in Figure 24. The two sectors that would face the most substantial losses are Services and Trade. Of the total losses, 32 percent of the total revenue decrease, 42 percent of the job loss, and 41 percent of personal income reduction occurred in the Sauk County Services sector.





It is clear from these five scenarios that changes in the health care sector can have a large effect on other sectors on the economy – Services and Trade sectors in particular. Not only do health care firms buy goods and services from these sectors. In addition, households working in the health care sector spend their income primarily in the Services and Trade sectors. Thus Services and Trade are especially vulnerable to changes in the health care industry. It is imperative that officials concerned with maintaining a strong county economy understand the linkages between the different sectors and how sectors such as the health sector serve as an economic engine bringing revenue and jobs into the county.

## Conclusions

The preceding study provides evidence to show that the Sauk County economy depends a great deal on the strength of its health care sector. Local decision makers need to consider how decisions in the health care sector may influence the presence of other industries in the county. A better understanding of these changes will allow the county to better plan for changes in the health care sector, maximizing the positive impacts of these changes and minimizing negatives ones.

While many people think of the health care sector as an ancillary sector that augments other parts of the economy, it is much more. It is also a basic industry that provides jobs and serves as a growth engine for the local economy. Basic industries are those industries that bring income into the local community. Such industries form the foundation of the local economy. The rural health care sector forms a basic industry providing goods and services not only to the local

economy, but also exporting these goods and services to residents living outside the local service area.

This notion is confirmed by the findings of this study. In 1998, 27 percent of hospital outpatient revenue, or \$2.9 million, was attributed to out-of-county residents coming to Sauk County for hospital services. There were similar findings for inpatient care with approximately 26 percent of inpatient revenue, or \$9.0 million, that attributed to non-Sauk County residents.

Additionally, patients who make trips to Sauk County will also spend money in non-medical related businesses such as restaurants, motels, and shopping centers. The impact of out-of-county revenue is even greater when one considers the money spent in these businesses by non-residents. Revenue from external funding sources such as Medicaid and Medicare also provide a significant positive impact to the local economy.

Hospitals, in particular, provide a large share of the county health care services and they have a significant impact on the rest of the health care industry. They impact the Sauk County economy in several ways: 1) through the purchase of goods and services, 2) through the multiplier effect or the effect created due to wages paid to households that are spent in the local community, 3) through agglomeration economies, or the creation of businesses that locate near the hospital to provide complementary services, such as physician offices and medical laboratories, and 4) by providing an amenity in the form of quality local health care which may attract other businesses to the area<sup>14</sup>. While every component of the health care sector is important, the Sauk County community may want to focus on hospitals as leverage for economic development.

We have estimated that the health care industry, with its linkages, accounts for 4,376 jobs in Sauk County, 11 percent of the total jobs in the county. The hospital sector supplies more than a quarter of these jobs, which makes it a very important force in the county economy. Furthermore, every two new health care jobs created will create one additional job elsewhere in the county. The converse is also true, a loss of two jobs in the health care sector would mean that another job would be lost in another industry within the county.

Moreover, the health care sector generates \$128 million in personal income, or approximately 12 percent of the county's total personal income. Every two dollars of personal income generated directly by health care has an additional effect of creating one dollar of personal income in other industries. Given these numbers and what they represent to the Sauk County economy, it is imperative that local officials think of the health care sector not just in terms of how it affects the health of its citizens but also how it affects the economic structure of the economy.

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<sup>14</sup> McDermott, Richard E., Robert J. Parsons, and Gary Cornia. (1994). "The Role of Community Hospitals in the Performance of Local Economies," *Journal of Health Care Finance*, 21(2):55-65.

With the valuable information obtained from this study, the next step is to develop strategies for strengthening the Sauk County economy through health care. One strategy would be to educate the public about decisions made regarding what health care plan to contract with, and how these decisions affect the viability of the local health care industry and ultimately the strength of the local economy. In many rural counties, managed care contracts force residents to bypass local county health care facilities and patronize facilities in larger urban areas. Such practices are designed to reduce costs to the employer and the employee. However, the choice to sign up for such plans ignores the reality that health care dollars leaving the county will no longer be available for the purchase of local goods and services inside the county. In addition, lost is the fact that after traveling 30 to 40 miles for treatment (often multiple times) the extra savings may be non-existent to the employee.

Currently the Sauk County government is considering self-insuring itself instead of contracting with a private insurance company. This decision to self-insure may not only save the county government in health care costs but also allow them to structure health care plans that place an emphasis on the use of local facilities. Changes such as this one are important steps in the right direction.

A second possible strategy would involve local hospital officials in partnership with the Sauk County Development Corporation (SCDC) organizing seminars for local businesses on topics such as “Getting the Best Buy for your Health Care Dollar” or “Thinking about the Impact of Your Health Care Expenditures on the Local Economy.” The percentage of total health care costs paid by businesses in 1990 nationally was 40 percent. Health benefit consumed about 26 percent of wage employees’ net benefits in 1990. Experts have predicted that average health care benefits will exceed \$22,000 per year by the year 2001<sup>15</sup>. Hopefully, such seminars would educate the local community and encourage more health care goods and services to be bought in county whenever possible given the importance of such revenue to the local economy.

A third potential strategy would be to create a partnership between the SCDC and local Sauk County municipalities looking to attract new businesses to Sauk County. Health care is an important amenity that many businesses require when looking to locate a plant or office. Local government officials could be provided with knowledge about what firms look for in terms of accessible local health care when determining a place to locate. In addition, these officials could be trained on techniques for conveying information about the local health care industry to business leaders.

Finally, Sauk County officials should be taking the lead to ensure that wages for health care employees, especially personal care workers, are high enough to retain these workers inside the county. With the growth of residents over 65 years old expected to rise rapidly over the next two decades, health care workers will be in great demand to help elderly residents manage daily

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<sup>15</sup> See Chenoweth, D.H. (1993). *Health Care Cost Management*. Madison: Brown & Benchmark.

life. Personal Care workers help disabled and elderly residents dress, eat, and take care of their necessary daily tasks.

It's been estimated that over 40 percent of those persons over 65 will need some in-home care either periodically or long-term<sup>16</sup>. In Wisconsin, the percentage will probably be higher because the state has made a concerted effort in the past to promote home-health care in lieu of institutional care for the elderly. Without home health care workers to assist them, elderly residents may be forced to move out of communities in which they feel a sense of place and move into more costly nursing home care – potentially out of Sauk County. The money spent on goods and services would also leave the county with these residents.

Wisconsin is already taking steps to make sure these people can remain in their communities even though they may need assistance with daily living. The state legislature voted this year to increase the hourly wage for personal care workers from \$11.50 to \$15.50. State legislators have insisted that the entire increase be passed onto the employees to help wages for personal care workers remain competitive with similar occupations. Sauk County officials need to take a proactive effort to ensure that wages are competitive in Sauk County.

These are just a few of the strategies that could be pursued in order to educate the public on the importance of local rural health care and guarantee a vibrant and prosperous health care sector well into the 21<sup>st</sup> Century and beyond. Sauk County's health care sector is strong and vibrant despite changes in the statewide health care system structure over the past few years, such as the emergence of managed care as a dominant force in rural areas. It is hoped that Sauk County officials use the information in this study as a guide for future decisions regarding health care and the Sauk County economy.

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<sup>16</sup> See Wisconsin State Journal, April 30, 2000

# **Appendix A**

## **Impact Analysis and Input-Output Analysis**

IMPLANPro is a computer modeling software package that utilizes Input-Output analysis. Input-Output analysis is a tool used to understand the numerous linkages within an economy.

The modeling capabilities of IMPLANPro allow for impact analysis. That is, it allows one to hypothesize about future economic conditions, change the appropriate factors in the economy, such as decreasing employment, and evaluate how they will be played out in the entire economy. Input-Output manages economic factors such as output, employment, and personal income. Therefore, these are the factors that can be altered in an impact analysis scenario. Consequently, all hypothetical scenarios that are to be tested with the IMPLANPro software must be translated into these economic factors.

The impact analysis will generate economic multipliers for the area. These multipliers report three types of effects as a result of the changes introduced to the model: direct, indirect, and induced effects. The direct effects are the changes that occurred within the sector, or industries, that was initially altered. The indirect effects are a result of the sector needing to purchase additional goods and services from other industries in order to meet a demand for their services. These purchases begin a chain reaction in the economy ending with the induced effects. The induced effects capture changes in household spending. Households will have more personal income to spend on goods and services as a result of new employment within the industries directly and indirectly affected by the initial change introduced to the model. All of these effects taken together are known as the total effects.

Input-Output analysis is a demand driven analysis tool. This means that industries respond directly and indirectly to meet changes in demand. Input-Output analysis is a linear model that is assumed to have constant returns to scale which means that an increase in output will be proportional to the increase in inputs. That is, when demand for goods or services increase (decrease), industries respond by increasing (decreasing) production to meet the increased (decreased) need. Additionally, the model assumes there are no supply constraints and that the production of goods and services is only limited by the demand for them. Similarly, a change in the price of an input is assumed to have no effect on final output. Furthermore, the commodity set required for production is assumed to be fixed. This means that while changes in the economy affect the price of inputs or outputs, the mix of inputs required for production are not changed. For example, if it took 20 laborers and 1 ton of materials to produce 200 units of a product, it would take require 40 workers and 2 tons of materials to produce 400 units of the same product regardless of price changes.

Further explanation and discussion about IMPLANPro and Input-Output can be found in:

MIG. (1996). IMPLANPro 95/NT. Available from the Minnesota IMPLAN Group Inc., 1940 S. Greeley Street, Suite 201, Stillwater, MN 55082.

Shaffer, Ron. (1989). *Community Economics: Economic Structure and Change in Smaller Communities*. Ames: Iowa State University Press.

Special thanks to Professor David Marcoullier from the University of Wisconsin- Madison Department of Urban and Regional Planning for his technical assistance with IMPLANPro.

## **Appendix B**

### **The Sauk County Health Care Industry Economic Impact Survey**

# The Sauk County Health Care Industry Economic Impact Survey

Organization Name: \_\_\_\_\_  
 Contact Person: \_\_\_\_\_  
 Contact Phone Number: \_\_\_\_\_  
 Fax Number: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Date of Interview: \_\_\_\_\_

## Employment

The first set of questions asks you about the nature of your business and a little about the level of employment for your establishment in 1998. The purpose of these questions is to gain an ideal of how important the health care sector is in terms of employment in Sauk County.

- Please check the category that best describes your facility?

Hospital	Nursing/Residential Care Facility
Physician's Or Dentist's Office/Clinic	Other Medical/Health Care
Pharmacy	Facility/Business

- For each category, how many persons were Full Time Equivalent (FTE) employees or partners, owners, etc. for your organization in 1998?  
If possible, please estimate the percentage that resided in Sauk County in 1998.

	<u><b>FTE Employees</b></u>	<u><b>Percentage that resided in Sauk County</b></u>
Medical Staff	_____	_____
Professional Staff	_____	_____
Support Staff	_____	_____
Partners	_____	_____
Owners	_____	_____
Other	_____	_____



# Sauk County Health Care Industry Economic Impact Survey

## Revenues, Expenditures, and Taxes

The second set of questions asks about total revenues, expenditures, and property taxes for your organization. The purpose of these questions is to find out a little more about the flow of money into and out of Sauk County that can be attributed to the health care sector.

**If your organization has operations outside of Sauk County, please answer the following questions solely with respect to that portion of your operations which are in Sauk County.**

3. What is the latest fiscal year for which you have complete records? \_\_\_\_\_
4. For your most recent fiscal year, what were total revenues for your organization?  
\_\_\_\_\_
5. For your most recent fiscal year, what were your five largest sources of revenue (eg. Medicare, Medicaid, private health insurance, etc.)? If possible, please estimate the percentage of total revenues each source comprises. A dollar amount for each source would be satisfactory if a percentage is not available.

Fiscal year ended: \_\_\_\_\_

	<u>Source</u>	<u>Percent of Total Revenues (or \$)</u>
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

6. What were total amount of property taxes paid by your establishment in 1998 (or latest fiscal year), if any? \_\_\_\_\_

# Sauk County Health Care Industry Economic Impact Survey

7. Did your establishment pay any special assessments (eg, for road improvements, sidewalk improvements, municipal services, etc.) in 1998 (or latest fiscal year)?

Yes

No

- 7A. If yes, what was the total amount of special assessments paid in 1998 (or latest fiscal year)? \_\_\_\_\_

8. In 1998 (or latest fiscal year), what was your organization's total annual operating budget? \_\_\_\_\_

9. What percentage of your organization's total annual operating budget was used to pay for labor in 1998 (or latest fiscal year)? \_\_\_\_\_

# Sauk County Health Care Industry Economic Impact Survey

10. In 1998 (or latest fiscal year), what were your organization's top five non-wage expenditures? If possible, please estimate the percentage of total expenditures they comprise?

	<u>Expenditure</u>	<u>Percentage of Total Expenditures</u>	<u>Estimated share to Sauk County Suppliers?</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____

## Recent Trends

The next two questions try to gain a better understanding of the outflow and inflow trends for health care revenues and expenditures in Sauk County?

11. Since 1996, what has been the trend in your sources of revenue (where the patient lives in Sauk County regardless of where the patient is employed)?

- A. Higher percentage of revenue from Sauk County sources.
- B. Lower percentage of revenue from Sauk County sources.
- C. No change.

- 11A. If there has been a change in your revenue source since 1996, please give an estimate of the percentage change. \_\_\_\_\_

# Sauk County Health Care Industry Economic Impact Survey

12. Since 1996, what has been the trend in insurance payments from out-of-county sources (eg. Madison) when the patient lives in Sauk County and the employer is located in Sauk County.
- A. Higher percentage of insurance payments from Sauk County sources.
  - B. Lower percentage of insurance payments from Sauk County sources.
  - C. No change.
13. Since 1996, what has been the trend in your sources of expenditures?
- A. Higher percentage of expenditures to Sauk County suppliers.
  - B. Lower percentage of expenditures to Sauk County suppliers.
  - C. No change.

## **Importance of the Sauk County Health Care Industry to the local economy**

14. Why do you think keeping health care local is important to the local economy?  
If you do not think it is important, then why not?

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# Appendix C

## Sauk County Steering Committee

**Karna O. Hanna**

Executive Director

Sauk County Development Corporation

**Catherine Frey**

Director for Outreach

Wisconsin Network for Health Policy Research

University of Wisconsin School of Medicine

**George L. Johnson**

President

Reedsburg Memorial Hospital

**David B. Jordahl**

President

St. Clare Hospital and Health Services

**Tim Size**

Executive Director

Rural Wisconsin Health Cooperative

**Bobbe Teigen**

Administrative Director

Sauk Prairie Memorial Hospital