

Measuring the Impact of the Healthcare Sector on a Local Economy:

Clarke County, Mississippi

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Introduction

Communities often overlook the economic influence of the healthcare 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 healthcare 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 healthcare 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 healthcare 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 healthcare 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 healthcare is critical to long-term economic development in rural communities (Doeksen et al.). Employers looking for a place to establish a new business choose to locate in an area that has good education and healthcare systems already in place. Attracting retirees to a community is

also more successful when there are quality healthcare 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 healthcare 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 healthcare sector to the Clarke County economy.

Healthcare Expenditures in Mississippi

Consistent with national trends, data in Table 1 show that healthcare 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 healthcare services represent a growing component of the state's economy as well. In 1980, healthcare 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 healthcare 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 during the same period.

As shown in Table 2, growth in personal healthcare 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 healthcare 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 Healthcare Spending, Mississippi, Selected Years, 1980-1998

Healthcare 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 Healthcare	10.90	45	85	178	348	293
Nonprescription Drugs and Other Medical Nondurables	2.38	170	212	236	249	260
Other Personal Healthcare	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 Healthcare Financing Administration

physician and other professionals, prescription drugs, and home health services. The data in Table 2 show more money was spent on home healthcare 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 healthcare. The trends in growth of the healthcare 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 Healthcare Spending Per Capita, Mississippi, Selected Years, 1980-1998

Healthcare Category	Average Annual Percentage Growth (%)	1980	1985	1990	1995	1998
				(1998 \$ ¹)		
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 Healthcare	10.36	18	33	69	129	106
Nonprescription Drugs and Other Medical Nondurables	1.89	67	82	91	93	94
Other Personal Healthcare	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	3,228

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 Healthcare Financing Administration

Potential Demand for Healthcare

People require different types of healthcare equipment (goods) and services, some of which may not be available locally. The amount of spending on different types of healthcare services retained within a local economy depends on a diverse set of factors. The size and types of healthcare 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 healthcare 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 healthcare sector within the county.

As shown previously in Table 3, the average annual per capita expenditure on healthcare in Mississippi in 1998 was \$3,228. If Clarke County's 17,955 residents (U.S. Census Bureau, 2000) spent this average amount, more than \$57.95 million would have been spent for healthcare services in the county. The first column in Table 4 presents Mississippi per capita expenditures by major healthcare categories in 1998. The second column contains estimated shares of each type of primary healthcare 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 17,955 provides estimates of potential local spending (primary healthcare) in Clarke County. The total spending potential is estimated to be \$41.6 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 Clarke County.

By comparing the potential local expenditures with actual local spending, the opportunity to expand local healthcare services may be assessed. For example, an existing hospital 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 healthcare 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 healthcare sector. The following sections present various types of information for Clarke County and the state.

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

Health Care Category	Mississippi Spending Per Capita	Percent Local Spending	Local Spending Per Capita	Potential Local Spending
Hospital Care	\$1,398	61%	\$853	\$15,315,615
Physician & Other Professional Services	\$804	75%	\$603	\$10,826,865
Prescription Drugs	\$350	75%	\$263	\$4,722,165
Nursing Home Care	\$250	100%	\$250	\$4,488,750
Dental Services	\$115	75%	\$86	\$1,544,130
Home Health Care	\$106	100%	\$106	\$1,903,230
Non-Prescription Drugs and Other Medical Non-Durables	\$94	75%	\$71	\$1,274,805
Other Personal Health Care	\$77	75%	\$58	\$1,041,390
Vision Products and Other Medical Durables	\$34	75%	\$26	\$466,830
Total Spending	\$3,228	72%	\$2,316	\$41,583,780

¹ 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 Clarke County and Mississippi are presented in Table 5. Between 1990 and 2000, Mississippi's population increased 10.5 percent and Clarke County population increased at about one-third of this rate (3.7%). Clarke

County, with about 26.0 persons per square mile, has a population density less than half of the state's population density (60 persons per square mile). The county's older residents represent 15.1 percent of the population, which is higher than the state, with 12.0 percent of its total population aged 65 and older. Population in Clarke County is projected through 2025 to increase by 17.2 percent while the state's population is projected to increase by 18.2 percent. The number of residents in the 65 and over category is expected to increase by 54 percent in the county, which is considerably lower than the state's projected population increase of 73.3 during the same time period.

According to the 2000 Census, the population of Clarke County was 64.5 percent white and 35.5 percent non-white. These numbers are roughly concurrent with the corresponding state percentages. The percentage of high school graduates in the county is higher (53.4%) than that of the state (49.5%), while the percentage of college graduates in the county (8.2%) was just more than half the state percentage (14.7%). NOTE: The high school and college graduate information is from the 1990 US Census population and is the most recent data available; educational attainment levels may actually be higher or lower at the time of this writing.

Economic Indicators

Data presented in Table 6 give observations of economic activity in Clarke County and Mississippi. The county's annual personal income is approximately \$312.3 million, providing about \$17,389 of annual income per person (the state's average is \$20,900). The median household income in Clarke County is \$26,236, which is slightly lower than the state income value (\$28,527). The county's poverty rate is 14.8 percent, about four percent less than the state's rate (18.1%).

The civilian labor force in the county is estimated to be 8,739 with 947 people employed by governments, and 635 unemployed. All types of local enterprises generated 6,363 jobs in 2000. Persons employed in non-farm, private sector jobs total about 5,012. This indicator has decreased by 8.9 percent between 1990 and 1999, and is substantially lower than the state indicator (31.2%). Average earnings per job in 2000 were \$21,046 per year compared to \$24,578 for the state.

Table 5. Selected Demographic Data for Clarke County and Mississippi

Item	County	State
Population, 2000	17,955	2,844,658
Population, percent change, 1990 to 2000	3.7%	10.5%
Persons per square mile, 2000	26.0	60.6
Populations by age, percent of total, 2000		
Under 20 years	29.6%	30.7%
20 to 64 years	55.2%	57.3%
65 years and over	15.1%	12.0%
Population projection, percent change to 2025		
Total population	17.2%	18.2%
65 years and over	54.0%	73.3%
Race:		
White	64.5%	61.4%
Non-white	35.5%	38.6%
Persons over 25 graduating from high school, 1990	53.4%	49.5%
Persons over 25 graduating from college, 1990	8.2%	14.7%
Households, 2000	6,978	1,046,434
Median Household money income, 1997	\$26,236	\$28,527
Persons below poverty, % 1997	14.8%	18.1%

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

Table 6. Selected Economic Data for Clarke County and Mississippi

Item	County	State
Personal Income, 2000 (\$1,000)	\$312,274	\$59,545,076
Personal Income per capita, 2000	\$17,389	\$20,900
Civilian Labor Force, 1999	8,739	1,269,955
Unemployment, 1999	635	64,666
Full-time and part-time employment by place of work, 2000	6,363	1,500,344
Employment in government, 2000	947	268,177
Local government employment, full-time equivalent, 2000	737	141,036
Private non-farm employment, 2000	5,012	1,177,383
Private non-farm employment, percent change 1990 to 1999	-8.9%	31.2%
Average earnings per job, 2000	\$21,046	\$24,578
Private non-farm establishments with paid employees, 1999	321	59,834
Private non-farm establishments with less than 20 employees, 1999	297	51,931
Nonemployer establishments, 1999	754	130,932
Retail sales, 1997 (\$1,000)	\$38,315	\$20,774,508
Retail sales per capita, 1997	\$2,125	\$7,605

Sources: Profile of General Demographic Characteristics, 2000, Bureau of Economic Analysis, Regional Accounts Data, CA-25-; US Census Bureau MapStats

There are 321 private non-farm establishments with paid employees, but 297 of these have less than 20 employees. There are 754 businesses that do not have any paid employees (proprietorships). Retail sales in the county were more than \$38.3 million in 1997. This is about \$2,125 per person and is notably lower than the state average (\$7,605).

Table 7 shows sectors of employment in Clarke County and the state. Manufacturing (31.6%), services (17.9%), local government (11.6%) and retail trade (11.5%) were the four most

significant employment sectors in 2000. Most healthcare jobs are included in the services sector, while sales of drugs and other medical durables and non-durables would be included in the retail trade sector.

Table 7. Employment by Industry in Clarke County and Mississippi, 2000

	County	Percent of County	State	Percent of State
Farm Employment	404	6.3%	54,784	3.7%
Ag. Services, Forestry, Fishing	138	2.2%	21,168	1.4%
Mining	147	2.3%	7,767	0.5%
Construction	278	4.4%	87,199	5.8%
Manufacturing	2,008	31.6%	239,692	16.0%
Transportation/Public Utilities	282	4.4%	70,664	4.7%
Wholesale Trade	140	2.2%	50,991	3.4%
Retail Trade	629	9.9%	244,648	16.3%
Finance, Insurance, Real Estate	250	3.9%	78,564	5.2%
Services	1,140	17.9%	376,690	25.1%
Government				
Federal Civilian	52	0.8%	27,385	1.8%
Federal Military	123	1.9%	35,453	2.4%
State	35	0.6%	64,303	4.3%
Local	737	11.6%	141,036	9.4%
Total Employment	6,363	100.0%	1,500,344	100.0%

Source: Bureau of Economic Analysis, Regional Accounts Data

A more detailed view of personal income sources is presented in Table 8. The data indicate that 58.8 percent of total personal income came from total earnings (adjusted to place of residence) with transfer payments contributing 24.8 percent. Other data show that 71.2 percent of the total earnings that originate in employment within the county are from wages and salaries. Finally, 41.6 percent of transfer payments were made for retirement/disability while 36.6 percent were made for medical purposes. Incidentally, during fiscal year 2001, the state's Division of Medicaid paid providers in Clarke County a total of \$12,424,779 or roughly 0.6% of the state

total of \$2.089 billion for services rendered to patients with Medicaid as their health insurance carrier.

Table 8. Personal Income Sources for Clarke County, and Mississippi, 2000

Source	County Total	County Percent	State Percent
	(\$1,000)		
Total Personal Income ¹	\$312,274		
Earnings by Place of Residence ²	\$183,686	58.8%	64.9%
Transfer Payments	\$77,298	24.8%	18.6%
 Total Earnings ³	 \$138,742		
Wages and Salaries	\$98,767	71.2%	78.1%
Proprietors Income	\$27,715	20.0%	11.7%
Other Labor Income	\$12,260	8.8%	10.3%
 Transfer Payments	 \$77,298		
Retirement and Disability	\$32,132	41.6%	37.4%
Medical Payments	\$28,319	36.6%	38.6%
Other	\$16,847	21.8%	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 Economics Analysis (2000 Data)

Healthcare Availability and Utilization

Healthcare resources are summarized in Table 9. These statistics demonstrate the availability of physicians and other selected healthcare services in the county. The rate of availability of healthcare service providers in Clarke County was lower than the state in most categories.

Table 9. Availability of Selected Medical Providers in Clarke County

Provider Type	County Number	County Rate/1000	State Rate/1000
Hospitals (2000)	1		
Licensed Hospital Beds	32	1.8	4.2
Nursing Home (2001) Beds	2 133	0.1 7.4	6.2
Health Care Practitioners: (2001)			
M.D.s	8	0.4	2
Family Practice	5	0.3	0.2
Internal Medicine	1	0.1	0.3
Other	2	0.1	1.4
Dentists	4	0.2	0.4
Nurse Practitioners	3	0.2	0.5
Emergency Medical Personnel (2001)			
EMT Basics & Intermediates.	18	1.0	0.6
Paramedics	7	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

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. Clarke County has one hospital. There are five Mississippi counties that border Clarke, and each one has a hospital. There are a total of 1209 hospital beds in these surrounding counties with 80 of them in Wayne County, 275 in another in Jones County, 16 in Jasper County, 99 in Newton County and 739 in Lauderdale County, while Clarke Hospital has 32 licensed beds. Table 10 contains data showing where county residents go to receive hospital care (out-flow). Approximately 75.5

percent of Clarke County residents obtained some form of hospital care outside the county during the time period studied.

Table 10. Hospital Discharge of Clarke County Residents by Hospital

Name of Hospital	Number ¹	Percent
Jeff Anderson Regional Medical Center	156	28.1%
H.C. Watkins Memorial Hospital, Inc.	136	24.5%
Rush Foundation Hospital	112	20.2%
Wayne General Hospital	28	5.0%
Riley Memorial Hospital	26	4.7%
Forrest General Hospital	19	3.4%
Alliance Health Center	15	2.7%
South Central Regional Medical Center	15	2.7%
University Hospital and Clinics	13	2.3%
Specialty Hospital of Meridian	7	1.3%
MS Baptist Medical Center	5	0.9%
Saint Dominic Hospital	5	0.9%
East MS State Hospital	4	0.7%
Newton Regional Hospital	3	0.5%
Prentiss Regional Hospital	3	0.5%
MS Methodist Hospital and Rehab Center	2	0.4%
Baptist Memorial Hospital North MS	1	0.2%
Central MS Medical Center	1	0.2%
Covington County Hospital	1	0.2%
Oak Circle Center	1	0.2%
River Oaks Hospital	1	0.2%
Wesley Medical Center	1	0.2%
Total	555	100.0%

¹ Aggregate Patient Origin Study, data collected during four 2-week periods from April 2001 - January 2002.

Source: Mississippi Office of Rural Health

Data in Table 11 show the county of residence of patients receiving care from the local hospital (in-flow). H.C. Watkins Memorial Hospital had approximately 91.3 percent of its patients from Clarke County, with the remaining 8.7 percent from Jasper County (4.0%), Wayne

County (1.3%), Greene County, Lauderdale County and Noxubee County. The latter three regions comprised a total of only 2.1 percent of the total number of patients discharged from Clarke Hospital. In Table 11A, the patient mix of the local hospital during the same period shows that 71.14 percent of the patients discharged were covered by Medicare, another 14.77 percent were covered with Medicaid; 5.37 percent were self-pay and only 1.34 percent were covered by Blue Cross.

Table. 11 Discharges by Hospital by County of Residence

H.C. Watkins Memorial Hospital, Inc.	Frequency ¹	Percent
Clarke County	136	91.3%
Jasper County	6	4.0%
Alabama	2	1.3%
Wayne County	2	1.3%
Greene County	1	0.7%
Lauderdale County	1	0.7%
Noxubee County	1	0.7%
Total	149	100.0%

¹ Aggregate Patient Origin Study, data collected during four 2-week periods from April 2001 - January 2002.

Source: Mississippi Office of Rural Health

Table 11A. Discharges by Hospital by Insurance Type

Pontotoc Hospital	Number of Discharges	Percent of Total
Medicare	71	87.65%
Commercial	5	6.17%
Medicaid	3	3.70%
Self Pay	2	2.47%
Total	81	100.00%

¹ Aggregate Patient Origin Study, data collected during four 2-week periods from April 2001- January 2002.

Source: Mississippi Office of Rural Health

Discharge Diagnoses

Data was obtained from the Mississippi State Office of Rural Health of Clarke County Hospital's patient discharge diagnoses during four, 2-week study periods between April 2001 and January 2002. Diagnoses from patients discharged from HC Watkins Memorial Hospital during that time showed that 16.9 percent were for respiratory diseases; 13.2 percent were for circulatory diseases which includes all types of heart diseases (hypertension, heart attacks, arteriosclerosis, etc.); 13.2 percent each were for digestive system problems and 7.4 percent for mental disorders. This data is somewhat consistent to the diagnoses of county residents that sought hospital care outside the county during the same time period, which is shown below.

Table 12. Discharge Diagnosis of Clarke County Residents From Hospitals in Mississippi (Four 2-week Periods April 01- January 02)

Disease Group	Number ¹	Percent
Circulatory	79	14.23%
Respiratory	53	9.55%
Digestive	47	8.47%
Pregnancy, childbirth	44	7.93%
Mental Disorders	43	7.75%
Live newborns	39	7.03%
Injury/Poisoning	30	5.41%
Endocrine, Immun	28	5.05%
Genitourinary	26	4.68%
Musculoskeletal	17	3.06%
All other categories	149	26.85%
TOTAL	555	100.00%

¹ Aggregate Patient Origin Study, data collected during four 2-week periods from April 2001 - January 2002.

Source: Mississippi Office of Rural Health

Table 12 shows the most common discharge diagnoses for residents of Clarke County who were hospitalized *at any hospital in the state* during the same study period as mentioned above: 14.23 percent for circulatory diseases, 9.55 percent for respiratory system diseases, and 8.47 percent for digestive disorders.

Information concerning hospital discharges, Medicare and Medicaid enrollment, and selected birth and death statistics are detailed in Table 13. Clarke County Hospital had 998 discharges for FYE 2001. The county had a higher percentage (17.9%) of

Table 13. Health Status and Health Indicators for Clarke County and Mississippi

Status or Indicator ¹	County Number	County Percent/Rate	State Percent/Rate ⁴
Hospital Discharges	998	0.0%	N/A
Medicare Enrollment (98)			
Aged (65 and over)	2,578	14.4%	11.5%
Disabled (Under 65)	622	3.5%	2.9%
Medicaid Eligible (2000)	3,591	20.0%	19.5%
Infant Mortality (1996-2000) ²	2	5.0	10.5
Live Births to Unmarried Mothers	116	44.8%	46%
Teenage Pregnancy (2000) ³	55	41.4	42.9

¹ Definitions are in Appendix B, Glossary of Terms

² Number represents total resident live births and deaths for 2000; 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 2000; 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 (2000); Department of Health and Human Services, Division of Medicaid (2000); Health Care Financing Administration (1998)

residents enrolled in Medicare relative to those in the state (14.4%); in addition, the county's Medicaid statistics were slightly elevated (20.0%) in comparison to the state's values (19.5%). These Medicaid values are consistent with the relatively modest number of residents in Clarke

County living at or below the poverty level (12.1%) as compared to the state's poverty level (18.1%). The rate of infant mortality was less than the state's rate, as well as the percentage of live births to unmarried mothers in the county (44.8%) was slightly lower than the state (46%). Accordingly, the teenage pregnancy rate in the county was marginally lower (41.4) than the state's rate (42.9) as well.

Table 14 contains the eleven most common causes of death among Clarke County residents in 2000. Cardiovascular disease, cancer, accidents, automobile accidents and chronic lung diseases were the top five reasons for death among county residents. This data is consistent with state rates for the five most common causes of death.

Table 14. Death Rates from Selected Causes for Clarke County

Causes of Death	Clarke County		State of Mississippi	
	Number ¹	Rate ²	Number ¹	Rate ²
Cardiovascular Diseases *	104	579.2	1,119	58.1
All Types of Cancer	37	206.1	11,792	414.5
Accidents (all types)	11	61.3	612	21.5
Automobile Accidents	8	44.6	804	28.3
Chronic Lung Diseases	6	33.4	1,303	45.8
Pneumonia & Influenza	5	27.8	670	23.6
Kidney Diseases	5	27.8	291	10.2
Homicide	2	11.1	246	8.6
Liver Diseases	1	5.6	613	32.9
Diabetes Mellitus	0	0	6,080	213.0
Suicide	0	0	215	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, 2000

Healthcare 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 healthcare sector for Clarke County.

Table 15 reports the estimated impact of the local hospital on Clarke County’s economy. Based on 1999 IMPLAN model data and primary data gathered from FYE 12-31-01 hospital financial reports, the county’s hospital provides 152 jobs and these jobs create the need for 22 additional jobs in other employment sectors within the local economy (county).

Table 15. Estimated Contribution of HC Watkins Memorial Hospital to the Clarke County Economy

Category	Unit of Measure	Initial Impact of Hospitals	Additional Impact of Hospitals	Total Impact of Hospitals	County Total	Hospitals as a Percent of Total
Employment	# Jobs	152	22	174	6,363	2.7%
Personal Income	\$	3,758,444	1,410,080	5,168,524	312,274,000	1.7%
Indirect Business Taxes	\$	41,573	77,112	118,685	12,089,000	1.0%

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

Source: Department of Agricultural Economics, Mississippi State University.

Compiled from 1999 IMPLAN model supplemented with FYE 2001 financial data obtained from local hospital

Thus, HC Watkins Memorial Hospital generates an impact of 2.7 percent of the total county employment or 174 jobs (152 directly and 22 indirectly). Likewise, the hospital creates

\$3.75 million in personal income directly, and about \$1.4 thousand indirectly, for a total of 1.7 percent of the county's income (\$5.16 million). Indirect business taxes in the county of approximately \$118 thousand are generated by the hospital as it creates secondary economic activity.

The economic impact of HC Watkins ECF (Extended Care Facility) was evaluated independently of the hospital with the results shown in Table 15A. Additionally, the direct and indirect economic impacts of the entire organization comprised of the hospital and the nursing facility was evaluated. These results are shown in Table 15B and account for 3.0 percent of the total county employment (188 jobs) with personal income of nearly \$5.5 million.

Table 15A. Estimated Contribution of HC Watkins ECF (nursing home) to the Clarke County Economy

Category	Unit of Measure	Initial Impact of Hospitals	Additional Impact of Hospitals	Total Impact of Hospitals	County Total	Hospitals as a Percent of Total
Employment	# Jobs	12	2	14	6,363	0.2%
Personal Income	\$	297,227	38,433	335,660	312,274,000	0.1%
Indirect Business Taxes	\$	9,452	6,009	15,461	12,089,000	0.1%

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

Source: Department of Agricultural Economics, Mississippi State University.

Compiled from 1999 IMPLAN model supplemented with FYE 2001 financial data obtained from local hospital

Table 15B. Estimated Contribution of Hospital & ECF to the Clarke County Economy

Category	Unit of Measure	Initial Impact of Hospitals	Additional Impact of Hospitals	Total Impact of Hospitals	County Total	Hospitals as a Percent of Total
Employment	# Jobs	164	24	188	6,363	3.0%
Personal Income	\$	4,055,671	1,443,601	5,499,272	312,274,000	1.8%
Indirect Business Taxes	\$	51,025	82,462	133,487	12,089,000	1.1%

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

Source: Department of Agricultural Economics, Mississippi State University.

Compiled from 1999 IMPLAN model supplemented with FYE 2001 financial data obtained from local hospital

In Table 16, three additional components of the healthcare sector (doctors/dentists, nursing homes and others) have been combined with the figures from the county hospital/nursing home. The county's entire healthcare sector employs 385 people directly, 49 people indirectly,

Table 16. Estimated Contribution of the Local Health Care Sector to the Clarke 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
Employment	jobs	385	49	434	6,363	6.8%
Personal Income	\$	9,885,000	986,332	10,871,332	312,274,000	3.5%
Indirect Business Taxes	\$	192,025	169,597	361,622	12,089,000	3.0%

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

NOTE: County has 1 hospital, 2 LTC facilities, 3 personal care homes

Source: Department of Agricultural Economics, Mississippi State University.

Compiled from 1999 IMPLAN model supplemented with FYE 2001 financial data obtained from local hospitals

which amounts to 6.8 percent of the county's total employment. Total payroll for the sector along with its impacts is estimated to be more than \$10.8 million. Indirect business taxes attributed to the healthcare sector are approximately \$361 thousand or 3.0 percent of the total in the county. Incidentally, Clarke County has, in addition to the hospital's nursing facility, two long-term care facilities and three personal care homes. The existing healthcare sector has a significant impact on employment and income throughout the other industries in Clarke County.

Summary and Conclusions

The economic influence of providing healthcare services is often overlooked when analyzing the local economy. Hospitals, nursing homes, physicians, dentists, pharmacies, home health agencies, and ambulance services are just a few of the providers that make up the healthcare sector. In a rural community, this particular sector 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 healthcare sector to the Clarke County economy. The income and employment estimates for Clarke County reinforce findings from similar research in other geographic areas.

Healthcare 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 healthcare as a percent of the state's gross product also increased from 3.23% in 1980 to 5.60% in 1999.

The demand for healthcare 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.

Healthcare services from a variety of providers located in Clarke 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 the hospital component of the healthcare sector in Clarke

County results in the employment of 2.7 percent of the county's total workforce (174 jobs) and 1.7 percent of the total earned personal income (\$5.168 million). The total healthcare sector impact on employment increases from 2.7 percent to 6.8 percent of the county's total workforce being employed either directly in or indirectly because of the healthcare sector. These additional impacts cause personal income to increase from nearly \$5.2 million or 1.7 percent to more than \$10.87 million or 3.5 percent of the county's total income. Indirect business taxes are affected in a similar manner, increasing from \$118 thousand (1.0%) to \$361 thousand or 3.0 percent of the county's total.

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

Comprehensive healthcare planning is essential to develop the strongest healthcare 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 healthcare planning to answer questions such as the following. What healthcare services are needed and feasible in our community? What changes are needed in our existing healthcare sector? This can best be accomplished with an open community planning process that includes a cross section of community residents, healthcare providers and members of the business community. Technical assistance can be obtained from Land Grant Universities or Offices of Rural Health.

Comprehensive reports such as this one completed for other counties in Mississippi with hospitals eligible for Critical Access designation can be found on the Internet at:

http://msucares.com/health/health/rh_economics.html

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 healthcare 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 Healthcare (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 healthcare 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 Healthcare 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: ly refers to family physicians, practitioners, obstetricians and gynecologists, and internists. Primary care physicians provide the first level of comprehensive healthcare.

Teenage pregnancy: Live births and reportable spontaneous fetal deaths and induced terminations to mothers less than 20 years of age.

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

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