

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

Choctaw County, Mississippi

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Mississippi Office of Rural Health, David Lightwine, Regional Director

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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, 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.

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 in rural areas with chronic conditions 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 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 quality health care providers available locally 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 Choctaw 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 for health care services of about 5% over the twenty-year period, which is greater than the average annual growth rate.

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 (millions of current \$)	Health Services	Total Gross State Product (millions of 1999 \$ ¹)	Health Services	Health Services as a Percent of GSP (%)
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	

¹ 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 \$ ¹)				
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
Total Spending	5.31	3,499	4,458	5,898	7,965	8,882

¹ 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 services. The data in Table 2 show 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 reflects 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 Care Spending Per Capita, Mississippi, Selected Years, 1980-1998

Health Care Category	Average Annual Percentage Growth (%)	1980	1985	1990	1995	1998
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
Total Spending	4.80	1,388	1,723	2,289	2,961	3,227

¹ 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 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 a particular type of service. Therefore, it is in the best interest of the 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 the Choctaw County's 9,758 residents (U.S. Census Bureau, 2000) spent this average amount, about \$32 million would have been spent for health care services in the county. The first column in Table 4 presents 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 9,758 Choctaw County residents provides estimates of potential (health care) spending in Choctaw County. The total spending potential for this county is estimated to be more than \$22 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 local providers in Choctaw 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

Table 4. Estimated Potential Primary Care Expenditure for Choctaw County

Health Care Category	Mississippi Spending Per Capita	Percent Local Spending	Local Spending per Capita	Potential Local Spending
Hospital Care	\$1,398	61% ¹	\$853	\$8,323,574
Physicians & Other Professional Care	804	75% ²	603	\$5,884,074
Prescription Drugs	350	75% ²	263	\$2,566,354
Nursing Home Care	250	100% ³	250	\$2,439,500
Dental Services	115	75% ²	86	\$839,188
Home Health Care	106	100% ⁴	106	\$1,034,348
Nonprescription Drugs and Other Medical Nondurables	94	75% ²	71	\$692,818
Other Personal Health Care	77	75% ²	58	\$565,964
Vision Products & Other Medical Durables	34	75% ²	26	\$253,708
Total Spending	\$3,228	72%	\$2,316	\$22,599,528

¹Footnotes explaining " Percent Local Spending" for each category are in presented in Appendix A

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 Choctaw County and the state.

Demographics

Population information detailing historical growth and future projections, population density, current age distribution, and household information for Choctaw County and Mississippi are presented in Table 5. Between 1990 and 2000, Mississippi's population increased 10.5 percent while Choctaw County's population increased 7.6 percent. Choctaw County has less than one-half the population density as Mississippi, indicating its extremely rural nature. The county's older residents (65 years and older) represent 13.8% of the local population while the state's population in the same age group is 12.0%. Population in Choctaw County is projected to increase at a much slower rate than the state. The number of residents in the 65 and older category is expected to increase by almost 53% in the county and by 73% in the state over the next 25 years.

According to the 2000 Census, the population of Choctaw County is 68.0% white and 31.1% non-white. These numbers show a significant deviation from those of the state. The percentage of high school graduates in the county (32.8%) is very close to that of the state (34.8%) while the percentage of college graduates is lower in the county (6.2%) than the states' percentage (8.0%).

Economic Indicators

Data presented in Table 6 give general observations of economic activity in Choctaw County and Mississippi. The county's annual personal income is slightly more than \$142 million, providing a little more than \$15,000 of annual income per person (about \$5,000 less than the state average). The median household income in Choctaw County is \$23,367, about 18 percent lower than the state income value and the county's poverty rate is somewhat higher (21.5%) than the state's (18.1%).

Table 5. Selected Demographic Data for Choctaw County and Mississippi

Item	County	State
Population, 2000	9,758	2,844,658
Population, percent change, 1990 to 2000	7.6%	10.5%
Persons per square mile, 2000	23.3	60.6
Populations by age, percent of total, 2000		
Under 20 years	29.8%	30.7%
20 to 64 years	52.9%	57.3%
65 years and over	13.8%	12.0%
Population projection, percent change to 2025		
Total population	6.2%	18.2%
65 years and over	52.6%	73.3%
Race:		
White	68.0%	61.4%
Non-white	31.1%	38.6%
Persons over 25 graduating from high school	32.8%	34.8%
Persons over 25 graduating from college	6.2%	8.0%
Households, 2000	3,686	1,046,434
Median Household money income, 1997	\$23,367	\$28,527
Persons below poverty, % 1997	21.5%	18.1%

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

The civilian labor force in the county is more than 2,900 with slightly more than 500 people employed by governments. All types of local enterprises generate 3,136 jobs. Persons employed in non-farm, private sector jobs total about 2,303. This indicator has decreased by 2.4 percent since 1990 and is dramatically lower than the state rate. Average earnings per job are slightly more than \$20,000 per year compared to about \$23,700 for the state.

Table 6. Selected Economic Data for Choctaw County and Mississippi

Item	County	State
Personal Income, 1999 (\$1,000)	\$142,017	\$57,272,226
Personal Income per capita, 1999	\$15,163	\$20,993
Civilian Labor Force, 1999	2,912	1,269,955
Unemployment, 1999	230	64,666
Full-time and part-time employment by place of work, 1999	3,136	1,493,441
Employment in government, 1999	505	264,746
Local government employment, full-time equivalent, 1999	358	141,499
Private nonfarm employment, 1999	2303	937,023
Private nonfarm employment, percent change 1990 to 1998	-2.4%	29.6%
Average earnings per job, 1999	\$20,237	\$ 23,753
Private nonfarm establishments with paid employees, 1998	157	59,771
Private nonfarm establishments with less than 20 employees, 1998	148	51,949
Nonemployer establishments, 1997	321	121,668
Retail sales, 1997 (\$1,000)	\$ 26,491	\$ 10,124,822
Retail sales per capita, 1997	\$ 2,715	\$ 7,605

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

There are 157 private non-farm establishments, but 148 of these have less than 20 employees. There are 321 businesses, which do not have any paid employees. Retail sales in the county were more than \$26 million in 1997. This is about \$2,700 per person, but is about \$5,000 below the state average.

Table 7 shows types of employment in Choctaw County and the state. Services, manufacturing, local government and farms were the leading employment sectors in 1999.

Table 7. Employment by Industry in Choctaw County and the State, 1999

Industry	County Number	Percent of County	State	Percent of State
Farm employment	328	10.8%	55,203	3.7%
Ag. services, forestry, fishing	(D)	NA	19,256	1.3%
Mining	65	2.1%	8,101	0.5%
Construction	218	7.2%	84,954	5.7%
Manufacturing	603	19.9%	250,824	16.8%
Transportation/public utilities	145	4.8%	67,269	4.5%
Wholesale trade	44	1.5%	51,052	3.4%
Retail trade	287	9.5%	244,023	16.3%
Finance, insurance, real estate	(D)	NA	76,283	5.1%
Services	836	27.6%	371,730	24.9%
Government				
Federal Civilian	65	2.1%	26,033	1.7%
Federal Military	62	2.0%	35,129	2.4%
State	20	0.7%	62,085	4.2%
Local	358	11.8%	141,499	9.5%
Total employment	3031	100.0%	1,493,441	100.0%

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

NA Not available

Source: Bureau of Economic Analysis, Regional Accounts Data

Most health care jobs are in the services sector, while sales of drugs and other medical items are included in the retail trade sector.

A more detailed view of personal income sources is presented in Table 8. The data indicate that almost 62 percent of total personal income came from total earnings (adjusted to place of residence) with transfer payments contributing 25 percent. Other data show the distribution of earnings that originate in employment within the county. Finally, transfer payment distributions made to county residents for medical payments (37.0%) and retirement and disability (35.0%) were very close to the state's percentages.

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

Source	County Total	County Percent	State Percent
	(\$1,000)		
Total Personal Income ¹	142,017		
Earnings by Place of Residence ²	87,631	62.0%	64.9%
Transfer Payments	35,510	25.0%	18.6%
Total Earnings ³	65,162		
Wages and Salaries	44,947	69.0%	78.1%
Proprietors' Income	13,957	21.4%	11.7%
Other Labor Income	6,258	10.0%	10.3%
Transfer Payments	35,510		
Retirement and Disability	12,413	35.0%	37.4%
Medical Payments	13,166	37.0%	38.6%
Other	9,911	28.0%	23.9%

¹ Definitions are in Appendix B, Glossary of Terms

² Total earnings adjusted to reflect earnings by place of residence.

³ 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 health care service providers in Choctaw County was less than the state in all categories except for the number of nursing home beds. The rate of EMTs (including intermediates) was 0.4 per 1,000 residents, and the rate of paramedics was 0.4 per 1,000, which matched the state's rate.

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. Choctaw County has one hospital located in Ackerman, near where two major state roads intersect. There

Table 9. Availability of Selected Medical Providers in Choctaw County

Provider	County Number	County Rate/1000	State Rate/1000
Hospitals (2000)	1		
Licensed Hospital Beds	17	1.7	4.2
Staffed Hospital Beds	17	1.7	3.8
Nursing Home (2001)	1		
Beds	68	7.0	6.2
Health Care Practitioners: (2001)			
M.D.s	3	0.3	2.0
Family Practice	3	0.3	0.2
Internal Medicine	0	0	0.3
Other	0	0	1.4
Dentists	4	0.4	0.4
Nurse Practitioners	1	0.1	0.5
Emergency Medical Personnel (2001)			
EMT Basics & Intermediates	4	0.4	0.6
Paramedics	4	0.4	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

are five counties that border Choctaw, four of which have one hospital each and one county with two hospitals, one for acute and one for psychiatric care.

Table 10 contains data showing where county residents go to receive hospital care (out-flow). During the studied time period, data from the Office of Rural Health showed that almost 75 percent of Choctaw County residents obtain some form of hospital care outside the county. The most common health problems related to patient out-flow are respiratory, circulatory, and injuries/poisonings.

Table 10. Discharges of Choctaw County Residents from Hospitals

Name of Hospital	Number ¹	Percent
Choctaw Medical Center	45	23.56%
Oktibbeha Co. Hospital	44	23.04%
Webster Health Services	36	18.85%
North MS Medical Center	16	8.38%
Montfort Jones Memorial Hospital	8	4.19%
Kilmichael Hospital	7	3.66%
University Medical Center	7	3.66%
Clay Co. Medical Center	6	3.14%
MS Baptist Medical Center	3	1.57%
Baptist Memorial Hospital Golden Triangle	2	1.05%
Diamond Grove Center	2	1.05%
East MS State Hospital	2	1.05%
St. Dominic Hospital	2	1.05%
Tyler Holmes Memorial Hospital	2	1.05%
Kings Daug Hospital- Greenville	1	0.55%
Central MS Medical Center	1	0.52%
Jeff Anderson Regional Medical Center	1	0.52%
MS Methodist Hospital & Rehabilitation Center	1	0.52%
Parkview River Regional	1	0.52%
Riley Memorial Hospital	1	0.52%
River Oaks Hospital	1	0.52%
Winston Medical Center	1	0.52%
Womans Hospital	1	0.52%
Total	191	100.01%

¹ Aggregate Patient Origin Study, data collected during four 2-week periods from Jan-Oct 2000

Source: Mississippi Office of Rural Health

Data in Table 11 show the county of residence of patients utilizing services from Choctaw Medical Center (in-flow). Discharges from the local hospital during the period being studied, shows that almost 80 percent of their patients reside in Choctaw County.

Table 11. Discharges by Hospital by County of Residence

Choctaw Medical Center	Frequency	Percent
Choctaw	45	78.9
Attala	7	12.3
Winston	3	5.3
Oktibbeha	1	1.8
Webster	1	1.8
Totals	57	100.1

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

Discharge Diagnoses

Data obtained from the Mississippi State Office of Rural Health show in Table 12 that nearly 21 % of all discharges of Choctaw County residents from hospitals around the state were for respiratory problems, which includes pneumonia, emphysema and other acute and chronic diseases of the lungs. The second leading cause of hospitalizations for residents was for circulatory problems, which includes all types of heart disease (hypertension, heart attacks, arteriosclerosis, etc.) along with cerebrovascular diseases (including “stroke”). Injuries and poisonings and gastrointestinal diseases were the third and fourth most common reasons for hospitalizations among Choctaw County residents.

Table 12. Discharge Diagnoses of Choctaw County Residents**From Hospitals in Mississippi, (4 Two-Week periods Jan-Oct 2000)**

Disease Group

Number
Percent

Respiratory

	40	20.94%
Circulatory	18	9.42%
Injury/Poisoning	17	8.90%
Digestive	16	8.38%
Pregnancy,childbirth	16	8.38%
Neoplasms (all types)	11	5.76%
Live newborns	10	5.24%
Endocrine, Immune	8	4.19%
Genitourinary	5	2.62%
Musculoskeletal	5	2.62%

All other categories	45	23.56%
Totals	191	100.00%

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

Information concerning hospital admissions, Medicare and Medicaid enrollment, infant mortality and births to teens are detailed in Table 13. The hospital in Choctaw County discharged 280 people in 1999. The percent of the county's residents enrolled in Medicare is almost the same as the state's percentage. The county exceeded the state in the percentage of people eligible for and/or being served by Medicaid. The rates of infant mortality and births to teenagers were much lower than the state's rates.

Table 13. Health Status and Health Indicators for Choctaw County and the State

Status or Indicator ¹	County Number	County Percent/Rate	State Percent/Rate ⁴
Hospital Discharges (2000)	280	3.0%	n/a

Medicare Enrollment (1998)			
Aged (65 and over)	1090	11.6%	11.5%
Disabled (Under 65)	280	3.0%	2.9%
Medicaid Eligible (2000)	2179	23.3%	17.9%
Medicaid Served	1352	14.4%	11.9%
Infant Mortality (1995-1999) ²	2	8.4	20.9
Births to Teens (1995-1999) ³	23	29.6	45.2

¹ Definitions are in Appendix B, Glossary of Terms

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

³ 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)

⁴ 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)

Table 14. Death Rates from Selected Causes for Choctaw County, 1999

Causes of Death	Choctaw County		State of Mississippi	
	Number ¹	Rate ²	Number ¹	Rate ²
Cardiovascular Diseases *	38	405.7	11,742	424.1
All Types of Cancer	19	202.9	6,131	221.4
Accidents (all types)	9	96.1	1,639	59.2
Chronic Lung Diseases	7	74.7	1,329	48.0
Automobile Accidents	5	53.4	954	34.4
Diabetes Mellitus	4	42.7	589	21.3
Pneumonia & Influenza	4	42.7	796	28.8
Kidney Diseases	3	32.0	620	22.4
Homicide	2	21.4	312	11.3
Liver Diseases	1	10.7	248	9.0
Suicide	1	10.7	305	11.0

¹ Numbers are total deaths per 1,000 population

² Rates are per 100,000 population

* Includes hypertension, cerebrovascular diseases and atherosclerosis

Source: Mississippi State Department of Health, Vital Statistics, 1999

Table 14 contains the ten most common causes of death among Choctaw County

residents in 1999. Cardiovascular disease, cancer, auto accidents and lung diseases are the four most common causes of death. This data is consistent with state rates for the same causes.

Health Care Sector Economic Impacts

Businesses generate direct impacts on local economies 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 Choctaw County.

Table 15 reports the estimated impact of the local hospitals on Choctaw County’s economy. Based on 1997 IMPLAN model data and primary data gathered from 2000 financial reports, the county’s hospital provides 140 jobs and these jobs create the need for 13 other local jobs. Thus, Choctaw County hospitals generate an impact of slightly over 5% of the county’s employment. Likewise, the hospital creates about \$2.6 million in personal income directly, about \$223,113 indirectly, for a total of almost 5% of the county’s income. Indirect business taxes in the county of about \$40 thousand are generated by the existing hospitals as they create secondary economic activity.

Table 15. Estimated Contribution of the Local Hospital to the Choctaw County Economy

Category	Unit of Measure	Initial Impact of Hospital	Additional Impact of Hospital	Total Impact of Hospital	County Total	Hospital as a Percent of Total
Employment	jobs	140	13	153	3,024	5.1%

Personal Income	\$	2,658,063	223,113	2,881,176	61,155,000	4.7%
Indirect Business Taxes ¹	\$	0	40,604	40,604	5,301,000	0.8%

¹Indirect business taxes include: sales taxes, property taxes, excise taxes, and other non-income taxes.

Source: Department of Agricultural Economics, Mississippi State University.

Compiled from 1997 IMPLAN model supplemented with data obtained from the Choctaw County hospital and the Mississippi Hospital Association.

In Table 16, three additional components of the health care sector (doctors & dentists; nursing and protective care; other medical & health services) have been combined with the figures from the county's hospitals (see Table 15). The additional components added together employ 91 people resulting in a total of 231 people employed by the entire health care sector. Total payroll for the entire sector is estimated to be \$5.25 million. The existing health care sector has a significant impact on employment and income throughout the other industries in Choctaw County. The total employment impact of Choctaw County's health care sector is an estimated 260 jobs that result in a total income of \$5.7 million. Indirect business taxes attributed to the health care sector amount to 2.6% of the total in the county.

Table 16. Estimated Contribution of the Local Health Care Sector to the Choctaw 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 as a Percent of Total
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Employment	# of Jobs	231	29	260	3,024	8.6%
Personal Income	\$	5,252,063	459,039	5,711,102	61,155,000	9.3%
Indirect Business Taxes ¹	\$	42,000	97,903	139,903	5,301,000	2.6%

¹Indirect business taxes include: sales taxes, property taxes, excise taxes, and other non-income taxes.

Source: Department of Agricultural Economics, Mississippi State University.

Compiled from 1997 IMPLAN model supplemented with data obtained from the Choctaw County hospital and 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. Typically, the local hospital is 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 Choctaw County economy. The income and employment estimates for Choctaw County reinforce findings from similar research in other geographic regions.

Health care expenditures (in real dollars) in Mississippi have more than doubled 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 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 socioeconomic 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 Choctaw 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) employment and income.

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 Choctaw County results in the employment of 5.1% of the county's total workforce (153 jobs) and 4.7 % of the total earned personal income (\$2.88 million). When other components of the health care sector are added to the hospital component, the impact on employment increases from 5.1 % to 8.6% of the county's total workforce being employed either directly in or indirectly because of the health care sector. Additionally, this impact causes personal income to

increase from 4.7% to 9.3% of the county's total income. Indirect business taxes are affected in a similar manner, increasing from 0.8% to 2.6% 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
- Choctaw County MapStats from Fed Stats
 Website: www.fedstats.gov/qf/states/28.html
 Accessed: 5-9-01
- Choctaw County Quick Facts from the U.S. Census Bureau
 Website: <http://quickfacts.census.gov/qfd/states/28.htm>
 Accessed: 5-9-01
- 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 State Board of Dental Examiners
 Website: <http://www.msbde.state.ms.us/>
 Accessed: 4-3-01
- Mississippi Board of Nursing
 2000 Annual Report
- 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

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, Choctaw County, Mississippi, July 2000

Website: <http://communityhealth.hrsa.gov>

Accessed: 11-1-00

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