

**Measuring the Impact of the Health Care Sector on a Local Economy:  
Montgomery County, Mississippi**

Report Prepared by:

L. Suzanne Berry, Agricultural Economics Research Associate  
Lynn Reinschmiedt, Agricultural Economist  
Stan Spurlock, Agricultural Economist  
Mississippi State University Department of Agricultural Economics

Joe Schmidt, Leader & Specialist, Community Resource Development  
Mississippi State University Extension Service-Community Resource Development

Report Prepared for:

Mississippi State Department of Health  
Mississippi Office of Rural Health, David Lightwine, Regional Director

October 2001

# Measuring the Impact of the Health Care Sector on a Local Economy:

## Montgomery County, Mississippi

### Table of Contents

	Page Number
Introduction.....	1
Health Care Expenditures in Mississippi.....	2
Potential Demand for Health Care Services.....	5
Demographics.....	8
Economic Indicators.....	8
Health Care Availability and Utilization.....	12
Hospital Utilization.....	12
Discharge Diagnoses.....	15
Health Care Sector Economic Impacts.....	18
Summary and Conclusions.....	21
Appendix A-Footnotes for Table 4.....	23
Appendix B-Glossary of Terms.....	24
References.....	25

### Tables

1	Gross State Product (GSP) and Health Services Component of GSP, Mississippi, 1980-1999.....	3
2	Personal Health Care Spending, Mississippi, Selected Years.....	4
3	Personal Health Care Spending per Capita, Mississippi, Selected Years.....	5
4	Estimated Potential Local Spending for Health Care in Montgomery County....	7
5	Selected Demographic Data for Montgomery County and Mississippi.....	9
6	Selected Economic Data for Montgomery County and Mississippi.....	10
7	Employment by Industry in Montgomery County and Mississippi, 1999.....	11
8	Personal Income Data for Montgomery County and Mississippi, 1999.....	12
9	Availability of Selected Medical Providers in Montgomery County.....	13
10	Hospital Discharges of Montgomery County Residents by Hospital.....	14
11	Discharges from Montgomery County Hospitals by Patient's County of Residence, 2000.....	15
12	Discharge Diagnoses of Montgomery County Residents from Hospitals in Mississippi, 2000.....	16
13	Health Status and Health Indicators for Montgomery County and the State.....	17
14	Death Rates from Selected Causes for Montgomery County.....	17
15	Estimated Contribution of the Local Hospital to the Montgomery County Economy.....	19
16	Estimated Contribution of the Local Health Care Sector to the Montgomery County Economy.....	20

# **Measuring the Impact of the Health Sector on a Local Economy: Montgomery County, Mississippi**

## **Introduction**

Communities often overlook the economic influence of the health care sector on their economies. Hospitals, nursing homes, physicians, dentists, pharmacies, home health agencies and ambulance services are just a few of the providers that make up the health care sector. In a rural community, health care providers generally represent a proportionally larger share of the local economy than it does in urban areas, with the rural hospital typically being one of the largest employers in the area.

The health care industry is changing not only in urban areas but also in rural areas due to policy- and market-driven forces (Ormand et al.). With the passing of the Balanced Budget Act of 1997, Medicare and Medicaid payments to small rural hospitals are often inadequate to maintain the financial health of those institutions. The higher proportion of an elderly population with chronic conditions in rural areas makes it difficult for a variety of health care providers to achieve a patient mix that is needed to offset the costs of high use among a few. This situation could trigger a reduction in services, the decision to not serve certain types of patients, or the closing of a particular health care entity.

Closure of a rural hospital, for example, can represent a serious threat not only to the health but also to the economic well-being of the community. The availability of quality health care is critical to long-term economic development in rural communities (Doeksen et al.). Employers looking for a place to establish new businesses choose locations that have good education and health care systems. Attracting retirees to a community is also

more successful when there are local health care providers available to meet their demand for services.

The demographic and socioeconomic composition found in rural communities can influence the demand placed on the health care delivery system. The types of services demanded and those supplied may vary between communities based on demographic factors and the availability of quality health care providers.

This report was developed by a team of economists working on a project called Rural Health Works in Mississippi. The following sections will address selected demographics and the health statistics of the county population along with the economic importance of the health care sector to the Montgomery County economy.

### **Health Care Expenditures in Mississippi**

Consistent with national trends, data in Table 1 show that health care expenditures in Mississippi have more than doubled during the past two decades, growing from \$1.4 billion in 1980 to \$3.6 billion in 1999. Of particular importance is the fact that health care services represent a growing component of the state's economy as well. In 1980, health care expenditures accounted for only 3.23% of Mississippi's gross state product, but by 1999 this figure had increased to 5.60%. This represents an average annual growth rate (in real dollars) for health care services of about 5% over the twenty-year period, which is greater than the average annual growth rate of about 2% for the total gross state product over the same period.

As shown in Table 2, growth in personal health care spending in Mississippi averages 5.31% from 1980 to 1998, increasing from nearly \$3.5 billion in 1980 to \$8.8 billion in 1998 (in real dollars). The major components of personal health care spending include hospital care,

**Table 1. Gross State Product (GSP) and Health Services Component of GSP, Mississippi, 1980-1999**

Year	Total Gross State Product	Health Services	Total Gross State Product	Health Services	Health Services as a Percent of GSP
	(millions of current \$)		(millions of 1999 \$ <sup>1</sup> )		(%)
1980	21,532	696	43,534	1,407	3.23
1981	24,203	800	44,359	1,466	3.31
1982	24,857	902	42,914	1,557	3.63
1983	26,190	966	43,808	1,616	3.69
1984	29,246	1,051	46,895	1,685	3.59
1985	30,669	1,105	47,486	1,711	3.60
1986	31,438	1,186	47,788	1,803	3.77
1987	33,844	1,352	49,634	1,983	3.99
1988	36,022	1,468	50,729	2,067	4.08
1989	37,657	1,618	50,594	2,174	4.30
1990	39,175	1,829	49,935	2,331	4.67
1991	41,311	2,051	50,532	2,509	4.96
1992	44,222	2,304	52,512	2,736	5.21
1993	47,384	2,412	54,631	2,781	5.09
1994	51,358	2,685	57,734	3,018	5.23
1995	54,562	2,942	59,646	3,216	5.39
1996	56,575	3,267	60,073	3,469	5.77
1997	58,743	3,483	60,976	3,615	5.93
1998	61,417	3,547	62,773	3,625	5.78
1999	64,286	3,603	64,286	3,603	5.60
Average Annual Percentage Growth	5.93	9.04	2.07	5.07	

<sup>1</sup> The CPI-U (1982-84=100) for the U.S. was adjusted to make 1999 the base year and this index was used to deflate nominal dollar values.

Source: Compiled from Bureau of Economic Analysis, Regional Accounts Data.

**Table 2. Personal Health Care Spending, Mississippi, Selected Years, 1980-1998**

Health Care Category	Average Annual Percentage Growth (%)	1980	1985	1990	1995	1998
		(millions of 1998 \$ <sup>1</sup> )				
Hospital Care	4.59	1,715	2,163	2,727	3,709	3,848
Physician & Other Professional Services	6.31	736	1,029	1,462	1,874	2,212
Prescription Drugs	7.08	281	362	510	686	962
Nursing Home Care	5.43	265	291	387	557	687
Dental Services	3.93	158	180	216	281	317
Home Health Care	10.90	45	85	178	348	293
Nonprescription Drugs and Other Medical Nondurables	2.38	170	212	236	249	260
Other Personal Health Care	4.91	89	86	112	173	211
Vision Products & Other Medical Durables	4.31	44	52	70	87	93
<b>Total Spending</b>	<b>5.31</b>	<b>3,499</b>	<b>4,458</b>	<b>5,898</b>	<b>7,965</b>	<b>8,882</b>

<sup>1</sup> The CPI-U (1982-84=100) for the U.S. was adjusted to make 1998 the base year and this index was used to deflate nominal dollar values.

Source: Compiled from data obtained from the Health Care Financing Administration

physician and other professionals, prescription drugs and home health are the major components of personal health care spending. The data in Table 2 show that more money was spent on home health care than any other health category, averaging 10.9% growth during the period.

Prescription drugs and physician and other professional services ranked second and third with annual growth rates of 7.08% and 6.51% respectively. Table 3 contains similar data for the same time period; however, it is per capita expenditures on health care. The trends in growth of the health care sector and expenditures are similar and there is no evidence that these trends will change in the future, given advances in medical technology and the increasing life span of the population.

**Table 3. Personal Health Spending Per Capita, Mississippi, Selected Years, 1980-1998**

Health Care Category	Average Annual Percentage Growth (%)	1980	1985	1990	1995	1998
				(1998 \$ <sup>1</sup> )		
Hospital Care	4.08	680	836	1,058	1,379	1,398
Physician & Other Professional Services	5.79	292	397	567	697	804
Prescription Drugs	6.56	111	140	198	255	350
Nursing Home Care	4.92	105	112	150	207	250
Dental Services	3.43	63	70	84	105	115
Home Health Care	10.36	18	33	69	129	106
Nonprescription Drugs and Other Medical Nondurables	1.89	67	82	91	93	94
Other Personal Health Care	4.40	35	33	44	64	77
Vision Products & Other Medical Durables	3.80	17	20	27	32	34
<b>Total Spending</b>	<b>4.80</b>	<b>1,388</b>	<b>1,723</b>	<b>2,289</b>	<b>2,961</b>	<b>3,228</b>

<sup>1</sup> The CPI-U (1982-84=100) for the U.S. was adjusted to make 1998 the base year and this index was used to deflate nominal dollar values.

Source: Compiled from data obtained from the Health Care Financing Administration

### Potential Demand for Health Care

People require different types of health care equipment (goods) and services, some of which may not be available locally. The amount of spending on different types of health care services retained within a local economy depends on a diverse set of factors. The size and types of health care businesses located within the community will have an impact on the welfare of the residents as well as the local economy. For purposes of this study, a business that produces or sells health care goods or services is defined as being a local provider if it is located inside the county. In general, people would prefer to make their purchases from local providers due to savings in travel expenses and time. However, residents will seek businesses located outside the

county if there are no local providers for particular type of service. Therefore, it is in the best interest of residents as well as the local economy to maintain a viable health care sector within the county.

As shown previously in Table 3, the average annual per capita expenditure on health care in Mississippi was \$3,228 in 1998. If Montgomery County's 12,189 residents (U.S. Census Bureau, 2000) spent this average amount, about \$39 million would have been spent for health care services in the county. The first column in Table 4 present Mississippi per capita expenditures by major health care categories in 1998. The second column contains estimated shares of each type of health care service that local businesses could provide if these businesses existed. Explanations of these estimated percentages are provided in Appendix A. The third column is the product of the first column multiplied by the second column. Multiplying the numbers in the local spending per capita column by 12,189 provides estimates of potential local (health care) in Montgomery County. The total spending potential for this county is estimated to be more than \$28 million per year. The actual amount of spending could be greater than or less than this value depending on the type, size and quality of providers located in Montgomery County.

By comparing the potential local expenditures with actual local spending, the opportunity to expand local health care services may be assessed. For example, existing hospitals will generate a certain amount of revenue every year. If this figure is below the potential value, there may be room to expand hospital services and retain more dollars within the local economy. Knowledge of where residents actually acquire various health care services will also be useful in determining whether the county has potential for growth. If residents are leaving the county in search of adequate care, then there may be a potential to expand locally. However, any business

must have a reliable consumer base of a certain size in order to remain viable. The size of the consumer base is dependent on population demographics within the county and possibly in nearby counties.

County-level data may help identify important aspects of the local economy and potential impacts from the health care sector. The following sections present various types of information for Montgomery County and the state.

**Table 4. Estimated Potential Local Spending for Health Care in Montgomery County**

Health Care Category	Mississippi Spending Per Capita	Percent Local Spending <sup>1</sup>	Local Spending per Capita	Potential Local Spending
Hospital Care	\$1,398	61% <sup>2</sup>	\$853	\$10,397,217
Physician & Other Professional Services	804	75% <sup>3</sup>	603	\$7,349,967
Prescription Drugs	350	75% <sup>3</sup>	263	\$3,205,707
Nursing Home Care	250	100% <sup>5</sup>	250	\$3,047,250
Dental Services	115	75% <sup>3</sup>	86	\$1,048,254
Home Health Care	106	100% <sup>4</sup>	106	\$1,292,034
Nonprescription Drugs and Other Medical Nondurables	94	75% <sup>3</sup>	71	\$865,419
Other Personal Health Care	77	75% <sup>3</sup>	58	\$706,962
Vision Products & Other Medical Durables	34	75% <sup>3</sup>	26	\$316,914
<b>Total Spending</b>	<b>\$3,228</b>	<b>72%</b>	<b>\$2,316</b>	<b>\$28,229,724</b>

<sup>1</sup>Footnotes explaining " Percent Local Spending" for each category are presented in Appendix A.

## **Demographics**

Population information detailing historical growth and future projections, population density, current age distribution, and household information for Montgomery County and Mississippi are presented in Table 5. Between 1990 and 2000, Mississippi's population increased 10.5 percent while Montgomery County experienced a decrease of 1.6 percent. Montgomery County has about one-half the population density as Mississippi, indicating its rural nature. The county's older residents represent a larger proportion of its total population than in the state as a whole. Population in Montgomery County is projected to increase at a much slower rate than the state. The number of residents in the 65 and over category is expected to increase by 35% in the county and by 73.3% in the state by the year 2025.

According to the 2000 Census, the population of Montgomery County was 54.3% white and 45.7% non-white. These numbers show a significant deviation from those of the state. The percentage of high school graduates in the county are very close to that of the state while the percentage of college graduates is higher in the state than in the county.

## **Economic Indicators**

Data presented in Table 6 give general observations of economic activity in Montgomery County and Mississippi. The county's annual personal income is almost \$200 million, providing slightly less than \$16,000 of annual income per person (about \$2,000 less than the state average). The median household income in Montgomery County is \$21,719, about 25 percent lower than the state income value and the county's poverty rate is slightly higher than the state's (Table 5).

**Table 5. Selected Demographic Data for Montgomery County and Mississippi**

Item	County	State
Population, 2000	12,189	2,844,658
Population, percent change, 1990 to 2000	-1.6%	10.5%
Persons per square mile, 2000	29.9	60.6
Populations by age, percent of total, 2000		
Under 20 years	29.9%	30.7%
20 to 64 years	53.4%	57.3%
65 years and over	16.7%	12.0%
Population projection, percent change to 2025		
Total population	4.9%	18.2%
65 years and over	35.0%	73.3%
Race:		
White	54.3%	61.4%
Non-white	45.7%	38.6%
Persons over 25 graduating from high school	35.8%	34.8%
Persons over 25 graduating from college	6.0%	8.0%
Households, 2000	4,690	1,046,434
Median Household money income, 1997	\$21,719	\$28,527
Persons below poverty, % 1997	22.4%	18.1%

Sources: US Census Bureau, Profile of General Demographic Characteristics: 2000;  
US Census Bureau, MapStats; Woods and Poole Economics, Inc.

The civilian labor force in the county is more than 5,400 with slightly more than 900 people employed by governments. All types of local enterprises generate 5,352 jobs. Persons employed in non-farm, private sector jobs total about 3,000. This indicator has increased by over 20 percent since 1990, but is lower than the state rate. Average earnings per job are almost \$17,000 per year compared to about \$23,400 for the state.

**Table 6. Selected Economic Data for Montgomery County and Mississippi**

Item	County	State
Personal Income, 1997 (\$1,000)	\$ 196,614	\$ 49,437,285
Personal Income per capita, 1997	\$ 15,787	\$ 18,098
Civilian Labor Force, 1999	5,446	1,269,955
Unemployment, 1999	326	64,666
Full-time and part-time employment by place of work, 1997	5,352	1,425,691
Employment in government, 1997	907	253,888
Local government employment, full-time equivalent, 1997	568	122,256
Private nonfarm employment, 1998	3,057	937,023
Private nonfarm employment, percent change 1990 to 1998	22.2%	29.6%
Average earnings per job, 1997	\$ 16,927	\$ 23,388
Private nonfarm establishments with paid employees, 1998	249	59,771
Private nonfarm establishments with less than 20 employees, 1998	221	51,949
Non-employer establishments, 1997	591	121,668
Retail sales, 1997 (\$1,000)	\$ 92,299	\$ 10,124,822
Retail sales per capita, 1997	\$ 5,068	\$ 7,605

Sources: Profiles of General Demographic Characteristics, 2000; Woods and Poole Economics, Inc.; US Census Bureau MapStats and Quick Facts

There are 249 private non-farm establishments, but 221 of these have less than 20 employees. There are almost 600 businesses, which do not have any paid employees. Retail sales in the county were about \$92 million in 1997. This is about \$5,000 per person, but is about \$2,500 below the state average.

Table 7 shows types of employment in Montgomery County and the state. Services, retail trade, and manufacturing were the leading employment sectors in 1999. Most health care

**Table 7. Employment by Industry in Montgomery County and Mississippi, 1999**

Industry	Percent of		Percent of	
	County	County	State	State
Farm employment	419	8.1%	55,203	3.7%
Ag. services, forestry, fishing	(D)	NA	19,256	1.3%
Mining	(D)	NA	8,101	0.5%
Construction	284	5.5%	84,954	5.7%
Manufacturing	845	16.3%	250,824	16.8%
Transportation/public utilities	194	3.7%	67,269	4.5%
Wholesale trade	159	3.1%	51,052	3.4%
Retail trade	987	19.1%	244,023	16.3%
Finance, insurance, real estate	196	3.8%	76,283	5.1%
Services	1,093	21.1%	371,730	24.9%
Government				
Federal Civilian	35	0.7%	26,033	1.7%
Federal Military	83	1.6%	35,129	2.4%
State	30	0.6%	62,085	4.2%
Local	718	13.9%	141,499	9.5%
<b>Total employment</b>	<b>5,174</b>	<b>100.0%</b>	<b>1,493,441</b>	<b>100.0%</b>

(D) Not shown to avoid disclosure of confidential information, but the estimates for this item is included in the totals

NA Not available

Source: Bureau of Economic Analysis, Regional Accounts Data

jobs are in the services sector, while sales of drugs and other medical goods are in the retail trade sector.

A more detailed view of personal income sources is presented in Table 8. The data indicate that 56.5 percent of total personal income came from total earnings (adjusted to place of residence) with transfer payments contributing 30.4 percent. Other data show the distribution of earnings that originate in employment within the county. Finally, transfer payments were primarily made for medical purposes (42.5%).

**Table 8. Personal Income Sources for Montgomery County and Mississippi, 1999**

Source	County Total	County Percent	State Percent
	(\$1,000)		
Total Personal Income <sup>1</sup>	\$212,892		
Earnings by Place of Residence <sup>2</sup>	\$120,374	56.5%	64.9%
Transfer Payments	\$59,174	30.4%	18.6%
Total Earnings <sup>3</sup>	\$93,921		
Wages and Salaries	\$63,417	67.5%	78.1%
Proprietors' Income	\$21,944	23.3%	11.7%
Other Labor Income	\$8,560	9.1%	10.3%
Transfer Payments	\$59,174		
Retirement and Disability	\$20,648	34.9%	37.4%
Medical Payments	\$25,121	42.5%	38.6%
Other	\$13,380	22.6%	23.9%

<sup>1</sup> Definitions are in Appendix B, Glossary of Terms

<sup>2</sup> Total earnings adjusted to reflect earnings by place of residence.

<sup>3</sup> Total earnings by place of work.

Source: Bureau of Economic Analysis (1999 Data)

### Health Care Availability and Utilization

Health care resources are summarized in Table 9. These statistics demonstrate the availability of physicians and other selected health care services in the county. The rate of the number of licensed and staffed hospital and nursing home beds in Montgomery County was more than the state's rates for these same categories. However, the county's rate for most of the selected health care practitioners was less than the state's rates.

#### Hospital Utilization

Fifty-five of Mississippi's eighty-two counties have only one hospital and 9 counties do not have any hospitals. The other eighteen counties have two or more hospitals. Montgomery County has two hospitals located approximately ten miles apart. There are five counties that border Montgomery; four of these have one hospital each and one county has no hospital.

**Table 9. Availability of Selected Medical Providers in Montgomery County**

Provider	County Number	County Rate/1000	State Rate/1000
Hospitals (2000)	2		
Licensed Hospital Beds	68	5.6	4.2
Staffed Hospital Beds	54	4.4	3.8
Nursing Home (2001) Beds	1 120	9.8	6.2
Health Care Practitioners: (2001)			
M.D.s	11	0.9	2.0
Family Practice	7	0.6	0.2
Internal Medicine	2	0.2	0.3
Other	2	0.2	1.4
Dentists (2001)	3	0.2	0.4
Nurse Practitioners	1	0.1	0.5
Emergency Medical Personnel (2001)			
EMT Basics & Intermediates	13	1.1	0.6
Paramedics	8	0.7	0.4

Note: Rate per 1000 based on 2000 Census Bureau county population data.

Sources: Mississippi State Department of Health, Division of Health Facilities Licensure & Certification; Mississippi State Department of Health, Emergency Medical Services Division; Mississippi State Board of Medical Licensure; Mississippi State Board of Nursing; Mississippi State Board of Dental Examiners; Mississippi Medical Association

Table 10 contains data showing where Montgomery County residents go to receive hospital care (out-flow). In the county, Kilmichael Hospital operates 19 licensed beds and Tyler Holmes Memorial Hospital in Winona operates 49 licensed beds. About 50 percent of county residents obtain some form of hospital care outside the county. The most common health problems contributing to patient out-flow were circulatory, respiratory, and digestive system

**Table 10. Hospital Discharges of Montgomery County Residents from Mississippi Hospitals**

Name of Hospital	County	Number	% of Total
<b>Tyler Holmes Memorial Hospital</b>	<b>Montgomery</b>	<b>132</b>	<b>31.81</b>

<b>Kilmichael Hospital</b>	<b>Montgomery</b>	<b>82</b>	<b>19.76</b>
Grenada Lake Medical Center	Grenada	70	16.87
Greenwood Leflore	Leflore	51	12.29
University Medical Center	Hinds	21	5.06
MS Baptist Medical Center	Hinds	19	4.58
Baptist Memorial-No.MS	Lafayette	10	2.41
St. Dominic Hospital	Hinds	7	1.69
Oktibbeha Co. Hospital	Oktibbeha	5	1.20
Webster Health Services	Webster	5	1.20
North MS Medical Center	Lee	4	0.96
Monfort Jones Memorial Hospital	Attala	2	0.48
Rankin Medical Center	Rankin	2	0.48
River Oaks Hospital	Rankin	2	0.48
Baptist Memorial-De Soto	De Soto	1	0.24
Central MS Medical Center	Hinds	1	0.24
Leake Memorial Hospital	Leake	1	0.24
<b>TOTAL</b>		<b>415</b>	<b>99.99</b>

Source: Mississippi Office of Rural Health,  
Patient Origin Study conducted during 4 two-  
week periods between Jan-October 2000

disorders. In addition, most women are forced to seek hospital care outside the county for pregnancy and childbirth because of the lack of these types of services within the county.

Data in Table 11 show the county of residence of patients receiving care from the two local hospitals (in-flow). Kilmichael Hospital had almost 85 percent of its patients from Montgomery County. Tyler Holmes Memorial Hospital had over 70 percent of patients from Montgomery County and about 25 percent from neighboring Carroll County.

**Table 11. Discharges by Hospital by County of Residence**

<b>Kilmichael Hospital</b>	<b>Frequency</b>	<b>Percent</b>
Montgomery	82	84.5
Choctaw	7	7.2

Attala	3	3.1
Webster	2	2.1
Carroll	1	1.0
Grenada	1	1.0
Lawrence	1	1.0
<b>Totals</b>	<b>97</b>	<b>99.9</b>

<b>Tyler Holmes Memorial Hosp.</b>	<b>Frequency</b>	<b>Percent</b>
Montgomery	132	72.5
Carroll	45	24.7
Choctaw	2	1.1
Attala	1	0.5
Grenada	1	0.5
Leflore	1	0.5
<b>Totals</b>	<b>182</b>	<b>99.8</b>

Source: Mississippi Office of Rural Health, Patient Origin Study conducted during 4 two-week periods between Jan-October 2000

### Discharge Diagnoses

Based on data received directly from Tyler Holmes Memorial Hospital, the four most common diagnoses of discharged patients are pneumonia, congestive heart failure, non-infectious gastroenteritis, and influenza with respiratory manifestations.

Data obtained from the Mississippi State Office of Rural Health show in Table 12 that 18.27% of all discharges of Montgomery County residents from hospitals around the state were for circulatory problems, which includes all types of heart diseases (hypertension, heart attacks, arteriosclerosis, etc.) and cerebrovascular diseases (including “stroke”). The second leading cause of hospitalizations for residents was for respiratory problems which includes pneumonia,

**Table 12. Discharge Diagnoses of Montgomery County Residents From Hospitals in Mississippi**

Disease Group	Number	Percent
Circulatory	76	18.27
Respiratory	67	16.11

Digestive	40	9.62
Pregnancy, childbirth	34	8.17
Injury/Poisoning	26	6.25
Genitourinary	26	6.25
Live newborns	23	5.53
Musculoskeletal	21	5.05
Endocrine, Immune systems	19	4.57
All other categories	84	20.18
<b>Totals</b>	<b>416</b>	<b>100.00</b>

Source: Mississippi Office of Rural Health, Patient Origin Study conducted during 4 two-week periods between Jan-October 2000

emphysema and other acute and chronic diseases of the lungs. Gastrointestinal diseases and pregnancy and childbirth were the third and fourth most common reasons for hospitalizations among Montgomery County residents.

Information concerning hospital admissions, Medicare and Medicaid enrollment, infant mortality, and birth to teens are detailed in Table 13. Combined, both Montgomery County hospitals had 2,000 discharges in 1999. The percent of the county's residents enrolled in Medicare was higher than the state's percentage. A similar trend was observed for Medicaid statistics. These values probably reflect the relatively higher population of aged residents in Montgomery County than in the state. The rates of infant mortality and births to teenagers were similar to the state's rates.

**Table 13. Health Status and Health Indicators for Montgomery County and the State**

Status or Indicator <sup>1</sup>	County Number	County Percent/Rate	State Percent/Rate <sup>4</sup>
Hospital Admissions (1999)	2000	16.41%	N/A
Medicare Enrollment (1998)			

Aged (65 and over)	2090	17.2 %	11.5 %
Disabled (Under 65)	430	3.5 %	2.9 %
Medicaid Enrollment (1998)			
Medicaid Eligible	3101	26.0 %	17.9 %
Medicaid Served	1699	13.9 %	11.9 %
Infant Mortality (1995-1999) <sup>2</sup>	6	21.4	20.9
Births to Teens (1995-1999) <sup>3</sup>	43	45.6	45.2

<sup>1</sup> Definitions are in Appendix B, Glossary of Terms

<sup>2</sup> Number represents total resident live births and deaths for 1999; county rate displayed as average annual rate per 1,000 live births

<sup>3</sup> Number represents total resident live births to mothers age 12-19 for 1999; county rate displayed as births per 1,000 females (age 12-19)

<sup>4</sup> State rates are age-adjusted to year 2000 standard; per 100,000 population

SOURCES: Mississippi State Department of Health, Vital Statistics; Department of Health and Human Services, Division of Medicaid; Health Care Financing Administration; Health Resources and Services Administration, Community Health Status Report (July 2000)  
Mississippi State Department of Health, Division of Health Facilities Licensure and Certification

Table 14 contains the ten most common causes of death among residents in Montgomery County in 1999. Cardiovascular disease, cancer, auto accidents and lung diseases are the top four. This is consistent with state rates for the same categories of death.

**Table 14. Death Rates from Selected Causes for Montgomery County**

Causes of Death	Montgomery County		State of Mississippi	
	Number <sup>1</sup>	Rate <sup>2</sup>	Number <sup>1</sup>	Rate <sup>2</sup>
Cardiovascular Diseases *	71	572.8	11,742	424.1
All Types of Cancer	29	234.0	6,131	221.4

Accidents (all types)	10	80.7	1,639	59.2
Chronic Lung Diseases	8	64.5	1,329	48.0
Automobile Accidents	8	64.5	954	34.4
Diabetes Mellitus	3	24.2	589	21.3
Kidney Diseases	3	24.2	620	22.4
Pneumonia & Influenza	2	16.1	796	28.8
Liver Diseases	1	8.1	248	9.0
Suicide	1	8.1	305	11.0
Homicide	1	8.1	312	11.3

<sup>1</sup> Numbers are total deaths per 1,000 population

<sup>2</sup> Rates are per 100,000 population

\* Includes hypertension and all other heart conditions, cerebrovascular diseases and atherosclerosis  
Source: Mississippi State Department of Health, Vital Statistics, 1999

### **Health Care Sector Economic Impacts**

Business generates direct impacts on the local economy by providing employment for residents (and possibly non-residents) and income to the employees. In addition, these businesses may purchase goods and services from other businesses and may provide tax revenue to local, state, and federal governments. Business profits and employee income are then spent in several different ways. Some spending is for goods and services provided by other local businesses, and some spending is “leaked” out of the county. These “indirect” impacts generated by a sector may be estimated with the help of an input-output model. Such a model was used to estimate the direct and indirect impacts of the health care sector for Montgomery County.

Table 15 reports the estimated impact of the local hospitals on Montgomery County’s economy. Based on 1997 IMPLAN model data and primary data gathered from 2000 financial reports, the county’s hospitals provide 178 jobs and these jobs create the need for 60 other local jobs. Thus, Montgomery County hospitals generate an impact of slightly over 4% of the county’s employment. Likewise, the hospitals create about \$4.2 million in personal income

directly, about \$1.0 million indirectly, for a total of about 5% of the county's income. Indirect business taxes in the county of about \$135 thousand are generated by the existing hospitals as they create secondary economic activity.

**Table 15. Estimated Contribution of Local Hospitals to the Montgomery County Economy**

Category	Unit of Measure	Initial Impact of Hospitals	Additional Impact of Hospitals	Total Impact of Hospitals	County Total	Hospitals Percent of Total
Employment	Jobs	178	60	238	5,500	4.3%
Personal Income	Million \$	4.2	1.0	5.2	101.3	5.2%
Indirect Business Taxes <sup>1</sup>	Thousand \$	0.0	134.7	134.7	8,818.0	1.5%

<sup>1</sup>Indirect business taxes include: sales taxes, property taxes, excise taxes, and other income taxes.

Source: Department of Agricultural Economics, Mississippi State University.  
Compiled from 1997 IMPLAN model supplemented with data obtained from the Mississippi Hospital Association.

In Table 16, three additional components of the health care sector (doctors and dentists; nursing and protective care; other medical and health services) have been combined with the figures from the county's hospitals (see Table 15). The additional components added together employ 286 people resulting in a total of 464 people employed by the entire health care sector. Total payroll for the entire sector is estimated to be \$11.4 million. The existing health care sector has a significant impact on employment and income throughout the other industries in Montgomery County. The total employment impact of Montgomery County's health care sector is an estimated 599 jobs that result in a total income of \$13.7 million. Indirect business taxes attributed to the health care sector amount to more than 5% of the total in the county.

**Table 16. Estimated Contribution of the Local Health Care Sector to the Montgomery**

### County Economy

Category	Unit of Measure	Initial Impact of Health Care Sector	Additional Impact of Health Care Sector	Total Impact of Health Care Sector	County Total	Health Care Percent of Total
Employment	Jobs	464	135	599	5,500	10.9%
Personal Income	Million \$	11.4	2.2	13.7	101.3	13.5%
Indirect Business Taxes	Thousand \$	130.0	338.9	468.9	8,818.0	5.3%

<sup>†</sup> Indirect taxes include sales taxes, property taxes, excise taxes and other non-income taxes

Source: Compiled from 1997 IMPLAN model supplemented with data obtained from the Mississippi Hospital Association.

### Summary and Conclusions

The economic influence on a community resulting from the delivery of health care services is often overlooked. Hospitals, nursing homes, physicians, dentists, pharmacies, home health agencies, and ambulance services are just a few of the providers that make up the health care sector. In a rural community, this particular sector generally represents a proportionally

larger share of the local economy than it does in urban areas, with the rural hospital typically being one of the largest employers in the area. This report addresses selected demographics and the health status of the population and emphasizes the economic importance of the health care sector to the Montgomery County economy. The income and employment estimates for the county reinforce findings from similar research in other geographic areas.

Health care expenditures (in real dollars) have more than doubled in Mississippi during the past two decades, rising from \$1.4 billion in 1980, to \$3.6 billion in 1999. The economic value of health care as a percent of the state's gross product also increased during the same time period from 3.23% in 1980, to 5.60% in 1999.

The demand for health care services within a geographical area is dependent upon several factors relating to socio-economic and health status indicators. Some of these factors include the current age distribution, population density, and health status of county residents. Health care services from a variety of providers located in Montgomery County are delivered to residents and non-residents alike. This creates substantial direct and indirect impacts on the local economy by providing residents (and possibly non-residents) with employment and income opportunities.

Financial interrelationships captured in an economic model indicate that the total impact (direct and indirect combined) of only the hospital component of the health care sector in Montgomery County results in the employment of 4.3% of the county's total workforce (238 jobs) and 5.2 % of the total earned personal income (\$5.2 million). When other components of the health care sector are added to the hospital component, the impact on employment increases from 4.3 % to 10.9% of the county's total workforce being employed either directly in or indirectly because of the health care sector. These additional impacts cause personal income to

increase from 5.2% to 13.5% of the county's total income. Indirect business taxes are affected in a similar manner, increasing from 1.5% to 5.3% of the county's total.

The results of research conducted on the Rural Health Works in Mississippi project quantify the importance of the health care sector in a rural economy. The economic viability of a community can depend on a strong and growing health care sector. The local health care sector can then be viewed as an economic development engine.

Comprehensive health care planning is essential to develop the strongest health care sector that efficiently and effectively meets local needs. A community can use the economic impact information provided in this report to stimulate community interest in comprehensive health care planning to answer questions such as the following. What health care services are needed and feasible in our community? What changes are needed in our existing health care sector? This can best be accomplished with an open community planning process that includes a cross section of community residents, health care providers and members of the business community. Technical assistance can be obtained from Land Grant Universities or Offices of Rural Health.

#### **Appendix A**

#### **Footnotes for Table 4**

1. This estimate is an extrapolation from Kentucky's experience. Kentucky's Medicaid program offers a wider range of services than required by Medicaid. To restrain Medicaid cost increases, Kentucky established a primary care gatekeeper program several years ago. This program is thought to have an impact with respect to appropriate utilization of care, but is not felt to be fully effective. Kentucky Medicaid eligible may use health care differently than individuals insured through commercial insurance plans. A 1996 study compared local

to non-local use by 300,500 Medicaid eligible people who reside in 49 rural counties in Southeast Kentucky. The aggregate of the 49 counties retained 61% of all hospital expenditures. Measuring by expenditure is important, particularly in hospital care, because tertiary care is far more expensive. This percent was applied to Table 4.

2. The federal Bureau of Primary Health Care (BPHC) required that applicants for Community/Migrant Health Centers (C/MHC) grants (330 clinics) develop a needs assessment to justify staffing of the clinic with physicians, midlevels, dentists, optometrists, pharmacists, and other providers. To help support the needs assessment and assure consistency in needs assessment assumptions, BPHC provided a formula, based on age and sex of the service area population that derived the total number of all ambulatory care visits. The formula estimates that 75% of all ambulatory care visits would be to primary care physicians. Note that these estimates use visits as the denominator. The BPHC rate was applied here.
3. Home health care is low technology care and can easily be offered by rural-based providers.
4. Nursing home care is low technology care, yet very expensive. In Kentucky, the average annual cost per patient excluding physician services and drugs is \$35,000 per patient year. Nursing home costs may vary significantly by state. Nursing home care can easily be provided in any rural community.

## **Appendix B**

### **Glossary of Terms**

The Rural Health Works in Mississippi research team recommended that a glossary be included at the end of this county report. The team will review this list and add or delete terms as needed. Some definitions were adapted from the report entitled “The Importance of the Health Care Sector on the Economy of Atoka County, Oklahoma”, Doeksen et al, Oklahoma Cooperative Extension Service at Oklahoma State University.

**Balanced Budget Act (BBA):** Signed in 1997 by President Clinton, this omnibus legislative package was primarily intended to balance the federal budget by 2002. This legislation contains major Medicare and Medicaid reforms, and a number of key rural health provisions.

**Gross state product (GSP):** The total output of goods and services produced by labor and property located within the state being considered

**Medicaid:** State administered program, funded by state and federal governments, which provides medical assistance to persons meeting local income and other eligibility criteria.

**Medicare:** Federal national insurance program which covers certain health services for persons over age 65 and other selected eligible persons.

**Personal income:** Income received by individuals from all sources.

**Poverty rate:** Percent of individuals who live at or below the federal poverty level. In 1998, the federal poverty level of a family of four was \$16,450.

**Primary care physicians:** Generally refers to family physicians, general practitioners, obstetricians and gynecologists, and general internists. Primary care physicians provide the first level of comprehensive health care.

**Transfer dollars:** Dollars flowing to individuals in the community as income or income subsidy from state or federal sources, such as government payments for health care (Medicare and Medicaid), supplemental security income (SSI), social security and other retirement income, and TAN-F (Temporary Assistance for Needy Families).

## References

- Bureau of Economic Analysis, Regional Accounts Data  
 Website: <http://www.bea.doc.gov/bea/regional/reis/action.cfm>  
 Accessed: 5-22-01
- Doeksen, Gerald A., Tom Johnson, and Chuck Willoughby. *Measuring the Economic Importance of the Health Sector on a Local Economy: A Brief Literature Review and Procedures to Measure Local Impacts*. Southern Rural Development Center, Mississippi State, MS. SRDC Number 202: January 1997.
- Doeksen, Gerald A., Fred C. Eilrich and Cheryl F. St.Clair. *The Importance of the Health Care Sector on the Economy of Atoka County, Oklahoma*. Oklahoma Cooperative Extension Service, Oklahoma University: 2000
- Health Care Financing Administration  
 Website: <http://www.hcfa.gov/stats/nhe-oact/stateestimates/Tables98.htm>  
 Accessed: 5-22-01  
 Website: <http://www.hcfa.gov/stats/nhe-oact/tables/t1.htm>  
 Accessed: 5-22-01  
 Website: <http://www.hcfa.gov/STATS/ENROLL/070199/MISSISSIPPI.HTM>
- IMPLAN Professional™ Version 2.0, Social Accounting & Impact Analysis Software  
 Minnesota IMPLAN Group, Inc., Stillwater, MN
- Mississippi Board of Nursing  
 2000 Annual Report
- Mississippi Hospital Association
- Mississippi State Board of Dental Examiners  
 Website: <http://www.msbde.state.ms.us/>  
 Accessed: 4-3-01
- Mississippi State Board of Medical Licensure  
 Physicians in Mississippi, August 2000
- Mississippi State Department of Health, Division Emergency Medical Services  
 Emergency Medical Services, Annual Report 1999
- Mississippi State Department of Health, Division of Health Facilities Licensure & Certification  
 1999 Report on Hospitals, July 2000
- Mississippi State Department of Health, Office of Rural Health  
 Aggregate Patient Origin Studies, 2000

Mississippi State Department of Health, Office of Community Health Services,  
Bureau of Public Health Statistics, Vital Statistics Mississippi 1999

Mississippi State Department of Health and Human Services, Division of Medicaid  
Website: <http://www.dom.state.ms.us/statistics.html>  
Accessed: March 14, 2001

Mississippi State Nursing Association  
Website: <http://msnurses.org>  
Accessed: August 1, 2001

Montgomery County MapStats from Fed Stats  
Website: [www.fedstats.gov/qf/states/28.html](http://www.fedstats.gov/qf/states/28.html)  
Accessed: 5-9-01

Montgomery County Quick Facts from the U.S. Census Bureau  
Website: <http://quickfacts.census.gov/qfd/states/28.htm>  
Accessed: 5-9-01

Ormond, Barbara A., Susan Wallin, and Susan M. Goldenson. *Supporting the Rural Health  
Care Safety Net*. Occasional Paper Number 36. The Urban Institute, Washington, DC.,  
March 2000.

U. S. Census Bureau  
American Fact Finder-Basic Facts-Quick Tables  
Website: <http://factfinder.census.gov/servlet/BasicFactc/Servlet>  
Accessed: 6-5-01

U. S. Department of Health & Human Services, Health Resources and Services Administration  
State Profile for Mississippi, July 2000  
Website: <http://stateprofiles.hrsa.gov/1999/MS199901SP.htm>  
Accessed: 5-9-01

U. S. Department of Health & Human Services, Health Resources and Services Administration  
Community health Status Report, Montgomery County, Mississippi, July 2000  
Website: <http://communityhealth.hrsa.gov>  
Accessed: 11-1-00

Woods & Poole Economics, Inc., Washington, D.C. Copyright 2001. 2001 State Profile,  
Mississippi. "Woods& Poole does not guarantee the accuracy of this data. The use of this  
data and the conclusion drawn from it are solely the responsibility of Mississippi State  
University Department of Agricultural Economics."