

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

Chickasaw County, Mississippi

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October 2002

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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 for a place to establish a new business choose to locate in an area that has good education and health care systems already in place. 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 Chickasaw 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 during 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 (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, General 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
				(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 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	3,228

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 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 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 in 1998 was \$3,228. If Chickasaw County's 19,440 residents (U.S. Census Bureau, 2000) spent this average amount, more than \$62.75 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 19,440 provides estimates of potential local spending (primary health care) in Chickasaw County. The total spending potential is estimated to be more than \$45 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 Chickasaw 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 Local Spending for Health Care in Chickasaw County

Health Care Category	Mississippi Spending Per Capita	Percent Local Spending	Local Spending Per Capita	Potential Local Spending
Hospital Care	\$1,398	61%	\$853	\$16,582,320
Physician & Other Professional Services	\$804	75%	\$603	\$11,722,320
Prescription Drugs	\$350	75%	\$263	\$5,112,720
Nursing Home Care	\$250	100%	\$250	\$4,860,000
Dental Services	\$115	75%	\$86	\$1,671,840
Home Health Care	\$106	100%	\$106	\$2,060,640
Non-Prescription Drugs and Other Medical Non-Durables	\$94	75%	\$71	\$1,380,240
Other Personal Health Care	\$77	75%	\$58	\$1,127,520
Vision Products and Other Medical Durables	\$34	75%	\$26	\$505,440
Total Spending	\$3,228	72%	\$2,316	\$45,023,040

¹Footnotes explaining " Percent Local Spending" for each category are 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 Chickasaw County and the state.

Demographics

Population information detailing historical growth and future projections, population density, current age distribution, and household information for Chickasaw County and Mississippi are presented in Table 5. Between 1990 and 2000, Mississippi's population

increased 10.5 percent and Chickasaw County also experienced an increase of 7.5 percent.

Chickasaw County has a population density of 38.7 persons per square mile compared to the state with 60.6 persons per square mile, indicating its rural nature. The county's older residents represent slightly more than the same proportion of its total population as the state as a whole. Population in Chickasaw County is projected through 2025 to increase by 6.3 percent while the state's population is projected to increase by 18 percent. The number of residents in the 65 and

Table 5. Selected Demographic Data for Chickasaw County and Mississippi

Item	County	State
Population, 2000	19,440	2,844,658
Population, percent change, 1990 to 2000	7.5%	10.5%
Persons per square mile, 2000	38.7	60.6
Populations by age, percent of total, 2000		
Under 20 years	31.6%	30.7%
20 to 64 years	54.9%	57.3%
65 years and over	13.6%	12.0%
Population projection, percent change to 2025		
Total population	6.3%	18.2%
65 years and over	53.0%	73.3%
Race:		
White	56.9%	61.4%
Non-white	43.1%	38.6%
Persons over 25 graduating from high school, 1990		
Chickasaw County	43.4%	49.5%
Persons over 25 graduating from college, 1990		
Chickasaw County	9.5%	14.7%
Households, 2000	7,253	1,046,434
Median Household money income, 1997	\$24,926	\$28,527
Persons below poverty, % 1997	16.6%	18.1%

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

over category is expected to increase by about 53 percent in the county and by more than 73 percent in the state.

According to the 2000 Census, the population of Chickasaw County was 56.9 percent white and 43.1 percent non-white. These numbers are dissimilar to those of the state. The percentage of high school graduates in the county (43.4%) is less than that of the state and the percentage of college graduates was also less in the county (9.5%) than in the state (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 general observations of economic activity in Chickasaw County and Mississippi. In 1999, the county's annual personal income was more than \$357 million, providing slightly more than \$18,000 of annual income per person, which is \$2,265 less than the state average of \$23,388. The median household income in Chickasaw County is \$24,926, about 13 percent lower than the state's income value (\$28, 527), while the county's poverty rate at 16.65 percent is slightly lower than the state's (18.1%).

The civilian labor force in the county is 7,593 with about 1,039 people employed by the state and local governments (1997). All types of local enterprises generate 10,368 jobs. Persons employed in non-farm, private sector jobs total about 6,988. This indicator has decreased by 7.5 percent since 1990, and is 38.7 percent lower than the state. Average earnings per job are \$19,258 per year compared to \$23,388 for the state. There are 427 private non-farm establishments, but 371 of these have less than 20 employees. There are 904 proprietor (non-employer) establishments, which do not have any paid employees. Retail sales in the county

were more than \$102 million in 1997, which is slightly more than \$5,590 per person and is about \$2,011 below the state average of \$7,605.

Table 6. Selected Economic Data for Chickasaw County and Mississippi

Item	County	State
Personal Income, 2000 (\$1,000)	\$357,275	\$57,272,226
Personal Income per capita, 2000	\$18,421	\$20,686
Civilian Labor Force, 1999	7,593	1,269,955
Unemployment, 1999	478	64,666
Full-time and part-time employment by place of work, 1997	10,368	1,425,691
Employment in government, 1997	1,039	253,888
Local government employment, full-time equivalent, 1997	716	122,256
Private non-farm employment, 1999	6,988	948,883
Private non-farm employment, percent change 1990 to 1999	-7.5%	31.2%
Average earnings per job, 1997	\$19,258	\$23,388
Private non-farm establishments with paid employees, 1999	427	59,834
Private non-farm establishments with less than 20 employees, 1999	371	51,931
Non-employer establishments, 1998	904	125,634
Retail sales, 1997 (\$1,000)	\$102,049	\$20,774,508
Retail sales per capita, 1997	\$5,594	\$7,605

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

Table 7 shows types of employment in Chickasaw County and the state. Manufacturing, services and retail trade were the three leading employment sectors in 1999. Most health care

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 Chickasaw County and Mississippi, 2000

Industry	County	Percent of County	State	Percent of State
Farm Employment	724	6.9%	54,784	3.7%
Ag. Services, Forestry, Fishing	(D)		21,168	1.4%
Mining	(L)		7,767	0.5%
Construction	(D)		87,199	5.8%
Manufacturing	4,838	46.0%	239,692	16.0%
Transportation/Public Utilities	431	4.1%	70,664	4.7%
Wholesale Trade	211	2.0%	50,991	3.4%
Retail Trade	1,183	11.3%	244,648	16.3%
Finance, Insurance, Real Estate	307	2.9%	78,564	5.2%
Services	1,476	14.0%	376,690	25.1%
Government				
Federal Civilian	61	0.6%	27,385	1.8%
Federal Military	121	1.2%	35,453	2.4%
State	30	0.3%	64,303	4.3%
Local	755	7.2%	141,036	9.4%
Total Employment	10,512	100.0%	1,500,344	100.0%

Source: Bureau of Economic Analysis, Regional Accounts Data

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

(L) Less than 10 jobs, but the estimates for this item are included in the totals.

A more detailed view of personal income sources is presented in Table 8. The data indicate that 59 percent of total personal income came from total earnings (adjusted to place of residence) with transfer payments contributing 24 percent. Other data show that 76.4 percent of the total earnings that originate in employment within the county are from wages and salaries with an additional 14.8 percent attributed to proprietor's income. Finally, 39.8 percent of transfer payments were made for retirement/disability while 39.7 percent were made for medical purposes. A note worth mentioning is that Medicaid (transfer) payments to Chickasaw County

healthcare service providers during fiscal year 2001 were \$15,147,959 million, which represents 0.7 percent of the state's total Medicaid payments of \$2.08 billion.

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

Source	County Total (\$1,000)	County Percent	State Percent
Total Personal Income ¹	\$357,275		
Earnings by Place of Residence ²	\$210,766	59.0%	64.9%
Transfer Payments	\$85,867	24.0%	18.6%
 Total Earnings ³	 \$231,384		
Wages and Salaries	\$176,860	76.4%	78.1%
Proprietors Income	\$34,243	14.8%	11.7%
Other Labor Income	\$20,281	8.8%	10.3%
 Transfer Payments	 \$85,867		
Retirement and Disability	\$34,168	39.8%	37.4%
Medical Payments	\$34,119	39.7%	38.6%
Other	\$17,580	20.5%	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)

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 Chickasaw County was similar to the state in most categories, as was the rate for the county's hospital beds at 4.8 per 1,000 residents compared to the state's rate

of 4.2 beds per 1,000 residents. The rate of medical doctors in the county (0.5 per 1,000 population) was considerably less than the state's rate of 2 per 1,000 population.

Table 9. Availability of Selected Medical Providers in Chickasaw County

Provider Type	County Number	County Rate/1000	State Rate/1000
Hospitals (2000)	2		
Licensed Hospital Beds	94	4.8	4.2
Nursing Home (2001)	2		
Beds	132	6.8	6.2
Health Care Practitioners: (2001)			
M.D.s	10	0.5	2
Family Practice	4	0.2	0.2
Internal Medicine	3	0.2	0.3
Other	3	0.2	1.4
Dentists	5	0.3	0.4
Nurse Practitioners	4	0.2	0.5
Emergency Medical Personnel (2001)			
EMT Basics & Intermediates.	8	0.4	0.6
Paramedics	4	0.2	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. Chickasaw County has two hospitals. There are six counties that border Chickasaw, four of which have one hospital each, with 2 counties having two hospitals each. There are a total of 939 licensed

hospital beds in these surrounding counties, with 650 beds in one county alone and a total of 94 licensed beds in Chickasaw County.

Table 10 contains data showing where county residents go to receive hospital care (out-flow). Trace Regional Hospital operates 84 licensed beds (72 acute, 12 adult chemical dependency and 18 geriatric psychiatric) and Okolona Community Hospital operates 10 licensed beds. About 78 percent of Chickasaw County residents obtained some form of hospital care outside the county during the time period studied (four 2-week periods between April 2001-January 2002).

Data in Table 11 show the county of residence of patients receiving care from both of the local hospitals (in-flow). Approximately 69 percent of Trace Regional Hospital's patients were residents of Chickasaw County with 100 percent of Okolona Community Hospital's patients also residents of the county.

Table 11 A shows that patients with Medicare coverage accounted for 70 percent of the discharges at Trace Regional Hospital and 100 percent of discharges at Okolona Community Hospital. Patients with Medicaid coverage accounted for almost 13 percent of the discharges at Trace Regional Hospital, with almost 13% of the discharged patients having Blue Cross or commercial insurance coverage. These discharge percentages are representative of the four, two-week periods studied between April 2001 and January 2002.

Table 10. Hospital Discharge of Chickasaw County Residents by Hospital

Name of Hospital	Number ¹	Percent
North MS Medical Center	271	49.0%
Trace Regional Hospital	118	21.3%
Gilmore Memorial Hospital	63	11.4%
Baptist Memorial Hospital North MS	26	4.7%
Clay County Medical Center	25	4.5%
North MS State Hospital	8	1.4%
Baptist Memorial Hospital Union County	7	1.3%
Pontotoc Hospital	7	1.3%
Oktibbeha County Hospital	6	1.1%
University Hospital and Clinic	4	0.7%
Diamond Grove Center	3	0.5%
Okolona Community Hospital	3	0.5%
Baptist Memorial Hospital Golden Triangle	2	0.4%
MS Methodist Hospital and Rehab Center	2	0.4%
Parkwood BHS Olive Branch	2	0.4%
Central MS Medical Center	1	0.2%
Grenada Lake Medical Center	1	0.2%
Hillcrest Hospital	1	0.2%
Magnolia Regional Health Center	1	0.2%
MS State Hospital	1	0.2%
Riley Memorial Hospital	1	0.2%

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

Source: Mississippi Office of Rural Health

Table. 11 Discharges by Hospital by County of Residence

<u>Trace Regional Hospital</u>	<u>Frequency¹</u>	<u>Percent</u>
Chickasaw County	118	69.0%
Calhoun County	26	15.2%
Clay County	14	8.2%
Monroe County	5	2.9%
Itawamba County	2	1.2%
Webster County	2	1.2%
Grenada County	1	0.6%
Lee County	1	0.6%
Pontotoc County	1	0.6%
Union County	1	0.6%
Total	171	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. 11 Discharges by Hospital by County of Residence

<u>Okolona Community Hospital</u>	<u>Frequency¹</u>	<u>Percent</u>
Chickasaw County	3	100.0%
Total	3	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

Trace Regional Hospital	Number of Discharges ¹	Percent of Total
Medicare	83	70.34%
Medicaid	15	12.71%
Commercial	11	9.32%
Blue Cross	4	3.39%
Self Pay	3	2.54%
Unknown	1	0.85%
Workman's Comp	1	0.85%
Total	118	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 11A. Discharges by Hospital by Insurance Type

Okolona Communtiy Hospital	Number of Discharges ¹	Percent of Total
Medicare	3	100.00%
Total	3	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 obtained from the Mississippi State Office of Rural Health show that during the four 2-week study periods between April 2001 and January 2002, 23 percent of hospital discharges were for circulatory problems that includes all types of heart diseases (hypertension, heart attacks, arteriosclerosis, etc.), 13 percent for endocrine problems (diabetes), 11 percent for respiratory illnesses and 9 percent for digestive disorders.

The most common discharge diagnoses for residents of Chickasaw County who were hospitalized at *any hospital in the state* during the same study period as mentioned above show

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

Disease Group	Number ¹	Percent
Circulatory	84	15.19%
Pregnancy, childbirth	67	12.12%
Live newborns	62	11.21%
Digestive	47	8.50%
Respiratory	42	7.59%
Injury/Poisoning	39	7.05%
Mental Disorders	38	6.87%
Endocrine, Immun	31	5.61%
Musculoskeletal	21	3.80%
Genitourinary	19	3.44%
All other categories	103	18.63%
TOTAL	553	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

that 15 percent were for circulatory diseases, 12 percent for pregnancy and childbirth, 11 percent for live newborn deliveries and finally, 8 percent for digestive diseases. This data is reflected in Table 12.

Information concerning hospital admissions, Medicare and Medicaid enrollment, and selected birth and death statistics are detailed in Table 13. There were 1,142 discharges for FYE 2000 between both local hospitals. The county had a higher percentage of residents enrolled in Medicare than the state and the county's Medicaid statistics were also higher than the state's. The rate of infant mortality was lower than the state's rate, however the percentage of births to unmarried mothers in the county (48.7%) was slightly higher than the state (46.0%), and the teenage pregnancy rate in the county (50.5) was considerably higher than the state's rate (42.9).

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

Status or Indicator ¹	County Number	County Percent/Rate	State Percent/Rate ⁴
Hospital Discharges	1,142	5.9%	N/A
Medicare Enrollment (98)			
Aged (65 and over)	2,759	14.2%	11.5%
Disabled (Under 65)	875	4.5%	2.9%
Medicaid Eligible (2000)	4,595	23.6%	19.5%
Infant Mortality (1996-2000) ²	3	8.8	10.5
Live Births to Unmarried Mothers	153	48.7%	46%
Teenage Pregnancy (2000) ³	75	50.5	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)

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

Table 14. Death Rates from Selected Causes for Chickasaw County

Causes of Death	Chickasaw County		State of Mississippi	
	Number ¹	Rate ²	Number ¹	Rate ²
Cardiovascular Diseases *	101	519.5	11,792	414.5
All Types of Cancer	40	205.8	6,080	213.0
Kidney Diseases	9	46.3	612	21.5
Chronic Lung Diseases	8	41.2	1,303	45.8
Accidents (all types)	8	41.2	1,119	58.1
Diabetes Mellitus	5	25.7	670	23.6
Homicide	5	25.7	215	11.0
Pneumonia & Influenza	4	20.6	804	28.3
Automobile Accidents	4	20.6	613	32.9
Liver Diseases	1	5.1	246	8.6
Suicide	1	5.1	291	10.2

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

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 Chickasaw County.

Table 15 reports the estimated impact of Trace Regional Hospital on Chickasaw County's economy. Based on 1999 IMPLAN model data and primary data gathered from FYE 2001 financial reports, this hospital provides 211 jobs and these jobs create the need for 38 additional local jobs. Thus, Trace Regional Hospital generates an impact of 2.4% of the total county employment. Likewise, the hospital creates more than \$5.19 million in personal income directly, and about \$ 543 thousand indirectly (including proprietor income and other property income), for a total of 1.7% of the county's income. Indirect business taxes in the county of more than \$302 thousand are generated by this hospital as it creates secondary economic activity.

Table 15. Estimated Contribution of Trace Regional Hospital to the Chickasaw 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	211	38	249	10,368	2.4%
Personal Income	\$	5,198,349	543,708	5,742,057	344,819,000	1.7%
Indirect Business Taxes	\$	176,536	125,815	302,351	16,487,000	1.8%

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 Trace Regional Hospital

Table 15A shows the same information as above for Trace Regional Hospital and their nursing home component, Floyd Dyer Manor Nursing Home. Again, Based on 1999 IMPLAN model data and primary data gathered from FYE 2001 financial reports, these facilities provide 259 jobs and these jobs create the need for 51 additional local jobs. Thus, this organization

generates an impact of 3.0% of the total county employment, more than \$6.22 million in personal income directly, and more than \$942 thousand indirectly, for a total of 2.1% of the county's income. Indirect business taxes in the county of more than \$334 thousand are generated by this combined enterprise as it creates secondary economic activity.

Table 15A. Estimated Contribution of Trace Regional Hospital & Floyd Dyer Manor Nursing Home

Category	Unit of Measure	Initial Impact of Entities	Additional Impact of Entities	Total Impact of Hospital & NH	County Total	Both Entities as a Percent of Total
Employment	# Jobs	259	51	310	10,368	3.0%
Personal Income	\$	6,224,779	942,545	7,167,324	344,819,000	2.1%
Indirect Business Taxes	\$	187,346	146,904	334,250	16,487,000	2.0%

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 and FYE 2001 financial data from Trace Regional Hospital and Nursing Home

An evaluation of the economic impact for Okolona Community Hospital located in Okolona, MS, could not be completed due to their inability to provide sufficient financial data.

Table 16. Estimated Contribution of the Local Health Care Sector to the Local 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	355	76	431	10,368	4.2%
Personal Income	\$	9,585,000	1,321,760	10,906,760	344,819,000	3.2%
Indirect Business Taxes	\$	270,000	215,471	485,471	16,487,000	2.9%

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

NOTE: Figures for Okolona Community Hospital are NOT included in this study

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, the three additional components of the health care sector (doctors & dentists; nursing and protective care; other medical & health services) have been combined with the collective figures from Trace Regional Hospital and Floyd Dyer Manor Nursing Home (see Table 15A). The additional components added together employ 96 people resulting in a total of 355 people employed by the county's entire health care sector. Total payroll for the entire sector is estimated to be more than \$9.58 million. The existing health care sector has a significant impact on employment and income throughout the other industries in Chickasaw County. The total employment impact of Chickasaw County's health care sector is an estimated 431 jobs (355 direct and 76 indirect) that results in a total income of more than \$10.9 million, with 4.2% of the total county employment being either directly or indirectly in the health care sector. Indirect business taxes attributed to the health care sector and its impacts are approximately \$485 thousand or almost 3 percent of the total in the county.

Summary and Conclusions

The economic influence of providing health care 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 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 Chickasaw County economy. The income and employment estimates for Chickasaw County reinforce findings from similar research in other geographic areas.

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 Chickasaw 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 Trace Regional Hospital and its affiliated nursing home results

in the employment of 3.0% of the county's total workforce (310 jobs) and 2.1 percent of the total earned personal income (\$7.16 million). When other components of the health care sector are added to the hospital/nursing home component, the impact on employment increases from 3.0 percent to 4.2 percent 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 \$7.167 million or 2.1 percent to more than \$10.9 million or 3.2 percent of the county's total income. Indirect business taxes are affected in a similar manner, increasing from \$334 thousand to \$485 thousand or nearly 3 percent of the county 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 the State's Office of Rural Health. Other Mississippi counties' reports 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 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.

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 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, General Accounts Data
 Website: <http://www.bea.doc.gov/bea/General/reis/action.cfm>
 Accessed: 12-4-01
- 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
- Chickasaw County MapStats from Fed Stats
 Website: www.fedstats.gov/qf/states/28.html
 Accessed: 3-18-02
- Chickasaw County Quick Facts from the U.S. Census Bureau
 Website: <http://quickfacts.census.gov/qfd/states/28.htm>
 Accessed: 3-18-02
- Health Care Financing Administration
 Website: <http://www.hcfa.gov/stats/nhe-oact/stateestimates/Tables98.htm>
 Accessed: 12-4-01
 Website: <http://www.hcfa.gov/STATS/ENROLL/070199/MISSISSIPPI.HTM>
 Accessed: 12-4-01
- 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: 4-23-02
- 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
2000 Report on Hospitals, July 2001

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 2000

Mississippi State Department of Health and Human Services, Division of Medicaid
Website: <http://www.dom.state.ms.us/statistics.html>
Accessed: January 28, 2002

Mississippi State Nursing Association
Website: <http://msnurses.org>
Accessed: 8-1-01

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: 11-7-01

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
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