

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

Wilkinson County, Mississippi

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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 Wilkinson 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, 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
				(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 Wilkinson County's 10,312 residents (U.S. Census Bureau, 2000) spent this average amount, more than \$33.2 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 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 10,312 provides estimates of potential local spending (primary health care) in Wilkinson County. The total spending potential is estimated to be more than \$23.8 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 Wilkinson County.

By comparing the potential local expenditures with actual local spending, the opportunity to expand local health care services may be assessed. For example, the 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 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 Wilkinson County

Health Care Category	Mississippi Spending Per Capita	Percent Local Spending	Local Spending Per Capita	Potential Local Spending
Hospital Care	\$1,398	61%	\$853	\$8,796,136
Physician & Other Professional Services	\$804	75%	\$603	\$6,218,136
Prescription Drugs	\$350	75%	\$263	\$2,712,056
Nursing Home Care	\$250	100%	\$250	\$2,578,000
Dental Services	\$115	75%	\$86	\$886,832
Home Health Care	\$106	100%	\$106	\$1,093,072
Non-Prescription Drugs and Other Medical Non-Durables	\$94	75%	\$71	\$732,152
Other Personal Health Care	\$77	75%	\$58	\$598,096
Vision Products and Other Medical Durables	\$34	75%	\$26	\$268,112
Total Spending	\$3,228	72%	\$2,316	\$23,882,592

¹ Footnotes 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 Wilkinson County and the state.

Demographics

Population information detailing historical growth and future projections, population density, current age distribution, and household information for Wilkinson County and Mississippi are presented in Table 5. Between 1990 and 2000, Mississippi's population increased 10.5 percent and Wilkinson County also experienced an increase of 6.6 percent.

Wilkinson County has a population density of 15.2 persons per square mile, which indicates it exceptionally rural nature. The county's older residents represent slightly more (13.9%) than the state average of 12.0 percent. Population in Wilkinson County is projected through 2025 to decrease by 12.8 percent while the state's population is projected to increase by 18 percent. The number of residents in the 65 and over category, however, is expected to increase by nearly 41 percent in the county and by more than 73 percent in the state.

According to the 2000 Census, the population of Wilkinson County was 31.2 percent white and 68.8 percent non-white. These numbers are considerably different than those of the state. The percentage of high school graduates in the county (39.4%) is 10 percent lower than that of the state (49.5%), and the percentage of college graduates is considerably less in the county (8.9%) than in the state (14.7%). These educational statistics are from the 1990 Census and may be higher or lower, based on 2000 Census data which has not been made available to the public at the time of this writing.

Economic Indicators

Data presented in Table 6 give general observations of economic activity in Wilkinson County and Mississippi. In 2000, the county's annual personal income was more than \$143 million, providing slightly less than \$14,000 of annual income per person, which is about \$7,000 less than the state average of \$20,900. The median household income in Wilkinson County is \$18,282, which is about \$10,000 lower than the state's income value (\$28, 527) and the county's poverty rate at 28.8% percent is noticeably higher than the state (18.1%). The civilian labor force in 1999 in the county was 2,983 with about 652 people employed by the state and local governments. All types of local enterprises generate 3,169 jobs. Persons employed in non-

Table 5. Selected Demographic Data for Wilkinson County and Mississippi

Item	County	State
Population, 2000	10,312	2,844,658
Population, percent change, 1990 to 2000	6.6%	10.5%
Persons per square mile, 2000	15.2	60.6
Populations by age, percent of total, 2000		
Under 20 years	29.1%	30.7%
20 to 64 years	56.9%	57.3%
65 years and over	13.9%	12.0%
Population projection, percent change to 2025		
Total population	-12.8%	18.2%
65 years and over	40.7%	73.3%
Race: White		
Non-white	31.2%	61.4%
	68.8%	38.6%
Persons over 25 graduating from high school, 1990	39.4%	49.5%
Persons over 25 graduating from college, 1990	8.9%	14.7%
Households, 2000	3,578	1,046,434
Median Household money income, 1997	\$18,282	\$28,527
Persons below poverty, % 1997	28.8%	18.1%

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

farm, private sector jobs total about 1,673. This indicator has increased by 9.3 percent since 1990, and is much lower than the state (31.2%). Average earnings per job are \$16,371 per year, which is about \$7,000 less than the state average at \$23,388.

Table 6. Selected Economic Data for Wilkinson County and Mississippi

Item	County	State
Personal Income, 2000 (\$1,000)	\$143,540	\$59,545,076
Personal Income per capita, 2000	\$13,933	\$20,900
Civilian Labor Force, 1999	2,983	1,269,955
Unemployment, 1999	455	64,666
Full-time and part-time employment by place of work, 1997	3,169	1,425,691
Employment in government, 1997	652	253,888
Local government employment, full-time equivalent, 1997	354	122,256
Private non-farm employment, 1999	1,673	948,883
Private non-farm employment, percent change 1990 to 1999	9.3%	31.2%
Average earnings per job, 1997	\$16,371	\$23,388
Private non-farm establishments with paid employees, 1999	171	59,834
Private non-farm establishments with less than 20 employees, 1999	152	51,931
Non-employer establishments, 1998	364	125,634
Retail sales, 1997 (\$1,000)	\$31,142	\$20,774,508
Retail sales per capita, 1997	\$3,380	\$7,605

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

There are 171 private non-farm establishments, but 152 of these have less than 20 employees. There are 364 non-employer establishments (proprietorships), which do not have any paid employees. Retail sales in the county were more than \$ 31.1 million in 1997. This is slightly more than \$3,380 per person per year, which is \$4,225 less than the state average of \$7,605.

Table 7 shows types of employment in Wilkinson County and the state. Services, local government (including schools), retail trade and manufacturing were the four leading employment sectors in 2000. 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 Wilkinson County and Mississippi, 2000

Industry	County	Percent of County	State	Percent of State
Farm Employment	262	8.6%	55,203	3.7%
Ag. Services, Forestry, Fishing	(D)		19,256	1.3%
Mining	22	0.7%	8,101	0.5%
Construction	(D)		84,954	5.7%
Manufacturing	344	11.3%	250,824	16.8%
Transportation/Public Utilities	181	6.0%	67,269	4.5%
Wholesale Trade	110	3.6%	51,052	3.4%
Retail Trade	411	13.5%	244,023	16.3%
Finance, Insurance, Real Estate	118	3.9%	76,283	5.1%
Services	884	29.1%	371,730	24.9%
Government				
Federal Civilian	16	0.5%	26,033	1.7%
Federal Military	60	2.0%	35,129	2.4%
State	42	1.4%	62,085	4.2%
Local	505	16.6%	141,499	9.5%
Total Employment	3,038	100.0%	1,493,441	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.

A more detailed view of personal income sources is presented in Table 8. The data indicate that 50.4 percent of total personal income came from total earnings (adjusted to place of residence) with transfer payments contributing 32.8 percent. Other data show that 73.1 percent of the total earnings that originate in employment within the county are from wages and salaries, with 16.6% from proprietor's income. Finally, 29.7 percent of transfer payments were made for

retirement/disability while 41.6 percent were made for medical purposes. An example of transfer payments would be the dollars Medicaid paid to healthcare goods and services' providers during fiscal year 2001. This amounted to more than \$11.1 million and represents 0.5% of the total amount paid (\$2.08 billion) to providers across the state during FY 2001.

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

Source	County Total (\$1,000)	County Percent	State Percent
Total Personal Income ¹	\$143,540		
Earnings by Place of Residence ²	\$72,277	50.4%	64.9%
Transfer Payments	\$47,039	32.8%	18.6%
 Total Earnings ³	 \$56,517		
Wages and Salaries	\$41,326	73.1%	78.1%
Proprietors Income	\$9,393	16.6%	11.7%
Other Labor Income	\$5,798	10.3%	10.3%
 Transfer Payments	 \$47,039		
Retirement and Disability	\$13,967	29.7%	37.4%
Medical Payments	\$19,567	41.6%	38.6%
Other	\$13,505	28.7%	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 Wilkinson County was lower than the state in most categories,

however the rate of nursing home beds at 10.2 beds per 1,000 residents was higher when compared to the state's rate of 6.2 beds per 1,000 residents. The rate of EMTs (including intermediates) and paramedics was less than the state's rates for these medical providers.

Table 9. Availability of Selected Medical Providers in Wilkinson County

Provider Type	County Number	County Rate/1000	State Rate/1000
Hospitals (2000)	1		
Licensed Hospital Beds	66	6.4	4.2
Nursing Home (2001) Beds	105	10.2	6.2
Health Care Practitioners: (2001)			
M.D.s	18	1.7	2
Family Practice	3	0.3	0.2
Internal Medicine	4	0.4	0.3
Other	11	1.1	1.4
Dentists	4	0.4	0.4
Nurse Practitioners	4	0.4	0.5
Emergency Medical Personnel (2001)			
EMT Basics & Intermediates.	1	0.1	0.6
Paramedics	1	0.1	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. Wilkinson

County has one hospital. There are three Mississippi counties that border Wilkinson County; one has one hospital and one has two hospitals; the remaining county does not have a hospital. There are a total of 355 licensed hospital beds in these surrounding counties and a total of 66 beds in Wilkinson County. Table 10 contains data showing where county residents go to receive

Table 10. Hospital Discharge of Wilkinson County Residents by Hospital

<u>Name of Hospital</u>	<u>Number¹</u>	<u>Percent</u>
Field Memorial Community Hospital	110	55.3%
Natchez Regional Medical Center	31	15.6%
Natchez Community Hospital	26	13.1%
University Hospital and Clinic	10	13.1%
Kings Daug Medical Center- Brookhaven	6	3.0%
South West MS Regional Medical Center	3	3.0%
Forrest General Hospital	2	1.0%
MS State Hospital	2	1.0%
Parkview River Regional	2	1.0%
Rankin Medical Center	2	1.0%
MS Baptist Medical Center	1	0.5%
MS Methodist Hospital and Rehab Center	1	0.5%
South Central Regional Medical Center	1	0.5%
Saint Dominic Hospital	1	0.5%
Vicksburg Medical Center	1	0.5%
Total	199	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

hospital care (out-flow). Wilkinson County General Hospital operates 66 licensed beds. About 45 percent of Wilkinson County residents obtained some form of hospital care *outside* the county during the time period studied (four two-week periods between April 2001 and January 2002).

Data in Table 11 show the county of residence of patients receiving care from the local hospital (in-flow). Approximately 51 percent of Wilkinson County General Hospital's patients

were residents of Wilkinson County with nearly 38 percent of patients being residents of Amite County and 7 percent of patients being residents of Louisiana.

Table. 11 Discharges by Hospital by County of Residence

Field Memorial Community Hospital	Frequency ¹	Percent
Wilkinson County	110	51.4%
Amite County	81	37.9%
Louisiana	15	7.0%
Pike County	4	1.9%
Walthall County	2	0.9%
Arkansas	1	0.5%
Franklin County	1	0.5%
Total	214	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 A shows that patients with Medicare coverage accounted for almost 62 percent of the discharges at the local county hospital. Patients with Medicaid coverage accounted for nearly 23 percent of the discharges; patients with commercial or Blue Cross insurance accounted

Table 11A. Discharges by Hospital by Insurance Type

Field Memorial Community Hospital	Number of Discharges	Percent of Total
Medicare	133	62.15%
Medicaid	50	23.36%
Commercial	13	6.07%
Self Pay	10	4.67%
Blue Cross	5	2.34%
Other Government	3	1.40%
Total	214	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

for 8 percent. These discharge percentages are representative of the four, two-week periods studied by the state's Office of Rural Health between April 2001 and January 2002.

Discharge Diagnoses

Data obtained from the Mississippi State Office of Rural Health show during the four 2-week sample periods between April 2001 and January 2002, that 20 percent of discharges from Field Memorial Community Hospital were for respiratory problems; 17 percent were for circulatory problems that includes all types of heart diseases (hypertension, heart attacks, arteriosclerosis, etc.) and 12 percent of discharges were for digestive disorders. Data in Table 12 show the most common discharge diagnoses for residents of Wilkinson County who were

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

Disease Group	Number ¹	Percent
Circulatory	46	23.12%
Respiratory	22	11.06%
Pregnancy, childbirth	19	9.55%
Digestive	17	8.54%
Injury/Poisoning	15	7.54%
Genitourinary	14	7.04%
Live newborns	13	6.53%
Endocrine, Immun	12	6.03%
Mental Disorders	6	3.02%
Musculoskeletal	6	3.02%
All other categories	29	14.57%
TOTAL	199	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

hospitalized at *any hospital in the state* during the same sample period as mentioned above show that 23 percent of discharges were for circulatory diseases, 11 percent were for respiratory diseases, nearly 10 percent for conditions arising during pregnancy and/or childbirth and almost 9 percent for conditions related to the digestive system.

Information concerning hospital admissions, Medicare and Medicaid enrollment, and selected birth and death statistics are detailed in Table 13. There were 1,115 discharges for FYE 2001 at the local county hospital. The county had a slightly higher percentage of residents enrolled in Medicare than the state average, but the county's Medicaid statistics were considerably higher than the state's by nearly 12 percent. This may be because of the higher

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

Status or Indicator ¹	County Number	County Percent/Rate	State Percent/Rate ⁴
Hospital Discharges	1,115	10.8%	N/A
Medicare Enrollment (98)			
Aged (65 and over)	1,343	13.0%	11.5%
Disabled (Under 65)	335	3.2%	2.9%
Medicaid Eligible (2000)	3,195	31.0%	19.5%
Infant Mortality (1996-2000) ²	2	7.8	10.5
Live Births to Unmarried Mothers	96	70.1%	46%
Teenage Pregnancy (2000) ³	29	37.7	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 5 year 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)

poverty rate in the county as compared to the state. The rate of infant mortality was slightly lower than the state's rate for the 5-year average and there were two (2) infant deaths during the year 2000. The percentage of births to unmarried mothers in the county was significantly higher (70.1%) than the state (46.0%), but the teenage pregnancy rate in the county (37.7 per 1,000) was lower than the state's rate (42.9 per 1,000).

Table 14 contains the eleven most common causes of death among Wilkinson County residents in 2000. Cardiovascular disease, cancer, accidents and diabetes were the top four reasons for death among county residents, with automobile accidents and pneumonia/influenza tied for fifth place. This data is somewhat consistent with state rates for three out of five of the most common causes of death.

Table 14. Death Rates from Selected Causes for Wilkinson County

Causes of Death	Wilkinson County State of Mississippi			
	Number ¹	Rate ²	Number ¹	Rate ²
Cardiovascular Diseases *	54	523.7	11,792	414.5
All Types of Cancer	21	203.6	6,080	213.0
Accidents (all types)	7	67.9	1,119	58.1
Diabetes Mellitus	5	48.5	670	23.6
Automobile Accidents	3	29.1	613	32.9
Pneumonia & Influenza	3	29.1	804	28.3
Chronic Lung Diseases	2	19.4	1,303	45.8
Kidney Diseases	1	9.7	612	21.5
Homicide	1	9.7	215	11.0
Liver Diseases	1	9.7	246	8.6
Suicide	0	0	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 Wilkinson County.

Table 15 reports the estimated impact of Field Memorial Community Hospital on the county’s economy. Based on 1999 IMPLAN model data and primary data gathered from FYE 2001 hospital financial reports, this hospital provides 107 jobs and these jobs create the need for 31 additional local jobs within the county. Thus, Wilkinson County Hospital generates an impact of 4.4% of the total county employment. Likewise, the hospital creates more than \$4.7 million in personal income directly, and about \$651 thousand indirectly, for a total of 3.7% of the county’s total income. Indirect business taxes in the county of slightly more than \$107 thousand are generated by this hospital as it creates secondary economic activity.

Table 15. Estimated Contribution of Field Memorial Community Hospital to the Wilkinson Co. Economy

	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	107	31	138	3,169	4.4%
Personal Income	\$	4,703,620	651,126	5,354,746	143,540,000	3.7%
Indirect Business Taxes	\$	0	107,302	107,302	5,363,000	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 supplemented with 2001 financial data obtained from hospital

In Table 16, three additional components of the healthcare sector (doctors & dentists; nursing and protective care; other medical & health services) have been combined with the collective figures from the county's hospital. The additional components added together employ 353 people resulting in a total of 460 people directly employed by the county's entire healthcare sector. Total payroll for the entire sector is estimated to be more than \$14.2 million. The

Table 16. Estimated Contribution of the Healthcare Sector to the Wilkinson 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	460	78	538	3,169	17.0%
Personal Income	\$	14,249,620	1,548,111	15,797,731	143,540,000	11.0%
Indirect Business Taxes	\$	263,000	302,357	565,357	5,363,000	10.5%

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 2001 financial data obtained from local hospital

existing health care sector has a significant impact on employment and income throughout the other industries in Wilkinson County. The total employment impact of Wilkinson County's

healthcare sector is an estimated 538 jobs that result in a total income of more than \$15.7 million or 11.0 percent of the total county employment being either directly or indirectly in the health care sector. Indirect business taxes attributed to the health care sector are approximately \$565 thousand or 10.5 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 Wilkinson County economy. The income and employment estimates for Wilkinson 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 Wilkinson County are delivered to residents and non-residents alike. This creates substantial direct and indirect impacts on the local economy by providing residents (and possibly non-residents) with employment and income opportunities.

Financial interrelationships captured in an economic model indicate that the total impact (direct and indirect combined) of only the hospital component of the health care sector in

Wilkinson County results in the employment of 4.4 percent of the county's total workforce (138 jobs) and 3.7 percent of the total earned personal income (\$5.35 million). When other components of the health care sector are added to the hospital component, the impact on employment increases from 4.4 percent to 17 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 \$5.35 million or 4.4 percent to more than \$15.7 million or 11.0 percent of the county's total income. Indirect business taxes are affected in a similar manner, increasing from \$ 107,302 or 2.0 to \$460,358 or 4.7% 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. Additional reports that have been completed for the state of Mississippi can be found on the Internet at http://msucare.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. One of the major changes which affected small rural hospitals in a negative fashion was changing Medicare reimbursements from a cost-based methodology to one related to a patient’s condition (DRG or diagnosis related group) regardless of the cost involved to effectively treat the patient.

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).

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