

# The Economic Impact of Health Care: Yazoo County, Mississippi

Community Resource Development  
Publication # CRD-04-26

## FINAL REPORT



Prepared for the  
Mississippi Hospital Association  
Jackson, Mississippi

*May 30, 2004*

# **The Economic Impact of Health Care: Yazoo County, Mississippi**

## **Executive Summary**

The health care sector includes hospitals, doctors, dentists and other professional medical services, nursing and home health care, and sales of drugs and medical equipment and supplies. Statewide, health care directly contributes more than three billion dollars annually to rural communities. The health care sector also stimulates economic growth in other parts of a local economy, such as retail and wholesale trade, finance and insurance, business social services, and transportation.

Health care is an important part of Yazoo County. It represented more than \$35 million of economic activity in 2000, of which 23% was attributable to indirect purchasing made by suppliers to the health care sector, and spending by health care professionals. Local health care supported 674 jobs, of which 124 were in supplier sectors, particularly trade, finance, real estate, and insurance, which together accounted for almost half of the indirect impacts. The total impact on labor income was in excess of \$19 million, part of the \$23.1 million of total value added to the economy because of health care.

## **Acknowledgements**

Dr. David Lightwine of the Mississippi Health Association helped with provision of data. The author is also grateful to Dr. Albert Myles, Extension Professor at Mississippi State University, who provided valuable comments during the preparation of this report, and to Rachel Welborn, State Health Coordinator at Mississippi State University, for her review.

This project was funded in part by the Mississippi Hospital Association; a statewide trade organization that assists member hospitals in effectively serving the health care needs of Mississippi through advocacy, representation, information, education and services.

Community Resource Development (CRD), a unit of Mississippi State University Extension Service, is well established as a provider of educational programs and technical assistance utilizing the latest research-based knowledge, strategies, and technology. CRD strengthens the capacity of citizens, organizations, and governments by exploring community change and identifying opportunities to improve the social and economic welfare of the citizens of Mississippi.

Mississippi State University does not discriminate on the basis  
of race, color, religion, national origin, sex, age, disability, or veteran status.

## Table of Contents

Executive Summary .....	2
Introduction.....	5
Personal Health Care Spending in Mississippi.....	6
Sources of Funding .....	9
Overview of Yazoo County .....	11
Health Care in Yazoo County .....	12
Local Spending Potential for Health Care .....	13
Economic Impacts.....	14
Summary .....	17
Notes .....	18
References.....	19
Appendix 1. Detailed Impact Tables .....	21
Appendix 2. Introduction to Input-Output Analysis.....	25

## **The Economic Impact of Health Care: Yazoo County, Mississippi**

### **Introduction**

Health care is important for everyone. In rural Mississippi it's not only about quality-of-life; the health care sector is an important and often substantial part of a small area's local economy. The health care sector includes hospitals, doctors, dentists and other professional medical services, nursing and home health care, and sales of drugs and medical equipment and supplies. Statewide, health care directly contributes more than three billion dollars annually to rural communities. But the health care sector also stimulates economic growth in other parts of a local economy, such as retail and wholesale trade, finance and insurance, business social services, and transportation.

Like a balloon, Mississippi's rural economy expands with job and income growth. As more goods and services are produced, additional growth occurs because of increased demand for purchased inputs. These activities are often referred to as "inter-industry sales". The health care sector generates a lot of inter-industry sales. Benefits include positive impacts on value added components of the economy, such as rent for land, wages for labor, interest for capital, and profit for entrepreneurs and managers.

Many rural residents see their health care system in trouble. Hospitals have been closed, services have been cut, and doctors are discouraged because Mississippi has high rates of Medicaid<sup>1</sup> enrollees coupled with declining reimbursement rates (Cossmann, 2003). Other challenges for physicians include a lack of medical infrastructure and a chronically ill population – Mississippi ranks high for obesity, cardiovascular disease and infant mortality.

Cessation of health services can represent a serious threat not only to the health but also to the economic well being of the community. This is because the availability of quality health care is critical to long-term economic development in rural communities. If local health care disappeared in rural Mississippi, much of the economy would go with it, including an estimated 81,000 jobs and more than \$2.5 billion of income in all sectors of the economy. In 2002, Mississippi received \$1.98 billion inflow of federal Medicaid dollars, which represented \$1.39 billion of gross state product (Blair and Millea, 2003); more than 39,000 jobs were supported by Medicaid inflow.

New businesses will locate to areas with good education and health care systems in place. This is also true for young families and seniors, who value locally available health care to meet their demand for services. The report illustrates the economic importance of the health care sector on Mississippi, its rural economy, and Yazoo County, and provides local decision-makers with a tool to use in planning and supporting their local health care system.

## Personal Health Care Spending in Mississippi

Nationwide, personal health care spending more than doubled from \$609 billion in 1990 to more than \$1.2 trillion in 2001 (Figure 1). Personal health care spending in the U.S.A. as a fraction of the total economy was 14.1% in 2001, a sharp increase from the previous year that was attributed less to health spending increases than to slower economic growth resulting from the recession that began in March 2001 and that was exacerbated by the

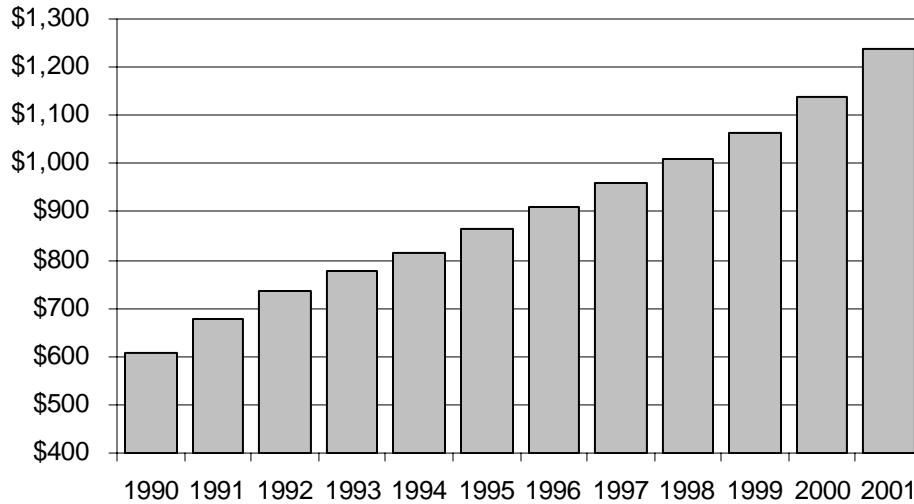


Figure 1. Personal Health Care Spending in the U.S.

terrorist attacks in September of that year (Levit et al., 2003). This result is more clearly understood by examining the health share of gross state product. In 2001, the U.S. health sector accounted for 5.8% of national gross state product, a 5% increase over the previous year (Figure 2).

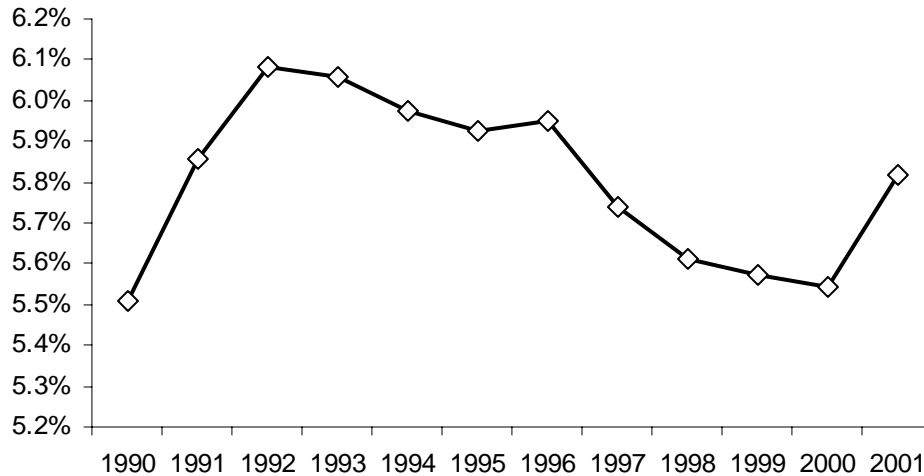


Figure 2. Health Services as a Percentage of U.S. Gross State Product

From 1990 through 2001, the national economy grew at an average rate of 7.8% per year in real terms. During the same period the health care sector more than doubled in size, outpacing national growth with an average real annual rate of 8.3%.

Health spending in Mississippi followed a trend similar to that of the nation for the same period (Table 1). Gross state product in Mississippi grew from \$39.2 billion in 1990 to \$67.1 billion in 2001, a 7.6% average real increase per year. But Mississippi's health sector grew at a faster rate: from \$1.9 billion in 1990 to \$4.1 billion in 2001 – a 9.9% average real increase per year.

Table 1. Total Gross State Product and Its Health Component (\$ millions, current).

Year	Total	USA		Mississippi	
		Health	Total	Health	Total
1990	5,706,658	314,363	39,175	1,829	39,175
1991	5,895,430	345,311	41,311	2,051	41,311
1992	6,209,096	377,805	44,222	2,304	44,222
1993	6,513,026	394,541	47,384	2,412	47,384
1994	6,930,791	413,949	51,358	2,685	51,358
1995	7,309,516	433,091	54,562	2,942	54,562
1996	7,715,901	459,084	56,575	3,267	56,575
1997	8,224,960	472,160	58,743	3,483	58,743
1998	8,750,174	491,056	61,709	3,557	61,709
1999	9,251,541	515,399	64,219	3,623	64,219
2000	9,891,187	548,451	66,162	3,824	66,162
2001	10,137,190	589,788	67,125	4,072	67,125
-----					
Average Annual					
Real Growth <sup>a</sup>	7.6%	8.2%	7.3%	9.9%	

<sup>a</sup>Current annual growth adjusted for inflation using the US GDP implicit price deflator.

Source: Bureau of Economic Analysis, Woods & Poole State Profile – Mississippi.

From 1990 to 2001 Mississippi health shares of gross state product trended upward, indicating that the health sector became relatively more important over time. Since 1997 health shares in Mississippi have exceeded the national rate (Figure 3); in 2001 it was more than 6% of the economy's gross state product.

Personal health care expenditures include spending for hospital care, professional services (including dental), drugs and other non-durables, vision products and other medical durables, nursing home care, and home health care<sup>2</sup>. In Mississippi, hospital and professional services together accounted for 74% of health sector spending (Figure 4). Non-durables, such as expenditures for prescription and non-prescription drugs, were 12% of average annual personal health care spending from 1990 through 1998.

The fastest-growing U.S. health expenditure category was prescription drugs, a key driver of overall spending trends in 2001. In the past decade increasing third party coverage and continued new drug introductions have spawned steady growth (Levit et al., 2003).

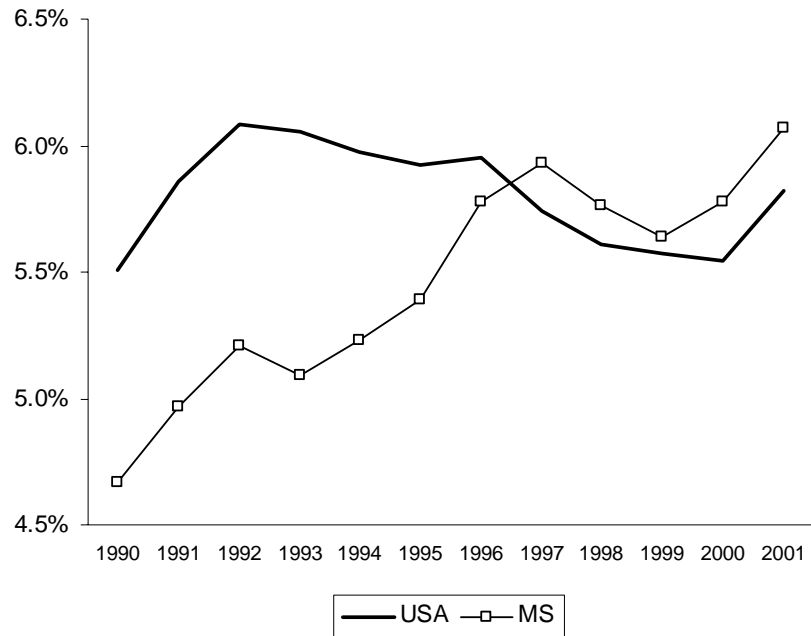


Figure 3. Health Services as a Percentage of Gross State Product, USA and Mississippi.

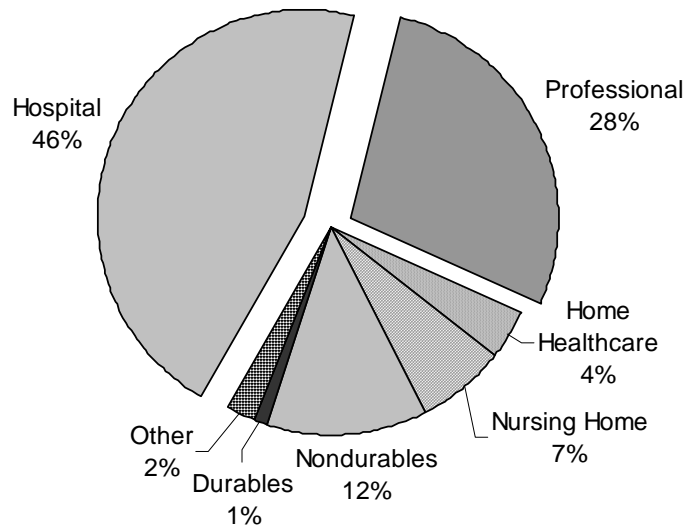


Figure 4. Personal Health Care Expenditures by Establishment Type in Mississippi, 1990-1998 average.

In Mississippi, expenditures for non-durable health products grew from \$598 million in 1990 to an estimated \$1.3 billion in 2001. Real growth averaged 12.4% annually over the period (Table 2). However, it was the home health care sector that had the highest rate of growth for real expenditures: 16% average annual growth. It is worth noting that growth in the home health care sector was nearly flat in 1997, but reversed itself in 1998, falling by more than 19%.

Table 2. Personal Health Care Spending, Mississippi, 1990-2001, \$ million.

Year	Hospital	Professional	Home Healthcare	Nursing Home	Non-Durables	Durables	Other
1990	2,187	1,345	143	310	598	56	91
1991	2,400	1,480	168	362	656	62	104
1992	2,654	1,543	192	418	715	70	113
1993	2,851	1,756	244	456	760	73	129
1994	3,082	1,845	297	490	809	77	144
1995	3,468	2,015	325	521	874	81	163
1996	3,671	2,131	384	578	963	86	184
1997	3,654	2,394	374	639	1,081	91	197
1998	4,000	2,529	293	687	1,222	93	210
1999 <sup>e</sup>	4,153	2,525	352	656	1,134	1,03	1,95
2000 <sup>e</sup>	4,383	2,665	372	692	1,197	1,09	2,06
2001 <sup>e</sup>	4,668	2,838	396	737	1,275	1,16	2,19
Average Annual							
Real Growth <sup>a</sup>	12.4%	12.3%	16.0%	13.6%	12.4%	12.1%	13.8%

a – Current annual growth adjusted for inflation using the medical sector CPI.

e – estimates based on actual GSP in 1999-2001 and average GSP fractions of expenditures from 1990-1998.

Source: Centers for Medicare and Medicaid Services (Mississippi PHCE, all payers), Bureau of Economic Analysis.

This has been attributed to the implementation of the Balanced Budget Act of 1997 and the Medicare Interim Payment System, which reduced the existing Medicare per visit cost limits (Martin et al., 2003). Average real expenditures for the two largest health sectors, hospital services and professional services, grew at an average annual rate of 12.4% and 12.3%, respectively.

### Sources of Funding

Total spending for health care is funded from both private and public sources. Private sources include out-of-pocket spending and private health insurance. Public spending is either federal, such as Medicare<sup>3</sup>, or state-based, such as Medicaid. Nationwide, private health insurance funds the largest portion of overall health care spending (Levit et al., 2003). In 2001, private health insurance accounted for 35% of national health expenditures<sup>4</sup> (Figure 5).

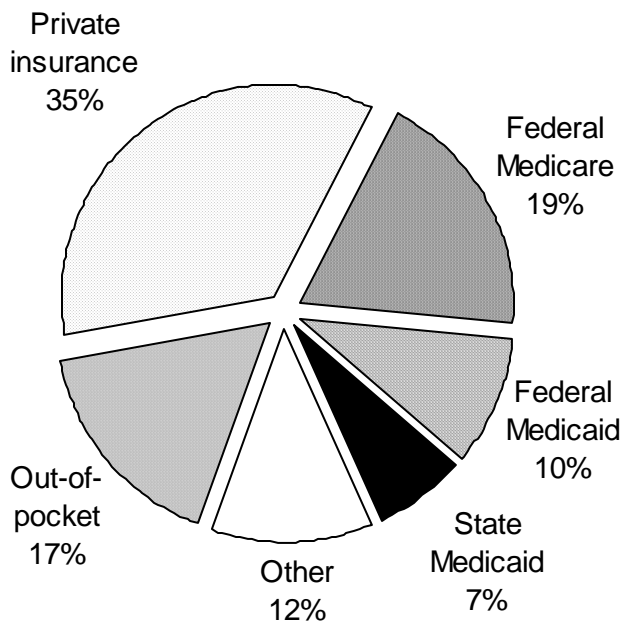


Figure 5. Source of Funding for National Health Expenditures, 2001.

In Mississippi, combined Medicare and Medicaid payments accounted for an average of 42% of personal health care expenditures between 1990 and 2001 (Figure 6). In 2002 Mississippi had the highest Federal Medical Assistance Percentage, a measure of fiscal need for health care used to calculate federally matched funds for Medicaid (Blair and Millea, 2002). As a result, state expenditures on Medicaid (\$820 million) were supplemented with \$1.98 billion from the federal government. In 2002, federal inflows supported 39,000 jobs, of which more than 20,000 were in the health sector (Blair and Millea, 2003).

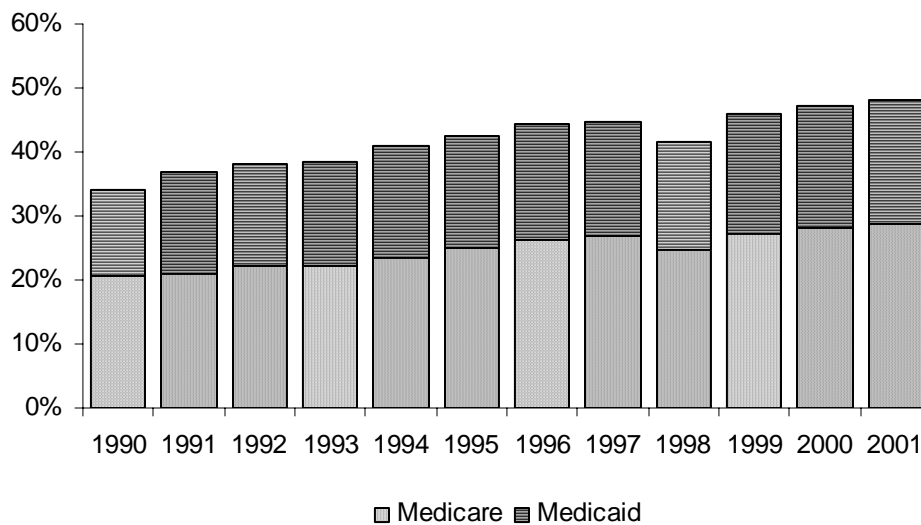


Figure 6. Medicare and Medicaid Spending in Mississippi as a Percentage of Personal Health Care Expenditures.

## Overview of Yazoo County

With more than 900 square miles of land, Yazoo County is the largest county in Mississippi. It is bordered on the west by the second largest tributary east of the Mississippi River, the Yazoo River. The river, named after the natives who inhabited this area long ago, defined the early economic and historic progress of the region. Gunboats during the Civil War patrolled the river, which provided a trade route for early settlers. Situated between rolling hills and the open fields of the Delta, agriculture and forestry were economically important; the river carried steamboats filled with cotton and other commodities to New Orleans.

Today Yazoo County is home to a number of incorporated cities, school districts, and special districts. The largest city is Yazoo City, which in 2000 had a population of 14,550, and is the county seat and hub for business activity. Other cities (population) include: Bentonia (500), Eden (126), and Satartia (68). There are two school districts in the county: (1)Yazoo City Municipal School District had an enrollment of 3,008 in 2000; and (2)Yazoo County School District, with a 2000 enrollment of 1,709 students. Special districts include five drainage districts: Eden Creek, Rocky Bayou Levee, Silver Creek, Piney Creek Watershed, and Fighting Bayou. Other special districts are: Yazoo County Soil Conservation District and Yazoo City Housing Authority. The total ad valorem assessment for Yazoo County was \$155 million in 2002, of which 51% was for real property (i.e. class 1 and 2). New facilities include a hardwood chipping and pulping mill (James River Corp) and expansion of a fertilizer manufacture (Mississippi Chemical Corp.) in the county (Conway, 2003).

Three demographics that affect spending on health care are population, age distribution and personal income. A State's population is a large factor because it tracks closely with changes in spending growth (Martin et al., 2001). The population in Yazoo County was 28,149 in 2000, up 10.4% from the previous decennial census in 1990 (Table 3).

Table 3. Selected Demographics and Income Data for Yazoo County.

	1990	2000	2010
Total Population:	25,506	28,149	28,220
School-aged Children <sup>5</sup> :	6,159	5,939	6,384
Elderly Persons:	3,770	3,490	3,835
Civilian Labor Force:	9,161	9,959	10,060
Employment:	8,298	9,046	9,125
Unemployment:	863	913	935
Total Personal Income: (\$ million)	315.0	485.2	560.9
Regular Income: (\$ million)	183.6	269.9	312.0
Dividends, Interest and Rent: (\$ million)	60.2	92.3	106.7
Transfer Payments: (\$ million)	71.2	123.0	142.2

Source: State and County QuickFacts, Woods & Poole Economics, County and City Databook 2000. Regular income is defined as wages, salaries, proprietor's income and other labor income less social contributions and residence adjustments. Estimates for 2010 based on Woods and Poole and historical fractions.

While the population of a community is proportional to levels of spending, the age distribution of the population is also an important factor. This is because the elderly consume, on average, almost three times that of the rest of the adult population (Olin, 2003), and six times that of people under age 18 (Martin et al., 2003). In 2000 school-aged children represented 21% of the population in Yazoo County, while 12.4% of the population were elderly (age 65 or greater). Population in the county is expected to remain stable through 2010.

Personal income is often used as a measure of prosperity. It also influences health care among local residents, and reflects the cost of producing health care services such as wages and salaries of health care workers (Martin et al., 2003). Total personal income includes wages and salaries, proprietor's income, dividends, interest, rent, and governmental transfer payments. In Yazoo County total personal income was in excess of \$485 million in 2000, of which 25% consisted of transfer payments. In 2000 Yazoo County, with per-capita income of \$17,238, was ranked 30<sup>th</sup> in the State. The average per-capita income for Mississippi was \$20,920.

Another factor that influences health care spending is health care insurance. Uninsured persons spend considerably less on health care than those who are fully insured. In 2002 16.7% of Mississippi's population were without health insurance, compared to 15.2% of the U.S. population (United Health Foundation). Mississippi ranked 38<sup>th</sup> in the nation. The proportion of Mississippi's uninsured exceeds that of Alabama (12.7%) and Tennessee (10.8%).

### **Health Care in Yazoo County**

Yazoo is one of 75 counties in Mississippi that has at least one hospital (Report on Hospitals, 2002). King's Daughters Hospital (KDH), is the only hospital facility in Yazoo County, and had 49 licensed beds in 2002, down from 88 beds the previous year (Yazoo was one of four counties in Mississippi to reduce the number of licensed beds in 2002). Complementing the acute care at King's Daughters were eight physicians and five dentists based in Yazoo City, as well as a number of home health agencies, medical clinics, hospices and related health care organizations (Resource Manual, 2001).

One measure of the level of health care in a community is the number of discharges that a hospital has in any one year. KDH discharged 1,428 patients after logging more than 8,700 hospital days in acute care in 2002. More than 95% of the discharged patients were residents of Yazoo County, while 1.2% lived in Hinds County.

What is surprising is the high percentage of local residents that received hospital care but were discharged from hospitals outside of Yazoo County. The data is indicative of where Yazoo County residents go for their hospital care, and may suggest where they make other health care purchases. During 2002-2003, 29% of Yazoo County residents who received hospital care were discharged from the local hospital (Figure 7). Nearly an

equal percentage went to Hinds County (28%) and Holmes County (25%), while the balance of residents were discharged from Rankin, Warren, Madison and other counties.

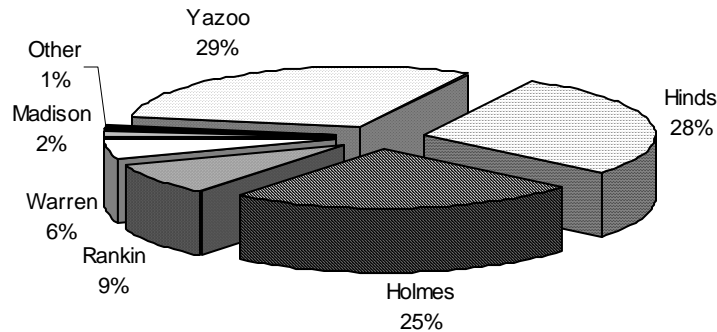


Figure 7. Percentage of Yazoo County Patients Discharged by Location of Hospital.

### Local Spending Potential for Health Care

The demand for local health care depends upon a diverse set of factors. In Yazoo County this may include the size as well as the type of health care business located within the community. Quality of care is also be an issue, and the lack of a particular type of service can motivate people to seek care outside the community. The manner in which health care is utilized can have a measurable impact on local health provision, and can ultimately affect the entire economy. This section presents estimates of local spending potential for health care.

Local spending potential is a rough measure of the possible demand for health care. It is estimated by multiplying per-capita local spending times the local population. Per-capita spending for health care is based on average statewide per-capita spending and the fraction of local purchases for particular goods and services.

For example, average per-capita spending for hospital services in Mississippi was \$1,798. It was shown in the previous section that 29% of all local residents discharged from hospitals were discharged from the hospital in the county. Thus, local per-capita spending for hospital services was 1798 times 0.29, or \$521. Therefore, the local spending potential for hospital services was estimated at \$14.6 million (521 times the population of Yazoo County: 28,149). Other health care sectors were estimated in a similar way and the results were totaled (Figure 4).

Local spending potential can be thought of as an upper bound - the actual amount of spending may be higher or lower, depending on the type, size and quality, as well as the availability of local health care provision.

Table 4. Estimated Local Spending Potential for Health Care in Yazoo County in 2000.

<b>Category</b>	<b>State Spending Per-Capita (\$)</b>	<b>Percent Local</b>	<b>Local Spending Per-Capita</b>	<b>2000 Population</b>	<b>Total Spending (\$)</b>
<b>Hospitals</b>	1,798	29%	521	28,149	14,674,865
<b>Physicians</b>	1,019	29%	295	28,149	8,316,703
<b>Home Health Care</b>	130	100%	130	28,149	3,654,116
<b>Nursing Homes</b>	294	100%	294	28,149	8,287,013
<b>Dental</b>	143	29%	41	28,149	1,163,771
<b>Medical Durables</b>	42	29%	12	28,149	340,616
<b>Drugs &amp; Non-durables</b>	515	29%	149	28,149	4,200,928
<b>Other</b>	88	29%	26	28,149	719,078
<b>TOTAL</b>	<b>4,028</b>	<b>-</b>	<b>1,469</b>		<b>41,357,090</b>

Source: Centers for Medicare and Medicaid Services, Mississippi Hospital Association, U.S. Census Bureau QuickFacts.

A comparison of local spending potential with actual spending may provide some insight with regard to expansion (or contraction) of the local health care sector. As an example consider the existing home health care sector, which generates a certain amount of annual revenue; if actual revenue for the sector is less than the estimated potential value, then there may exist opportunities to expand home health care services in the county, thus retaining more dollars in the local economy. Total spending potential for personal health care in Yazoo County for 2000 was estimated at more than \$41.3 million (Table 4).

Total spending for local health care included more than \$14.6 million for local hospital care, \$8.3 million for physicians and other professionals, \$3.6 million for home health care, \$8.3 million for nursing home care, \$1.1 million for dental services, and more than \$4.2 million for prescription drugs and other medical non-durables. These estimates are consistent with health care spending trends in the nation and in Mississippi - the fastest growing spending category in 2001 was prescription drugs, and the largest spending categories were hospital and physician services (Levit et al., 2003). Total local spending was estimated at \$1,469 per-capita, a value that is comparable to other sources (Conway, 2003a).

## **Economic Impacts**

The health care system in Yazoo County is an important part of the local economy. This section quantifies local health care in terms of output (often referred to as “sales”), jobs, labor income, and value added. Value added impacts represent the sum of returns to land, labor, management, and capital; that is, rent, wages, profit, and interest, respectively.

One reason why health care is important is that it is a definite and integral part of the economy. As a consequence, changes in the health care sector affect other sectors; this sort of consequence is referred to as an “indirect effect”. For example, consider the impact of the health care sector on employment: hospitals provide jobs to health care professionals (this is a direct effect on employment) – an expansion of existing facilities places increased demands on health care suppliers, who consequently find it necessary to create new jobs - this is an indirect effect. Another form of an indirect effect is the change in the number of local retail and services jobs related to health care employee spending, as well as spending made by employees of health care suppliers. Income, industrial output, and contributions to value added are considered in a similar fashion (Table 5). The total economic impact of health care is then calculated as the sum of direct plus indirect impacts over all of the industry sectors in Yazoo County.

Estimation of economic impacts was made possible through input-output analysis, which was first modeled by Polish-born Wassily Leontief, who was awarded the Nobel Prize in Economic Sciences in 1973. The reader is referred to the appendix for more information about input-output analysis, and the complex mathematical software used to create the models from which the estimates in this report were obtained.

Table 5. Health Care Related Economic Impacts

	<b>Direct</b>	<b>Indirect</b>
<b>Output or Sales</b>	Health care revenue	Health care supplier revenue, local retail and service revenue related to health care employee spending
<b>Employment</b>	Jobs in the health care sector	Health care supplier jobs and other jobs in retail and service sectors related to employee spending
<b>Income</b>	Health care employee income. (Income is a component of value added – see below)	Income paid to health care supplier employees and income received by employees in retail and service sectors related to health care employee spending.
<b>Value Added</b>	Returns to land, labor, management and capital in the health care sector	Returns to health care supplier's land, labor, management and capital

The health care sector in Yazoo County directly contributed \$27.5 million to the local economy (Table 6) in 2000. Although this was only 3% of the economy in terms of industrial output, it should be remembered that it was only a direct effect, and does not take into account the interactions with the rest of the economy. This direct economic activity directly supported 552 jobs in the health care sector and contributed \$18.2 million to value added components of the economy, which included \$16.4 million of labor income.

Table 6. Direct Impact of Health Care on Yazoo County

	<b>Output</b>	<b>Jobs</b>	<b>Income</b>	<b>Value Added</b>
<b>Doctors and Dentists</b>	5.6	76	3.0	3.5
<b>Nursing and Protective Care</b>	8.5	274	5.9	6.4
<b>Hospitals</b>	9.4	140	5.5	5.9
<b>Other Medical and Health Services</b>	4.0	62	2.0	2.5
<b>Total</b>	<b>27.5</b>	<b>552</b>	<b>16.4</b>	<b>18.2</b>
<b>Percent of Economy</b>	<b>3.0%</b>	<b>5.3%</b>	<b>6.5%</b>	<b>8.1%</b>

Source: Implan, 2000. Output, income and value added in \$ million. Note that employment levels reflect all jobs in their respective establishments; for example, 76 jobs in the Doctors and Dentists row includes professionals *and* staff employed at all Doctors and Dentists facilities.

The direct impacts only tell part of the story. The initial economic activity that is generated by the health care sector percolates through the community's economy as supporting sectors meet the demand for products and services required for health care (i.e., indirect effects). The income received by health care professionals, when spent locally, generates additional sales, an induced effect<sup>6</sup>.

The total impact of the health care sector on the Yazoo County economy was estimated at \$35.5 million, which included the \$27.5 million of direct effects plus \$8 million of indirect spending (Table 7). The 552 jobs that are closely linked to health care were augmented by an additional 124 jobs in other sectors, and resulted in \$19.1 million of labor income. The total impact on value added components, which includes labor income, was in excess of \$23.1 million. Detailed economic impact tables are presented in the appendices.

Table 7. Summary of Economic Impacts of Health Care on Yazoo County

	<b>Direct</b>	<b>Indirect</b>	<b>Total</b>
<b>Output</b>	27.5	8.0	35.5
<b>Jobs</b>	552	124	676
<b>Labor Income</b>	16.4	2.7	19.1
<b>Total Value Added</b>	18.2	5.0	23.2

Output, income and value added in \$ million.

## Summary

Consisting of hospitals, physicians, dentists, nursing homes, home health care agencies, pharmacies, and other professionals, the health care sector represents a substantial and important part of a rural community, in terms of both jobs and income. Sixty-five of Mississippi's 82 counties were classified as rural<sup>7</sup> in the 2000 Census. Statewide, rural health care provides more than 81,000 jobs and \$2.5 billion of income. Almost half of the jobs are attributable to Medicaid inflows, including 21,000 health care jobs. What makes these statistics remarkable is that more than 10% of the rural counties in Mississippi have no hospital, historically one of the largest segments of the health care sector.

Federal transfer payments represent an enormous part of health care spending. In 2002, nearly \$2 billion was injected into the State's economy in the form of Medicaid payments. This level of dependence upon the federal government for local assistance will likely continue, and is an indicator of the magnitude of individuals and families with limited income, and without adequate health insurance. Still more telling is the number of rural residents who have limited access to health care, income and insurance notwithstanding.

In the past decade health care costs have risen faster than the cost of living in Mississippi. In real terms, the health component of gross state product<sup>8</sup> in grew statewide by an average of almost 10% per year from 1990 through 2001. Some segments of the health care sector exhibited even greater growth. For example, real home health care spending grew by an average of 16% annually, and personal spending for hospital services, the largest segment, grew by more than 12.4% annually in real terms.

Health care is an important part of Yazoo County. It represented more than \$35 million of economic activity in 2000, of which 23% was attributable to indirect purchasing made by suppliers to the health care sector, and spending by health care professionals. Local health care supported more than 550 jobs directly, and another 124 jobs in supplier sectors, particularly trade, finance, real estate, and insurance, which together accounted for almost half of the indirect impacts – an indication of a great deal of interaction and industrial interdependence. The total impact on labor income was in excess of \$19 million, part of the \$23.1 million of total value added to the economy because of health care. Yazoo County is fortunate to be one of the 75 counties in Mississippi that has a hospital. Almost all of the patients discharged from King's Daughters Hospital in Yazoo City were residents of Yazoo County. Yet this represented only 29% of residents who sought hospital care; the balance of patients was discharged from hospitals in nearby counties. Spending potential for local health care was estimated in this report at more than \$41 million. Is expansion of local health care warranted? It is a worthy consideration for local leaders and a populace that is expected to experience relatively flat growth through 2010. Comprehensive health care planning is essential to develop the strongest health care sector that efficiently and effectively meets local needs. It is hoped that the information in this report will stimulate further community interest in local health care.

## Notes

1 - Medicaid is a program that pays for medical assistance for certain individuals and families with low incomes and resources. This program became law in 1965 and is jointly funded by the Federal and State governments (including the District of Columbia and the Territories) to assist States in providing medical long-term care assistance to people who meet certain eligibility criteria. Medicaid is the largest source of funding for medical and health-related services for people with limited income.

2 - Personal Health Care Expenditures represent a subset of National Health Expenditures. Personal health care expenditures measure spending for health care in the U.S., but do not include government administration, government public health activities, research, or capital investments.

3 - Medicare, which is administered by Centers for Medicare & Medicaid Services, is a health insurance program for people 65 years of age and older, some disabled people under 65 years of age, and people with End-Stage Renal Disease (permanent kidney failure treated with dialysis or a transplant). It is the nation's largest health insurance program.

4 - National Health Expenditures measure spending for health care in the U.S. by type of service delivered (hospital care, physician services, nursing home care, etc.) and source of funding for those services (private health insurance, Medicare, Medicaid, out-of-pocket spending, etc.).

5 - School-aged children are defined in this report as persons aged five to 18 years

6 - Indirect effects in this report are the sum of indirect and induced effects.

7 – The term “rural” is used in this report to represent non-metropolitan counties based on Rural-urban Continuum (Beale) Codes. Beale codes form a classification scheme by the Office of Management and Budget that distinguishes metropolitan counties by size and non-metropolitan counties by degree of urbanization and proximity to metro areas.

8 - Gross state product (GSP) measures the market value of goods and services produced by labor and property located within a state.

## References

Berry, L.S. and S. Spurlock. 2002. *Measuring the Impact of the Health Care Sector on a Local Economy: Walthall County, Mississippi*. Mississippi State University. Department of Agricultural Economics. Information Report 2002-013.

Blair, B. and M. Millea. 2003. *Economic Impacts of Federal Medicaid Expenditures on the State of Mississippi in 2002*. Mississippi Health Policy Research Center. Mississippi State University.

Bureau of Economic Analysis. Regional Economic Information Service.  
[www.bea.doc.gov/bea/regional/reis/default.htm](http://www.bea.doc.gov/bea/regional/reis/default.htm)

Centers for Medicare and Medicaid Services. [cms.hhs.gov/medicare/](http://cms.hhs.gov/medicare/),  
[cms.hhs.gov/statistics/nhe/state-estimates-residence/phc-percap-1998.asp](http://cms.hhs.gov/statistics/nhe/state-estimates-residence/phc-percap-1998.asp)

Cossmann, J.S. 2003. *Mississippi's Physician Labor Force: Current Status and Future Concerns*. Mississippi Health Policy Research Center. Mississippi State University.

CMMS-1. Centers for Medicare and Medicaid Services. Mississippi Personal Health Care Expenditures (PHCE), All Payers 1980-98.  
[cms.hhs.gov/statistics/nhe/state-estimates-provider/ms.asp](http://cms.hhs.gov/statistics/nhe/state-estimates-provider/ms.asp) (Figure 4)

Conway, 2003. *New Facilities in Mississippi – 1995*. Document #46624. Conway Document Archives. Conway Data, Inc. [www.conway.com/cdi/](http://www.conway.com/cdi/)

Conway, 2003a. Development Alliance Community Demographics Library. Community Demographics, DevelopmentAlliance.com and Conway Data. Inc.  
[site.conway.com/ez/GetEZState4.cfm?state=MS](http://site.conway.com/ez/GetEZState4.cfm?state=MS)

Implan. 2000. Implan Professional Version 2.0, 2000 Data for Mississippi. Minnesota Implan Group. Stillwater, MN.

Martin, A.B., L.S. Whittle, and K.R. Levit. 2001. *Trends in State Health Care Expenditures and Funding: 1980-1998*. Health Care Financing Review 22(4).

Martin, A., L. Whittle, K. Levit, G. Won, and L. Hinman. 2002. *Health Care Spending During 1991-1998: A Fifty State Review*. Health Affairs 21(4).

Medpac. June 2003. *Healthcare Spending and the Medicare Program: A Data Book*. Medicare Payment Advisory Commission, Washington D.C.

Mississippi Counties. [www.mscounties.com](http://www.mscounties.com)

Mississippi Development Authority. Community Profile – Yazoo City, Mississippi.

Olin, G. 2003. *National Health Care Expenses in the U.S. Community Population, 2000*. Statistical Brief #27. Agency for Healthcare Research and Quality, Rockville, MD. [www.meps.ahrq.gov/papers/st27/stat27.pdf](http://www.meps.ahrq.gov/papers/st27/stat27.pdf)

Report on Hospitals 2002. June 2003. Mississippi State Department of Health.

Resource Manual. July 2001. Yazoo County Health Network, Yazoo City, MS.

United Health Foundation. 2003. *America's Health: State Health Rankings – 2003 Edition: Lack of Health Insurance*. [www.unitedhealthfoundation.org](http://www.unitedhealthfoundation.org) Based on 2002 data from the Current Population Survey, March 2003, U.S. Bureau of Labor Statistics.

U.S. Census Bureau. *County & City Databook, 2000*. [www.census.gov/prod/www/ccdb.html](http://www.census.gov/prod/www/ccdb.html)

U.S. Census Bureau. *State & County QuickFacts*. [quickfacts.census.gov/qfd/states/28000.html](http://quickfacts.census.gov/qfd/states/28000.html)

U.S. Census Bureau. *Government Integrated Directory, 2000*.

Woods & Poole Economics. Washington D.C. *2003 State Profile – Mississippi*.

Yazoo County Convention & Visitors Bureau - [www.yazoo.org](http://www.yazoo.org)

## Appendix 1. Impact Tables

<b>IMPACT ON OUTPUT</b>				
<b>DESCRIPTION</b>	<b>DIRECT</b>	<b>INDIRECT</b>	<b>INDUCED</b>	<b>TOTAL</b>
M 03 Ranch Cattle	0	947	6,620	7,567
M 05 Other Livestock	0	581	15,943	16,524
M 06 Cotton	0	3	1,658	1,662
M 07 Food Grains	0	3	167	171
M 08 Feed Grains	0	33	1,332	1,365
M 09 Other Field Crops	0	10	1,813	1,823
M 10 Forestry, Fisheries, and Greenhouses	0	1,745	4,883	6,628
M 11 Mining	0	4,665	8,537	13,201
M 12 Construction	0	80,932	83,992	164,924
M 13 Food Processing	0	6,005	99,229	105,234
M 14 Wood and Paper Processing	0	12,193	15,543	27,735
M 15 Printing & Publishing	0	13,417	8,283	21,701
M 16 Chemicals	0	120,362	9,866	130,228
M 17 Petro, Rubber & Leather	0	224	61	284
M 18 Non-Metallic Mineral Products	0	0	1	1
M 20 Machinery, Electronics, Trans. Equip.	0	38,638	45,707	84,345
M 22 Transport & Communication	0	200,857	189,077	389,934
M 23 General Utilities	0	132,983	288,671	421,654
M 24 Wholesale & Retail Trade	0	287,274	1,723,905	2,011,178
M 25 Finance, Insurance & Real Estate	0	319,377	1,634,430	1,953,806
M 26 Business & Social Services	0	372,444	595,994	968,439
Doctors and Dentists	5,540,588	0	171,729	5,712,317
Nursing and Protective Care	8,531,875	0	129,202	8,661,077
Hospitals	9,400,000	1,013	282,225	9,683,238
Other Medical and Health Services	4,000,000	93,187	123,314	4,216,501
M 27 Business & Professional Organizations	0	276,571	63,783	340,354
M 28 State and Local Government	0	107,014	272,057	379,070
M 29 Federal Government	0	137,299	28,547	165,847
<b>Total</b>	<b>27,472,463</b>	<b>2,207,776</b>	<b>5,806,568</b>	<b>35,486,807</b>

**IMPACT ON EMPLOYMENT**

<b>DESCRIPTION</b>	<b>DIRECT</b>	<b>INDIRECT</b>	<b>INDUCED</b>	<b>TOTAL</b>
M 03 Ranch Cattle	0	0	0	0
M 05 Other Livestock	0	0	1	1
M 06 Cotton	0	0	0	0
M 07 Food Grains	0	0	0	0
M 08 Feed Grains	0	0	0	0
M 09 Other Field Crops	0	0	0	0
M 10 Forestry, Fisheries, and Greenhouses	0	0	0	0
M 11 Mining	0	0	0	0
M 12 Construction	0	2	1	3
M 13 Food Processing	0	0	1	1
M 14 Wood and Paper Processing	0	0	0	0
M 15 Printing & Publishing	0	0	0	0
M 16 Chemicals	0	0	0	0
M 17 Petro, Rubber & Leather	0	0	0	0
M 18 Non-Metallic Mineral Products	0	0	0	0
M 20 Machinery, Electronics, Trans. Equip.	0	0	0	0
M 22 Transport & Communication	0	1	1	3
M 23 General Utilities	0	1	1	2
M 24 Wholesale & Retail Trade	0	4	46	51
M 25 Finance, Insurance & Real Estate	0	3	4	8
M 26 Business & Social Services	0	9	19	28
Doctors and Dentists	76	0	2	78
Nursing and Protective Care	274	0	4	278
Hospitals	140	0	4	144
Other Medical and Health Services	62	1	2	65
M 27 Business & Professional Organizations	0	7	2	9
M 28 State and Local Government	0	0	1	1
M 29 Federal Government	0	2	0	2
<b>Total</b>	<b>552</b>	<b>32</b>	<b>92</b>	<b>677</b>

**IMPACT ON LABOR INCOME**

<b>DESCRIPTION</b>	<b>DIRECT</b>	<b>INDIRECT</b>	<b>INDUCED</b>	<b>TOTAL</b>
M 03 Ranch Cattle	0	136	951	1,087
M 05 Other Livestock	0	70	3,685	3,755
M 06 Cotton	0	1	354	355
M 07 Food Grains	0	1	43	44
M 08 Feed Grains	0	6	254	260
M 09 Other Field Crops	0	2	476	478
M 10 Forestry, Fisheries, and Greenhouses	0	615	2,029	2,643
M 11 Mining	0	778	1,423	2,201
M 12 Construction	0	47,085	34,108	81,193
M 13 Food Processing	0	757	15,127	15,884
M 14 Wood and Paper Processing	0	2,209	3,310	5,519
M 15 Printing & Publishing	0	3,919	2,633	6,552
M 16 Chemicals	0	27,980	2,362	30,342
M 17 Petro, Rubber & Leather	0	36	10	46
M 18 Non-Metallic Mineral Products	0	0	0	0
M 20 Machinery, Electronics, Trans. Eqpt.	0	5,172	6,137	11,309
M 22 Transport & Communication	0	48,760	47,361	96,122
M 23 General Utilities	0	20,462	43,809	64,271
M 24 Wholesale & Retail Trade	0	116,433	779,540	895,973
M 25 Finance, Insurance & Real Estate	0	58,164	109,762	167,926
M 26 Business & Social Services	0	177,506	270,241	447,747
Doctors and Dentists	3,026,407	0	93,802	3,120,210
Nursing and Protective Care	5,927,769	0	89,767	6,017,536
Hospitals	5,535,593	597	166,201	5,702,390
Other Medical and Health Services	1,996,829	46,519	61,559	2,104,908
M 27 Business & Professional Organizations	0	150,143	32,188	182,331
M 28 State and Local Government	0	17,903	44,803	62,706
M 29 Federal Government	0	107,591	22,370	129,961
<b>Total</b>	<b>16,486,598</b>	<b>832,845</b>	<b>1,834,305</b>	<b>19,153,748</b>

**IMPACT ON TOTAL VALUE ADDED**

<b>DESCRIPTION</b>	<b>DIRECT</b>	<b>INDIRECT</b>	<b>INDUCED</b>	<b>TOTAL</b>
M 03 Ranch Cattle	0	168	1,174	1,342
M 05 Other Livestock	0	97	5,144	5,241
M 06 Cotton	0	1	582	583
M 07 Food Grains	0	2	91	93
M 08 Feed Grains	0	12	478	490
M 09 Other Field Crops	0	3	863	867
M 10 Forestry, Fisheries, and Greenhouses	0	984	2,813	3,797
M 11 Mining	0	2,144	3,924	6,069
M 12 Construction	0	51,510	37,878	89,388
M 13 Food Processing	0	915	18,214	19,129
M 14 Wood and Paper Processing	0	3,402	4,556	7,959
M 15 Printing & Publishing	0	4,976	3,385	8,360
M 16 Chemicals	0	42,178	3,527	45,705
M 17 Petro, Rubber & Leather	0	51	14	65
M 18 Non-Metallic Mineral Products	0	0	0	0
M 20 Machinery, Electronics, Trans. Equip.	0	6,772	8,037	14,809
M 22 Transport & Communication	0	94,298	91,595	185,893
M 23 General Utilities	0	68,131	158,759	226,890
M 24 Wholesale & Retail Trade	0	188,531	1,242,729	1,431,259
M 25 Finance, Insurance & Real Estate	0	218,073	1,188,962	1,407,035
M 26 Business & Social Services	0	212,386	319,553	531,940
Doctors and Dentists	3,484,568	0	108,003	3,592,571
Nursing and Protective Care	6,358,677	0	96,292	6,454,969
Hospitals	5,892,149	635	176,906	6,069,690
Other Medical and Health Services	2,456,118	57,219	75,719	2,589,056
M 27 Business & Professional Organizations	0	161,522	34,003	195,526
M 28 State and Local Government	0	39,108	99,549	138,657
M 29 Federal Government	0	96,374	20,038	116,412
<b>Total</b>	<b>18,191,511</b>	<b>1,249,495</b>	<b>3,702,788</b>	<b>23,143,794</b>

## Appendix 2. A Brief Introduction to Input-Output Analysis

Public policy makers, elected officials, and decision makers at the local level frequently assess the priority of potential and ongoing projects. These projects often take the form of either a new industry locating in an area, or the expansion of an existing industry. In either case there is often an expectation that a new project will expand the labor market through increased demand for employment and local services. As new jobs are added, total income increases and local unemployment decreases. Demographic aspects of the economy, such as population and commuting patterns also change. New businesses are created to support expansion and provide locally available inputs to production. Increased income stimulates the growth of retail and service sectors. These changes to the economic and fiscal landscape of a local area, or region have implications on further economic development, as well as on tax policy, and the provision of public services, such as education and public safety.

Input-output analysis was developed in the 1930's by Wasily Leontief, who won the Nobel Prize in 1973 for his contributions to economics. Since then it has become one of the best-known, and most widely used techniques for assessing regional economic impacts. It excels at analyzing the economic relationships or linkages among major sectors of the economy. Input-output analysis is based on the fact that an initial change (increase or decrease in sales) in one sector of the economy can affect other sectors of the economy.

The initial change is often referred to as an impact, or a direct effect. The direct effect is measured in terms of sales to final demand, and it is the economic variable that drives an input-output model. The initial impact requires increased production by secondary industries, the suppliers of goods and services to the primary industry. Increased production by secondary industries is referred to collectively as indirect effects. Additionally, induced effects arise as a result of spending of the new income by households. Through careful examination of the relationships among industries themselves and between industries and households one can estimate the total effect, which is the sum of the direct, indirect, and induced effects.

One widely used input-output model is Implan, a commercial software produced by the Minnesota Implan Group, Inc. at Stillwater, Minnesota. Its popularity is due to its geographic and model formulation flexibility, and the extensive economic information that it provides. The Implan system, developed originally for use by the U.S. Forest Service, has been in use since 1979 and is capable of developing input-output models for any county, state, or group of counties or states in the United States.