

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

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Measuring the Impact of the Health Sector on a Local Economy

Newton County, Mississippi

Introduction

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

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

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

Health Care Expenditures in Mississippi

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

As shown in Table 2, growth in personal health care spending in Mississippi averages 5.31% from 1980 to 1998, increasing from nearly \$3.5 billion in 1980 to \$8.8 billion in 1998 (in real dollars). The major components of personal health care spending include hospital care, physician and other professionals, prescription drugs and home health are the major components of personal health care spending. The data in Table 2 show that more money was spent on home

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

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

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

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

As shown previously in Table 3, the average annual per capita expenditure on health care in Mississippi was \$3,228 in 1998. If Newton County's 21,838 residents of (U.S. Census Bureau, 2000) spent this average amount, about \$70.5 million would have been spent for health care services by residents. 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 first column multiplied by the second column. Multiplying the numbers in the local spending per capita column by 21,838 provides estimates of potential local (health care) spending in Newton County. The total spending potential for this county is estimated to be more than \$50.5 million per year. The actual amount of spending could be greater than or less than this value depending on the type, size and quality of providers in Newton County and the health status of its residents.

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

search of adequate care, then there may be a potential to expand locally. However, any business must have a reliable consumer base of a certain size in order to remain viable. The size of the consumer base is dependent on population demographics within the county and possibly in nearby counties.

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

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

Health Care Category	Mississippi Spending Per Capita	Percent Local Spending	Local Spending per Capita	Potential Local Spending
Hospital Care	\$1,398	61% ¹	\$853	\$18,627,814
Physician & Other Professional Services	804	75% ²	603	\$13,168,314
Prescription Drugs	350	75% ²	263	\$5,743,394
Nursing Home Care	250	100% ³	250	\$5,459,500
Dental Services	115	75% ²	86	\$1,878,068
Home Health Care	106	100% ⁴	106	\$2,314,828
Nonprescription Drugs and Other				
Medical Nondurables	94	75% ²	71	\$1,550,498
Other Personal Health Care	77	75% ²	58	\$1,266,604
Vision Products & Other Medical Durables	34	75% ²	26	\$567,788
Total Spending	\$3,228	72%	\$2,316	\$50,576,808

¹Footnotes 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 Newton County and Mississippi are presented in Table 5. Between 1990 and 2000, Mississippi's population increased 10.5 percent while Newton County experienced an increase of 7.6 percent. Newton County has slightly more than one-half the population density as Mississippi, indicating its rural nature. The county's older residents represent a larger proportion of its total population than in the state as a whole. Population in Newton County is projected through 2025 to increase at a slower rate than the state. The number of residents in the 65 and over category is expected to increase by 58% in the county and by 73.3% in the state.

According to the 2000 Census, the population of Newton County was 65% white and 34% non-white. These numbers show a slight deviation from those of the state. The percentage of high school graduates in the county are very close to that of the state, however, the percentage of college graduates is somewhat lower than the state.

Economic Indicators

Data presented in Table 6 give general observations of economic activity in Newton County and Mississippi. The county's annual personal income is more than \$424 million, providing slightly more than \$19,000 of annual income per person (about \$1,000 less than the state average). Median household income in Newton County is \$25,659, about 10 percent lower than the state income value and the county's poverty rate is slightly lower than the state.

Table 5. Selected Demographic Data for Newton County and Mississippi

Item	County	State
Population, 2000	21,838	2,844,658
Population, percent change, 1990 to 2000	7.6%	10.5%
Persons per square mile, 2000	37.8	60.6
Populations by age, percent of total, 2000		
Under 20 years	30.1%	30.7%
20 to 64 years	55.3%	57.3%
65 years and over	14.6%	12.0%
Population projection, percent change to 2025		
Total population	13.0%	18.2%
65 years and over	58.2%	73.3%
Race:		
White	65.0%	61.4%
Non-white	34.3%	38.6%
Persons over 25 graduating from high school	34.2%	34.8%
Persons over 25 graduating from college	5.5%	8.0%
Households, 2000	8,221	1,046,434
Median Household money income, 1997	\$25,659	\$28,527
Persons below poverty, % 1997	16.4%	18.1%

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

The civilian labor force in the county is more than 8,200 with slightly more than 1200 people employed by governments. All types of local enterprises generate 9,827 jobs. Persons employed in non-farm, private sector jobs total about 5,100. This indicator has increased by over 23 percent since 1990, but is lower than the state rate of 29.6%. Average earnings per job are almost \$20,000 per year compared to about \$23,700 for the state.

There are 376 private non-farm establishments, but 342 of these have less than 20 employees. There are more than 900 businesses, which do not have any paid employees. Retail

Table 6. Selected Economic Data for Newton County and Mississippi

Item	County	State
Personal Income, 1999 (\$1,000)	\$ 424,206	\$57,272,226
Personal Income per capita, 1999	\$ 19,512	\$20,686
Civilian Labor Force, 1999	8,268	1,269,955
Unemployment, 1999	553	64,666
Full-time and part-time employment by place of work, 1999	9,827	1,493,441
Employment in government, 1999	2,094	264,746
Local government employment, full-time equivalent, 1999	1235	141,499
Private nonfarm employment, 1998	5,144	937,023
Private nonfarm employment, percent change 1990 to 1998	23.2%	29.6%
Average earnings per job, 1999	\$ 20,166	\$ 23,753
Private nonfarm establishments with paid employees, 1998	376	59,771
Private nonfarm establishments with less than 20 employees, 1998	342	51,949
Non-employer establishments, 1997	966	121,668
Retail sales, 1997 (\$1,000)	\$ 116,044	\$ 10,124,822
Retail sales per capita, 1997	\$ 5,402	\$ 7,605

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

sales in the county were about \$116 million in 1997. This is about \$5,400 per person, but is about \$2,200 below the state average.

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

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

Industry	County		Percent of	
	County	County	County	State
Farm employment	828		8.5%	55,203
Ag. services, forestry, fishing	(D)	NA		19,256
Mining	(D)	NA		8,101
Construction	490		5.0%	84,954
Manufacturing	2413		24.8%	250,824
Transportation/public utilities	280		2.9%	67,269
Wholesale trade	118		1.2%	51,052
Retail trade	1368		14.1%	244,023
Finance, insurance, real estate	309		3.2%	76,283
Services	1828		18.8%	371,730
Government				
Federal Civilian	85		0.9%	26,033
Federal Military	145		1.5%	35,129
State	629		6.5%	62,085
Local	1235		12.7%	141,499
Total employment	9728		100.0%	1,493,441

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

NA Not available

Source: Bureau of Economic Analysis, Regional Accounts Data

are in the services sector, while sales of drugs and other medical items would be included in the retail trade sector.

A more detailed view of personal income sources is presented in Table 8. The data indicate that 61 percent of total personal income came from total earnings (adjusted to place of residence) with transfer payments contributing 24 percent. Other data show that 65.3 percent of the total earnings that originate in employment within the county are from wages and salaries. Finally, transfer payments were primarily made for medical purposes (41%).

Table 8. Personal Income Data for Newton County and Mississippi, 1999

Source	County Total	County Percent	State Percent
	(\$1,000)		
Total Personal Income ¹	424,206		
Earnings by Place of Residence ²	257,472	61.0%	64.9%
Transfer Payments	101,881	24.0%	18.6%
Total Earnings ³	239,902		
Wages and Salaries	156,772	65.3%	78.1%
Proprietors' Income	61,158	25.4%	11.7%
Other Labor Income	21,972	9.2%	10.3%
Transfer Payments	101,881		
Retirement and Disability	38,384	38.0%	37.4%
Medical Payments	41,806	41.0%	38.6%
Other	21,093	21.0%	23.9%

¹ Definitions are in Appendix B, Glossary of Terms

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

³ Total earnings by place of work.

Source: Bureau of Economic Analysis (1999 Data)

Health Care Availability and Utilization

Health care resources are summarized in Table 9. These statistics demonstrate the availability of physicians and other selected health care services in the county. The rate of health care service providers in Newton County was less than the state in most categories. However, the rate of licensed and staffed hospital beds was greater than the state's rates of 4.2 and 3.8, respectively. The rate of EMTs (including intermediates) was 1.0 per 1,000 residents, while the rate of paramedics was 0.3 per 1,000.

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. Newton County has two hospitals located in the northwest and southeast regions of the county. There are eight

Table 9. Availability of Selected Medical Providers in Newton County

Provider	County Number	County Rate/1000	State Rate/1000
Hospitals (2000)	2		
Licensed Hospital Beds	99	4.5	4.2
Staffed Hospital Beds	99	4.5	3.8
Nursing Home (2001)	1		
Beds	120	5.5	6.2
Health Care Practitioners: (2001)			
M.D.s	14	0.6	2.0
Family Practice	4	0.2	0.2
Internal Medicine	5	0.2	0.3
Other	5	0.2	1.4
Dentists	8	0.4	0.4
Nurse Practitioners	7	0.3	0.5
Emergency Medical Personnel (2001)			
EMT Basics & Intermediates.	22	1.0	0.6
Paramedics	7	0.3	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

counties that border Newton, six of which have one hospital each and one county with six hospitals. Newton Regional Hospital in Newton, operates 49 licensed beds while Laird Hospital in Union, operates 50 licensed beds.

Table 10 contains data showing where Newton County residents go to receive hospital care (out-flow). About 62 percent of Newton County residents obtain some form of hospital care outside the county. The most common health problems related to patient out-flow are respiratory, circulatory, and digestive system disorders.

Table 10. Hospital Discharges of Newton County Residents by Hospital

Name of Hospital	Number ¹	Percent
Newton Regional Hosp.	223	24.32%
Jeff Anderson Reg. Medical Center	185	20.17%
Rush Foundation Hospital	137	14.94%
Laird Hospital	127	13.85%
Riley Memorial	68	7.42%
University Medical Center	55	6.00%
Neshoba County Gen. Hospital	32	3.49%
Alliance Health Center	19	2.07%
MS Baptist Medical Center	16	1.74%
S.E. Lackey Memorial. Hospital	12	1.31%
St. Dominic Hospital	11	1.20%
River Oaks Hospital	9	0.98%
Speciality Hosp Meridian	4	0.44%
Central MS Medical Center	3	0.33%
East Mississippi State Hospital	3	0.33%
Forrest General Hospital	3	0.33%
MS Methodist Hospital & Rehab	2	0.22%
Rankin Medical Center	2	0.22%
Womans Hospital	2	0.22%
HC Watkins Memorial Hospital	1	0.11%
MS State Hospital	1	0.11%
Scott Regional Hospital	1	0.11%
Vicksburg Medical Center	1	0.11%
Total	917	100.02%

¹ Aggregate Patient Origin Study, data collected during four 2-week periods from Jan-Oct 2000
Source: Mississippi Office of Rural Health

Data in Table 11 show the county of residence of patients receiving care from both of the Newton County hospitals (in-flow). Newton Regional Hospital had 77.5% and Laird Hospital had 53.6% of their patients from within the county.

Table 11. Discharges from Newton Regional Hospital by Patient's County of Residence

County of Residence	Frequency	Percent
Newton	223	77.5
Jasper	33	11.7
Scott	14	4.9
Winston	3	1.0
Lauderdale	2	0.7
Noxubee	2	0.8
Attala	1	0.3
Calhoun	1	0.3
Hinds	1	0.3
Jones	1	0.3
Lamar	1	0.3
Madison	1	0.3
Neshoba	1	0.3
Tennessee	1	0.3
Unknown	3	1.0
Total	288	100.0%

Discharges from Laird Hospital by Patient's County of Residence

Newton	127	53.6
Neshoba	59	24.9
Leake	24	10.1
Scott	18	7.6
Lauderdale	2	0.8
Adams	1	0.4
Chickasaw	1	0.4
Jeff Davis	1	0.4
Kemper	1	0.4
Perry	1	0.4
Winston	1	0.4
Unknown	1	0.4
Total	237	99.8

Source: Office of Rural Health, Aggregate Patient Origin Study, data collected during four 2-week periods from Jan-Oct 2000

Discharge Diagnoses

Data obtained from the Mississippi State Office of Rural Health show in Table 12 that 13.96% of all discharges of Newton County residents from hospitals around the state were for problems relating to the respiratory system, which includes pneumonia, emphysema and other acute and chronic diseases of the lungs. The second leading cause of hospitalizations for residents was for circulatory problems, which includes all types of heart diseases (hypertension, heart attacks, arteriosclerosis, etc.) along with cerebrovascular diseases (including “stroke”). Gastrointestinal diseases and pregnancy and childbirth were the third and fourth most common reasons for hospitalizations among Newton County residents.

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

Disease Group	Number	Percent
Respiratory	128	13.96%
Circulatory	127	13.85%
Digestive	83	9.05%
Pregnancy,childbirth	72	7.85%
Live newborns	59	6.43%
Genitourinary	53	5.78%
Endocrine, Immune	52	5.67%
Injury/Poisoning	44	4.80%
Musculoskeletal	25	2.73%
All other categories	122	29.88%
Totals	917	100.00%

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

Information concerning hospital admissions, Medicare and Medicaid enrollment, infant mortality and births to teens are detailed in Table 13. Combined, the Newton County hospitals

had 1,371 discharges in 1999. The percent of the county's residents enrolled in Medicare was higher than the state's percentage. A similar trend was observed for Medicaid statistics. These values probably reflect the somewhat higher population of aged residents in Newton County than in the state. The rates of infant mortality and births to teenagers were lower than the state.

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

Status or Indicator ¹	County Number	County Percent/Rate	State Percent/Rate ⁴
Hospital Discharges (2000)	1371	6.3%	N/A
Medicare Enrollment (1998)			
Aged (65 and over)	3700	17.0%	11.5%
Disabled (Under 65)	840	3.9%	2.9%
Medicaid Eligible (2000)	4308	19.8%	17.9%
Medicaid Served	2328	10.7%	11.9%
Infant Mortality (1995-1999) ²	4	17.2	20.9
Births to Teens (1995-1999) ³	53	29.7	45.2

¹ Definitions are in Appendix B, Glossary of Terms

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

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

⁴ State Rates are age-adjusted to year 2000 standard; per 100,000 population

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

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

Table 14. Death Rates from Selected Causes for Newton County

Causes of Death	Newton County		State of Mississippi	
	Number ¹	Rate ²	Number ¹	Rate ²
All Types of Cancer	54	248.4	6,131	221.4
Diabetes Mellitus	7	32.2	589	21.3
Cardiovascular Diseases *	101	464.6	11,742	424.1
Pneumonia & Influenza	4	18.4	796	28.8
Chronic Lung Diseases	13	59.8	1,329	48.0
Liver Diseases	6	27.6	248	9.0
Kidney Diseases	5	23.0	620	22.4
Accidents (all types)	15	69.0	1,639	59.2
Automobile Accidents	13	59.8	954	34.4
Suicide	6	27.6	305	11.0
Homicide	1	4.6	312	11.3

¹ Numbers are total deaths per 1,000 population

² Rates are per 100,000 population

* Includes hypertension, cerebrovascular diseases and atherosclerosis

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

Health Care Sector Economic Impacts

Businesses generate direct impacts on local economies by providing employment for residents (and possibly non-residents) and income to their employees. In addition, these businesses may purchase goods and services from other businesses and may provide tax revenue to local, state, and federal governments. The business profits and the 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 Newton County.

Table 15 reports the estimated impact of the local hospitals on Newton County's economy. Based on 1997 IMPLAN model data, primary data gathered from 2000 financial reports from Newton Regional Hospital and data provided by the Mississippi Hospital Association, the county's hospitals provide 450 jobs and these jobs create the need for 91 other local jobs. Thus, Newton County hospitals generate an impact of 5.5% of the county's total employment. Likewise, the hospitals create about \$11.2 million in personal income directly, almost \$1.5 million indirectly, for a total of 6% of the county's income. Indirect business taxes in the county of more than \$264 thousand are generated by the existing hospitals as they create secondary economic activity, which accounts for 1.9% of the county total. See Appendix C for the economic impact of Newton Regional Hospital on the local economy.

Table 15. Estimated Contribution of Newton County Hospitals to the Newton 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	# of Jobs	450	91	541	9,815	5.5%
Personal Income	\$	11,210,924	1,498,851	12,709,775	213,379,000	6.0%
Indirect Business Taxes ¹	\$	0	264,876	264,876	13,928,000	1.9%

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

Source: Department of Agricultural Economics, Mississippi State University.

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

In Table 16, three additional components of the health care sector (doctors & dentists; nursing and protective care; other medical & health services) have been combined with the figures from the county's hospitals (see Table 15). The additional components employ 576 people resulting in a total of 1,026 people employed by the county's health care sector. Total

payroll for the health care sector is estimated to be \$25.9 million. This sector has a significant impact on employment and income throughout the other industries in Newton County. The total employment impact of Newton County's health care sector is an estimated 1,223 jobs that result in a total income of more than \$29 million. Indirect business taxes attributed to the health care sector amount to 6.5% of the total in the county.

Table 16. Estimated Contribution of the Local Health Care Sector to the Newton 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	# of Jobs	1026	197	1,223	9,815	12.5%
Personal Income	\$	25,931,924	3,172,625	29,104,549	213,379,000	13.6%
Indirect Business Taxes	\$	282,000	622,224	904,224	13,928,000	6.5%

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

Source: Department of Agricultural Economics, Mississippi State University.

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

Summary and Conclusions

The economic influence on a community resulting from the delivery of health care services is often overlooked. Hospitals, nursing homes, physicians, dentists, pharmacies, home health agencies, and ambulance services are just a few of the providers that make up the health care sector. In a rural community, this particular sector generally represents a proportionally larger share of the local economy than it does in urban areas, 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 Newton County economy. The income and employment estimates for Newton County reinforce findings from similar research in other geographic regions.

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

The demand for health care services within a geographical area is dependent upon several factors relating to 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 Newton 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 just the hospital component of the health care sector in Newton

County results in the employment of 5.5% of the county's total workforce (541 jobs) and 6.0 % or \$12.7 million of the total earned personal income. When other components of the health care sector are added to the hospital component, the impact on employment increases from 5.5% to 12.5% 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 6.0% to 13.6% of the county's total income. Indirect business taxes are affected in a similar manner, increasing from 1.9% to 6.5% of the county's total.

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

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

Appendix A
Footnotes for Table 4

1. This estimate is an extrapolation from Kentucky's experience. Kentucky's Medicaid program offers a wider range of services than required by Medicaid. To restrain Medicaid cost increases, Kentucky established a primary care gatekeeper program several years ago. This program is thought to have an impact with respect to appropriate utilization of care, but is not felt to be fully effective. Kentucky Medicaid eligible may use health care differently than individuals insured through commercial insurance plans. A 1996 study compared local to non-local use by 300,500 Medicaid eligible people who reside in 49 rural counties in Southeast Kentucky. The aggregate of the 49 counties retained 61% of all hospital expenditures. Measuring by expenditure is important, particularly in hospital care, because tertiary care is far more expensive. This percent was applied to Table 4.
2. The federal Bureau of Primary Health Care (BPHC) required that applicants for Community/Migrant Health Centers (C/MHC) grants (330 clinics) develop a needs assessment to justify staffing of the clinic with physicians, midlevels, dentists, optometrists, pharmacists, and other providers. To help support the needs assessment and assure consistency in needs assessment assumptions, BPHC provided a formula, based on age and sex of the service area population that derived the total number of all ambulatory care visits. The formula estimates that 75% of all ambulatory care visits would be to primary care physicians. Note that these estimates use visits as the denominator. The BPHC rate was applied here.
3. Home health care is low technology care and can easily be offered by rural-based providers.
4. Nursing home care is low technology care, yet very expensive. In Kentucky, the average annual cost per patient excluding physician services and drugs is \$35,000 per patient year. Nursing home costs may vary significantly by state. Nursing home care can easily be provided in any rural community.

Appendix B

Glossary of Terms

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

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

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

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

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

Personal income: Income received by individuals from all sources.

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

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

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

Appendix C

Newton Regional Hospital Economic Impact

The estimated impact of Newton Regional Hospital on Newton County's economy is shown in Table 15A. Based on 1997 IMPLAN model data and primary data gathered from 2000 financial reports from Newton Regional Hospital, the hospital provides 189 jobs and these jobs create the need for 31 additional local jobs. Thus, Newton Regional Hospital generates an impact of 2.3% of the county's total employment. Likewise, the hospital creates more than \$3.9 million in personal income directly, more than \$557 thousand indirectly, for a total of 2.1% of the county's income. Indirect business taxes in the county of more than \$100 thousand or 0.7% of the county's total are generated by this hospital as it creates secondary economic activity.

Table 15A. Estimated Contribution of Newton Regional Hospital to the Newton County Economy

Category	Unit of Measure	Hospital	Additional Impact of Hospital	Total Impact of Hospital	County Total	Hospital Percent of Total
Employment	jobs	189	31	220	9,613	2.3%
Personal Income	\$	3,907,720	557,047	4,464,767	210,545,000	2.1%
Indirect Business Taxes ¹	\$	0	100,551	100,551	13,955,000	0.7%

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

Source: Department of Agricultural Economics, Mississippi State University.

Compiled from 1997 IMPLAN model supplemented with data obtained from Newton Regional Hospital

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